For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: Carol Browner

FROM: Howard L. Rhodes HLR

DATE: November 18, 1992

SUBJ: Amendment Letter to the Construction Permit AC 27-118674 and PSD-FL-091 (PSD-FL-091A) Florida Crushed Stone Company: Cement Kiln

Attached for your approval and signature is a letter amendment authorizing continuous utilization of shredded tires as a fuel supplement to coal in Florida Crushed Stone Company's (FCSC) cement kiln. The existing kiln processes raw material to produce clinker with the primary heat source being coal.

Over the past couple of years, FCSC has conducted tests for a number of pollutants. Each test was conducted under a Department Type I audit (with Department personnel personally witnessing the sampling and analysis). The test results have been evaluated and it appears that there were no increases in the pollutant emissions when comparing a baseline test (coal) and the coal-shredded tire tests. The tests were conducted to establish actual pollutant emissions and future permitting requirements.

It is also important to note that FCSC is the proposed market for tire derived fuel from a "Waste Tire Site Abatement Contract", which would be granted by the Division of Waste Management. The potential waste tire site has over 250,000 tires. This will be the first contract to be authorized to date for which the disposal method is combustion.

I recommend your approval and signature.

~~PL~~ OK APL 11-18-92
JB JB
CHF, FYI, etc
Please initial and forward.
Bm

File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

November 18, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Randy Thompson
Environmental Department
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Thompson:

Re: Amendment to the Construction Permit, No. AC 27-118674 (PSD-FL-091A), Authorizing Continuous Utilization/Firing of Shredded Tire Derived Fuel in the Facility's Cement Kiln

The Department has reviewed the request for a construction permit amendment that you provided in a letter received on August 6, 1991. The request was for the facility's cement kiln to be permitted to burn shredded tire derived fuel at a maximum utilization/firing rate of 15% of the total Btu heat input (1.33 tons per hour). Based on a review of the results of the emissions tests conducted September 18-24, 1990, October 14-16, 1991, and July 22-29, 1992, actual pollutant emissions did not appear to increase and the request is acceptable. Therefore, the following Specific Conditions and Attachments will be changed and/or added:

<u>SPECIFIC CONDITIONs</u>:

- The cement kiln's maximum utilization/firing rate of shredded tires shall not exceed 15.0 percent of the total Btu heat input, or 1.33 tons per hour.
- The utilization/firing rate of shredded tires shall be quantified (weighed) continuously and recorded; and, the records shall be kept on file for a minimum of two years.
- The quantity of all deliveries of whole and shredded tires shall be documented and kept on record/file for a minimum of two years.
- Tire-derived fuel (TDF) may be introduced into the cement kiln only at a point at the base of the preheater (i.e., kiln inlet).
- TDF firing in the cement kiln shall not commence or be conducted unless the cement kiln has reached an operating temperature of at least 1,400°F for one hour. The operating temperature shall be measured at the cement kiln inlet.

- TDF firing in the cement kiln shall not commence or be conducted unless the oxygen level in the kiln, as measured at the cement plant induced draft fan, is at least 3 percent (1-hour average).
- Permittee shall continuously monitor NO_x concentrations in the stack gases in the CPL (cement, power, and lime) main plant stack, and convert the same to a mass emission rate (lb/hr on a 1-hour average) using an FDER approved conversion factor. Within 6 months following EPA promulgation of final regulations on continuous emission monitoring (40 CFR Part 75), a flow monitor and NO_x emission monitor (EPA-approved or equivalent) shall be installed in the CPL main plant stack to continuously measure the stack gas flow rate and NO_x concentration. The monitors shall be maintained and calibrated periodically to insure adequate data. The data shall be recorded on an hourly basis and used in the determination of NO_x stack emissions.
- Any change in the method of operation, etc., pursuant to Florida Administrative Code (F.A.C.) Rule 17-210.200 (Definitions-Modification), the permittee shall submit an application along with the appropriate processing fee to the Department's Bureau of Air Regulation.
- Objectionable odors shall not be allowed off the facility's property in accordance with F.A.C. Rule 17-296.320.

<u>Attachments to be Incorporated</u>:

- Letter amendment and attachments authorizing testing for pollutant emissions while utilizing shredded tires as a supplementary fuel dated June 6, 1990 (Intent to Issue package dated April 30, 1990; Public Notice received May 11, 1990).
- Dr. J. P. Subramani's letter received November 1, 1990 (hand delivered).
- Cover letter and test reports received November 29, 1990, from Mr. Tom Mountain.
- Ms. Jewell A. Harper's letter received February 22, 1991.
- Mr. C. H. Fancy's letter with enclosure dated March 8, 1991.
- Dr. John B. Koogler's letter with enclosures received May 20, 1991.
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- Dr. John B. Koogler's letter received November 10, 1992.
- Mr. Tom Mountain's letter received November 10, 1992, via FAX.
- 40 CFR (July, 1991 version).

This letter amendment must be attached to the construction permit, No. AC 27-118674, and federal permit PSD-FL-091 (PSD-FL-091A), and shall become a part of the permits.

Sincerely,

Carol M. Browner

Carol M. Browner
Secretary

CB/BM/rbm

Attachments

cc: B. Thomas, SW District FAX'd 11-23-92 (attn: Harry [air] Kerns / Robert [solid waste]) RBM
D. Beason, Esq., DER hand delivered 11-23-92 RBM
J. Koogler, Ph.D., P.E., K&A FAX'd 11-23-92 RBM
B. Mitchell, NPS
J. Harper, EPA
C. Hetrick, HCBCC
A. Cleveland, Esq., OHF&C
D. Buff, P.E., KBN
T. Mountain, FCSC
L. Sellers, Jr., Esq., H&K
Reading File
Bruce Mitchell
Bill Parker / Tom LeBlew
Kathy Liles / Lawrence Jennings (HCPD)
11-23-92 RBM

Attachments Available Upon Request

MESSAGE CONFIRMATION NOV-23-'92 MON 10:40

TERM ID: DIV OF AIR RES MGMT P-9999

TEL NO: 904-922-6979

NO.	DATE	ST.TIME	TOTAL TIME	ID	DEPT CODE	OK	NG
012	11-23	10:36	00°03'43			04	01

NAME(S): Harry Kerns - Air
attn: Robert Butera - SW

DEPARTMENT/COMPANY: SW District

DATE: 11-23-92

PHONE: 813-744-6084

TOTAL NUMBER OF PAGES, INCLUDING COVER PAGE: 5

****

FROM: Bruce Mitchell

DIVISION OF AIR RESOURCES MANAGEMENT

BUREAU: of Air Regulation

OFFICE PHONE: 904-488-1344 SC/278-1344 FAX PHONE: (904)922-6979

SENDER: Sue

COMMENTS: ~~[illegible]~~ Document auth. shredded tiles @ FCSC; 2nd page has a statement deletion to the one sent Friday. Thanks, Bru

HAVE A NICE DAY!

Recycled Paper
Printed with Soy Based Inks

MESSAGE CONFIRMATION NOV-23-'92 MON 10:35

TERM ID: DIV OF AIR RES MGMT P-9999

TEL NO: 904-922-6979

NO.	DATE	ST.TIME	TOTAL TIME	ID	DEPT CODE	OK	NG
011	11-23	10:32	00°03'36	904 377 7158		05	00

NAME(S): John Koegler

DEPARTMENT/COMPANY: K & A

DATE: 11-23-92

PHONE: 904-377-7158

TOTAL NUMBER OF PAGES, INCLUDING COVER PAGE: 5

****

FROM: Bruce Mitchell

DIVISION OF AIR RESOURCES MANAGEMENT

BUREAU: of Air Regulation

OFFICE PHONE: 904-488-1344 FAX PHONE: (904)922-6979

SENDER: Bruce

COMMENTS: Auth. to utilize shredded tires; 2nd page has a statement deletion from the one Pradeep picked-up on Friday. Thanks, Bruce

HAVE A NICE DAY!

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

November 18, 1992

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- o Tire-derived fuel (TDF) may be introduced into the cement kiln only at a point at the base of the preheater (i.e., kiln inlet).
- o TDF firing in the cement kiln shall not commence or be conducted unless the cement kiln has reached an operating temperature of at least 1,400°F for one hour. The operating temperature shall be measured at the cement kiln inlet.

- o TDF firing in the cement kiln shall not commence or be conducted unless the oxygen level in the kiln is at least 3 percent, as measured at the base of the preheater.
- o A sonic-type meter or equivalent shall be installed in the CPL (cement, power, and lime) main plant stack to continuously measure the stack gas flow rate. The meter shall be periodically calibrated to insure adequate data. The stack gas flow rate shall be recorded on an hourly basis and used in the determination of NO_x stack emissions.
- o Any change in the method of operation, etc., pursuant to Florida Administrative Code (F.A.C.) Rule 17-210.200 (Definitions-Modification), the permittee shall submit an application along with the appropriate processing fee to the Department's Bureau of Air Regulation.
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Carol M. Browner
Secretary

CB/BM/rbm

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cc: B. Thomas, SW District
D. Beason, Esq., DER
J. Koogler, Ph.D., P.E., K&A
B. Mitchell, NPS
J. Harper, EPA
C. Hetrick, HCBCC
A. Cleveland, Esq., OHF&C
D. Buff, P.E., KBN
T. Mountain, FCSC
L. Sellers, Jr., Esq., H&K

MEMORANDUM

RECEIVED

NOV 13 1992

Division of Air Resources Management

TO: Mr. Preston Lewis
Mr. Bruce Mitchell

FROM: John B. Koogler

DATE: November 11, 1992

SUBJECT: Florida Crushed Stone Company
Approval for Using Tire Derived Fuel

The Hernando County Board of County Commissioners voted on November 10, 1992, by a 4 - 0 vote, to accept the recommendation of their consultant (KBN Engineering) and legal counsel (Oertel, Hoffman) to allow Florida Crushed Stone to proceed with amendments to all necessary air permits authorizing the use of both shredded and whole tire derived fuel without challenge. This approval is based upon the condition that certain specific conditions recommended by the consultant be incorporated as Specific Conditions in all applicable air permits. A copy of the conditions and the consultant's recommendations dated November 10, 1992, are attached hereto.

The Hernando County consultant reviewing baseline and TDF emission data from the Florida Crushed Stone facility concluded, after reviewing our reports describing the results of the tests conducted during the period July 21-29, 1992, that the use of TDF had no affect on the emissions of any constituent with the possible exception of total hydrocarbons (measured by EPA Method 25A). Based on the results of the July 1992 tests, the consultant stated that there could be a total hydrocarbon emission rate increase of up to 1.2 pounds per hour as a result of using TDF in the cement plant. Additional information related to hydrocarbon emissions was submitted to all parties (including your office) under cover of my letter dated November 5, 1992. The additional data included the results of baseline and TDF emission measurements conducted at the Florida Crushed Stone facility in 1990 and 1991. After reviewing these data, the Hernando County consultant concluded (as stated during a meeting in your offices on November 9, 1992) that the effects of TDF on total hydrocarbon emissions was inconclusive; i.e., it could not concluded that TDF did or did not effect total hydrocarbon emissions.

For your review, the data reported in my letter of November 5, 1992, are summarized in the following table.

KOOGLER & ASSOCIATES

Test	Date	Emission Rate (lb/hr) TDF/Coal	Coal
Sum of volatile and Semi-volatile hydrocarbons from MM5 and VOST	9/18-24/90	1.34	5.16
Total VOC (EPA 25A)	11/13-21/91	1.2	3.6
Benzene (VOST)		0.00060	0.00131
Total VOC (EPA 25A)	7/21-29/92	3.7*	2.5*

* As reported by the Hernando County consultant.

These data indicate that total hydrocarbon emissions from the Florida Crushed Stone facility are generally less than five pounds per hour and are unrelated to the type of fuel being used. In some cases, hydrocarbon emissions are greater while burning coal than while burning a mixture of coal and TDF and in other cases, they are higher while burning a mixture of coal and TDF than while burning coal.

To put the magnitude of hydrocarbon emissions from the Florida Crushed Stone facility into perspective, I have developed three points of reference. First, emission factors for methane and non-methane hydrocarbon emissions from the combustion of bituminous coal are reported in AP-42, Section 1.1, to total 0.10 pounds of hydrocarbons per ton of coal. During the test conducted at Florida Crushed Stone in July 1992, an average of 66.5 tons per hour of coal were fired to the power plant, cement plant and lime plant. Based on this coal firing rate, the expected VOC emission rate (as measured by EPA Method 25A) would be about 6.6 pounds per hour. The measured emission rate was in the range of 2.5 - 3.7 pounds per hour.

A second point of reference is the concentration of hydrocarbons in the CPL stack gas that is equivalent to the 1.2 pound per hour difference in hydrocarbon emissions measured during the two test scenarios in July 1992 and the quantification of this concentration difference. As reported in our reports, the limit of detection of one part per million was equivalent to about four pounds per hour of total hydrocarbons. The apparent 1.2 pound per hour change in hydrocarbon emissions initially reported by the Hernando County consultant would be equivalent to a hydrocarbon concentration of about 0.3 parts per million. This change in concentration is well below the reported limit of detection of EPA Method 25 (50 parts per million) and is less than the allowable Calibration Error of EPA 25A (5 percent of the 0-10 ppm scale or 0.5 ppm). In summary, the apparent difference in hydrocarbon emissions measured during the July 1992 tests results from a procedural approach for handling several hydrocarbon concentration measurements that were below the limit of detection of the instrument. The actual difference in emissions (0.3 ppm) cannot be reliably measured by either EPA Method 25 or 25A.

The third point of reference I would like to use is the emissions from a surface coating facility exempt from permitting requirements by Rule 17-2.210(3)(v), FAC. This rule (or the renumbered equivalent) exempts facilities applying less than six gallons of surface coating per day. At an application of six gallons per day, a coating density of 10 pounds per gallon and a 50 percent VOC fraction, the exempt VOC emission rate is in the range of 30 pounds per day. On a 24-hour basis, this is equivalent to 1.25 pounds per hour or about equivalent, the apparent difference in hydrocarbon emission rates reported for the two sets of July 1992 tests at Florida Crushed Stone.

The purpose of this memo is to update you on the recent action of the Hernando County Board of County Commissions and to demonstrate that use of tire derived fuel has no significant effect on total hydrocarbon emissions from the Florida Crushed Stone facility. Regarding the action taken by Hernando County, this action will allow the Department to issue to Florida Crushed Stone an amendment to Construction Permit AC27-118674 (PSD-FL-091A) authorizing continuous utilization of shredded tire derived fuel as described in the Department's Intent to Issue dated August 30, 1991. The action by the County will also allow the Department to amend the same permit, either with or without further public notice, to authorize the continuous utilization of whole tire derived fuel. As both Hernando County and Florida Crushed Stone agree there is no conclusive evidence indicating the use of TDF increases total hydrocarbon emissions, I would urge that you consider authorizing Florida Crushed Stone to utilize whole TDF without further notice under the conditions of the Department's Final Determination dated July 14, 1992; with the understanding that the conditions proposed by Hernando County be added to the conditions previously proposed by the Department.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

FAX TRANSMITTAL FORM

TO: Bruce Mitchell

FROM: John Koogler

PROJECT: 307-90-01

SENT BY: Wendy

DATE: 11/12/92

FAX PHONE: 904-377-7158

The text being transmitted consists of 3 pages PLUS this one.

REMARKS:

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 2
To Bruce Mitchell | From Tom Mountain
Co. FDER-Air Program | Co. FCS-CPL
Dept. Tallahassee | Phone # 904-799-7881
Fax # 904-922-6979 | Fax # 904-799-3508

FCS

FLORIDA CRUSHED STONE COMPANY

CEMENT / POWER / LIME PLANT

November 10, 1992

Chairman John Richardson and Board of County Commissioners
of Hernando County
20 North Main Street
Brooksville, Florida 34601

RE: Florida Crushed Stone-Tire Derived Fuel Permits

Honorable Chairman and Commissioners:

Florida Crushed Stone (FCS) has reviewed the final TDF report from Dave Buff of KBN Engineering. FCS agrees to abide by the seven (7) specific conditions listed on page 7-3 of the report dated 11/10/92 and to have them incorporated into the FCS-TDF permits to be issued by the FDER.

Please call me if you have any questions.

Sincerely,

Tom Mountain

Tom Mountain
Environmental Manager

Copy:
B. Mitchell, FDER-Tallahassee w/attch
J. Piermatteo, FCS
R. Thompson, GeoTech
J. Koogler, K&A
L. Sellers, H&K
D. Buff, KBN
S. Fernandez, OHF&C
C. Herrick, Hernando County

P.O. BOX 1608 / 10311 CEMENT PLANT ROAD / BROOKSVILLE, FL 34605-1608 / PHONE (904) 799-7881 / FAX (904) 799-

contained in DER's May 29, 1992, proposed performance test authorization which included a draft amendment to FCS's air permits.

Specific Conditions:

1. The cement kiln's maximum utilization/firing rate of tire-derived fuel (TDF) shall not exceed 15.0 percent of the total Btu heat input, or 1.33 tons per hour.
2. The utilization/firing rate of TDF shall be quantified (weighed) continuously and recorded and the records shall be kept on file for a minimum of two years.
3. The quantity of all deliveries of TDF shall be documented and kept on record/file for a minimum of two years.
4. TDF may be introduced into the cement kiln only at a point at the base of the preheater (i.e., at the kiln inlet).
5. TDF firing in the cement kiln shall not commence or be conducted unless the cement kiln has reached an operating temperature of at least 1,400°F for one hour. The operating temperature shall be measured at the cement kiln inlet.
6. TDF firing in the cement kiln shall not commence or be conducted unless the oxygen level in the kiln, as measured at the cement plant induced draft fan, is at least 3 percent (1-hour average).
7. Permittee shall continuously monitor NO_x concentrations in the stack gases in the CPL main plant stack, and convert the same to a mass emission rate (lb/hr on a 1-hour average) using an FDER approved conversion factor. Within 6 months following EPA promulgation of final regulations on continuous emission monitoring (40 CFR Part 75), a flow monitor and NO_x emission monitor (EPA-approved or equivalent) shall be installed in the CPL main plant stack to continuously measure the stack gas flow rate and NO_x concentration. The monitors shall be maintained and calibrated periodically to insure adequate data. The data shall be recorded on an hourly basis and used in the determination of NO_x stack emissions.

Recommendations to HCBCC

It is recommended that if the above specific conditions are incorporated into the FDER permits for shredded and whole TDF, the HCBCC should not challenge the issuance of the permits. If such conditions are not incorporated into the permits, reasonable assurance will not be provided that TDF fuel will be utilized in an environmentally acceptable manner, and the HCBCC should challenge the issuance of the permits in an administrative hearing.

BEST AVAILABLE COPY

Bruce TRT to analyze the data and KBN's report - Let's talk Preston 11/9/92

MEETING ATTENDEE LIST
BUREAU OF ~~WASTEWATER MANAGEMENT AND GRANTS~~ AIR REGULATION

Project Name: FLORIDA CRUSHED STONE (TDF)

Meeting Date: 11/9/92 1:00 pm

Name	Representing	Address	Phone #
PRESTON LEWIS	DER/AIR	2600 BLAIRSTONE TALLAHASSEE, FL	(904) 488-134
CLAIR FANCY	|	|	|
Randy Thompson	GeoTech Ind.	P.O. Box 490300 Leesburg, FL 34749-0300	904-787-0608
Tom Mountain	FCS	P.O.Box 1508 Brooksville, FL 34605-1508	(904) 799-7881
JOHN KOOGLER	FCS / K&A	Gainesville, FL	904/377-58
Segundo Fernandez	Hernando Co./OHFC	2700 Blair Stone Rd. Tallahassee	904/877-0099
David Buff	KBN	Gainesville, FL	904/331-9000
Larry Sellers	Holland & Knight/FCS	TLH	425-5671
THOMAS LeDEW	DER/SOLID WASTE	2600 BLAIR STONE R TALLY	922-6104
Clair Fancy	DER	"	"
Bill Parker	DER	"	9226104

11/13
11/27

Florida Crushed Stone

VOC - Conflict between FCS and KBN data on whether there is an increase of emissions.
Hydro Carbon are Very Low
< 2 1/2 ppm

TDF 15% fuel supplement W/TDF
85% Coal primary
1983 operating Permit

4.1 #/HR ~ 1 ppm

SHREDDED TIRES permit is noticed.

WHOLE TIRES - intent to issue
Possibility of increase in emission.

Bruce Can you give Bill Parker a Copy of the KBN ar

IMPACT OF TRACE CONSTITUENTS ON AIR QUALITY

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

Constituent	Emission Rate(1) (lb/hr)		Impact of Emission and No Threat Levels(2) (micrograms per cubic meter)					
			8-hr		24-hr		Annual	
	Baseline	TDF	Impact	NTL	Impact	NTL	Impact	NTL
Al	-	0.948	0.04	100	0.016	24	-	-
As	<0.004	-	<0.01	2	<0.001	0.48	<0.00001	0.00023
Ba	0.005	-	<0.01	5	<0.001	1.2	0.00001	50
Cd	<0.005	-	<0.01	0.5	<0.001	0.12	<0.00001	0.00056
Cr should be VI not III	0.010	-	<0.01	0.5	<0.001	0.1.2	0.00002	~~1000~~ 0.000083
Co	0.005	-	<0.01	0.5	<0.001	0.12	-	-
Cu	0.003	-	<0.01	1.0	<0.001	0.24	-	-
Fe	0.992	-	0.04	50	0.016	12	-	-
Pb	0.130	-	0.01	1.5	0.002	0.36	0.00022	0.09
Mg	-	0.081	<0.01	100	<0.001	24	-	-
Hg	0.025	-	<0.01	~~1.0~~	<0.001	~~0.24~~	0.00005	- 0.3
Mo	0.018	-	<0.01	50	<0.001	12	-	-
Ni	<0.018	-	<0.01	0.5	<0.001	0.12	<0.00003	0.00420
Se	<0.004	-	<0.01	2	<0.001	0.48	-	-
Ag	<0.001	-	<0.01	0.1	<0.001	0.024	<0.00001	3
Ti	-	0.017	<0.01	100	<0.001	24	-	-
Va	<0.018	-	<0.01	0.5	<0.001	0.12	<0.00003	20
Zn	3.094	-	0.14	50	0.051	12	-	-
2,3,7,8 TCDD	0.114×10^{-6}	-	-	-	-	-	1.9×10^{-10}	2.2×10^{-8}
Acetone	0.025	-	<0.01	35600	<0.001	8544	-	-
Benzene	-	0.171	0.01	30	0.003	7.2	0.00028	0.12
Toluene	-	0.246	0.01	3750	0.004	900	0.00041	300
TCE	<0.003	-	<0.01	3350	<0.001	804	-	-
Chlorobenzene	-	0.009	<0.01	460	<0.001	110	-	-
Ethylbenzene	-	0.004	<0.01	4350	<0.001	1044	-	-
Xylene	-	0.015	<0.01	4350	<0.001	1044	-	-
? Chloromethane	-	0.043	<0.01	- 1050	0.001	- 254	-	-
Bromomethane	<0.003	-	<0.01	200	<0.001	48	<0.00001	0.006
Carbon disulfide	<0.003	-	<0.01	120	<0.001	29	<0.00001	0.01
Styrene	-	<0.005	<0.01	2150	<0.001	516	-	-

(1) Listed emission rate is the highest rate measured during Baseline and TDF tests with cement, power and lime plants operating.

(2) No Threat Levels - Policy based ambient guidelines established by FDER.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

FAX TRANSMITTAL FORM

TO: Bruce Mitchell

FROM: John Koogler

PROJECT: 307-90-01

SENT BY: Marion

DATE: 11/3/92

FAX PHONE: 904-377-7158

The text being transmitted consists of 4 pages PLUS this one.

REMARKS: Copy of original report will be Federal Expressed to you tonight.

PRELIMINARY REPORT

TIRE-DERIVED FUEL
TEST BURN
FLORIDA CRUSHED STONE
BROOKSVILLE, FLORIDA

Prepared For:

Hernando County Board of County Commissioners
20 North Main Street
Brooksville, Florida 34601

Prepared By:

KBN Engineering and Applied Sciences, Inc.
1034 NW 57th Street
Gainesville, Florida 32605

November 1992
22122B1/R1

7.0 SUMMARY AND CONCLUSIONS

FCS has conducted a test burn program utilizing TDF to provide up to 15 percent of the heat input to the cement kiln located within the CPL plant. The program was witnessed and evaluated by KBN, acting on behalf of the HCBCC. The FDER also witnessed the testing by sending staff representatives from the Tallahassee and Tampa offices. Based on the review of all available data, the major aspects of the TDF test burn are summarized below:

1. The test protocol developed for the test burn was adequate to demonstrate whether any increases in emissions of regulated air pollutants will occur due to TDF firing in the cement kiln;
2. USEPA reference methods were used to measure stack emissions from the CPL plant. In general, proper stack test procedures were followed during the stack testing. In a few instances, deviations from proper procedures were evidenced, but these deviations are not considered significant to the conclusions reached.
3. FCS plant personnel were completely cooperative throughout the test period. No indication was received of any intent to conceal or falsify any plant operating or test data. Two unannounced visits were conducted to verify proper operation when firing TDF.
4. Both baseline and TDF/coal testing were conducted with the CPL plants operating at or near their maximum operating rates.
5. PM and NO_x emissions from the CPL plant were well below the allowable emission rate during both baseline and TDF/coal firing conditions.
6. Emissions of all pollutants, except THC, do not increase as a result of TDF firing in the cement kiln. Based on the available data, it is concluded that THC emissions increased for TDF/coal firing as compared to the baseline emissions. However, the THC emissions are low (less than 4 lb/hr average), and do not represent a concern from an emission or air quality impact standpoint.
7. The data indicate that acceptable clinker was being produced on a continuous basis throughout the test period, including TDF/coal firing periods.
8. There is no apparent difference in cement kiln inlet temperatures when firing 100 percent coal and when firing TDF/coal in the cement kiln. However, two periods exist during TDF/coal burning in August when kiln inlet temperatures drop well below the normal range. The reasons for this are not clear, but are not of major concern since clinker quality was demonstrated throughout the test period.

9. The analysis of coal and TDF demonstrate that TDF is overall a cleaner fuel than coal. Concentrations of nearly all trace elements measured in the TDF are significantly lower than the concentrations in coal.
10. The modeling analysis demonstrates that the potential impacts of each air toxic pollutant are well below the respective FDER no-threat level (NTL). Maximum impacts of Cr^{+6} are also predicted to be below the FDER NTL and would not pose a threat to the public health.

In conclusion, the test burn satisfies beyond all reasonable doubts that TDF firing in the cement kiln at FCS can occur without an increase in allowable emissions. Further, reasonable assurance has been provided that TDF firing can occur without an increase in actual emissions of any regulated pollutant measured during the test period, except for THC. The small increase in THC emissions, and the small magnitude of THC emissions, does not pose any threat to the public health. It is cautioned, however, that these conclusions are valid only for the range of conditions experienced during the test burn.

It is concluded that TDF firing at FCS, <u>if conducted properly</u>, can occur in an environmentally safe manner, and that the health and safety of the residents of Hernando County will not be jeopardized.

This conclusion is supported in part by the large number of cement kilns in the U.S. which have or are currently burning waste tires as a permitted supplemental fuel. Test data available from some of the dry process cement kilns in the United States that were burning TDF indicate emissions are not adversely affected and, in many cases, improve. For example, at Ash Grove Cement in Durkee, Oregon, emissions of PM, CO, SO_2, eight metals, chlorides and aliphatic compounds were all found to either remain the same or decrease with 10 percent TDF firing as compared to 100 percent coal firing. The long residence times, high operating temperatures, and scrubbing action of cement kilns provide an ideal environment to burn tires as a supplemental fuel. Organics are efficiently destroyed, and many trace elements are incorporated into the clinker product. Refer to additional related information contained in Appendix C.

In order to provide reasonable assurance that FCS conducts TDF burning in an environmentally acceptable manner, the following conditions are recommended to be included in any air permit issued for TDF firing in the cement kiln at FCS. Some of these recommended conditions were

contained in DER's May 29, 1992, proposed performance test authorization which included a draft amendment to FCS's air permits.

Specific Conditions:

1. The cement kiln's maximum utilization/firing rate of whole tires shall not exceed 15.0 percent of the total Btu heat input, or 1.33 tons per hour.
2. The utilization/firing rate of whole tires shall be quantified (weighed) continuously and recorded and the records shall be kept on file for a minimum of two years.
3. The quantity of all deliveries of whole tires shall be documented and kept on record/file for a minimum of two years.
4. Tire-derived fuel (TDF) may be introduced into the cement kiln only at a point at the base of the preheater (i.e., at the kiln inlet).
5. TDF firing in the cement kiln shall not commence or be conducted unless the cement kiln has reached an operating temperature of at least 1,400°F for one hour. The operating temperature shall be measured at the cement kiln inlet.
6. TDF firing in the cement kiln shall not commence or be conducted unless the oxygen level in the kiln is at least 3 percent, as measured at the base of the preheater.
7. A sonic-type flow meter or equivalent shall be installed in the CPL main plant stack to continuously measure the stack gas flow rate. The meter shall be periodically calibrated to insure adequate data. The stack gas flow rate shall be recorded on an hourly basis and used in the determination of NO_x stack emissions.

Recommendations to HCBCC

Based on the test burn results, which indicate an increase in THC emissions due to TDF firing, an air construction permit should be required of FCS prior to being authorized to burn TDF on a continuous basis.

It is recommended that if the above recommended conditions are incorporated into the construction permit, the HCBCC should not challenge the issuance of the construction permit. If such conditions are not incorporated into the construction permit, reasonable assurance will not be provided that TDF fuel will be utilized in an environmentally acceptable manner, and the HCBCC should challenge the construction permit in an administrative hearing.

BEST AVAILABLE COPY

See whole times
pkg for reports:
PSD-FL-091C

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

KA 307-90-01

September 16, 1992

RECEIVED
SEP 18 1992
Division of Air
Resources Management

Mr. Tom Mountain
Florida Crushed Stone Company
10311 Cement Plant Road
Brooksville, FL 34601

Subject: Florida Crushed Stone Company
Baseline and Coal/TDF Test Reports
July 21-29, 1992

Dear Mr. Mountain:

Enclosed are reports of the tests conducted under baseline and coal/TDF firing conditions at the Florida Crushed Stone CPL plant during the period July 21-29, 1992. Also, enclosed is a separate report comparing the results of measurements made during the baseline and coal/TDF test periods. Copies of these reports are being transmitted to all parties on the Distribution List by overnight mail. The reports for Mr. David Buff of KBN are being hand delivered on this date along with CPL plant operating records for the period July 21 through August 31, 1992.

If you or any parties on the Distribution List have any questions regarding these reports, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa
Enc.

c: Mr. Bruce Mitchell, FDER, Tallahassee
Mr. Chi-Sun Lee, FDER, Tampa
Mr. C. Hetrick, Hernando County
Mr. David Buff, KBN
Mr. A. Cleveland, Oertel, Hoffman
Mr. Larry Sellers, Holland & Knight
Mr. Carl Lunderstadt, FCS, Leesburg

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

HERNANDO COUNTY,

Petitioner,

vs. OGC CASE NO. 91-1808

FLORIDA CRUSHED STONE COMPANY and STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION,

Respondents.

_________________________________/

ORDER GRANTING REQUEST FOR EXTENSION OF TIME TO FILE PETITION FOR HEARING

This cause has come before me upon receipt of a request made by Petitioner, HERNANDO COUNTY, pursuant to Florida Administrative Code Rule 17-103.070, to grant an extension of time to file a petition for administrative hearing concerning the Department's Application No. AC27-118674. See Exhibit 1 attached.

Counsel for Petitioner has discussed this request with counsel for Respondent, State of Florida Department of Environmental Regulation (DER), and the DER has no objection to it. Therefore,

IT IS ORDERED:

The request for an extension of time to file a petition for administrative proceeding is granted. Petitioner shall have until November 13, 1992, to file a petition in this matter. Filing shall be complete upon receipt by the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. Bruce Mitchell
2.
3. Air
4. TT 310D

Remarks:

RECEIVED

OCT 1 5 1992

Division of Air
Resources Management

From Doug Beason

Date 10-15-92

Phone 8-9730

DONE AND ORDERED on this 14th day of October, 1992, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

DANIEL H. THOMPSON
General Counsel

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400
Telephone: (904) 488-9730

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by U.S. Mail to C. Anthony Cleveland, Esq., Oertel, Hoffman, Fernandez & Cole, P.A., Post Office Box 6507, Tallahassee, FL 32314-6507, and to Larry Sellers, Esq., Holland & Knight, Post Office Drawer 810, Tallahassee, FL 32302, on this 15th day of October, 1992.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

W. DOUGLAS BEASON
Assistant General Counsel

2600 Blair Stone Road
Tallahassee, FL 32399-2400
Telephone: (904) 488-9730

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

RECEIVED
SEP 30 1992
Dept. of Environmental Re
Office of General Counse'

HERNANDO COUNTY,

Petitioner,

vs.

OGC FILE NO.: 91-1808
DER FILE NO.: AC27-118674

FLORIDA CRUSHED STONE COMPANY and STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION,

Respondents.

MOTION FOR EXTENSION OF TIME
FOR FILING PETITION

Pursuant to Rule 17-103.070, Florida Administrative Code, HERNANDO COUNTY, requests an extension of time in which to file a petition for formal administrative proceedings concerning the Intent to Issue regarding DER File Nos. AC27-118674, PSD-FL-091, and PSD-FL-091A, dated August 30, 1991. In support thereof, Hernando County states as follows:

1. The Department's Intent to Issue authorizes continuous utilization/firing of shredded tire derived fuel in Florida Crushed Stone Company's cement kiln.

2. The Department Order dated September 3, 1992, provided Hernando County until October 1, 1992, to file a Petition relative to this matter. The extension was granted to allow Florida Crushed Stone time to conduct a test burn, report the results to Hernando County, and allow sufficient time for the county to evaluate the results.

3. Consultants for Hernando County have identified concerns regarding the Intent to Issue referenced herein and have met with representatives of Florida Crushed Stone on multiple occasions in an attempt to resolve these issues.

4. In July, 1992, Florida Crushed Stone conducted an additional whole tire test burn. The results of this test burn are relevant to the County's concerns with respect to continuous utilization firing of shredded tires. Hernando County's consultant only received the above-described data from Florida Crushed Stone on September 16, 1992. On September 25, 1992, the County's consultant notified Hernando County that as a result of Florida Crushed Stone's delay in providing the data resulting from the whole tire test burn, an extension of the October 1, 1992, County deadline to file any petition relating to Florida Crushed Stone's request for authorization to continuously burn shredded tires was necessary. <u>See</u> Dave A. Buff letter to Hernando County, attached hereto and incorporated herein as Exhibit "A".

5. Accordingly, in order to allow sufficient time for Hernando County to receive and review this data, it is requested that the time in which to file a petition for formal administrative proceedings be extended to and including November 13, 1992.

6 The undersigned on this date unsuccessfully attempted to contact W. Douglas Beason, Assistant General Counsel, for the Department regarding his position on this Motion. Larry Sellers, Counsel for Florida Crushed Stone Company, has no objection to this Motion.

WHEREFORE, Hernando County respectfully requests that the Department enter an order granting an extension of time in which to file a petition for formal administrative proceedings to and including November 13, 1992.

Respectfully submitted,

OERTEL, HOFFMAN, FERNANDEZ & COLE, P.A.
Post Office Box 6507
Tallahassee, FL 32314-6507
(904) 877-0099

C. ANTHONY CLEVELAND
Fla. Bar ID#217859
Attorneys for HERNANDO COUNTY

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by Hand-Delivery to the AGENCY CLERK, Office of General Counsel, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 and by United States Mail to W. DOUGLAS BEASON, Assistant General Counsel, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 and LARRY SELLERS, Holland & Knight, Post Office Drawer 810, Tallahassee, Florida 32302, this 22nd day of September, 1992.

Attorney

cac\1579\1579-11th.mot

PRELIMINARY REPORT

TIRE-DERIVED FUEL
TEST BURN
FLORIDA CRUSHED STONE
BROOKSVILLE, FLORIDA

Prepared For:

Hernando County Board of County Commissioners
20 North Main Street
Brooksville, Florida 34601

Prepared By:

KBN Engineering and Applied Sciences, Inc.
1034 NW 57th Street
Gainesville, Florida 32605

November 1992
22122B1/R1

FEDERAL EXPRESS

[redacted]

QUESTIONS? CALL 800-238-5355 TOLL FREE.

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Company: KOOGLER & ASSOC | Department/Floor No.
Street Address: 4014 NW 13TH ST
City: GAINESVILLE | State: FL | ZIP Required: 32609

2 To (Recipient's Name) Please Print: Bruce Mitchell | Recipient's Phone Number (Very Important): (904) 488-1[illegible]
Company: FDER Twin Towers Office | Department/Floor No.
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2600 Blair Stone Rd
City: Tallahassee | State: FL | ZIP Required: 32399

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4 SERVICES (Check only one box)

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16 [ ] FEDEX LETTER*
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13 [ ] FEDEX BOX
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Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
51 [ ] OTHER PACKAGING
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53 [ ] FEDEX BOX
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70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas.
*Declared Value Limit $500.
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5 DELIVERY AND SPECIAL HANDLING (Check services required)

HOLD FOR PICK-UP (Fill in Box H) 1 [ ] WEEKDAY or 31 [ ] SATURDAY
DELIVER 2 [ ] WEEKDAY or 3 [ ] SATURDAY (Extra charge) (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE Dangerous Goods Shipper's Declaration not required
Dry Ice, 9, UN 1845, ______ X ______ kg. III
7 [ ] OTHER SPECIAL SERVICE
9 [ ] SATURDAY PICK-UP (Extra charge)
[ ] DESCRIPTION
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total	Total	Total

DIM SHIPMENT (Chargeable Weight) [ ] lbs.
L x W x H

Received At
1 [ ] Regular Stop 3 [X] Drop Box
4 [ ] B.S.C.
2 [ ] On-Call Stop 5 [ ] Station

7 Release Signature:

Emp. No. | Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City | State | Zip
Received By:
X
Date/Time Received | FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

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1.0 INTRODUCTION

The Florida Crushed Stone Company (FCS) has recently undergone a tire-derived fuel (TDF) test burn program at its Brooksville cement, power, and lime (CPL) plant. The purpose of the test burn was to determine conclusively if the firing of up to 15 percent TDF in the cement plant causes an increase in the emissions of any regulated air pollutant from the CPL plant. The test burn was conducted during July and August 1992.

The Hernando County Board of County Commissioners (HCBCC) has maintained a continuing interest in FCS's proposals to utilize waste tires as a supplemental fuel in the cement plant. In May 1992, HCBCC contracted with KBN Engineering and Applied Sciences, Inc. (KBN) to serve as a consultant to the county to evaluate the TDF test burn. The scope of services to be provided included: 1) review and approval of a test protocol for the test burn, which was to be developed by consultants to FCS, 2) witness all activities during the test burn period to determine if proper and adequate data are collected, 3) review of the data and results of the test burn to ascertain beyond a reasonable doubt that burning TDF can occur without an increase in allowable emissions, and 4) provide a final report to HCBCC concerning the adequacy of the test burn.

The report contained herein satisfies the last requirement of the contract, i.e., a final report which addresses the adequacy of the test burn to demonstrate if an increase in emissions of any regulated pollutant will occur under TDF firing conditions. An overview of the test program is presented in Section 2.0. Baseline testing is summarized in Section 3.0, and TDF firing results are presented in Section 4.0. A comparison of the baseline and TDF firing results is presented in Section 5.0. Results of an air quality impact analysis conducted for emissions from the CPL plant are discussed in Section 6.0. A summary and conclusions of the TDF test program are presented in Section 7.0.

2.0 OVERVIEW OF TEST PROGRAM

The overall test program to demonstrate the feasibility and acceptability of TDF firing in the cement kiln at FCS was conducted over an approximate 40-day period. The testing period is summarized in Table 2-1. Baseline testing, with no TDF being fired in the kiln, was conducted during the first 2 days of the test period, on July 21 and 22, 1992. TDF/coal firing in the cement kiln was initiated on July 23 and continued through July 30, at which time the cement kiln was shutdown due to full cement silos. Emission testing for TDF firing was conducted during this period, on July 28 and July 29.

The cement kiln was re-started on August 8, 1992, using 100 percent coal as fuel. TDF/coal firing in the kiln was begun on August 10 and continued through August 31, 1992. The kiln was shut down at this time due to high inventory levels.

The test period includes approximately 30 days of TDF/coal firing in the kiln, and 4 days of 100 percent coal firing in the kiln.

During the baseline and TDF/coal firing emission testing, the test methods set forth in the approved test protocol were utilized. All methods used were the U.S. Environmental Protection Agency (EPA) reference methods as specified in the Code of Federal Regulations (CFR), Title 40, Part 60. Manual stack testing was performed for the following during each test:

- Particulate matter (PM)
- Nitrogen oxides (NO_x)
- Carbon monoxide (CO)
- Total hydrocarbons (THC)
- Hydrogen chloride (HCl)
- Lead (Pb)
- Mercury (Hg)
- Arsenic (As)
- Chromium (Cr)
- Zinc (Zn)
- Volatile organic compounds:
  - Bromomethane
  - Acetone

Table 2-1. Summary of TDF Test Burn Operation

Period	Conditions
Prior to 07/21/92	100% coal firing in kiln
07/21/92 to 07/22/92	Baseline stack testing; 100% coal firing in kiln
07/23/92 to 07/27/92	TDF/coal firing in kiln
07/28/92 to 07/29/92	TDF/coal firing stack testing
07/30/92	TDF/coal firing in kiln; kiln shut down due to full silos
08/08/92 to 08/09/92	Kiln restarted; 100% coal firing in kiln
08/10/92 to 08/31/92	TDF/coal firing in kiln
08/31/92	Kiln shut down due to high inventory

Carbon disulfide
1,1,1-trichloroethane
Benzene
Toluene
Chlorobenzene
Ethylbenzene
Xylene
Styrene
Hexane

Pollutant measurements for NO_x, CO, and THC were performed continuously for two 12-hour periods (a total of approximately 24 hours) in each the baseline and TDF/coal firing emission test periods. All other pollutant measurements were obtained during a total of three runs in each the baseline and TDF/coal firing emission test periods. The duration of each run was approximately 2 hours.

All emission measurements were made at the main stack exhaust for the CPL plant. The cement, power and lime plants all exhaust through the main stack at FCS.

Several plant operating parameters were measured continuously throughout the entire 30-day test period. These included power plant, cement plant, and lime plant operating parameters. In addition, continuous stack measurements of NO_x, sulfur dioxide (SO_2), CO, and opacity are obtained by the plant using in-stack monitors.

Based upon the 30-day test period, Koogler & Associates (K&A) prepared emission test reports as well as a summary report comparing the baseline and TDF/coal firing results. The summary report concluded that the test data demonstrated that the use of up to 15 percent TDF in the cement kiln has no effect upon emissions from the CPL plant. An air quality screening analysis was also performed separately by K&A, which addressed the predicted ambient impacts of toxic pollutants from the CPL plant. This analysis concluded that impacts of all air toxics will be well below the Florida Department of Environmental Regulation's (FDER) established no-threat levels (NTLs).

3.0 BASELINE TESTING

3.1 PLANT OPERATING CONDITIONS

The baseline testing, utilizing 100 percent coal to fire the CPL plants, was conducted during the period 0810-1914 on July 21, 1992, and 0800-1900 on July 22, 1992. The CPL plants were all operating during the baseline testing. Prior to the baseline testing, the CPL plant had been operating with coal providing 100 percent of the heat input to the cement plant. This assured that all plant operating parameters and emission test results would be representative of 100 percent coal firing. Following the conclusion of baseline testing on July 22, 1992, firing of up to 15 percent TDF in the cement plant was begun, ending the baseline test period.

Based on review of the plant operating data, baseline testing was conducted with the CPL plants operating at or near their maximum operating rates. Plant operating data during the baseline testing are summarized in Table 3-1. The cement plant averaged 78.6 tons per hour (TPH) clinker production, which represents 105 percent of the maximum permitted production rate of 75 TPH. Kiln feed averaged 120.9 TPH, which is 109 percent of the maximum permitted feed rate of 110.6 TPH. Heat input to the kiln averaged 214 million British thermal units per hour (MMBtu/hr), which is 86 percent of the maximum heat input of 248 MMBtu/hr. Coal feed rate to the kiln averaged 8.5 TPH, compared to a maximum firing rate of 10.3 TPH.

The power plant electrical generating rate during the baseline test period averaged 114.0 megawatts (MW), and coal feed rate averaged 47.2 TPH. The maximum electric generating rate for the power plant is 125 MW.

The lime plant lime feed rate during the baseline test period averaged 16.4 TPH compared to a maximum permitted lime feed rate of 22 TPH. The coal feed rate to the lime plant averaged 8.8 TPH.

It is noted that FCS plant personnel were very cooperative in answering questions raised by KBN staff, in providing explanations to plant operations, conducting equipment inspections, and providing any other information requested by KBN staff during the baseline test period. Complete access to the plant control room was provided at all times, so that plant operations could be monitored. Hourly computer printouts of plant operating data were witnessed being generated in the control room, and later provided to KBN for inspection. The TDF feed system

Table 3-1. Summary of CPL Plant Operating Data During Emission Testing

Parameter	Permitted or Maximum Rate	Baseline Conditions (07/21/92 to 07/22/92) Test Average	Baseline Conditions Percent of Maximum	TDF/Coal Firing (07/28/92 to 07/29/92) Test Average	TDF/Coal Firing Percent of Maximum
Lime Plant					
Coal Feed (TPH)	—	8.8	—	12.9	—
Lime Feed (TPH)	22	16.4	75	20.8	95
Power Plant					
Coal Feed (TPH)	—	47.2	—	48.3	—
Gen. Rate (MW)	125	114.0	91	110.6	88
Cement Plant					
Coal Feed (TPH)	10.3/8.76 [a]	8.5	83	7.3	83
TDF Feed (TPH)	0/1.33 [a]	0	0	1.33	100
Heat Input (MMBtu/hr)	248	214	86	228	92
Kiln Feed (TPH)	110.6	120.9	109	117.6	106
Clinker Prod. (TPH)	75	78.6	105	76.4	102
Cement Plant Fan					
Temperature (°F)	—	754	—	762	—
Current (amp)	—	121	—	117	—
Damper (%)	—	53.1	—	54.8	—
Oxygen (%)	—	5.21	—	4.16	—
CO (ppm)	—	353	—	244	—
Preheater					
Exit Temperature (°F)	—	789	—	790	—
Internal Temperature (°F)	—	1,264	—	1,518	—
Meal Temperature (°F)	—	1,339	—	1,337	—
Kiln Inlet					
Temperature (°F)	—	1,601	—	1,616	—
Draft (inches H_20)	—	0.78	—	0.72	—
Oxygen (%)	—	7.92	—	1.25	—
Combustibles (%)	—	-0.09	—	0.20	—
Bag House					
Inlet Temperature (°F)	—	403	—	400	—
Fan Speed (%)	—	74	—	71	—
Current (amp)	—	3,216	—	3,129	—
Pressure Drop (inches H_2O)	—	7.8	—	7.6	
Stack					
Oxygen (%)	—	6.6	—	6.3	—
NO_x (ppm)	—	150	—	165	—
Opacity (%)	—	4.0	—	3.6	—
Gas Flow (dscfm)	—	600,293	—	587,135	—

Note: NR = not reported on hourly basis.

[a] For 100 percent coal and 15 percent TDF/coal firing, respectively.

and monitoring equipment, lime feed and lime product systems, and coal feed systems were all inspected during the baseline testing.

Based on discussions with plant operating personnel, and a review of the plant operating data, the CPL plant was operating normally during the baseline test period.

3.2 STACK TEST PROCEDURES

Review of the stack test procedures employed by K&A indicate in general that proper procedures were followed during the stack testing. In a few instances, deviations from proper procedures were evidenced. These are discussed below:

1. The VOST sampling train used for stack sampling employed a digital flow meter to provide a constant sample flow rate. This rate was apparently multiplied by the sample duration to arrive at total sample volumes. However, the test method requires that a gas meter be used to record total sample volumes. Use of the flow meter as a sample volume totalizing device instead of a gas meter could introduce a test inaccuracy of up to 10 percent. Based on the VOC stack test results, as described below, this potential error is not considered to be significant (i.e., the conclusions of the testing would not change).
2. Review of the continuous monitoring strip chart data revealed several practices that are not in strict conformance with EPA Reference Methods 7E, 10, and 25A. The primary concern is with the frequent changing of analyzer ranges. A test range for each analyzer should be selected and the required linearity demonstrations made for that range. Other concerns are related to infrequent drift checks and in the failure to demonstrate NO_x bias checks.

While these inconsistencies might not be acceptable for compliance testing, the data is considered adequate for the purposes of demonstrating potential emission changes. There is adequate quality assurance demonstrated to ensure basic test accuracy.

3.3 BASELINE EMISSION TEST RESULTS

Baseline emission test results are summarized in Table 3-2. PM emissions averaged 47.7 lb/hr and were well below the allowable PM emission rate 86.5 lb/hr for the cement, power and lime plants all operating. NO_x emissions averaged 762 lb/hr, which is well below the allowable emission rate of 1,205 lb/hr when all three plants are operating.

Table 3-2. Summary of Emission Test Results for Baseline and TDF/Coal Firing Conditions, CPL Plant

Pollutant Name	Baseline Conditions (100% Coal) Number of Obs.	Baseline Conditions (100% Coal) Average (lb/hr)	TDF/Coal Firing Number of Obs.	TDF/Coal Firing Average (lb/hr)	Test For Significant Change
Criteria Pollutants					
Particulate	3	47.7	3	62.7	Significant Change
Nitrogen Oxides	23	762.2	22	692.9	OK
Lead	3	0.0118	3	0.0146	OK
Mercury	3	0.0153	3	0.0099	OK
Carbon Monoxide	23	421.5	22	671.2	Significant Change
Total Hydrocarbons	23	2.5	22	3.7	a
Non-Criteria Pollutants					
Arsenic	3	0.0021	3	0.0018	OK
Chromium	3	0.0106	3	0.0096	OK
Zinc	3	8.92	3	6.20	OK
Hydrogen Chloride	3	71.62	3	65.93	OK
Volatile Organic Compounds:					
Bromomethane	3	b	3	0.001	OK
Acetone	3	0.141	3	0.137	OK
Carbon disulfide	3	0.068	3	0.101	OK
Benzene	3	0.417	3	0.200	OK
Trichloroethane	3	b	3	b	OK
Toluene	3	0.086	3	0.031	OK
1,1,1-Trichloroethane	3	b	3	b	OK
Chlorobenzene	3	0.024	3	0.023	OK
Ethylbenzene	3	0.011	3	0.007	OK
Xylene	3	0.043	3	0.023	OK
Styrene	3	0.032	3	0.021	OK
Hexane	3	b	3	b	OK

[a] Many observations below the detection limit; no calculation possible.
[b] Observations were all below the detection limit; no calculation possible.

There is no allowable emission rate for other pollutants from the CPL plant (except for sulfur dioxide, which was not measured during the emission testing). CO emissions averaged 421 lb/hr. In the case of THC emissions, nearly all of the measurements were below the minimum detectable limit (MDL) of the measurement method. Assuming a value of one-half the MDL for such measurements yields an average THC emission rate of 2.5 lb/hr for the baseline conditions.

Emissions of the other criteria pollutants, i.e., lead and mercury, were well below 0.1 lb/hr. Emissions of all non-criteria pollutants were also well below 0.5 lb/hr, except for HCl and zinc. HCl emissions averaged 71.6 lb/hr, while zinc emissions averaged 8.9 lb/hr.

Individual measurements for the baseline test runs can be found in the Appendix, Tables A-1 and A-2, or in the K&A test reports.

4.0 TIRE-DERIVED FUEL (TDF) TESTING

4.1 PLANT OPERATING CONDITIONS

The TDF/coal testing, utilizing up to 1.33 TPH TDF and 19 percent TDF on a heat input basis to fire the cement kiln, with remaining heat input supplied from coal, was conducted during the period 0715-1900 on July 28, 1992, and 0655-1817 on July 29, 1992. The power, cement and lime plants were all operating during the baseline testing. The power and lime plants were both operating utilizing 100 percent coal. Prior to the TDF testing, the cement kiln had been operating for approximately 5 days on TDF/coal, with TDF supplying approximately 15 percent of the heat input to the cement plant. This assured that all plant operating parameters and emission test results would be representative of TDF/coal firing.

Based on review of the plant operating data, TDF/coal firing testing was conducted with the CPL plants operating at or near their maximum operating rates. The cement plant averaged 76.4 TPH clinker production, which represents 102 percent of the maximum permitted production rate of 75 TPH. Kiln feed averaged 117.6 TPH, which is 106 percent of the maximum permitted feed rate of 110.6 TPH. Heat input to the kiln averaged 228 MMBtu/hr, which is 92 percent of the maximum heat input of 248 MMBtu/hr. Coal feed rate to the kiln averaged 7.3 TPH, compared to a maximum firing rate of 8.76 TPH when firing TDF/coal.

The TDF feed rate to the kiln averaged 1.33 TPH, which is the maximum permitted rate for TDF firing. It is noted that TDF firing is computer controlled, and by means of an automated weigh scale/feeder, the weight of TDF introduced to the kiln can be strictly controlled and monitored.

The power plant electrical generating rate during the baseline test period averaged 110.6 MW, and coal feed rate averaged 48.3 TPH. The maximum electric generating rate for the power plant is 125 MW.

The lime plant lime feed rate during the baseline test period averaged 20.8 TPH, and the coal feed rate averaged 12.9 TPH. The maximum permitted lime feed rate to the lime plant is 22 TPH.

As in the baseline testing, FCS plant personnel were very cooperative in answering questions raised by KBN staff and providing other information during the TDF/coal stack testing.

Plant operations were explained and demonstrated, operations were witnessed, and other information requested by KBN staff were provided. Complete access to the plant control room was provided at all times, so that plant operations could be monitored. Hourly computer printouts of plant operating data were witnessed being generated in the control room. These were later provided to KBN for review. The TDF feed system and monitoring equipment, lime feed and lime product systems, and coal feed systems were all inspected during the TDF/coal firing testing.

Based on discussions with plant operating personnel, and a review of the plant operating data, the CPL plant was operating normally during the TDF/coal test period.

4.2 STACK TEST PROCEDURES

The comments regarding the baseline stack test procedures, described above, also apply to the TDF/coal testing. The potential errors introduced from not strictly following all required test procedures are not considered to be significant (i.e., the conclusions of the testing would not change). While some procedures may not be acceptable for compliance testing purposes, the data is considered adequate for the purposes of demonstrating potential emission changes. There is adequate quality assurance demonstrated to ensure basic test accuracy.

4.3 TDF/COAL EMISSION TEST RESULTS

TDF/coal firing emission test results are summarized in Table 3-2. PM emissions averaged 62.7 lb/hr and were well below the allowable PM emission rate 86.5 lb/hr for the cement, power and lime plants all operating. NO_x emissions averaged 693 lb/hr, which is well below the allowable emission rate of 1,205 lb/hr when all three plants are operating.

There is no allowable emission rate for other pollutants from the CPL plant (except for sulfur dioxide, which was not measured during the emission testing). CO emissions averaged 671 lb/hr. In the case of THC emissions, about one-half of the measurements were below the minimum detectable limit (MDL) of the measurement method. Assuming a value of one-half the MDL for such measurements yields an average THC emission rate of 3.7 lb/hr for the TDF/coal firing conditions.

Emissions of the other criteria pollutants, i.e., lead and mercury, were well below 0.1 lb/hr. Emissions of all non-criteria pollutants were also well below 0.5 lb/hr, except for HCl and zinc. HCl emissions averaged 65.9 lb/hr, while zinc emissions averaged 6.2 lb/hr.

Individual measurements for the TDF/coal test runs can be found in the Appendix, Tables A-1 and A-2, and in the K&A test reports.

Two unannounced site visits to the FCS plant were conducted when TDF was being fired in the cement plant kiln. These visits were conducted on August 27, 1992, and September 22, 1992. In both cases, the lime plant was not operating. The power plant and cement plants were both operating normally. No operating problems with the CPL plant or TDF firing were indicated by the FCS operating personnel.

5.0 COMPARISON OF EMISSIONS DURING BASELINE AND TDF FIRING CONDITIONS

5.1 STACK TESTING

A comparison of baseline and TDF/coal firing emission test results is presented in Table 5-1. Statistical analysis were performed on the data, according to 40 CFR 60, Appendix C, Determination of Emission Rate Change. This method compares a "before" and "after" emission rate to determine if, based on a 95 percent confidence interval, an increase in emissions to the atmosphere has occurred. As indicated in Table 5-1, the average emission rate for PM, CO, and THC increased for TDF/coal firing as compared to the baseline emissions. Therefore, the Appendix C method was applied to PM and CO. The method was not applied to THC emissions due to many of the individual test values being below the MDL, therefore precluding a valid statistical analysis for this pollutant.

In the case of PM, the Appendix C method indicates that an increase in PM emissions has resulted due to TDF/coal firing. However, K&A has pointed out in the summary report that PM emissions from the CPL plant have shown variability based on historical test data. These test data are summarized in Table 5-2. PM emissions have been measured both under 100 percent coal firing and TDF/coal firing, and with and without the power plant operating. For all PM tests conducted when firing 100 percent coal in the CPL, PM emissions have averaged 52.1 lb/hr. PM emissions while firing TDF/coal in the cement plant, and coal in the power and lime plants, have averaged 57.4 lb/hr. Comparison of the 100 percent coal and the TDF/coal results show that a slight increase occurs when firing TDF in the kiln. However, analysis of the data based on the 40 CFR 60 Appendix C method shows no increase in emissions at the 95 percent confidence level. It is therefore concluded that TDF firing in the kiln has no significant effect upon PM emissions from the CPL plant.

In the case of CO, comparison of the baseline and TDF/coal firing emissions indicates a large increase in CO emissions when firing TDF. However, K&A presents arguments in their summary report that the CO emissions from the CPL plant are highly variable, and comparison of two sets of tests may not be indicative of overall emission levels. A discussion of these data is presented below:

1. During the August 1990 test burn, baseline CO emissions from the CPL plant ranged from 160 ppm to 430 ppm (test run averages) and from 444 lb/hr to 1,218 lb/hr, with the average 901 lb/hr. CO emissions from the CPL plant when firing TDF/coal

Table 5-1. Comparison of Emission Test Results for Baseline and TDF/Coal Firing Conditions, CPL Plant

Pollutant Name	Average Emission Rate (lb/hr) Baseline Conditions (100% Coal)	TDF/Coal Firing	Change (lb/hr)	Change Percent	Significant Change[c]
Criteria Pollutants					
Particulate	47.7	62.7	+15.0	+31	Yes
Nitrogen Oxides	762.2	692.9	-69.3	-9	No
Lead	0.0118	0.0146	+0.0028	+24	No
Mercury	0.0153	0.0099	-0.0054	-35	No
Carbon Monoxide	421.5	671.2	+249.7	+59	Yes
Total Hydrocarbons	2.5	3.7	+1.2	+48	a
Non-Criteria Pollutants					
Arsenic	0.0021	0.0018	-0.0003	-14	No
Chromium	0.0106	0.0096	-0.0010	-9	No
Zinc	8.92	6.20	-2.72	-30	No
Hydrogen Chloride	71.62	65.93	-5.69	-8	No
Volatile Organic Compounds:					
Bromomethane	b	0.001	+0.001	--	No
Acetone	0.141	0.137	-0.004	-3	No
Carbon disulfide	0.068	0.101	+0.033	+49	No
Benzene	0.417	0.200	-0.217	-52	No
Trichloroethane	b	b	--	--	No
Toluene	0.086	0.031	-0.055	-64	No
1,1,1-Trichloroethane	b	b	--	--	No
Chlorobenzene	0.024	0.023	-0.001	-4	No
Ethylbenzene	0.011	0.007	-0.004	-36	No
Xylene	0.043	0.023	-0.020	-47	No
Styrene	0.032	0.021	-0.011	-34	No
Hexane	b	b	--	--	No

[a] Many observations below the detection limit; no calculation possible.
[b] Observations were all below the detection limit; no calculation possible.
[c] Based on statistical analysis according to 40 CFR 60, Appendix C.

Table 5-2. PM Emission Test Results from CPL Plant

Date	Fuel	Run	Particulate Matter Emissions (lb/hr)
12/23/88	Coal	1	53.73
		2	48.89
		3	42.55
		4	55.33
09/18/90 to 09/20/90	Coal	1	62.21
		2	59.15
		3	49.05
02/28/91	Coal	1	50.12
		2	53.56
		3	59.84
07/21/92 to 07/22/92	Coal	1	54.38
		2	46.13
		3	42.64
		Average =	52.12
09/20/90 to 09/21/90	Coal/TDF	1	57.25
		2	33.55
		3	65.83
07/28/92 to 07/29/92	Coal/TDF	1	54.11
		2	60.42
		3	73.44
		Average =	57.43

Note: Cement, power, and lime plants were all operating during testing.

ranged from 60 ppm to 310 ppm (test run averages) and from 141 lb/hr to 859 lb/hr, and averaged 532 lb/hr. For these 1990 tests, baseline CO emissions were much higher than TDF/coal emissions. The 1990 baseline CO emissions are also higher than the TDF/coal firing emissions measured in the July 1992 tests.

2. CO emissions from the cement plant alone were measured during the November 1991 trial burn. CO emissions averaged 59 lb/hr under baseline conditions, and 80 lb/hr under TDF/coal firing conditions. This indicates that CO emissions from the cement plant alone are relatively small, and cannot account for the wider variation in CO emissions from the CPL plant.
3. CO concentrations at the kiln inlet were measured during the July 1992 test burn. During baseline conditions, the CO concentrations ranged from 121 ppm to 549 ppm, and averaged 280 ppm. During TDF/coal firing, the CO ranged from 139 ppm to 375 ppm, and averaged 244 ppm. This would indicate no increase in CO emissions from the cement plant due to TDF/coal firing.

An analysis of CO concentrations at the kiln inlet over the entire 30-day TDF test period is presented in Section 5.2. The CO data from this analysis also indicate that CO concentrations can normally fluctuate by a factor of two or more under either 100 percent coal firing or TDF/coal firing. It is therefore concluded that TDF firing in itself does not result in increased CO emissions from the cement plant or from the CPL plant.

The THC data do not lend itself to statistical analysis. However, analysis of the data indicate an average THC emission rate of 2.5 lb/hr for the baseline conditions, and of 3.7 lb/hr for the TDF/coal firing conditions. Since the TDF/coal firing emission rate is approximately 50 percent higher than the baseline emission rate, it is concluded that an increase in THC emissions occurs when burning TDF in the kiln.

The average emission rates for all other pollutants decreased under TDF/coal firing conditions, and therefore it is not necessary to apply the Appendix C method. These pollutants included NO_x, mercury, arsenic, chromium, zinc, and hydrogen chloride, as well as nearly all of the VOCs. For the VOCs tested, an increase in the average emission rate for only carbon disulfide occurred due to TDF firing. However, based on statistical analysis, no increase in carbon disulfide emissions is indicated at the 95 percent confidence level. It can, therefore, be concluded that emissions of these pollutants did not increase above the baseline emissions due to TDF/coal firing.

Another indication of the potential air emissions associated with TDF versus coal firing can be ascertained from fuel analysis data. Comparison of the coal and TDF fuel analysis data obtained during the baseline and TDF/coal testing shows TDF to be lower in concentrations of chloride, arsenic, mercury, lead, and chromium compared to coal (refer to Appendix A). Only zinc was higher in TDF compared to coal.

5.2 OPERATION DURING 30-DAY TEST PERIOD

Several plant operating parameters, including continuous emission monitoring data, were recorded for the CPL plant during the 30-day trail burn period. The 30-day period included approximately 4 days of baseline operating conditions, i.e., with the cement plant fired with 100 percent coal. Two of these days occurred during the baseline stack testing period (July 21-22, 1992), and the remaining two days occurred during the period August 8-9, 1992, when the cement plant was brought back on-line after approximately a week shutdown.

5.2.1 CLINKER QUALITY

A cement plant operating parameter of particular interest is that of clinker quality. The FCS cement plant tests for clinker quality as well as the finished cement quality approximately every two hours. The primary indicator of the quality of the clinker as well as the finished cement product is tricalcium silicate (C_3S). According to FCS plant personnel, a good clinker product would have a C_3S content generally between 60 and 70 percent. The finished cement product is generally maintained between 50 and 56 percent C_3S. FCS attempts to maintain clinker quality within these ranges on a daily (24-hr) average basis. Individual clinker or finished cement samples having C_3S values outside these ranges do not necessarily translate to a poor quality clinker or product. Blend silos within the finish mill allow off-specification material to be stored and blended with materials of higher or lower C_3S contents. However, a long-term trend of high or low C_3S values would indicate a potential problem.

The daily cement plant and finish mill C_3S values for the 30-day trail burn period are presented graphically in two figures (see Appendix B). These were obtained by averaging all the samples taken during each 24-hour period. The baseline and TDF/coal firing conditions are delineated by different symbols in the figures. Review of these figures indicates that clinker C_3S content was similar during both baseline conditions and TDF/coal firing conditions. The majority of values are in the 60 to 70 percent C_3S range, with only a few values lying below the target range. Values outside the acceptable range are accompanied by nearby values within the acceptable range. This indicates that acceptable clinker was being produced throughout the test period, including TDF/coal firing periods.

Finish mill cement product quality displays a similar trend in C_3S content. Finish mill values are more consistent than clinker, which is expected since blending can be used to maintain product quality. Two periods do occur when the daily average finish mill quality falls outside the acceptable range. This occurs during the TDF/coal firing period of July 25-28, and the baseline conditions of August 8-10. This latter period occurs just after cement kiln startup, and could be attributed to the startup process. However, the TDF/coal excursion period occurs during normal cement plant operations, a few days after TDF is introduced to the kiln. The cause of this excursion period is not known. This excursion period might be a cause for concern, except that the TDF/coal firing period of August 10-30 demonstrates that good quality cement can be produced on a continuing basis when TDF/coal is fired in the cement plant. During this period, all daily average C_3S values are within the acceptable range of 50 to 56 percent.

5.2.2 KILN INLET TEMPERATURE

The temperature at the cement kiln inlet is an indicator of cement kiln operation. The long-term trend of this parameter can be examined to determine if TDF/coal firing adversely affects kiln operation. The recorded values of this parameter for the 30-day test period are shown graphically in the appendix.

Kiln inlet temperature is shown to be vary between about 1,500°F and 1,800°F during the July test period. No significant difference between 100 percent coal firing and TDF/coal firing conditions are evident. During the August test period, kiln inlet temperature is more variable. Temperatures generally range between 1,500°F and 1,700°F for both 100 percent coal firing and TDF/coal firing. However, two periods exist during August when kiln inlet temperatures drop well below the normal range, and as low as 1,100°F. These all occur during TDF/coal burning. The reasons for this are not clear. This could represent normal operation. However, the baseline (100 percent coal firing) data may not reflect this due to the much shorter time period for which data is available.

5.2.3 KILN INLET CARBON MONOXIDE AND OXYGEN CONCENTRATION

The CO and O_2 concentrations at the cement kiln inlet are also indicators of cement kiln operation. The long-term trends of these parameters can be examined to ascertain if TDF/coal firing adversely affects kiln operation. The recorded values of these parameters for the 30-day test period are shown graphically in the appendix.

Kiln inlet CO concentrations are seen to be highly variable throughout the test period. During the July test period, concentrations are generally in the 0 to 700 ppm range. Some higher values, up to 1,000 ppm, occur during 100 percent coal firing conditions, and up to 2,500 ppm, occur during TDF/coal firing conditions. The highest values appear to be associated with a kiln upset condition on July 25.

During the August test period, CO concentrations generally range between 0 to 700 ppm as well. Higher values, up to 1,300 ppm, occur at the end of the August period and last for several days.

By far the highest CO values occurred during TDF/coal burning. The reasons for this are not clear; however, the variable nature of the CO levels in the kiln could represent normal operation. This theory has been espoused by FCS in the past, and there is scientific literature to support the theory.

Kiln inlet O_2 concentrations are also seen to be variable throughout the test period. During the July test period, concentrations are all in the range of approximately 3 to 7 percent. No significant differences between 100 percent coal firing and TDF/coal firing are indicated. No kiln upset conditions are evident from the O_2 data during this period, although the CO data indicated a possible upset condition on July 25.

During the August test period, O_2 concentrations also generally range between 4 and 8 percent. Concentrations are more variable than the July test period, but no upset conditions are evident. Coal firing conditions do not reflect significantly different concentrations than under TDF/coal firing conditions.

5.2.4 STACK NO_x EMISSIONS

NO_x emissions are recorded continuously from the CPL plant by means of an in-stack NO_x monitor. Hourly measurements from this monitor are available for the 30-day test period.

Emissions are reported in terms of both concentration (ppm) and lb/hr. The hourly measurements are presented graphically in the appendix.

During the July test period, NO_x stack emissions from the CPL plant averaged approximately 190 ppm and 550 lb/hr. No discernible difference is indicated between baseline and TDF/coal burning during this period.

During the August test period, after the cement plant was restarted after being shutdown, the NO_x levels are seen to increase to above the July levels. Average NO_x emissions are approximately 230 ppm and 650 lb/hr. However, the mass emissions are still well below the allowable NO_x emissions rate for the CPL plant of 1,205 lb/hr. The data further indicate that, during the August period, both baseline (100 percent coal being burned in the cement plant) and TDF/coal firing emissions are higher than during the July period. Further, the baseline emissions are in general higher than the TDF/coal burning emission levels. However, this could be a result of the kiln startup, wherein steady state levels or normal kiln operation may not have yet been reached.

6.0 AIR QUALITY MODELING ANALYSIS

K&A performed an air quality modeling analysis which evaluated the potential impacts of the CPL emissions. The emission rate for each pollutant used in the analysis was the higher of the average emission rate during baseline conditions or during TDF/coal firing emissions. Based on this analysis, it was demonstrated that the potential impacts of each pollutant were well below the respective FDER no-threat level (NTL). The maximum impacts for HCl and zinc were at least 10 times below their respective NTL. The maximum impacts for other pollutants were at least a factor of 1,000 below their respective NTL.

Emissions and potential impacts of hexavalent chromium (Cr^{+6}) were not specifically measured during the test burn and were not addressed in the K&A report. However, the potential impact of this very toxic air pollutant can be conservatively estimated by initially assuming that all the Cr emitted is of the Cr^{+6} type. Typically, the majority (i.e., 80 percent) of Cr emitted from combustion sources is of the chromium metal type, and the remainder is Cr^{+6}. Based on the Cr emissions used in the modeling analysis (0.01076 lb/hr), the maximum 1-hr impact is 0.00068 $\mu g/m^3$. Using the recommended USEPA averaging time factor of 0.1 to convert the 1-hr maximum to an annual average, the maximum annual average concentration is 6.8×10^{-5} $\mu g/m^3$. This annual impact is below the annual NTL for Cr^{+6} of 8.3×10^{-5} $\mu g/m^3$. As a result, impacts of Cr^{+6} are predicted to be below the FDER NTL and would not pose a threat to the public.

KBN has reviewed the K&A report and finds that the modeling analysis was preformed in an appropriate manner, and has verified the results of the analysis.

7.0 SUMMARY AND CONCLUSIONS

FCS has conducted a test burn program utilizing TDF to provide up to 15 percent of the heat input to the cement kiln located within the CPL plant. The program was witnessed and evaluated by KBN, acting on behalf of the HCBCC. The FDER also witnessed the testing by sending staff representatives from the Tallahassee and Tampa offices. Based on the review of all available data, the major aspects of the TDF test burn are summarized below:

1. The test protocol developed for the test burn was adequate to demonstrate whether any increases in emissions of regulated air pollutants will occur due to TDF firing in the cement kiln;
2. USEPA reference methods were used to measure stack emissions from the CPL plant. In general, proper stack test procedures were followed during the stack testing. In a few instances, deviations from proper procedures were evidenced, but these deviations are not considered significant to the conclusions reached.
3. FCS plant personnel were completely cooperative throughout the test period. No indication was received of any intent to conceal or falsify any plant operating or test data. Two unannounced visits were conducted to verify proper operation when firing TDF.
4. Both baseline and TDF/coal testing were conducted with the CPL plants operating at or near their maximum operating rates.
5. PM and NO_x emissions from the CPL plant were well below the allowable emission rate during both baseline and TDF/coal firing conditions.
6. Emissions of all pollutants, except THC, do not increase as a result of TDF firing in the cement kiln. Based on the available data, it is concluded that THC emissions increased for TDF/coal firing as compared to the baseline emissions. However, the THC emissions are low (less than 4 lb/hr average), and do not represent a concern from an emission or air quality impact standpoint.
7. The data indicate that acceptable clinker was being produced on a continuous basis throughout the test period, including TDF/coal firing periods.
8. There is no apparent difference in cement kiln inlet temperatures when firing 100 percent coal and when firing TDF/coal in the cement kiln. However, two periods exist during TDF/coal burning in August when kiln inlet temperatures drop well below the normal range. The reasons for this are not clear, but are not of major concern since clinker quality was demonstrated throughout the test period.

9. The analysis of coal and TDF demonstrate that TDF is overall a cleaner fuel than coal. Concentrations of nearly all trace elements measured in the TDF are significantly lower than the concentrations in coal.
10. The modeling analysis demonstrates that the potential impacts of each air toxic pollutant are well below the respective FDER no-threat level (NTL). Maximum impacts of Cr^{+6} are also predicted to be below the FDER NTL and would not pose a threat to the public health.

In conclusion, the test burn satisfies beyond all reasonable doubts that TDF firing in the cement kiln at FCS can occur without an increase in allowable emissions. Further, reasonable assurance has been provided that TDF firing can occur without an increase in actual emissions of any regulated pollutant measured during the test period, except for THC. The small increase in THC emissions, and the small magnitude of THC emissions, does not pose any threat to the public health. It is cautioned, however, that these conclusions are valid only for the range of conditions experienced during the test burn.

It is concluded that TDF firing at FCS, <u>if conducted properly</u>, can occur in an environmentally safe manner, and that the health and safety of the residents of Hernando County will not be jeopardized.

This conclusion is supported in part by the large number of cement kilns in the U.S. which have or are currently burning waste tires as a permitted supplemental fuel. Test data available from some of the dry process cement kilns in the United States that were burning TDF indicate emissions are not adversely affected and, in many cases, improve. For example, at Ash Grove Cement in Durkee, Oregon, emissions of PM, CO, SO_2, eight metals, chlorides and aliphatic compounds were all found to either remain the same or decrease with 10 percent TDF firing as compared to 100 percent coal firing. The long residence times, high operating temperatures, and scrubbing action of cement kilns provide an ideal environment to burn tires as a supplemental fuel. Organics are efficiently destroyed, and many trace elements are incorporated into the clinker product. Refer to additional related information contained in Appendix C.

In order to provide reasonable assurance that FCS conducts TDF burning in an environmentally acceptable manner, the following conditions are recommended to be included in any air permit issued for TDF firing in the cement kiln at FCS. Some of these recommended conditions were

contained in DER's May 29, 1992, proposed performance test authorization which included a draft amendment to FCS's air permits.

Specific Conditions:

1. The cement kiln's maximum utilization/firing rate of whole tires shall not exceed 15.0 percent of the total Btu heat input, or 1.33 tons per hour.
2. The utilization/firing rate of whole tires shall be quantified (weighed) continuously and recorded and the records shall be kept on file for a minimum of two years.
3. The quantity of all deliveries of whole tires shall be documented and kept on record/file for a minimum of two years.
4. Tire-derived fuel (TDF) may be introduced into the cement kiln only at a point at the base of the preheater (i.e., at the kiln inlet).
5. TDF firing in the cement kiln shall not commence or be conducted unless the cement kiln has reached an operating temperature of at least 1,400°F for one hour. The operating temperature shall be measured at the cement kiln inlet.
6. TDF firing in the cement kiln shall not commence or be conducted unless the oxygen level in the kiln is at least 3 percent, as measured at the base of the preheater.
7. A sonic-type flow meter or equivalent shall be installed in the CPL main plant stack to continuously measure the stack gas flow rate. The meter shall be periodically calibrated to insure adequate data. The stack gas flow rate shall be recorded on an hourly basis and used in the determination of NO_x stack emissions.

Recommendations to HCBCC

Based on the test burn results, which indicate an increase in THC emissions due to TDF firing, an air construction permit should be required of FCS prior to being authorized to burn TDF on a continuous basis.

It is recommended that if the above recommended conditions are incorporated into the construction permit, the HCBCC should not challenge the issuance of the construction permit. If such conditions are not incorporated into the construction permit, reasonable assurance will not be provided that TDF fuel will be utilized in an environmentally acceptable manner, and the HCBCC should challenge the construction permit in an administrative hearing.

APPENDIX A

STATISTICAL ANALYSIS OF EMISSION TEST RESULTS

Table A-1. Summary of Emission Test Results for Baseline and TDF Firing Conditions, CPL Plant, FCS

	BASELINE CONDITIONS (100% COAL)						TDF/COAL FIRING						TEST FOR SIGNIFICANT CHANGE					
Pollutant Name	Run 1 (lb/hr)	Run 2 (lb/hr)	Run 3 (lb/hr)	N	Average (lb/hr)	Standard Deviation	Run 1 (lb/hr)	Run 2 (lb/hr)	Run 3 (lb/hr)	N	Average (lb/hr)	Standard Deviation	Is Test Applicable[a]	Sp	tcalc	Degrees of Freedom	tTABLE	TDF Emission Test
<u>Criteria Pollutants</u>																		
Particulate	54.38	46.13	42.64	3	47.72	6.03	54.11	60.42	73.44	3	62.66	9.86	YES	8.170	2.24	4	2.13	Significant Change
Nitrogen Oxides	b	b	b	23	762.22	95.27	b	b	b	22	692.85	103.98	NO	99.619	N/A	43	1.68	OK
Lead	0.0118	0.0177	0.0059	3	0.0118	0.0059	0.0225	0.0111	0.0102	3	0.0146	0.0069	YES	0.006	0.54	4	2.13	OK
Mercury	0.0120	0.0131	0.0207	3	0.0153	0.0047	0.0075	0.0096	0.0127	3	0.0099	0.0026	NO	0.004	N/A	4	2.13	OK
Carbon Monoxide	b	b	b	23	421.48	142.93	b	b	b	22	671.24	300.02	YES	233.261	3.59	43	1.68	Significant Change
Total Hydrocarbons	b	b	b	23	--	--	b	b	b	22	c	c	NO	N/A	N/A	N/A	N/A	N/A
<u>Non-Criteria Pollutants</u>																		
Arsenic	0.00211	0.00213	0.00193	3	0.0021	0.00011	0.00150	0.00179	0.00224	3	0.0018	0.00037	NO	0.0003	N/A	4	2.13	OK
Chromium	0.01044	0.00896	0.01240	3	0.0106	0.00173	0.00988	0.00945	0.00947	3	0.0096	0.00024	NO					OK
Zinc	13.74	6.42	6.60	3	8.92	4.18	6.96	6.40	5.24	3	6.20	0.88	NO	3.0179	N/A	4	2.13	OK
Hydrogen Chloride	62.88	80.84	71.14	3	71.62	8.99	84.97	63.82	48.99	3	65.93	18.08	NO	14.28	N/A	4	2.13	OK
Volatile Organic Compounds:																		
Bromomethane	d	d	d	3	c	c	0.001	d	d	3	0.001	0.0006	NO	0.0004	N/A	4	2.13	OK
Acetone	0.151	0.158	0.114	3	0.1412	0.0235	0.242	0.095	0.074	3	0.137	0.0912	NO	0.0666	N/A	4	2.13	OK
Carbon disulfide	0.064	0.107	0.031	3	0.0676	0.0380	0.209	0.047	0.046	3	0.101	0.0939	YES	0.0717	0.57	4	2.13	OK
Benzene	0.449	0.405	0.396	3	0.4167	0.0281	0.227	0.183	0.191	3	0.200	0.0235	NO	0.0259	N/A	4	2.13	OK
Trichloroethane	d	d	d	3	c	c	d	d	d	3	c	c	NO					OK
Toluene	0.084	0.083	0.089	3	0.0855	0.0030	0.034	0.029	0.029	3	0.031	0.0029	NO	0.0029	N/A	4	2.13	OK
1,1,1-Trichloroethane	d	d	d	3	c	c	d	d	d	3	c	c	NO					OK
Chlorobenzene	0.010	0.029	0.032	3	0.0239	0.0120	0.024	0.022	0.023	3	0.023	0.0011	NO					OK
Ethylbenzene	0.006	0.015	0.011	3	0.0106	0.0045	0.006	0.007	0.007	3	0.007	0.0002	NO	0.0032	N/A	4	2.13	OK
Xylene	0.023	0.050	0.057	3	0.0430	0.0179	0.020	0.025	0.023	3	0.023	0.0024	NO					OK
Styrene	0.013	0.043	0.038	3	0.0316	0.0161	0.022	0.020	0.022	3	0.021	0.0014	NO	0.0114	N/A	4	2.13	OK
Hexane	d	d	d	3	c	c	d	d	d	3	c	c	NO	0.0000	N/A	4	2.13	OK

[a] Test is only applicable when average TDF/Coal firing emissions are greater than baseline emissions.
[b] See Table A-2.
[c] Observations were all below the detection limit; no calculation possible.
[d] Value below detectable limit.

Table A-2. Continuous Emission Test Data, Baseline and TDF Firing

	Baseline Conditions (100% Coal)			TDF/Coal Firing		
	CO (lb/hr)	THC (lb/hr)	NOx (lb/hr)	CO (lb/hr)	THC (lb/hr)	NOx (lb/hr)
	621	11.6	674	565	8.2	539
	489	4.1 *	843	1012	8.2	517
	376	4.1 *	687	1319	8.2	573
	426	4.1 *	597	1400	6.5	616
	321	4.1 *	687	1051	7.4	628
	342	4.1 *	636	880	4.1	718
	474	4.1 *	692	802	4.1	752
	547	4.1 *	752	429	4.1 *	975
	582	4.1 *	605	612	4.1 *	654
	568	4.1 *	770	455	4.1 *	573
	534	4.1 *	744	448	4.1 *	590
	403	4.1 *	839	489	4.1 *	778
	584	4.1 *	981	779	4.0 *	771
	644	4.1 *	831	342	4.0 *	663
	469	4.1 *	754	734	4.0 *	708
	519	4.1 *	758	681	4.0 *	696
	279	4.1 *	848	409	4.0 *	742
	245	4.1 *	818	401	4.0 *	787
	323	4.1 *	720	499	4.0 *	717
	162	4.1 *	887	409	4.4	746
	180	4.1 *	870	464	4.8	717
	253	4.1 *	805	588	4.0	783
	352	4.1 *	733		4.1 *	
	----	----	----	----	----	----
N=	23		23	22		22
Avg.=	421	2.5	762	671	3.7	693

* Value was below detectable limit. Value equal to one-half the detectable limit was used for calculating averages.

Summary of PM and CO Emission Rates, All Past Data

	Baseline Conditions		TDF Conditions	
	PM (lb/hr)	CO (lb/hr)	PM (lb/hr)	CO (lb/hr)
	53.73	1043	57.25	859
	48.89	1218	33.55	597
	42.55	444	65.83	141
	55.33		54.11	
	62.21		60.42	
	59.15		73.44	
	49.05			
	50.12			
	53.56			
	59.84			
	54.38			
	46.13			
	42.64			
Average	52.1	901.7	57.4	532.3
Standard Deviation S	6.272	405.9	13.543	363.3
N	13	3	6	3

Table 2. Test for Significant Change of PM Emissions, FCS

	Baseline Conditions			TDF Conditions			TEST FOR SIGNIFICANT CHANGE					
Pollutant Name	N	Average (lbs/hr)	Standard Deviation	N	Average (lbs/hr)	Standard Deviation	Is Test Applicabl	Sp	tcalc	Degrees of Freedom	tTABLE	Post Emission Test
Criteria Pollutants												
Particulate	13	52.12	6.27	6	57.43	13.54	YES	9.040	1.19	17	2.13	OK
Carbon Monoxide	3	901.7	405.9	3	532.3	363.3	NO	385.206	N/A	4		OK

Note: Test is only applicable if there is any increase in average TDF emissions over the average basline emissions.

TABLE 6
SUMMARY OF COAL ANALYSES

TDF CONDITIONS

FLORIDA CRUSHED STONE COMPANY
CPL PLANT
BROOKSVILLE, FLORIDA

Sample Date	Moisture (%)	Carbon (%)	Hydrogen (%)	Nitrogen (%)	Sulfur (%)	Ash (%)	Oxygen (%)	Chloride (%)
Coal								
7-28-92	6.26	71.53	4.79	1.43	0.74	8.85	6.40	0.09
7-28-92	6.76	71.86	4.73	1.43	0.77	8.27	6.18	0.11
7-29-92	7.09	69.20	4.66	1.46	0.69	9.61	7.29	0.09
7-29-92	5.90	71.32	4.81	1.44	0.69	8.80	7.04	0.09
Average	6.50	70.98	4.75	1.44	0.72	8.88	6.73	0.10
TDF								
7-28-92	1.07	66.42	6.70	0.66	0.98	19.73	4.44	0.06
7-29-92	0.76	65.51	6.17	0.51	1.23	24.18	1.64	0.03
Average	0.92	65.95	6.44	0.58	1.10	21.95	3.04	0.05

Sample Date	Arsenic (μg/g)	Mercury (μg/g)	Lead (μg/g)	Chromium (μg/g)	Zinc (μg/g)
Coal					
7-28-92	3	0.05	86	82	87
7-28-92	3	0.18	92	78	95
7-29-92	1	0.10	98	72	102
7-29-92	1	0.08	88	70	84
Average	2	0.10	91	75	92
TDF					
7-28-92	1	0.03	10	2.0	319
7-29-92	<1	0.04	17	4.0	712
Average	1	0.04	14	3.0	515

TABLE 6
SUMMARY OF COAL ANALYSES

BASELINE CONDITIONS

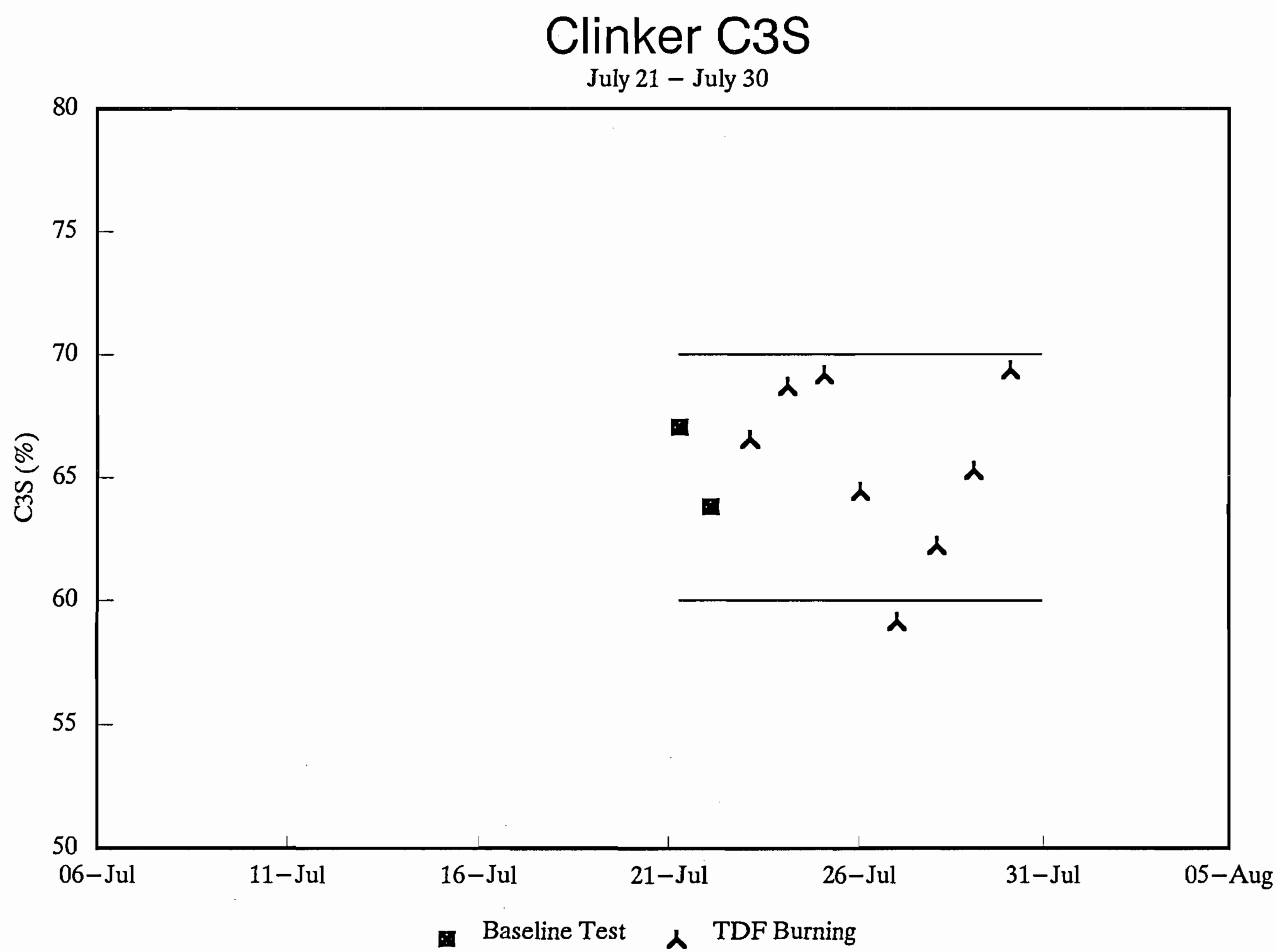
FLORIDA CRUSHED STONE COMPANY
CPL PLANT
BROOKSVILLE, FLORIDA

Sample Date	Moisture (%)	Carbon (%)	Hydrogen (%)	Nitrogen (%)	Sulfur (%)	Ash (%)	Oxygen (%)	Chloride (%)
7-21-92	7.89	69.95	4.74	1.45	0.69	8.73	6.55	0.10
7-21-92	4.01	74.38	5.06	1.55	0.69	7.41	6.90	0.11
7-22-92	7.79	69.98	4.71	1.43	0.70	8.54	6.85	0.09
7-22-92	5.25	73.00	4.84	1.42	0.64	7.85	7.00	0.09
Average	6.24	71.83	4.84	1.46	0.68	8.13	6.82	0.10

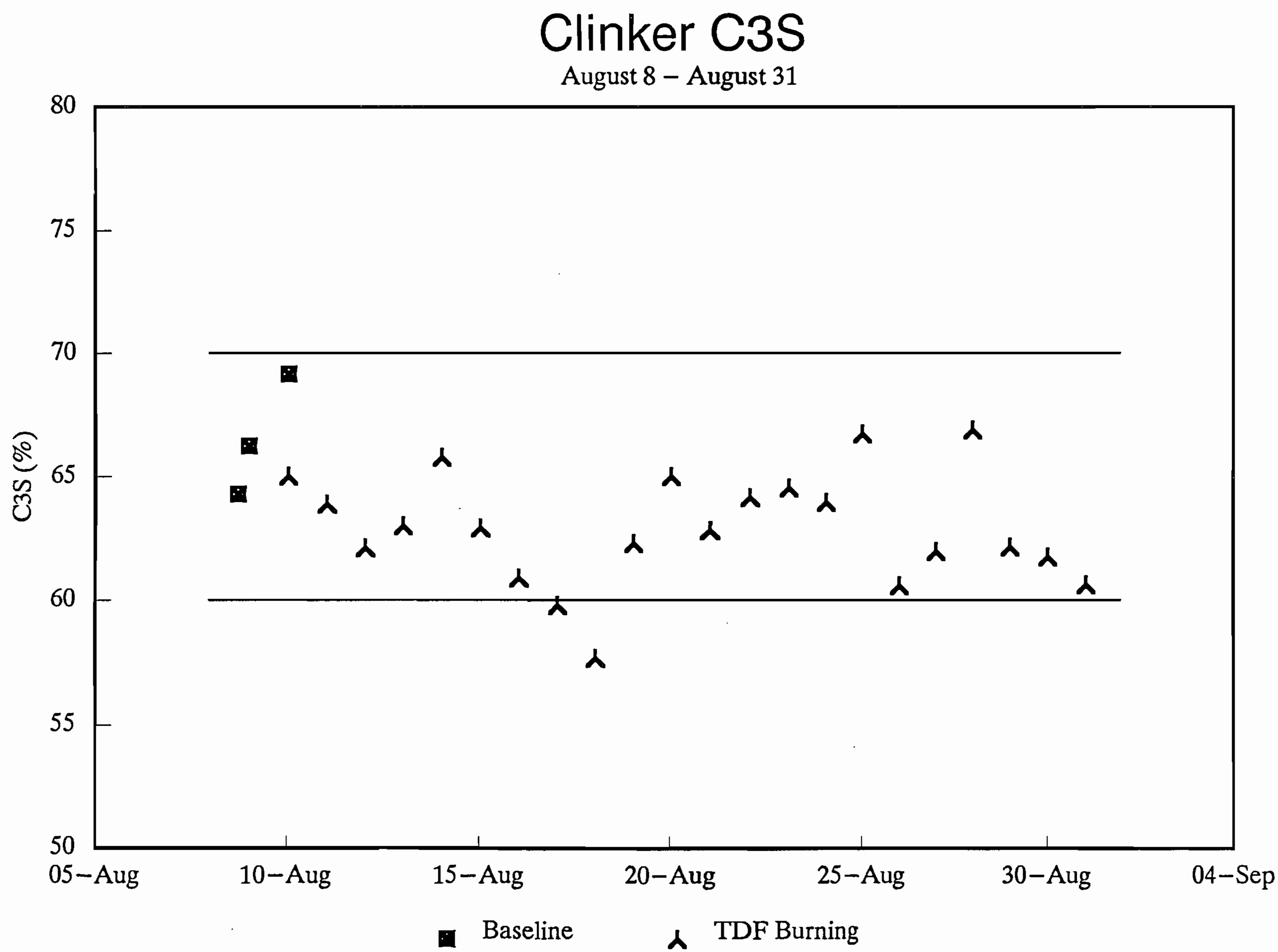
Sample Date	Arsenic (µg/g)	Mercury (µg/g)	Lead (µg/g)	Chromium (µg/g)	Zinc (µg/g)
7-21-92	1	0.10	93	73	115
7-21-92	<1	0.05	96	85	98
7-22-92	2	0.05	94	72	116
7-22-92	<1	0.03	94	82	105
Average	<1.2	0.06	94	78	108

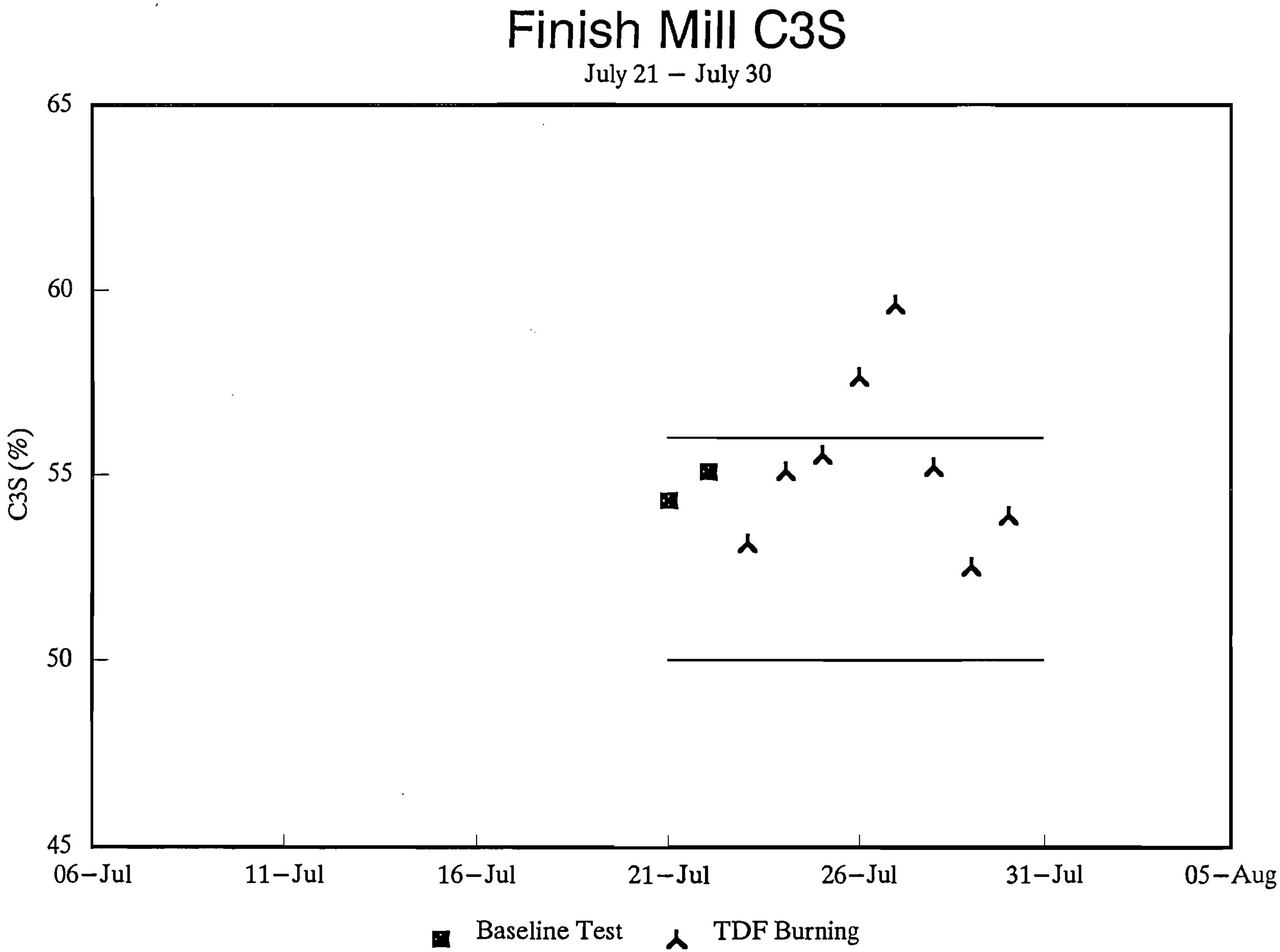
APPENDIX B

GRAPHICAL DISPLAY OF TEST PARAMETERS DURING 30-DAY TEST PERIOD



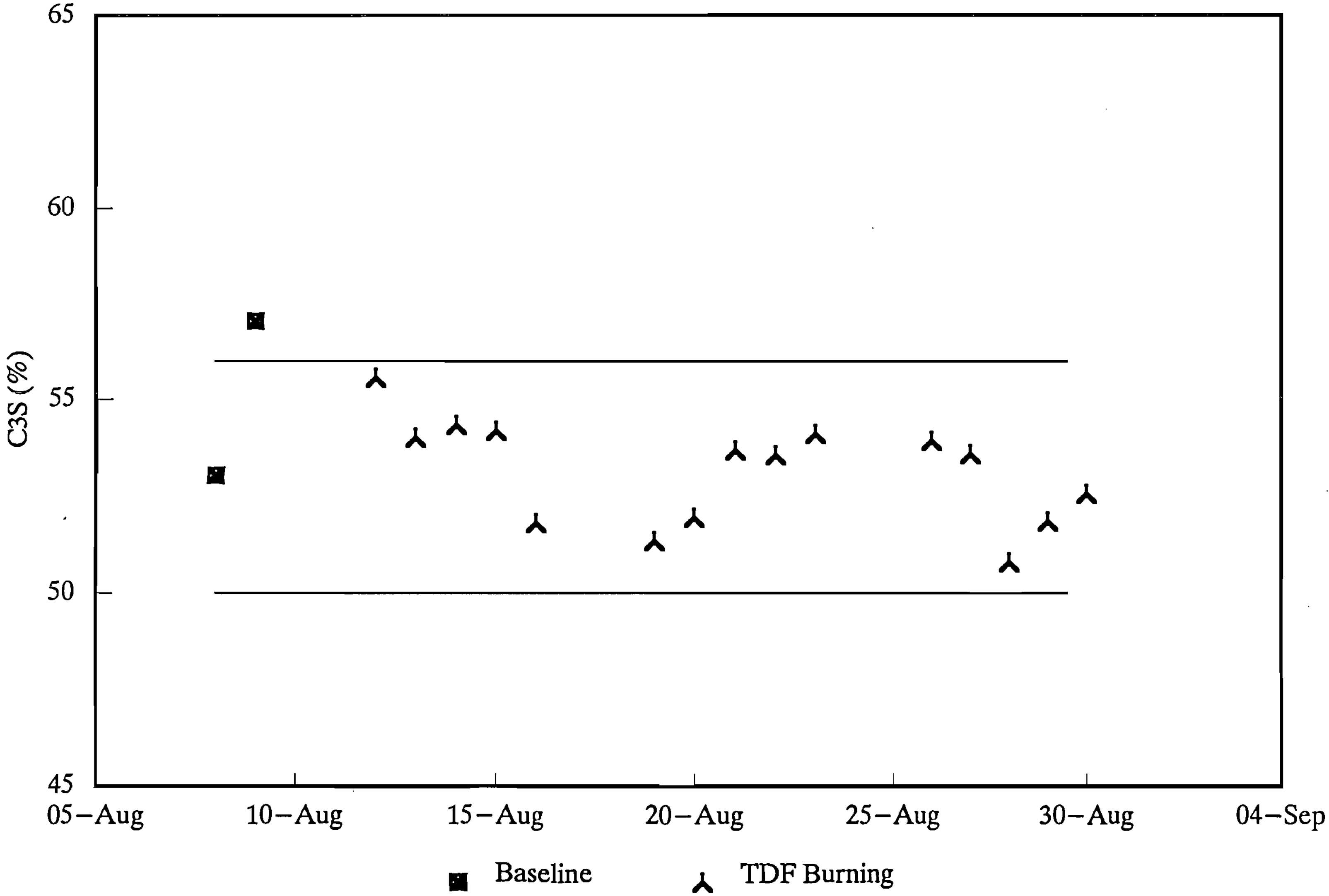
Clinker C3S
July 21 – July 30
C3S (%)
80
75
70
65
60
55
50
06–Jul
11–Jul
16–Jul
21–Jul
26–Jul
31–Jul
05–Aug
Baseline Test
TDF Burning


Clinker C3S
August 8 – August 31
C3S (%)
80
75
70
65
60
55
50
05–Aug
10–Aug
15–Aug
20–Aug
25–Aug
30–Aug
04–Sep
Baseline
TDF Burning


Finish Mill C3S
July 21 – July 30
C3S (%)
65
60
55
50
45
06–Jul
11–Jul
16–Jul
21–Jul
26–Jul
31–Jul
05–Aug
Baseline Test
TDF Burning

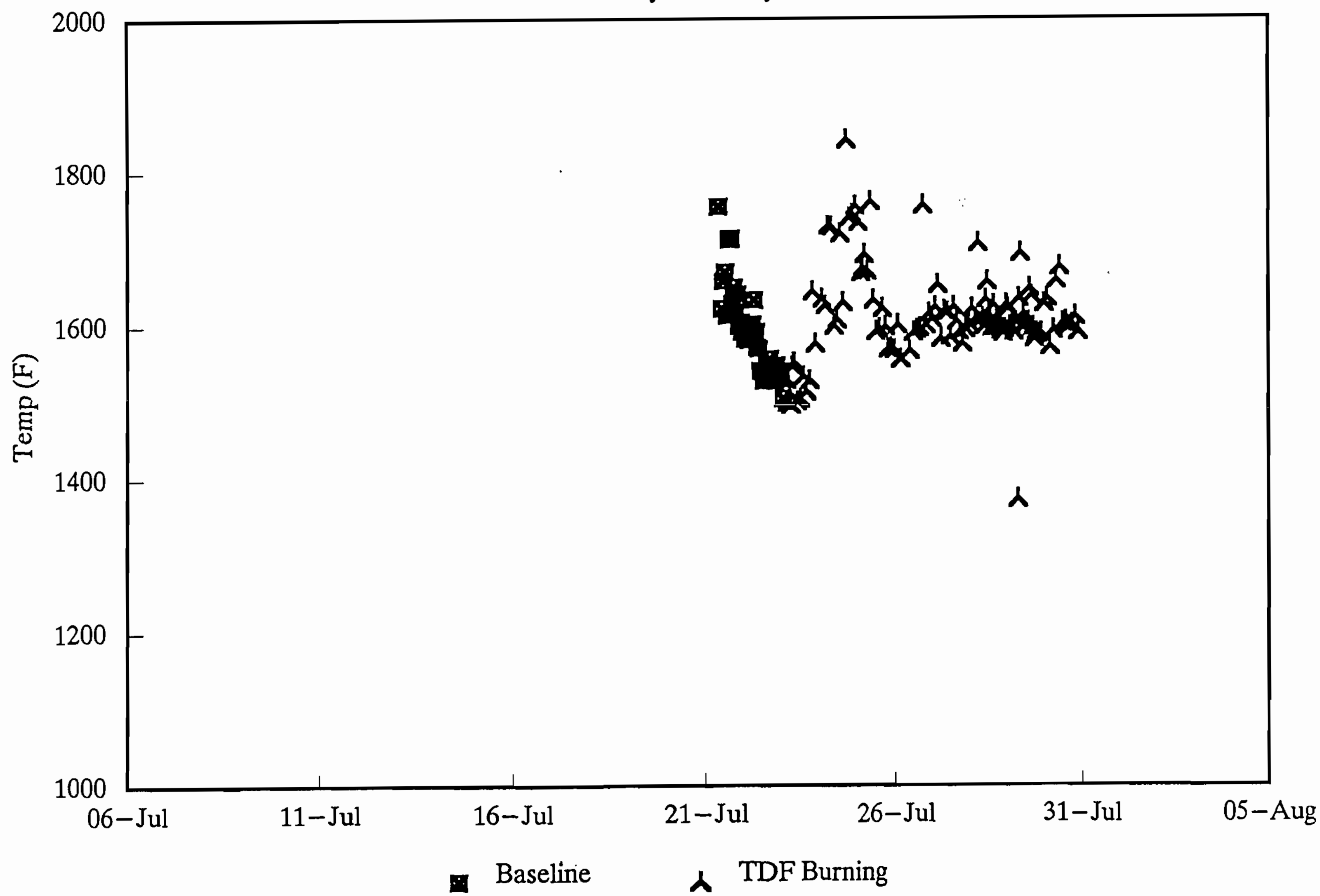
Finish Mill C3S

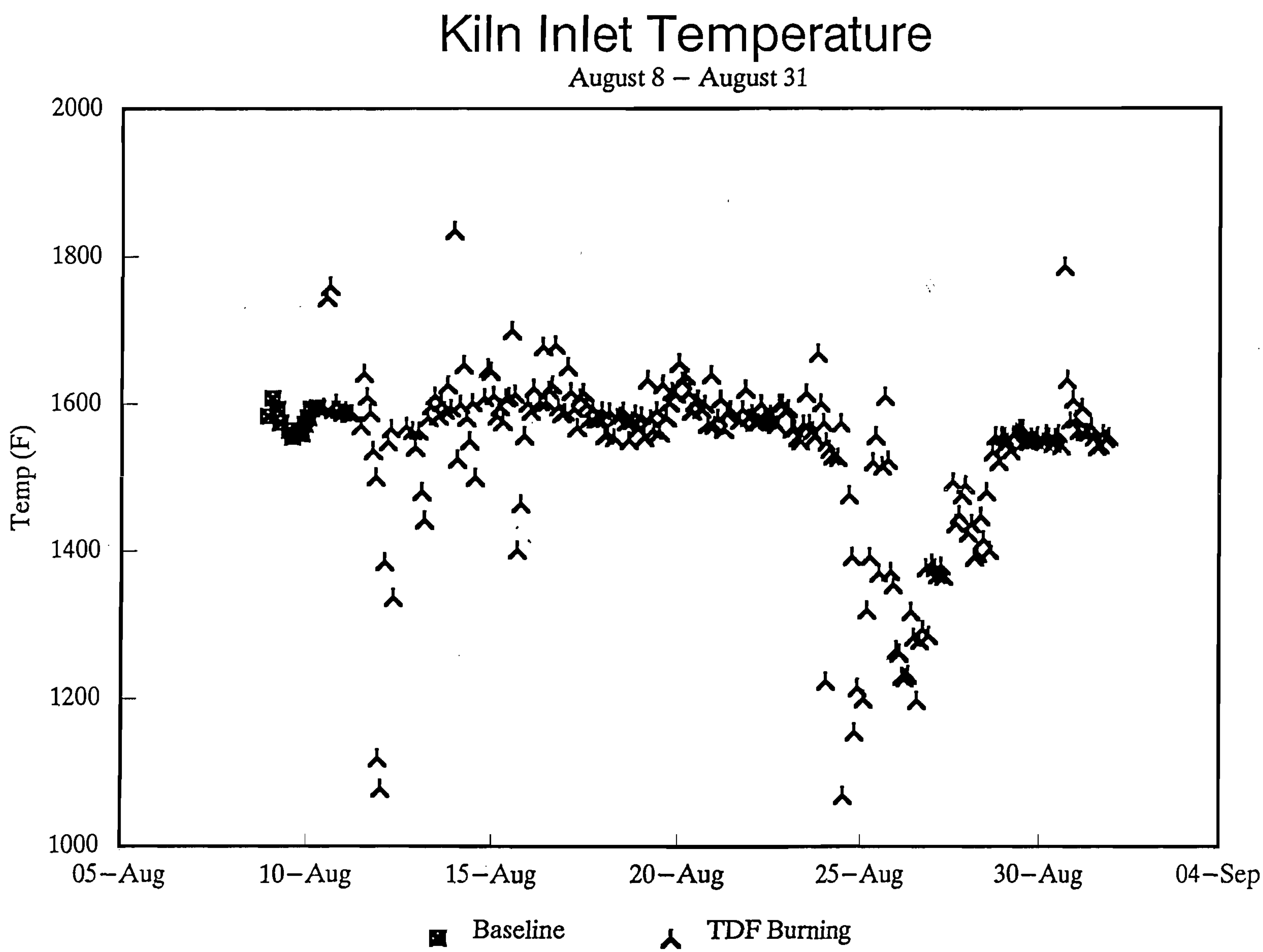
August 8 – August 31

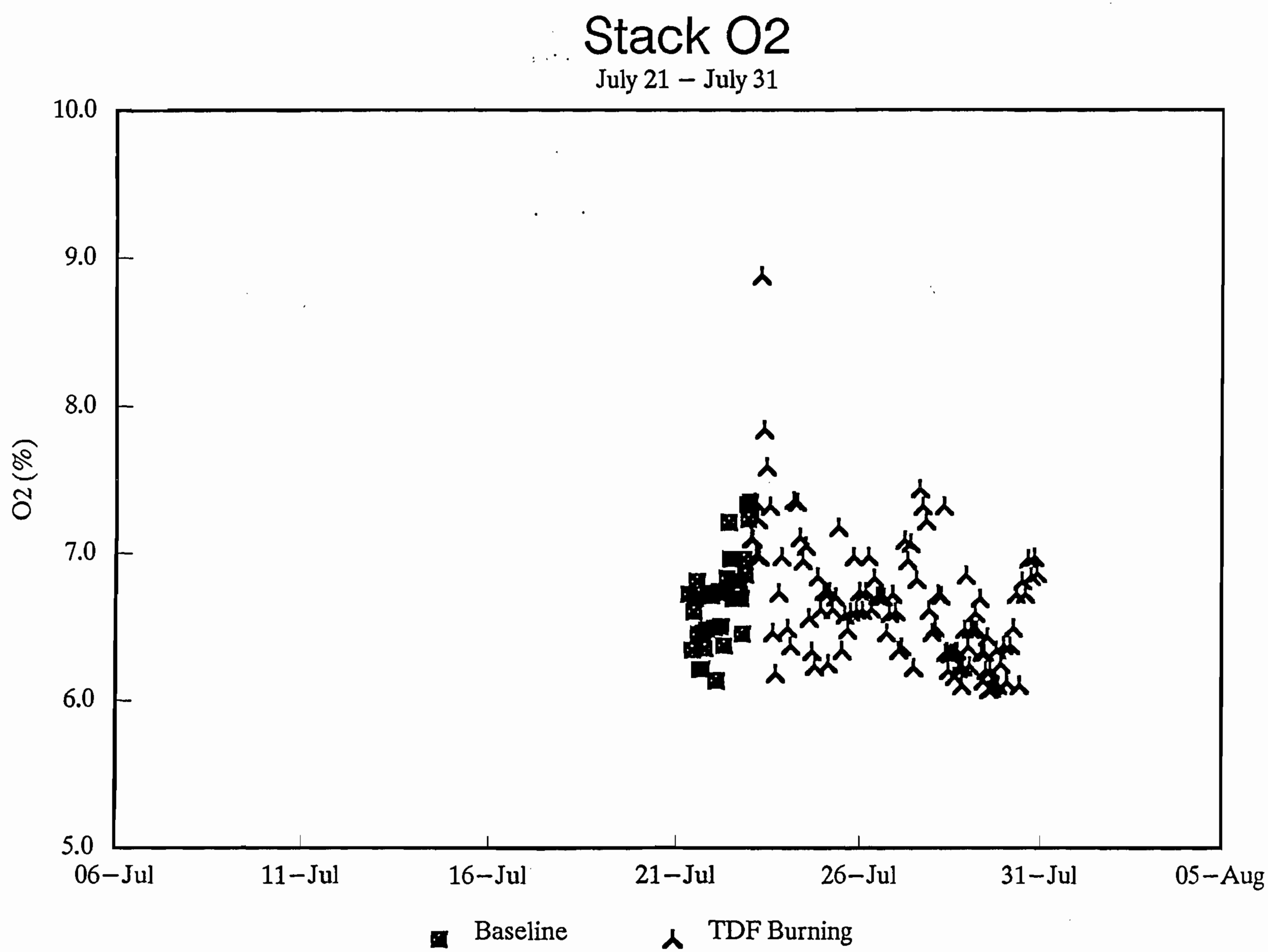


Kiln Inlet Temperature

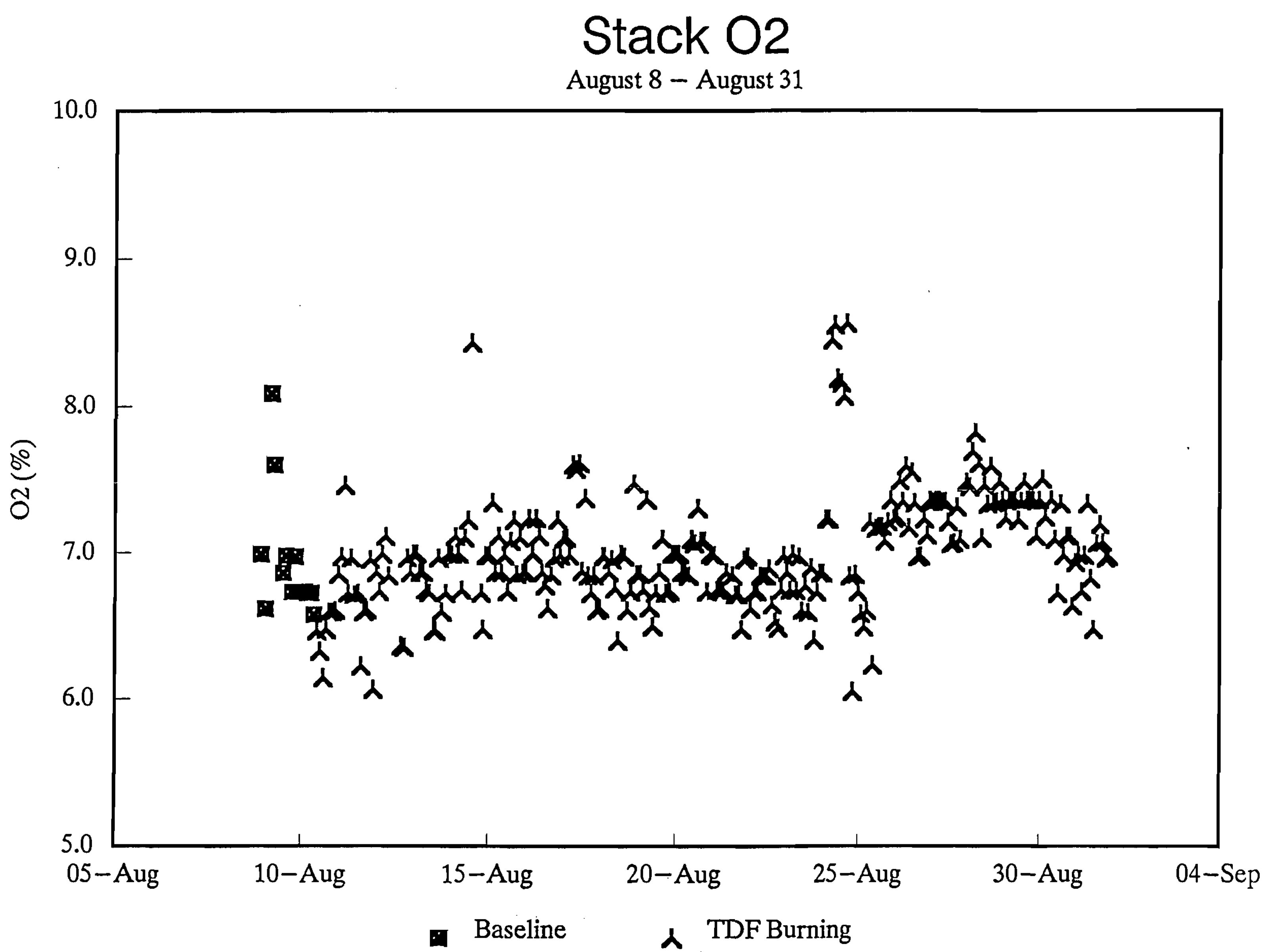
July 21 – July 30



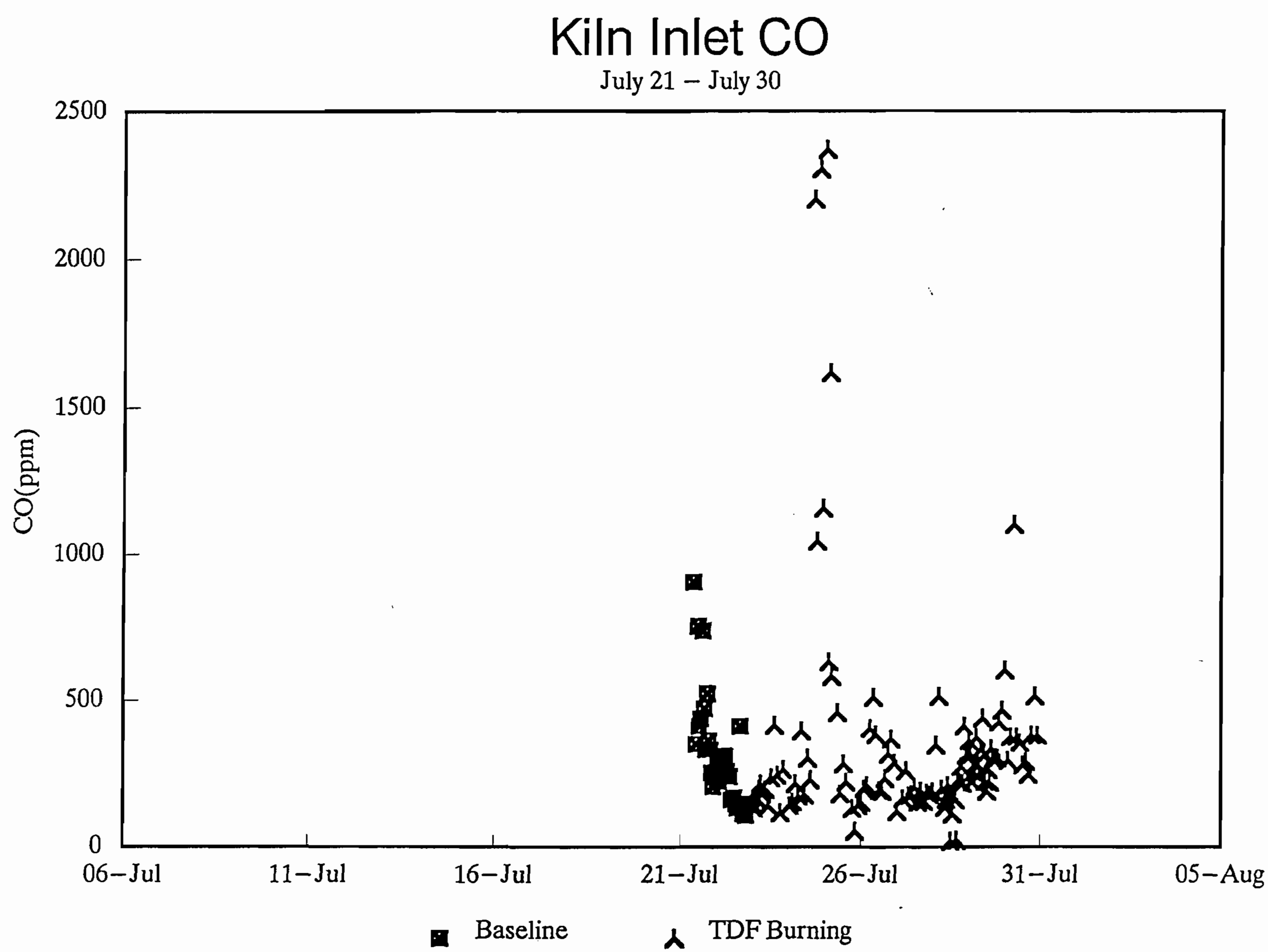

Kiln Inlet Temperature
August 8 – August 31
Temp (F)
2000
1800
1600
1400
1200
1000
05–Aug
10–Aug
15–Aug
20–Aug
25–Aug
30–Aug
04–Sep
Baseline
TDF Burning



Stack O2
July 21 – July 31
O2 (%)
10.0
9.0
8.0
7.0
6.0
5.0
06–Jul
11–Jul
16–Jul
21–Jul
26–Jul
31–Jul
05–Aug
Baseline
TDF Burning

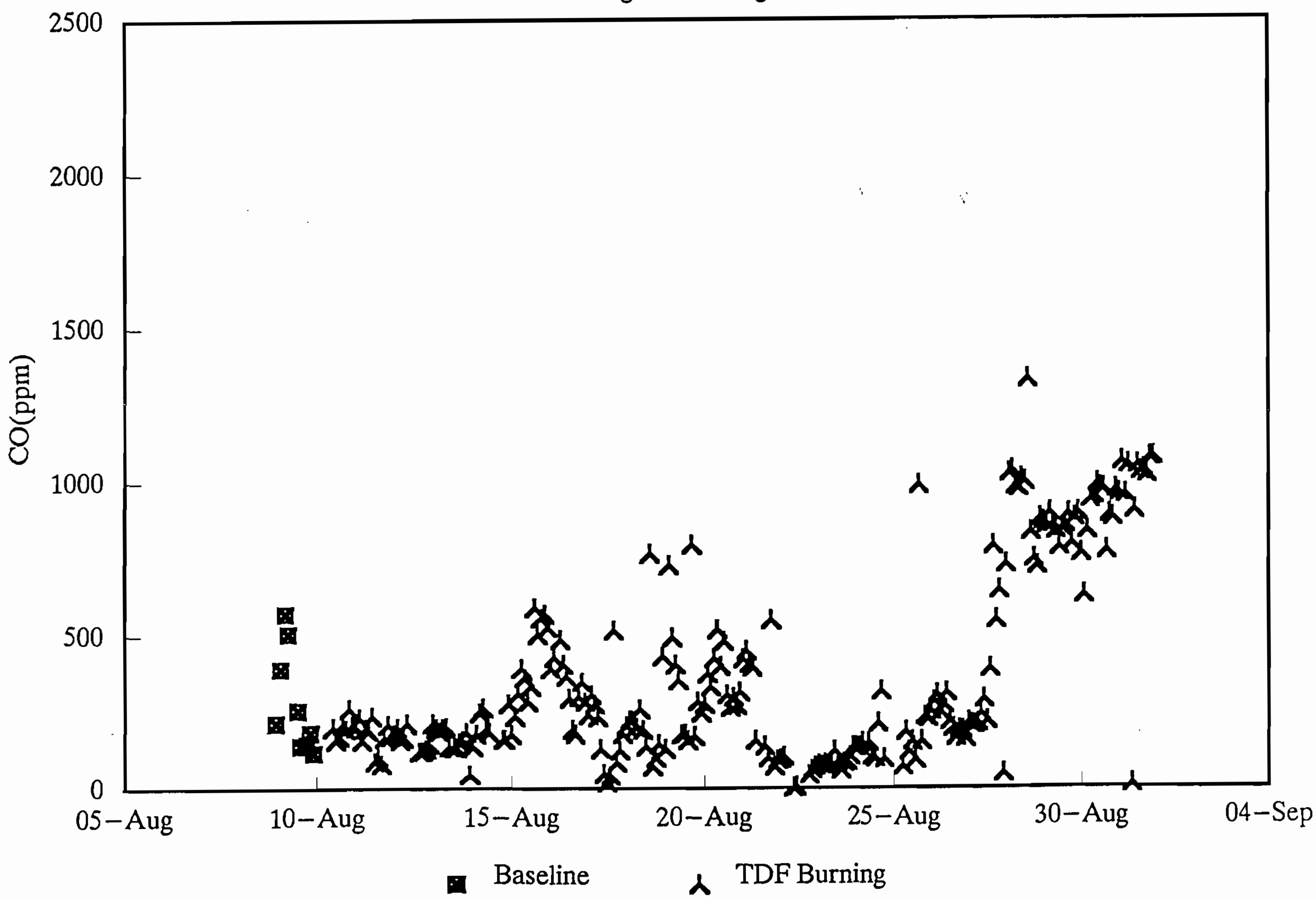


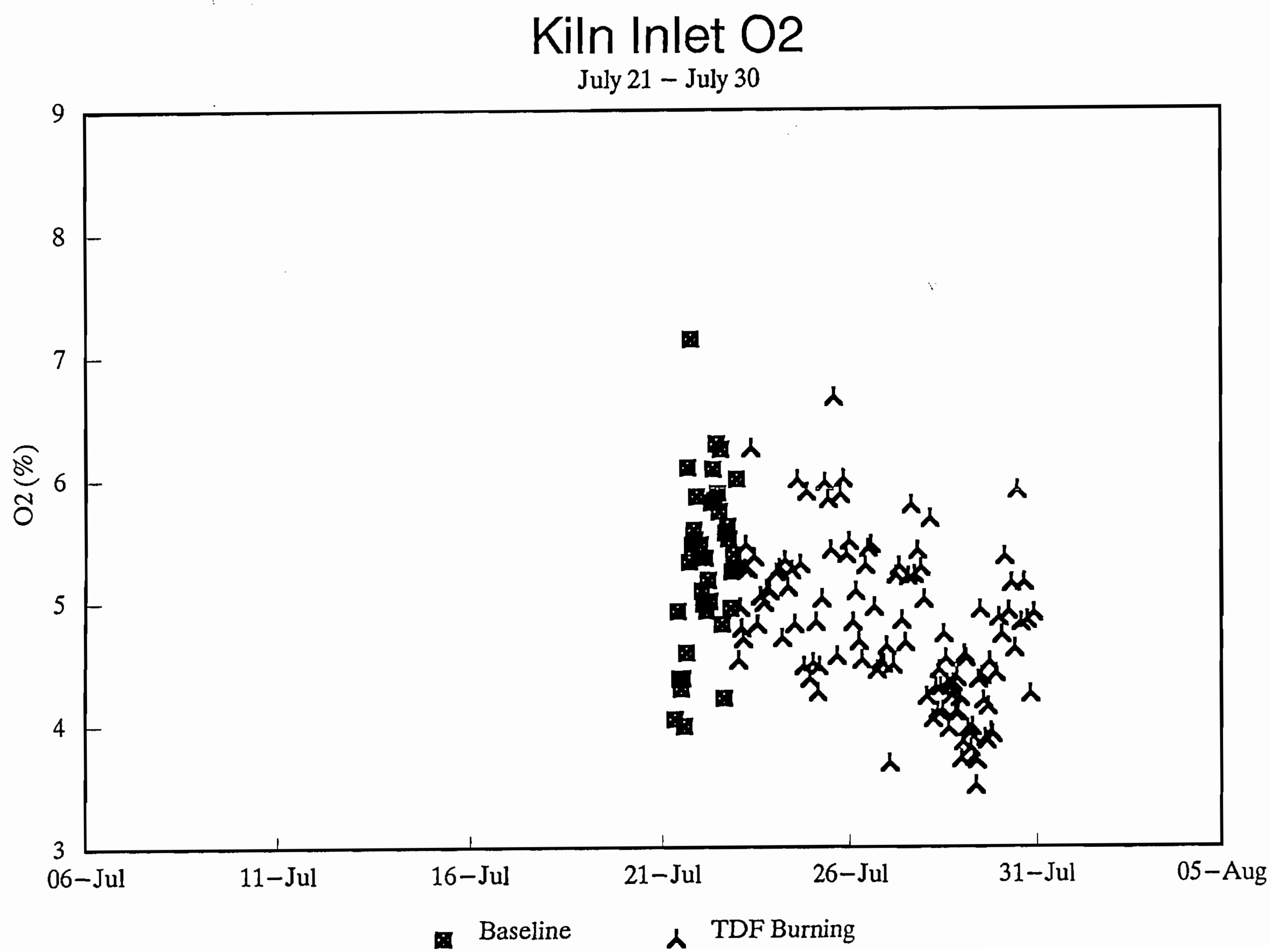
Stack O2
August 8 – August 31
O2 (%)
10.0
9.0
8.0
7.0
6.0
5.0
05–Aug
10–Aug
15–Aug
20–Aug
25–Aug
30–Aug
04–Sep
Baseline
TDF Burning


Kiln Inlet CO
July 21 – July 30
CO(ppm)
2500
2000
1500
1000
500
0
06–Jul
11–Jul
16–Jul
21–Jul
26–Jul
31–Jul
05–Aug
Baseline
TDF Burning

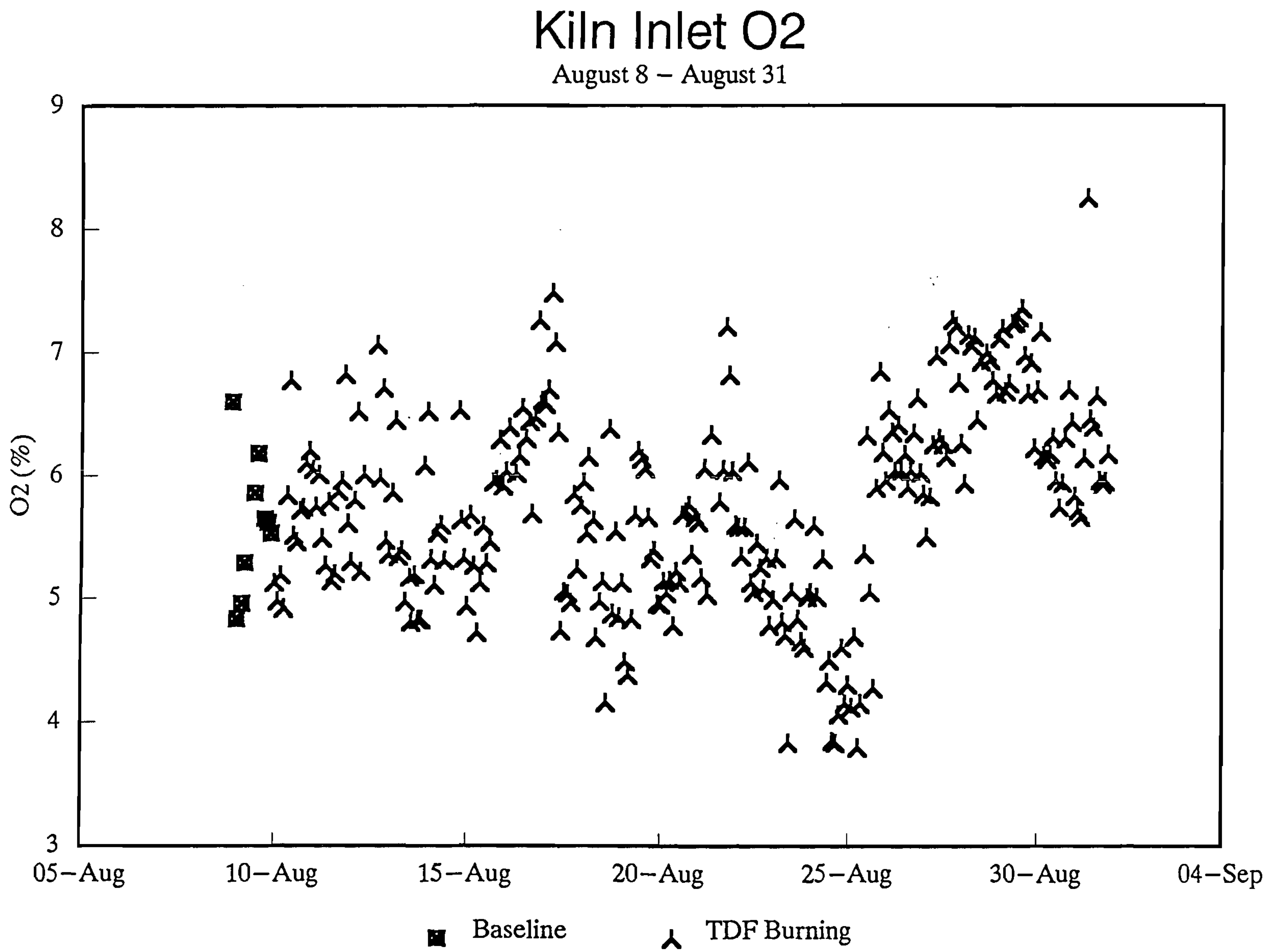
Kiln Inlet CO

August 8 – August 31





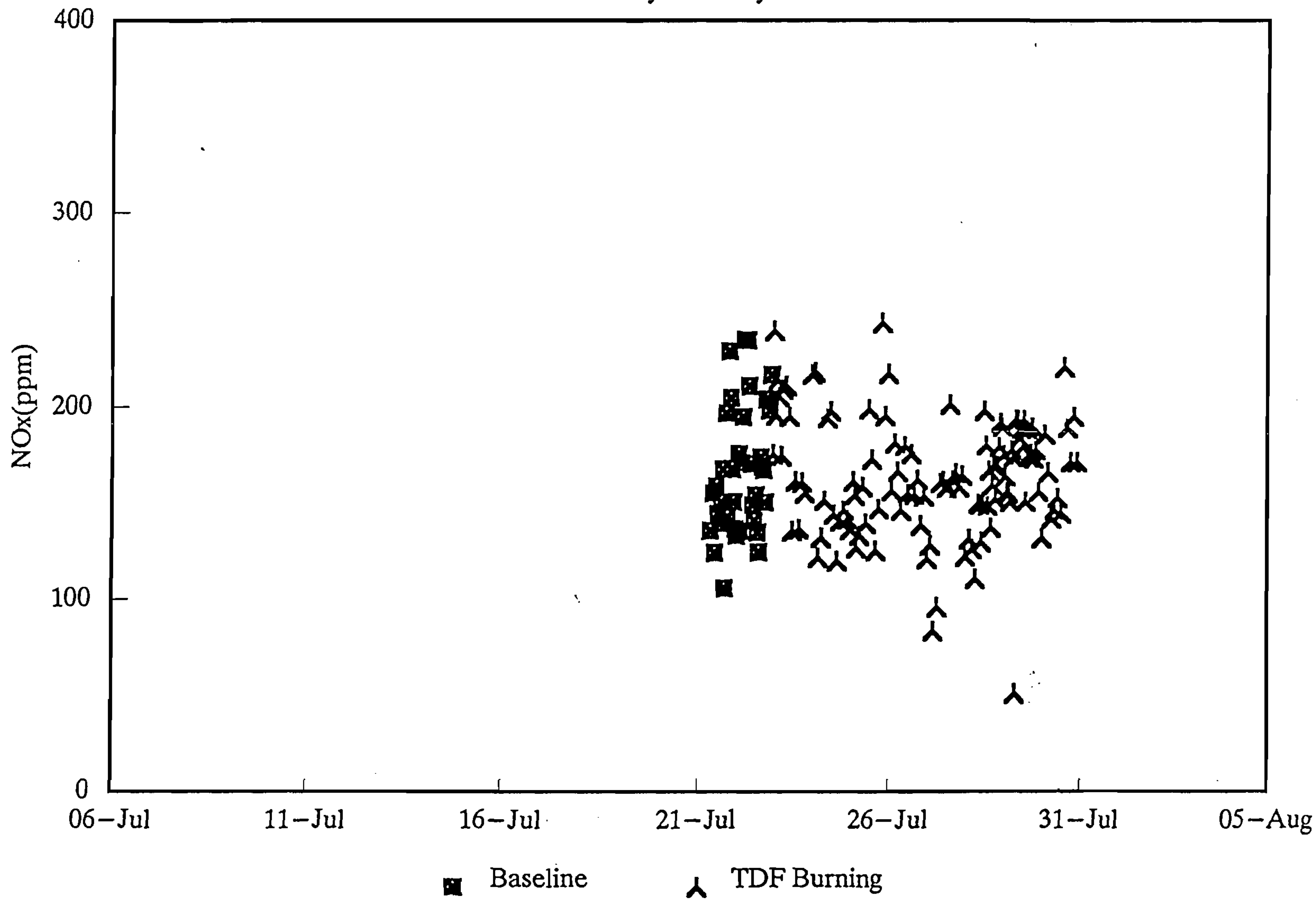
Kiln Inlet O2
July 21 – July 30
O2 (%)
9
8
7
6
5
4
3
06–Jul
11–Jul
16–Jul
21–Jul
26–Jul
31–Jul
05–Aug
Baseline
TDF Burning

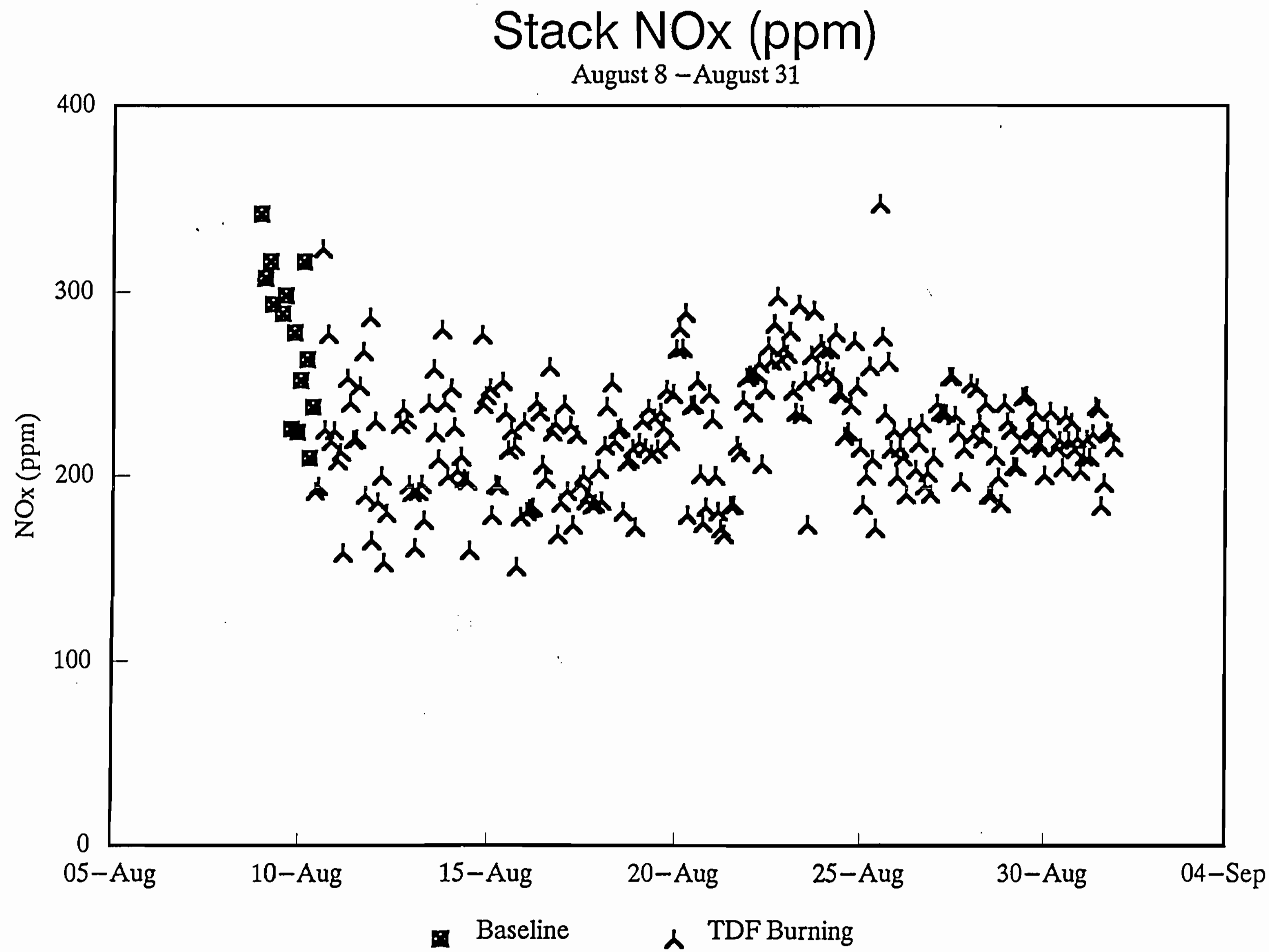


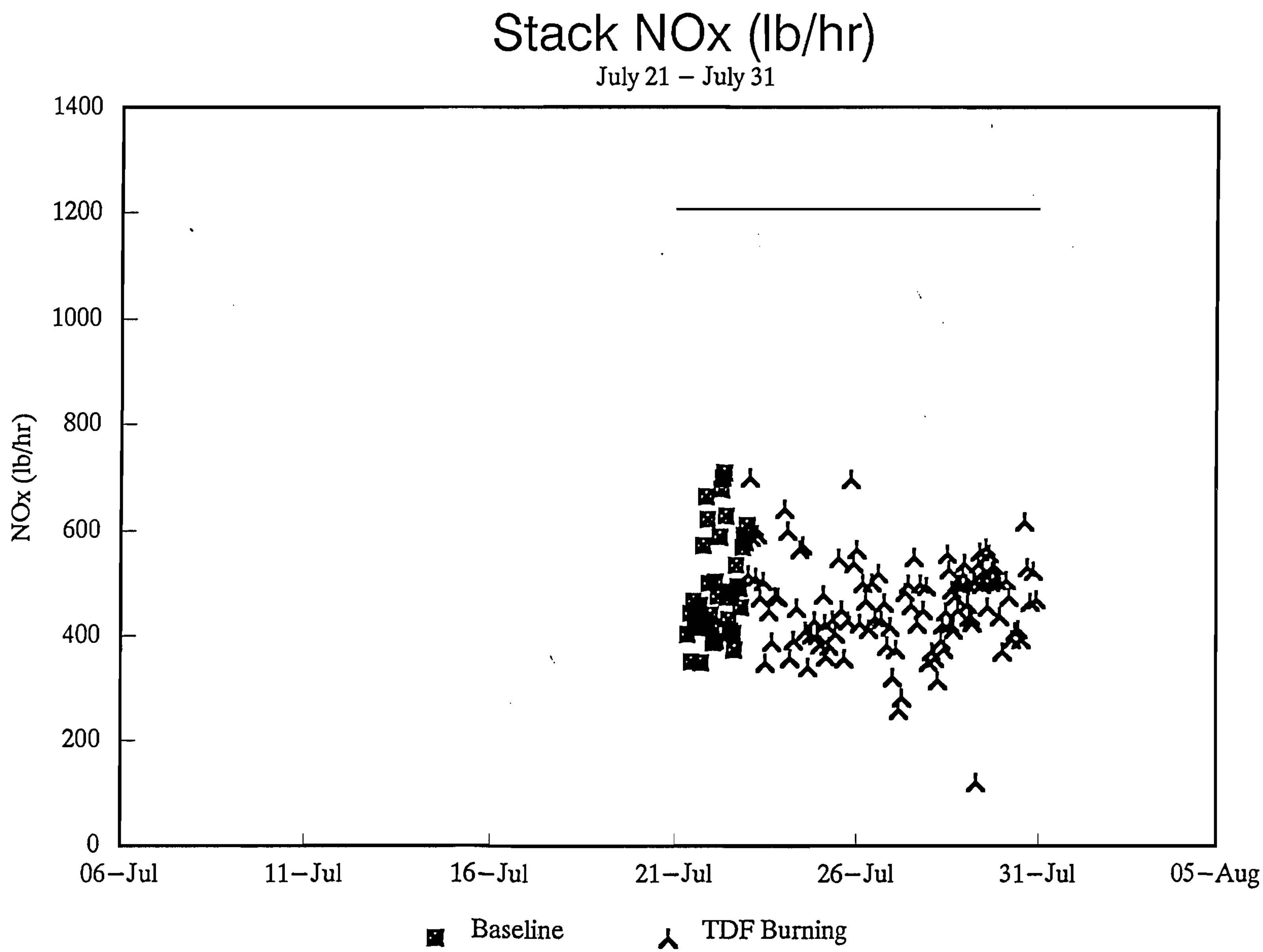
Kiln Inlet O2
August 8 – August 31
O2 (%)
9
8
7
6
5
4
3
05–Aug
10–Aug
15–Aug
20–Aug
25–Aug
30–Aug
04–Sep
Baseline
TDF Burning

Stack NOx (ppm)

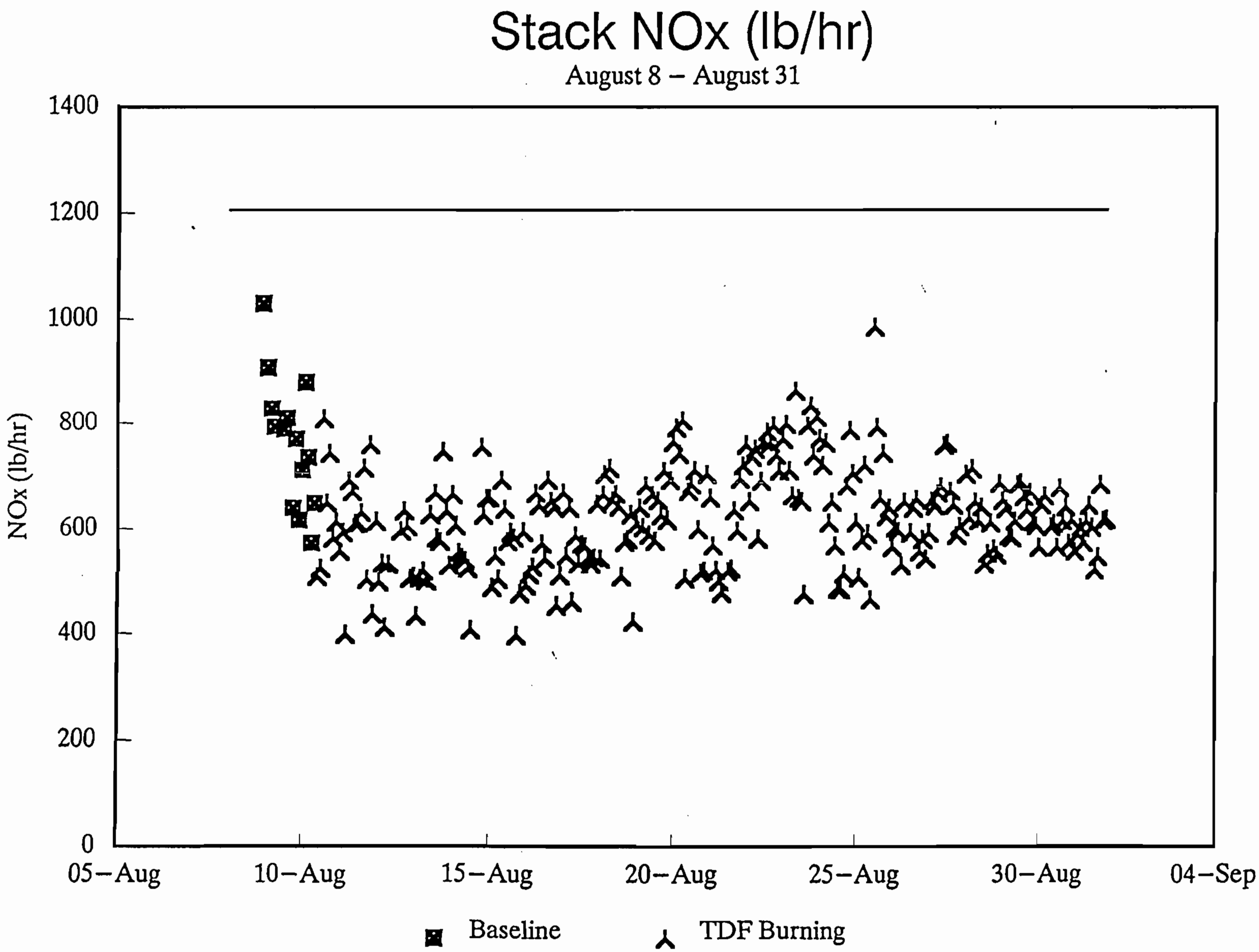
July 21 – July 31




Stack NOx (ppm)
August 8 – August 31
NOx (ppm)
400
300
200
100
0
05–Aug
10–Aug
15–Aug
20–Aug
25–Aug
30–Aug
04–Sep
Baseline
TDF Burning



Stack NOx (lb/hr)
July 21 – July 31
NOx (lb/hr)
1400
1200
1000
800
600
400
200
0
06–Jul
11–Jul
16–Jul
21–Jul
26–Jul
31–Jul
05–Aug
Baseline
TDF Burning



Stack NOx (lb/hr)
August 8 – August 31
1400
1200
1000
800
600
400
200
0
NOx (lb/hr)
05–Aug
10–Aug
15–Aug
20–Aug
25–Aug
30–Aug
04–Sep
Baseline
TDF Burning

APPENDIX C

PUBLISHED LITERATURE CONCERNING WASTE TIRE BURNING IN CEMENT KILNS

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EPA-450/3-91-024
December 1991

Air

PB92-145358

EPA

Burning Tires for Fuel and Tire Pyrolysis: Air Implications

control technology center

ctc

4. TIRE AND TDF USE IN PORTLAND CEMENT KILNS

The portland cement production process is extremely energy intensive (from 4 to 6 million Btu's (MMBtu's) are required to make a ton of product); therefore, alternative and cost-effective fuel options are of great interest. Waste tires have been tried as a supplemental fuel in well over 30 cement kilns and in at least one rotary lime manufacturing kiln. Currently, tires are in use, either on a trial or permanent basis, in 11 cement kilns and one lime kiln.

A cement kiln provides an environment conducive to the use of many fuel substances, such as tires, not normally included in the fuel mix. Specifically, the very hot, long, inclined rotary kiln provides temperatures up to 2700°F, long residence time, and a scrubbing action on kiln materials that allows a kiln to accommodate and destroy many problem organic substances. Also, the rock-like "clinker" formed in the kiln can often incorporate the resulting ash residue with no decrease in product quality. Tires are a compact fuel, with very low moisture. Tires have some iron and zinc content, both desirable materials in the raw material mix for cement manufacturing. Further, the materials handling operations already in place at many cement plants require only minimal modification to accommodate TDF feed. For these reasons, cement kilns are one of the most common methods by which energy in waste tires is recovered.

Cement plants attract favorable power rates because the process is so energy intensive; TDF cost per Btu is thus less of a savings. Second, cement kilns can accommodate many alternate fuels,[1] such that regional availability and price for these may affect the marginal savings of TDF. For example, on the Southeast Gulf coast, petroleum coke is

Table 4-1. Portland Cement Facilities that have been, or are, Burning TDF or Whole Tires

COMPANY AND LOCATION	KILNS DESCRIPTION[a]	TDF OR TIRE EXPERIENCE	AIR EMISSIONS TEST DATA	COMMENTS/REFERENCES
Allentown Cement (LeHigh Portland Cement Co.) Allentown, PA	2 dry kilns; coal/coke fired			References 2 and 5
Ash Grove Cement Co. West Plant Durkee, OR	Dry/1980; PH; ESP; natural gas/oil co-fire; one four-stage preheater; 500,000 tpy.	Current use; burned since 6/90, 2"x2"; fed pneumatically into feed end of kiln; permitted to burn up to 10% TDF; currently running 8%	Extensive testing for PM, SO_x, metals, HC; showed no significant increase	References 2, 6, and 7
Blue Circle, Inc. Atlanta, GA	2 dry kilns; coal/coke fired	Past use		References 2 and 5
Box Crow Cement Co., Box Crow Plant Midlothian, TX	1 dry kiln; PH/PC; coal-fired; baghouse; 310,000 tpy	Past use; 2"x6" TDF; 10-12% TDF	CEMS only; test burn planned soon	References 2, 5, and 7
Calaveras Cement Co. Redding, CA	1 kiln; PH/PC; FF; coal fired, 650,000 tpy	Current use; burned since 1985, 2"x2" TDF, wire-free now; whole by mid-1991; about 20% Btu; 65 tons TDF per day (6,000 tires); TDF into riser duct just above kiln feed housing	Yes; emission not significantly different than burning coal	Use permit modification from local agency. References 1, 2, 7, and 8
California Portland Cement (Arizona Portland) Rillito, AZ	4-dry kilns; 1 with PH/PC; coal-fired; 2 kilns inactive in 1990.	Past use; 2"x2" 10% of energy from TDF; TDF since 1986	No	References 1 and 2
California Portland Cement Mojave, CA	1 dry kiln; PH/PC; FF; coal-fired; 3,250 tpd	2.5"x 2.5"; 30% TDF of total fuel	No	References 2 , 5, and 7
Centex Illinois Cement Co. LaSalle, IL	1 dry kiln; PH; FF; coal fired.	Test use; anticipate 4/91 test burn	Applied for test burn permit; plant 4/91 test burn.	Completed permit application; plans April 1991 test burn. References 2 and 9
Essroc Materials, Inc. Nazareth, PA	1 planned dry kiln; PC; to be completed 1991		Test burn in November	References 2, 5, and 7

Table 4-1. (Continued)

COMPANY AND LOCATION	KILNS DESCRIPTION[a]	TDF OR TIRE EXPERIENCE	AIR EMISSIONS TEST DATA	COMMENTS/REFERENCES
Florida Crushed Stone Co. Brookville, FL	1 dry kiln; PH; FF; ; coal fired	Past use; fed TDF into preheater; stopped because of preheater plugging problems; installing whole tire feeder; Test data (10/90) not valid, but tested for PM, SO_2, VOCs, furans, dioxins, metals.	Incomplete	References 2 and 10
Giant Resource Recovery Harleyville, SC	4 wet Kilns; ESP; coal fired			References 2 and 5
Gifford Hill Cement Co. Harleyville, SC (now Blue Circle)	1 dry kiln; PH; FF; coal fired	Past use; whole tires; 20% of energy from TDF during testing; in process of making modifications to install feed equipment.	No	References 2 and 11
Holnam/Ideal Cement Dundee, MI	2 wet kilns; coal/coke-fired	2"x2"		References 2 and 5
Holnam/Ideal Cement Seattle, WA	1 wet kiln; ESP; coal/coke fired	Current use; 2" wire-free; test permit is for up to 25%; first used TDF in 1986; discontinued because TDF not price competitive with coal; reinstated TDF use in 1990; 20% of energy is from TDF.	Yes; using 0%, 11%, and 14% TDF; complete data for PM, SO_2, NO_x, heavy metals, PNA's, and VOC's.	References 2, 5, 12, and 13
Kosmos Cement Co. Kosmosdale, KY	1 dry kiln; PH; FF; coal fired, 2,160 tpd	Past use; shredded TDF	Yes (PM, SO_2, CO, HC, HCl)	References 2, 5, and 7
La Farge Corp., Balcones Plant New Braunfels, TX	1 dry kiln; PH/PC	Current test use; 2" wire-free. Used TDF experimentally for 2 yrs; completed trials for emission testing; permit being issued to limit TDF to 25% of energy used; planning to test VOC, PAH's, PCDD/PCDR.	planned	Investigating tire burning on corporate level. References 2, 5, and 7

Table 4-1. (Continued)

COMPANY AND LOCATION	KILNS DESCRIPTION[a]	TDF OR TIRE EXPERIENCE	AIR EMISSIONS TEST DATA	COMMENTS/REFERENCES
Lone Star Cement, Cape Girardeu, MO			Test burn soon	Reference 7
Medusa Concrete Clinchfield, GA	1 Wet Kiln inactive in 1990; 1 dry kiln w/PH; FF; coal fired.			References 2 and 5
Medusa Cement Charlevoix, MI	1 dry kiln; PH/PC; coal-fired			References 2 and 5
Monarch Cement Co. Humboldt, KS	3 dry kilns; 2 with PH; FF; coal/coke			References 2 and 5
River Cement Co., Selma Plant Festus, MO	2 dry kilns; FF; coal fired.			References 2 and 5
RMC Lone Star Davenport, CA	1 dry kiln; PH/PC; ESP; coal fired	Current use		References 2 and 14
Roanoke Cement Co. Cloverdale Plant Roanoke, VA	5 dry kilns; 1 with PH; coal fired; TDF planned in kiln with PH	Test use; planning use of whole tires, beginning with 4% and increasing to 20% tires; tires from retailers and maybe from dumps.	Yes, winter 1991; tires at 20%	Have spent $320,000 for equipment and testing; will be paid a disposal fee for taking tires, and perhaps a state subsidy based on $0.50 tax on new tires; currently permitting. References 2 and 15
Southdown, Inc. Southwestern Portland Cement Co. Victorville, CA	2 dry kilns, 1 with PH/PC; FF; coal fired.	Current use; test permit; use not continuous; whole and shredded; TDF added at precalciner; whole added into feed end of kiln by double gate method.	CEMS; new test data	Test permit; final permit pending CEMS data analysis. Whole into kiln feed end; TDF into preheater at precalciner. References 2, 7, and 16
Southdown, Inc. Southwestern Portland Cement Co. Fairborn, OH	1 dry kiln; PH FF; coal fired.	Past permitted use; Whole 36"; 10-15%; use was successful and are renewing alternate fuels permit; tires were slid, not rolled, into feed end of kiln.	CEMS; new emissions tests have been done	Tire burning stopped until renew permit to burn whole tires; public opposition to solvent-derived fuels; working their copy through the permit process References 2, 7, 16, and 17

Table 4-1. (Continued)

COMPANY AND LOCATION	KILNS DESCRIPTION[a]	TDF OR TIRE EXPERIENCE	AIR EMISSIONS TEST DATA	COMMENTS/REFERENCES
Southdown, Inc. (Southwestern) Lyons, CO	1 dry kiln; PH/PC; FF; gas, coal, waste oil; 1,400 tpd	Current use; 3"x3" TDF; dropped on to feed shelf by screw conveyor; 1/2 ton/hr @ 5%; some feeding problems; plugging of rubber shreds to hopper if shreds have belts and beads.		References 2, 5, 7, and 16
St. Mary's Peerless Cement Detroit, MI	1 wet kiln; coal-fired			References 2 and 5
<u>Lime Manufacture</u>				
Boise Cascade Wallula, WA	1 rotary lime kiln; freed by gas, oil, and tires; venturi scrubber controlled.	TDF up to 15%	Yes; 5/86; baseline gas fired; TDF 15% with gas; measured PAH's and metals	Lime manufacturing rotary kiln. Reference 18

[a] PH = Preheater, PC = Precalciner, ESP = electrostatic precipitator, FF = fabric filter

4.2.5 Tires as Fuel in the Kiln

Tires or TDF can be used to supplement the kiln fuel and/or the precalciner fuel. When TDF is added to the kiln fuel mix, it is often added at the burner (lower) end of the kiln, near, but not mixed with, the coal feed. At one plant (Holnam/Ideal), TDF is fed in above the coal flame.[19] This arrangement permits the chips to be blown further into the kiln and causes the chips to fall through the coal flame to produce much better combustion. In most cases, TDF is added at the feed end (high end) of the kiln. Several kilns have added whole tires at the feed end of the kiln so that burning occurs as the tires move down the kiln; this method is common in Europe.[4] However, many kilns in the U.S., particularly wet process kilns, have chains hanging down in the feed end of the kiln to enhance heat exchange. Such equipment forms a barrier to everything but finely ground materials, and precludes use of whole tires at the feed end. Kilns with preheaters provide the best environment for adding TDF or tires at the feed end, because significant preheating of the dry feed has occurred before the feed contacts the tire chips.

Tires have occasionally been used to supplement the primary precalciner fuel (usually coal), with mixed results. Florida Crushed Stone in Brookville, Florida, was feeding TDF into the preheater, but had to discontinue use because of plugging of the preheater (most likely due to oil condensate from the incomplete combustion of the tire chips). The company is in the process of installing a whole tire feeder with weight-belt, computer, variable rate belt, and triple gate chute to feed tires into the kiln.[10]

Southwestern Portland Cement in Victorville, California, not only adds TDF successfully to the preheater, but concurrently supplements the primary kiln fuel by mixing whole tires in the kiln feed.[16] Tire chips are added in the preheater, at the pyroclone (precalciner) unit, right after the tertiary air duct that brings hot air from the clinker cooler.[16] The chips burn quickly and go up the air stream into the preheater. Concurrently, whole tires are introduced into the feed end of the kiln with a double gate method. First, the tire is fed upright into a downward chute that slopes 30 to 40 degrees, so that it rolls down and stops at the second gate. The first gate closes and the second gate opens. The tire then rolls across the feed shelf and into the kiln. The double gate method reduces excess air introduction to and heat loss from the kiln.[16] Using both kinds of tires concurrently helps maximize the percent of fuel provided by tires. Whole tire use reduces coal used at the firing end of the kiln, but too many whole tires would provide too much heat in the kiln feed end. The TDF replaces coal used in the precalciner, but would not be used in the kiln, because they are more expensive than the whole tires.[16]

4.3 EMISSIONS, CONTROL TECHNIQUES AND THEIR EFFECTIVENESS

Testing results from three cement facilities and one lime kiln were evaluated for this report. The four facilities are: Ash Grove Cement, Durkee, Oregon; Holnam/Ideal Cement, Seattle, Washington; Calaveras Cement, Redding, California; and Boise Cascade Lime, Wallula, Washington.

Testing performed at Ash Grove Cement in Durkee, Oregon, on October 18 to 20, 1989, evaluated criteria pollutants, aliphatic and aromatic compounds, metals, and specifically examined chloride emissions to assess the possibility of dioxin formation.[20] Ash Grove's normal fuel is a mixture of gas and coal. As seen in Table 4-2, emissions of chloride were lower burning some TDF than with normal kiln firing, and; therefore, the Oregon Department of Environmental

Table 4-2. Effect of Burning 9 to 10 percent TDF in a Gas and Oil Co-fired Dry Process, Rotary Cement Kiln Controlled by an ESP[20]
Ash Grove Cement, Durkee, Oregon

Pollutant	Baseline, 0% TDF	9-10% TDF	Percent Change
Particulate, lb/MMBtu	0.969	0.888	-8
SO_2, lb/MMBtu	0.276	0.221	-20
CO, ppm	0.049	0.036	-27
Aliphatic compounds, lb/MMBtu	0.0011	0.0009	-18
Nickel, μg	30	DL[a]	NA[b]
Cadmium, μg	3.0	2.0	-33
Chromium, μg	30	DL[a]	NA[b]
Lead, μg	DL[a]	DL[a]	NA[b]
Zinc, μg	35	35	0
Arsenic, μg	0.2	0.2	0
Chloride, lb/hr	0.268	0.197	-26
Copper, μg	37	13	-65
Iron, μg	400	200	-50

[a] Below detection limit (DL).
[b] NA = not applicable.

4.6 CONCLUSIONS

The long residence time and high operating temperatures of cement kilns provide an ideal environment to burn tires as supplemental fuel. Results of several tests conducted on cement kilns while burning tires or TDF indicate the emissions are not adversely affected, but in many cases improve when burning tire.

Costs associated with modifying feed equipment to burn TDF in cement kilns is minor in most cases. Cost savings in fuel cost can be 70 to 90 percent of the cost of the primary fuel, depending on location and governmental incentives.

Overall, burning tires or TDF in cement kilns appear to be an economically satisfactory and environmentally sound way of not only disposing scrap tires, but also reclaiming their fuel value.

Dave Buff

SCRAP TIRE MANAGEMENT COUNCIL

Scrap Tire Use/Disposal Study

Final Report

A.T. Kearney

September 11, 1990

2.1 USE AS FUEL IN CEMENT KILNS

Abstract. Either whole tires or tire-derived fuel (TDF) can be used as supplemental fuel in cement kilns, depending on kiln size and technology. The technology is proven. At least two U.S. kilns are currently burning tires or TDF on an operating basis, with at least five additional kilns burning whole tires or TDF on an experimental basis. Burning scrap tires or TDF in kilns does not adversely effect environmental performance or product quality.

Kilns currently burning TDF have volume capacities in the 0.5 - 3 million tire per year range. At an average burning rate of 1.5 million tires per year, we estimate that cement kilns could use approximately 60 million tires per year as auxiliary fuel by 1995. This assumes switchover of about 40 kilns with optimal scrap tire burning configurations (kilns with preheaters/precalciners), out of a total kiln population of about 240.

Principal barriers to further scrap tire use in this industry are:

- Marginal cost advantage of TDF over typical kiln fuels (coal, petroleum coke); whole tires have a greater advantage, but can only be used in larger kilns with preheaters
- Air permit modification requirements for testing, and delays in issuing modifications
- Reliability of tire/TDF supply (risk to recovering capital investment)
- Certain kiln designs require costly feed system design modifications

2.1.1 Technology Description

Cement is manufactured by controlled heating of a mixture of finely ground calcareous material (e.g., limestone), argillaceous material (e.g, clay or shale), and siliceous material (e.g., sand) to about 1500-1600°C in a rotary kiln. These materials provide the basic elements required in cement: calcium, silicon, aluminum, and iron. The high temperatures in the kiln cause decarbonation of lime and subsequent reaction with silica to form calcium silicates. The calcium silicate "clinker" is ground with gypsum to produce cement.

Rotary kilns are long, inclined, cylindrical furnaces through which the cement ingredients move in approximately one to four hours. Due to their unusually high operating temperature and long exhaust gas residence times in the burning zone, cement kilns have the capacity to safely use a wide variety of fuels, including tires or tire-derived fuel (TDF). Whole tires or TDF are a good auxiliary fuel for coal or oil burning cement kilns because their:

- BTU value is comparable to or higher than typical coal used in making cement

- Nitrogen, sulfur, and ash content is lower than typical values for coal

- Steel content provides supplemental iron for the cement.

The high operating temperature in the kiln allows for complete combustion of tires and oxidation of steel beads or belts without adversely affecting kiln operation. Therefore, steel reinforcement does not need to be removed prior to tire use as fuel. In fact, because iron is a basic ingredient in cement, and the temperature in cement kilns is high enough for complete combustion of steel to iron oxide, burning whole tires or TDF with steel content reduces raw material costs for supplemental iron for some kilns.

Cement manufacture is energy intensive, requiring about 160 kwh of energy per ton of clinker produced. Typical energy costs are about $6.00 per ton of clinker.

The form in which tires can be used as an auxiliary fuel, either whole or as tire-derived fuel, is dependent upon the configuration of the kiln. Kilns with preheaters can utilize whole tires as fuel; kilns without preheaters can only use tire-derived fuel, typically in 2 inch x 2 inch to 4 inch x 4 inch size.

In either case, kilns must be equipped with separate fuel feed systems to utilize tires. Whole tires are fed to kilns using a mechanical feed system designed for tire charging. TDF may be fed using either mechanical or pneumatic systems. Mechanical feed systems have been successful in feeding TDF to cement kilns without any problems. Three of the cement kilns using TDF on an experimental basis used pneumatic blowers to feed TDF but experienced problems with feed line plugging caused by wire. Subsequently, one of these kilns has switched over to a mechanical feed system for TDF.

Typical feed rates in the cement kilns using TDF in U.S. vary from 2-3 tons per hour, with about 10-25% of the BTU value of the fuel being provided by the tires. Average annual tire consumption at a typical facility is about 2-3 million tires.

Two cement kilns in the U.S. use TDF as an auxiliary fuel, and another five use TDF on an experimental basis with intentions to install permanent systems. Tires have been widely used in Europe and Japan as an auxiliary fuel in cement kilns for several years.

U.S. Facilities

- Calaveras Cement, Redding, CA:
    - Annual consumption: 2 million tires
    - 25% of BTU value of fuel is provided by tires
    - Has used TDF as supplemental fuel for 5 years
- Arizona Portland Cement:
    - Approximate annual consumption: 3 million tires
    - Uses 2" x 2" TDF at a rate of 2T/hour, expected to rise to 4T/hour
    - About 10% of BTU value of the fuel is provided by tires
- Southwest Portland Cement Co., Fairborn, OH
    - Approximate annual consumption: 1.0 million tires
    - Whole tires used
    - About 6-8% of BTU value provided by tires
    - Modified air emissions permit
- Ashgrove Cement, Durkee, Oregon
    - Has used TDF on an experimental basis for the last two years
    - Expected approximate annual consumption: 0.4 million tires
    - Completed trial burns for emissions testing for modified permit
    - Public hearings for permit scheduled for October
    - Pneumatic blower used to feed TDF
    - Use 2" relatively wire free TDF
- Ideal Cement, Seattle, WA
    - Has used TDF on an experimental basis for the last six months
    - Expected approximate annual consumption: 1.4 million tires
    - Pneumatic blower used to feed TDF
    - 20% of BTU value of fuel provided by tires

In Japan, over 69,000 tons of tires are used per year as fuel in cement kilns. Typically, tires are used whole in Japanese kilns.

2.1.2 Environmental, Economic, and Volume Characteristics

Environmental Characteristics

- o TDF use reduces NO_x emissions by 10%. No changes observed in SO_2 particulates and CO (as total C) emissions.
- o No waste residues produced from TDF use.
- o No formation of furans from TDF use due to extremely high temperatures in the kiln.

Use of tires as fuel in cement kilns typically reduces production of nitrogen oxides and does not adversely affect other components of kiln air emissions. This is due to the relative characteristics of waste tire materials compared to typical coals used in cement manufacture.

The average sulfur content of TDF is about 1.23% by weight, as compared to 1.59% for coal. The nitrogen content of TDF is also lower than that for coal, 0.24% by weight as compared to 1.76%. The ash content of TDF is about 4.7% by weight as compared to 6.23% by weight for coal. Sulfur in the TDF becomes incorporated into the calcining lime as $CaSO_4$, which is a raw material in the manufacture of cement. All of the ash gets absorbed in the clinker, so there are no residues from the use of TDF in cement kilns. No adverse effects on the quality of cement have been observed due to the use of TDF in cement kilns.

The Bavarian State Institute for Environmental Protection (W. Germany) concluded that the best process of disposing of waste tires is to use them as a fuel in cement kilns.

Tests on kilns in the U.S. demonstrate that existing emission controls on kilns should be sufficient to enable them to use TDF as an auxiliary fuel, while meeting the emission standards as long as the percentage of TDF used is no more than 20% of the heat value of the total fuel used in the kilns.

Economic Characteristics

- o Estimated break even procurement cost = $30.00 - 45.00/ton

- Use 2" relatively wire free TDF

- La-Farge Cement, Texas
  - Has used TDF on an experimental basis for two years
  - Expected approximate annual consumption: 1.3 million tires
  - Completed trial burns for emissions testing; permit issuance in process
  - Modified permit will place restraint only on percentage of tires allowed to be burnt (25% of the fuel)
  - 9-10% of BTU value of fuel provided by tires
  - Auger feed system
  - Use 2" relatively wire free TDF

- Gifford Hill Cement Co., Harleyville, S.C.
  - Experimental use of whole tires
  - Test burn in May 1990
  - Expected approximate annual consumption: 1.2 to 1.5 million tires per year
  - 20% of BTU value of fuel to be provided by tires
  - Joint venture with Oxford Energy and Radian Corp.

<u>Foreign Facilities</u>

- Heidelberger Cement Plant, W. Germany:
  - Total of 50,000 MT of tires burnt per year in 6 of its cement plants
  - Tires fed whole into the kilns
  - Percent of tires in the fuel feed varies from 10-20%

- Blue Circle Dry Process Cement Works, Hope, Sheffield, England
  - Annual consumption of tires: 4,700 tons (expected to increase to about 8,000 tons)
  - Whole tires used
  - 17% of fuel substituted by tires

- Sumitomo Cement Co., Japan

- Onada Cement Co., Japan

- Chichibu Cement Co., Japan

- Osaka Cement Co., Japan

FLORIDA CRUSHED STONE COMPANY
CEMENT / POWER / LIME PLANT

AUGUST 3, 1992

RECEIVED

AUG 04 1992

Division of Air
Resources Management

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Bruce,

All changes I made are circled. Most are for the first run to correspond to the print outs. Evidently, you were given readings off the monitors.

If you have any questions, please give me a call.

Sincerely,

Charles E. Allen

Charles E. Allen
Cement Plant Manager

CEA:sf

Enclosures

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4036 0235923586

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1 From (Your Name) Please Print: Charles Allen
Your Phone Number (Very Important): 904-799-7881
Company: FLORIDA CRUSHED STONE/CPL DIV
Department/Floor No.:
Street Address: 10311 CEMENT PLANT ROAD
City: BROOKSVILLE State: FL ZIP Required: 34601

2 To (Recipient's Name) Please Print: Mr. Bruce Mitchell
Recipient's Phone Number (Very Important): 904 488-1344
Company: FDER Twin Towers Office Bldg
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip® Codes.): 2600 Blair Stone Road
City: Tallahassee State: FL ZIP Required: 32399-2400

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check

4 SERVICES (Check only one box)

Priority Overnight Service (Delivery by next business morning†)
- 11 [ ] YOUR PACKAGING
- 16 [ ] FEDEX LETTER *
- 12 [X] FEDEX PAK *
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight Service (Delivery by next business afternoon†)
- 51 [ ]
- 56 [ ] FEDEX LETTER *
- 52 [ ] FEDEX PAK *
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day Service (formerly Standard Air) (Delivery by second business day†)
- 30 [ ] ECONOMY TWO-DAY SVC.

Heavyweight Service (for Extra Large or any package over 150 lbs.)
- 70 [ ] HEAVYWEIGHT **
- 80 [ ] DEFERRED HEAVYWEIGHT **

† Delivery commitment may be later in some areas.
* Declared Value Limit $100.
** Call for delivery schedule.

DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 [ ] HOLD FOR PICK-UP (Fill in Box H)
- 2 [X] DELIVER WEEKDAY
- 3 [ ] DELIVER SATURDAY (Extra charge) (Not available to all locations)
- 4 [ ] DANGEROUS GOODS (Extra charge)
- 5 [ ]
- 6 [ ] DRY ICE ______ Lbs
- 7 [ ] OTHER SPECIAL SERVICE
- 8 [ ]
- 9 [ ] SATURDAY PICK-UP (Extra charge)
- 10 [ ]
- 11 [ ] DESCRIPTION
- 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
Total 1	Total L	Total

DIM SHIPMENT (Chargeable Weight) ______ lbs.

Received At: 1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

FedEx Emp. No.

Emp. No. Date
☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold
Street Address
City State Zip
Received By:
X
Date/Time Received FedEx Employee Number

5 Release Signature:
Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 8/90
PART #119501 FXEM 1/91
FORMAT #041
041

BEST AVAILABLE COPY

TDF: [illegible]
~110 lbs/tire
9:00, 10:00, 1:00, 2:00, 4:00, 5:00

#1 Run: 8:10 - 10:[illegible]
#2 Run: 12:02 - 2:34 p.m. (1 & 2) p.m.
#3 Run: 3:30 - 6:00 p.m. (4 & 5) p.m.

7-28-92

		#1	x̄	#2	x̄	#3	x̄
Lime Plant							
	coal feed rate (#/hr)	26,000	26,000	22,000	22,500	24,000	24,000
		26,000		23,000		24,000	
	limestone " " (TPH)	20.0	20.5	20.0	20.0	22.0	21.0
		21.0		20.0		20.0	
Power Plant							
	coal feed rate (#/hr)	96,000	96,500	99,000	98,500	99,000	98,500
		97,000		98,000		98,000	
	load (MW)	110.6	111.4	111.0	111.4	110.7	110.8
		112.2		111.7		110.9	
Cement Plant							
	coal feed rate (TPH)	7.2	7.5	7.5	7.5	7.6	7.55
		7.8		7.5		7.5	
	TDF " " (TPH)	1.33	1.33	1.33	1.33	1.33	1.33
		1.33		1.33		1.33	
	kiln " " (TPH)	125.0	122.5	125.0	126.0	123.0	123.5
		120.0		127.0		124.0	
	clinker prod. rate (TPH) to be calc.	76.6	75.8	76.6	76.9	75.9	76.1
		75		77.2		76.3	
Baghouse							
	inlet Temp (°F)	409.5	397.1	405.0	402.4	399.9	389.5
		384.6		399.7		380.1	
	fan speed (%)	72.0	72.0	70.0	70.0	70.0	70.0
		72.0		70.0		70.0	
	fan current (amps)	3217	3193	3146	3111	3101	3096
		3169		3075		3090	
	ΔP (in-H_2O)	7.8	7.6	7.4	7.5	7.6	7.45
		7.3		7.6		7.3	
Cement Plant Fan							
	inlet Temp (°F)	772	768	762	760	768	763
		764		758		758	
	Fan current (amps)	114.9	115.9	117.1	121.1	116.2	117.3
		116.8		125.1		118.4	
	damper setting (%)	54.8	54.8	54.8	54.8	54.9	54.85
		54.8		54.8		54.8	
	O_2 (%)	4.06	4.19	4.74	4.64	3.97	4.14
		4.45		4.54		4.31	
	CO (ppm)	159.6	184.4	112.3	139.3	216.9	220.7
		209.1		166.2		224.6	
Pre-Heater							
	Exit gas Temp (°F)	797	798	788	784	790	785
		799		780		780	
	internal gas Temp (°F)	1518	1517	1517	1516.5	1521	1517
		1516		1516		1513	
	raw mill Temp (°F)	1340	1331	1330	1312	1325	1319.5
		1322		1294		1314	

Kiln Inlet

	#1	$\bar{x}$	#2	$\bar{x}$	#3	$\bar{x}$
Gas Temp (°F)	1610	1604.5	1613 ✓	1610	1626 ✓	1612
	1599 ✓		1607 ✓		1598 ✓	
Draft (in-H_2O)	0.58	0.67	0.70 ✓	0.73	0.67 ✓	0.74
	0.76 ✓		0.75 ✓		0.81 ✓	
O_2 (%)	1.12	0.91	1.54 ✓	1.51	0.87 ✓	1.035
	0.69 ✓		1.47 ✓		1.20 ✓	
combustibles (%)	0.03	0.035	0.06 ✓	0.05	0.06 ✓	0.04
	0.04 ✓		0.04 ✓		0.02 ✓	

Stack

	#1	$\bar{x}$	#2	$\bar{x}$	#3	$\bar{x}$
O_2 (%)	6.32 ✓	6.33 ✓	6.32 ✓	6.32	6.33 ✓	6.33
	6.33 ✓		6.32 ✓		6.33 ✓	
NO_x (ppm)	148.8	139.2	179.6 ✓	164.0	147.3 ✓	153.2
	129.6 ✓		148.4		159.1 ✓	
Opacity (%)	4.7	4.0	3.7 ✓	4.0	4.9 ✓	4.35
	3.3 ✓		4.2 ✓		3.8 ✓	
velocity head (stack test)						

9:00, 10:00, 11:00, 2:00, 4:00, 5:00

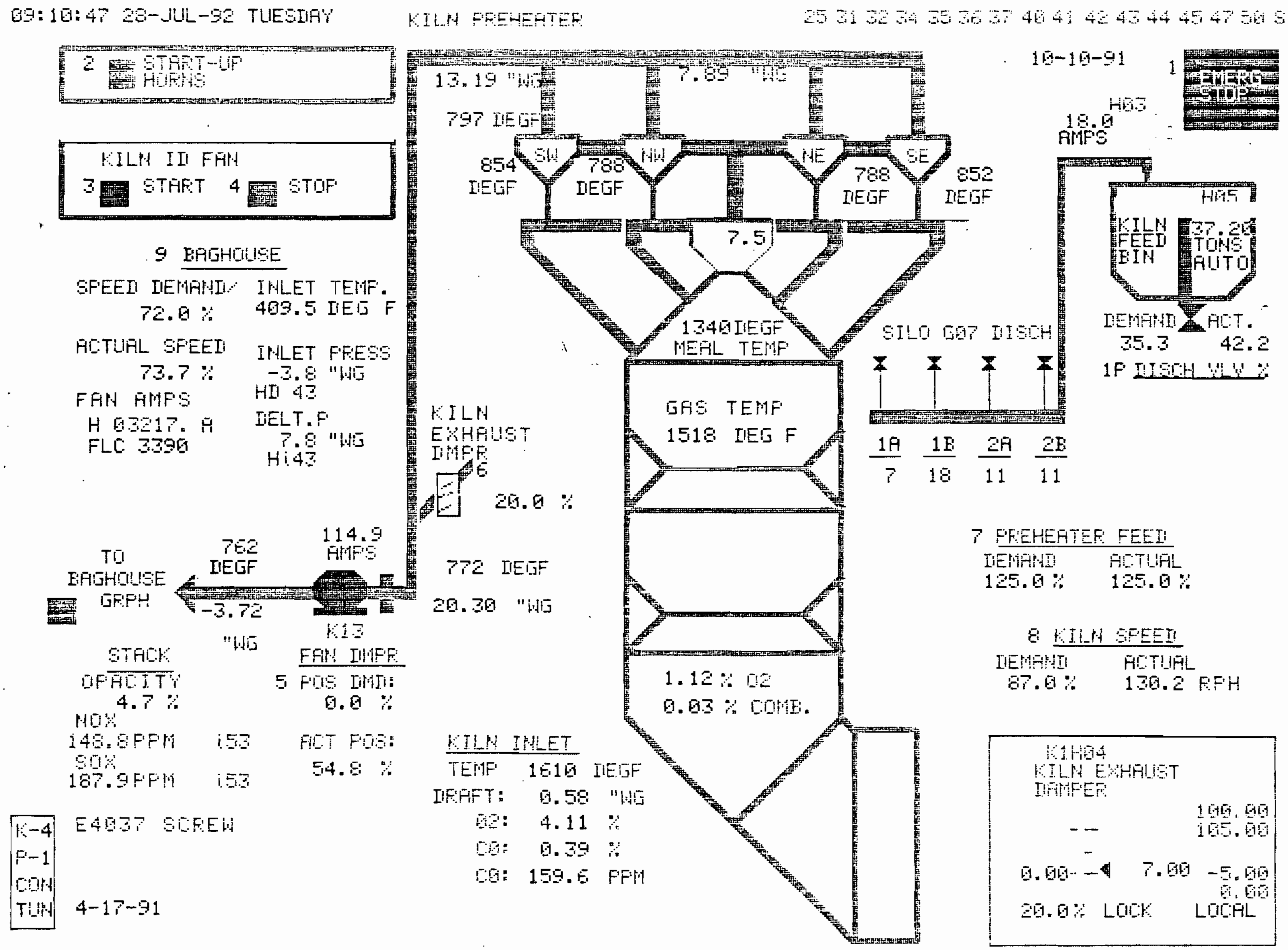
7-29-92

		Data @
#1 Run:	8:51 – 11:12 a.m.	(9, 10) a.m.
#2 Run:	12:28 – 2:47	(1, 2) pm
#3 Run:	4:00 – 6:17 pm.	(4, 5) pm

	#1	x̄	#2	x̄	#3	x̄
Lime Plant						
coal feed rate (lbs/hr)	27,000 / 29,000	28,000	26,000 / 27,000	26,500	27,000 / 27,000	27,000
limestone " " (TPH)	24.0 / 20.0	22.0	22.0 / 20.0	21.0	20.0 / 20.0	20.0
Power Plant						
coal feed rate (lbs/hr)	96,000 / 95,000	95,500	93,000 / 97,000	95,000	96,000 / 96,000	96,000
load (MW)	109 / 111	110	109.5 / 108.7	109.1	111.5 / 110.7	111.1
Cement Plant						
coal feed rate (TPH)	7.0✓ / 6.7✓	6.85✓	7.4✓ / 7.4✓	7.4	7.4✓ / 6.9✓	7.15
TDF " " (TPH)	1.33✓ / 1.33✓	1.33✓	1.33✓ / 1.33✓	1.33	1.33✓ / 1.33✓	1.33
kiln " " (TPH)	122✓ / 117✓	119.5✓	127✓ / 129✓	128	130✓ / 130✓	130
clinker prod. rate (TPH) (to be calc.)	75.6 / 74.0	74.8	77.2 / 77.7	77.45	78 / 78	78
Baghouse						
inlet Temp. (°F)	403.3✓ / 407.3✓	405.3✓	395.4✓ / 393.3✓	394.35	410.8✓ / 413.0✓	411.9
fan speed (%)	71✓ / 71✓	71✓	71✓ / 71✓	71	71✓ / 71✓	71
fan current (amps)	3140✓ / 3108✓	3124✓	3154 / 3179	3166.5	3104.0 / 3071.0	~~3005.55~~ 3087.5
ΔP (in-H_2O)	7.6✓ / 7.7✓	7.65✓	7.1✓ / 7.8✓	7.45	7.6✓ / 7.9✓	7.75
Cement Plant Fan						
inlet Temp. (°F)	752✓ / 755✓	753.5	773✓ / 759✓	766	757✓ / 765✓	761
fan current (amps)	115.4✓ / 113.3✓	114.35	118.6✓ / 118.6✓	118.6	118.7✓ / 115.6✓	117.15
damper setting (%)	54.8✓ / 54.8✓	54.8	54.8✓ / 54.8✓	54.8	54.8✓ / 54.9✓	54.85
O_2 (%)	3.50✓ / 3.71✓	3.605	4.40✓ / 4.20✓	4.30	3.87✓ / 4.15✓	4.01
CO (ppm)	439.1✓ / 310.4✓	374.75	263.0✓ / 219.0✓	241.0	298.2✓ / 306.0✓	302.1
Pre-Heater						
exit gas Temp (°F)	774✓ / 774✓	774	818✓ / 800✓	809	793✓ / 791✓	792
internal gas Temp (°F)	1514✓ / 1518✓	1516	1519✓ / 1519✓	1519	1519✓ / 1520✓	1519.5
raw mill Temp (°F)	1331✓ / 1250✓	1290.5	1392✓ / 1385✓	1388.5	1372✓ / 1390✓	1381

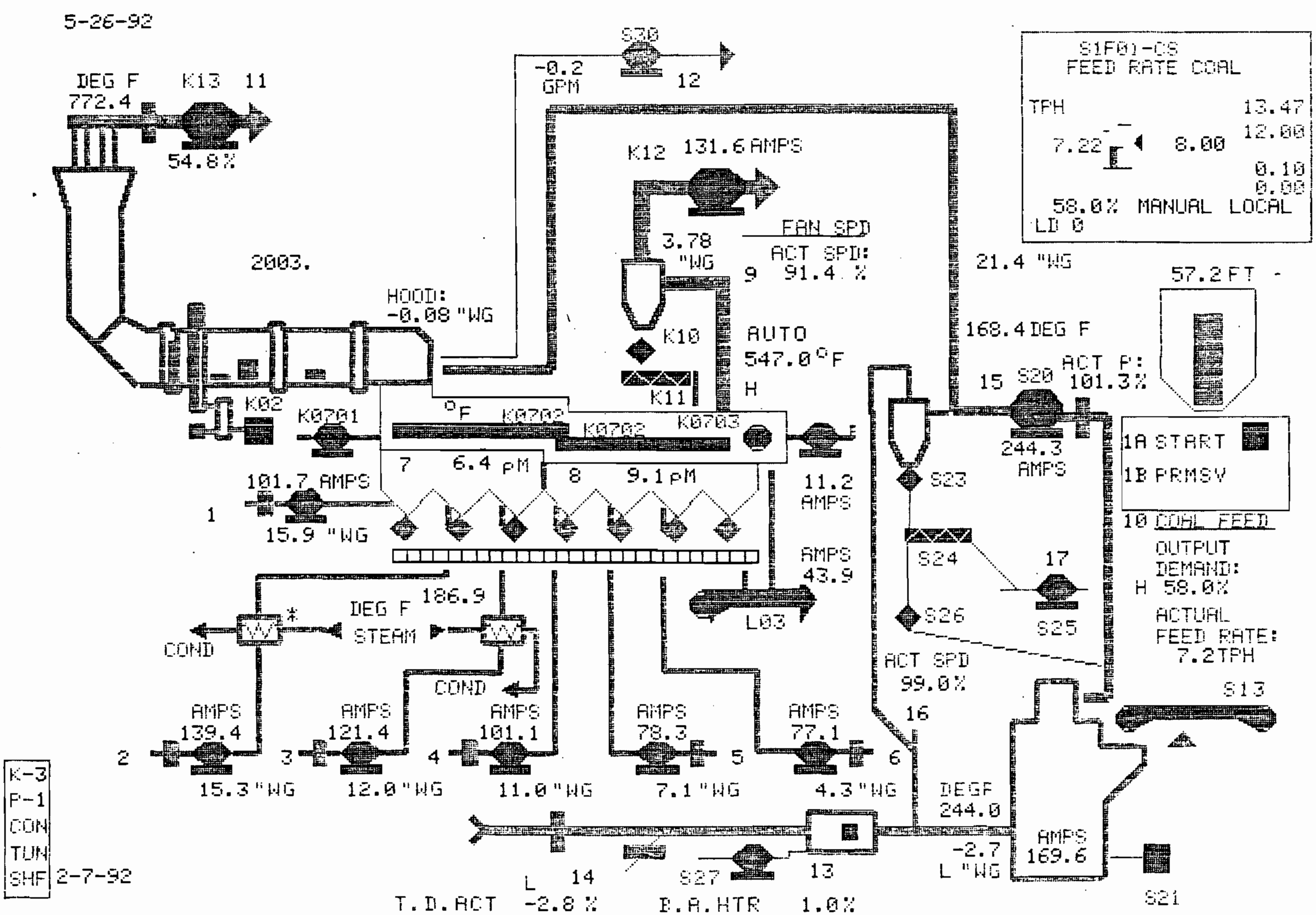
7-29-92
(Data cont.)

		#1	$\bar{x}$	#2	$\bar{x}$	#3	$\bar{x}$
Kiln Inlet	gas Temp (°F)	1694✓ 1599✓	1646.5	1603✓ 1605✓	1604	1639✓ 1598✓	1618.5
	draft (in. H_2O)	0.60✓ 0.48✓	0.54	0.79✓ 0.91✓	0.80	0.83✓ 0.88✓	0.855
	O_2 (%)	1.54✓ 1.52✓	1.53	1.31✓ 1.21✓	1.26	1.21✓ 1.25✓	1.23
	combustibles (%)	0.49✓ 0.33✓	0.41	0.35✓ 0.38✓	0.365	0.30✓ 0.26✓	0.28
Stack	O_2 (%)	6.32✓ 6.13✓	6.225	6.43✓ 6.07✓	6.25	6.08✓ 6.10✓	6.09
	NO_x (ppm)	193.0✓ 183.1✓	188.05	192.8✓ 150.5✓	171.65	168.6✓ 175.5✓	172.05
	Opacity (%)	2.7✓ 2.8✓	2.75	2.2✓ 2.7✓	2.45	4.0✓ 3.5✓	3.75
	velocity head (stack test)						



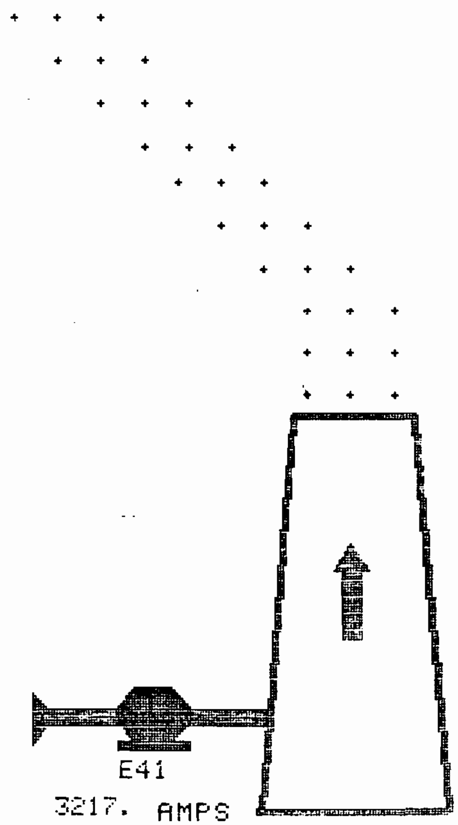
09:10:47 28-JUL-92 TUESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
13.19 "WG
7.89 "WG
797 DEGF
10-10-91
1 EMERG STOP
H03
18.0 AMPS
SW
NW
NE
SE
854 DEGF
788 DEGF
788 DEGF
852 DEGF
H05
KILN FEED BIN
37.20 TONS AUTO
7.5
9 BAGHOUSE
SPEED DEMAND
72.0 %
INLET TEMP.
409.5 DEG F
ACTUAL SPEED
73.7 %
INLET PRESS
-3.8 "WG
HD 43
FAN AMPS
H 03217. A
FLC 3390
DELT.P
7.8 "WG
Hi43
1340DEGF MEAL TEMP
SILO G07 DISCH
DEMAND
35.3
ACT.
42.2
1P DISCH VLV %
GAS TEMP
1518 DEG F
KILN EXHAUST DMPR
6
20.0 %
1A
1B
2A
2B
7
18
11
11
7 PREHEATER FEED
DEMAND
125.0 %
ACTUAL
125.0 %
TO BAGHOUSE GRPH
762 DEGF
114.9 AMPS
772 DEGF
20.30 "WG
-3.72 "WG
K13
FAN DMPR
5 POS DMD:
0.0 %
ACT POS:
54.8 %
STACK OPACITY
4.7 %
NOX
148.8PPM i53
SOX
187.9PPM i53
8 KILN SPEED
DEMAND
87.0 %
ACTUAL
130.2 RPH
1.12 % O2
0.03 % COMB.
KILN INLET
TEMP 1610 DEGF
DRAFT: 0.58 "WG
O2: 4.11 %
CO: 0.39 %
CO: 159.6 PPM
K1H04
KILN EXHAUST DAMPER
100.00
105.00
0.00
7.00
-5.00
0.00
20.0%
LOCK
LOCAL
K-4
P-1
CON
TUN
E4037 SCREW
4-17-91

09:10:51 28-JUL-92 TUESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



K-3
P-1
CON
TUN
SHF 2-7-92

09:11:16 28-JUL-92 TUESDAY MAIN STACK 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	4.7 %		4.2 %	10.0 %
NOx:	148.8 PPM	420.2 LB/HR	434.9 LB/HR	1205. LB/HR
SO2:	187.9 PPM	698.6 LB/HR	591.6 LB/HR	781.0 LB/HR

O2: 6.32 %

TEMP: 406.2 °F

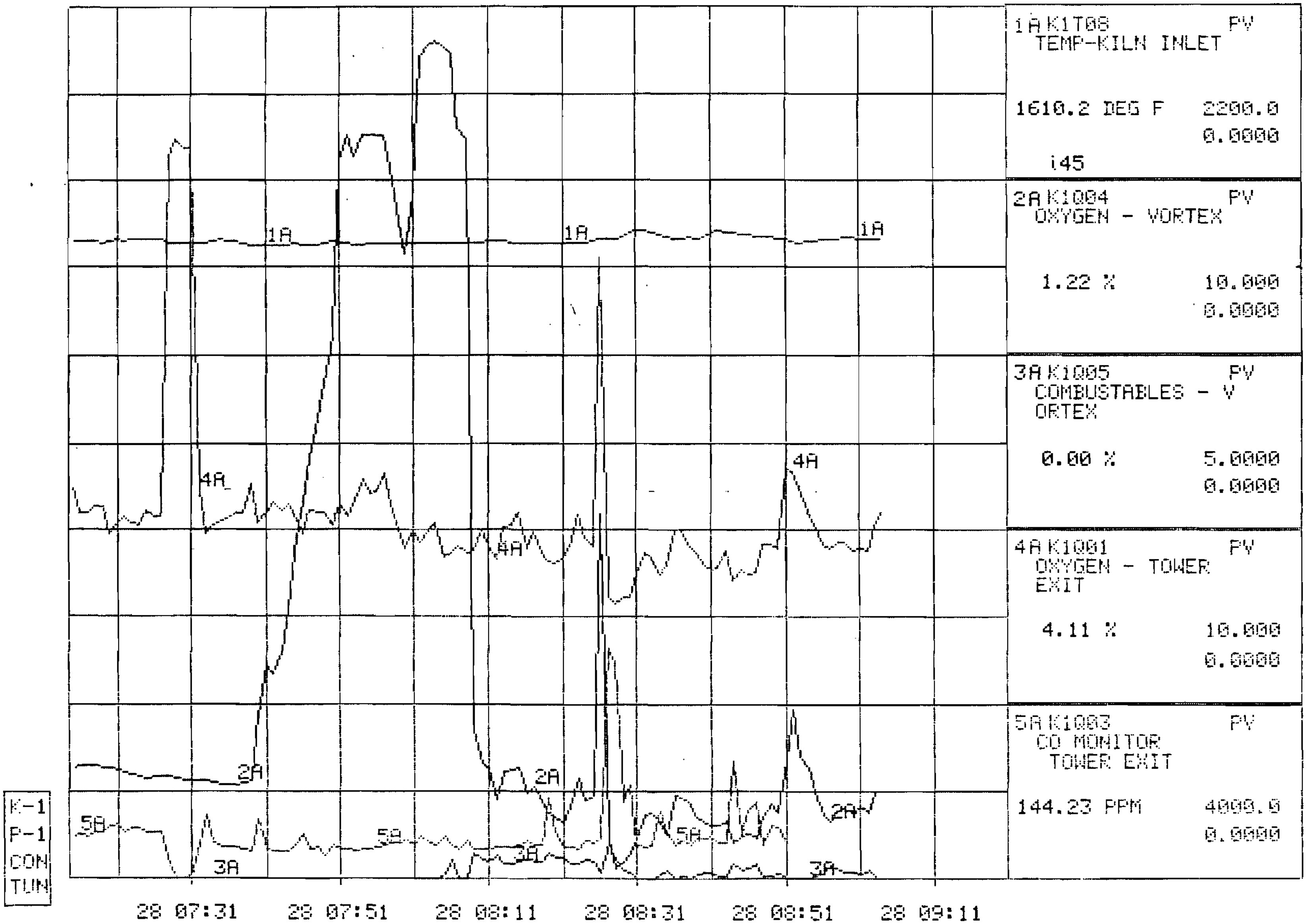
E1T19 155 °F

E1T20 122 °F

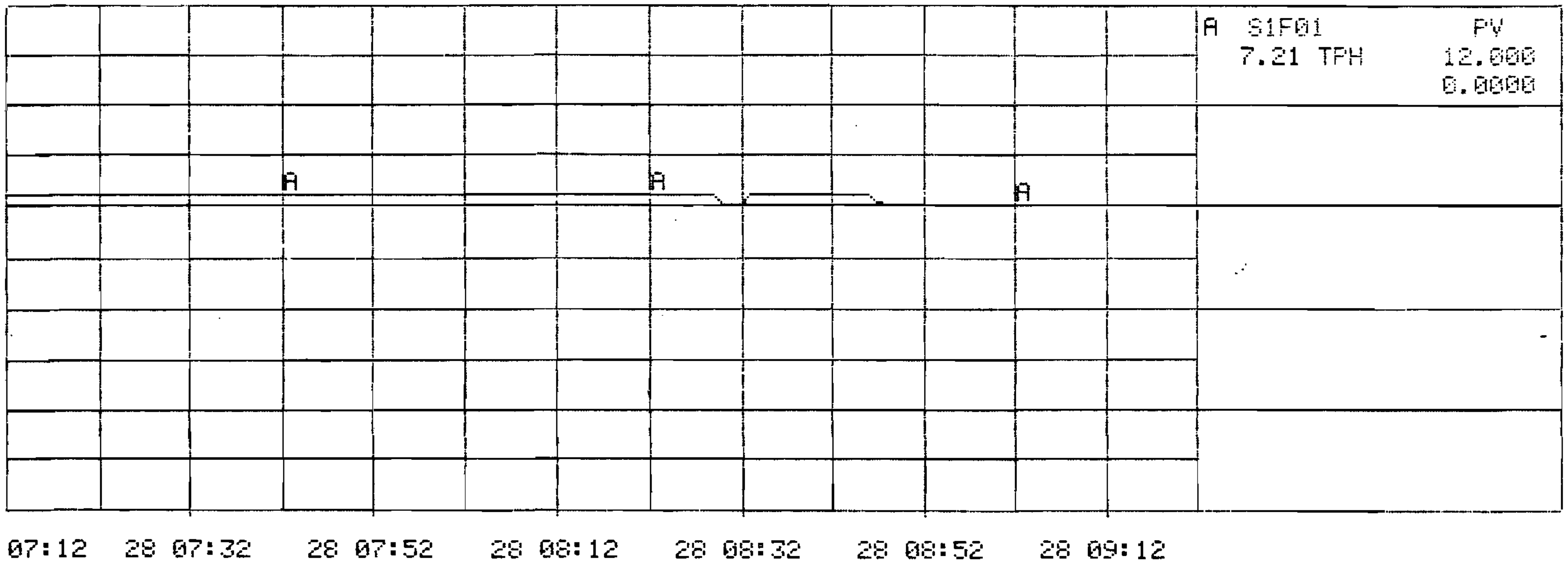
K-2
P-1
CON
TUN
SHF

5-14-92

09:11:28 28-JUL-92 TUESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



09:12:19 28-JUL-92 TUESDAY CM GRINDING CONTROL 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT

110.61 POUNDS

S1F02-T1
TOTAL NUMBER
OF TIRES

4199.0

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT

1784.6 TONS

B S1F01-CS
FEED RATE COAL

TPH 13.47

12.00

7.21 8.00

0.10
0.00
%

58.0

MANUAL LOCAL

LD 0

D S1F02-S
TIRE FEED SWITCH

RUN ■

STOP

S1F02-T2
TOTAL TIRE
WEIGHT

H 0 238164 POUNDS

S1I01
COAL MILL DRIVE

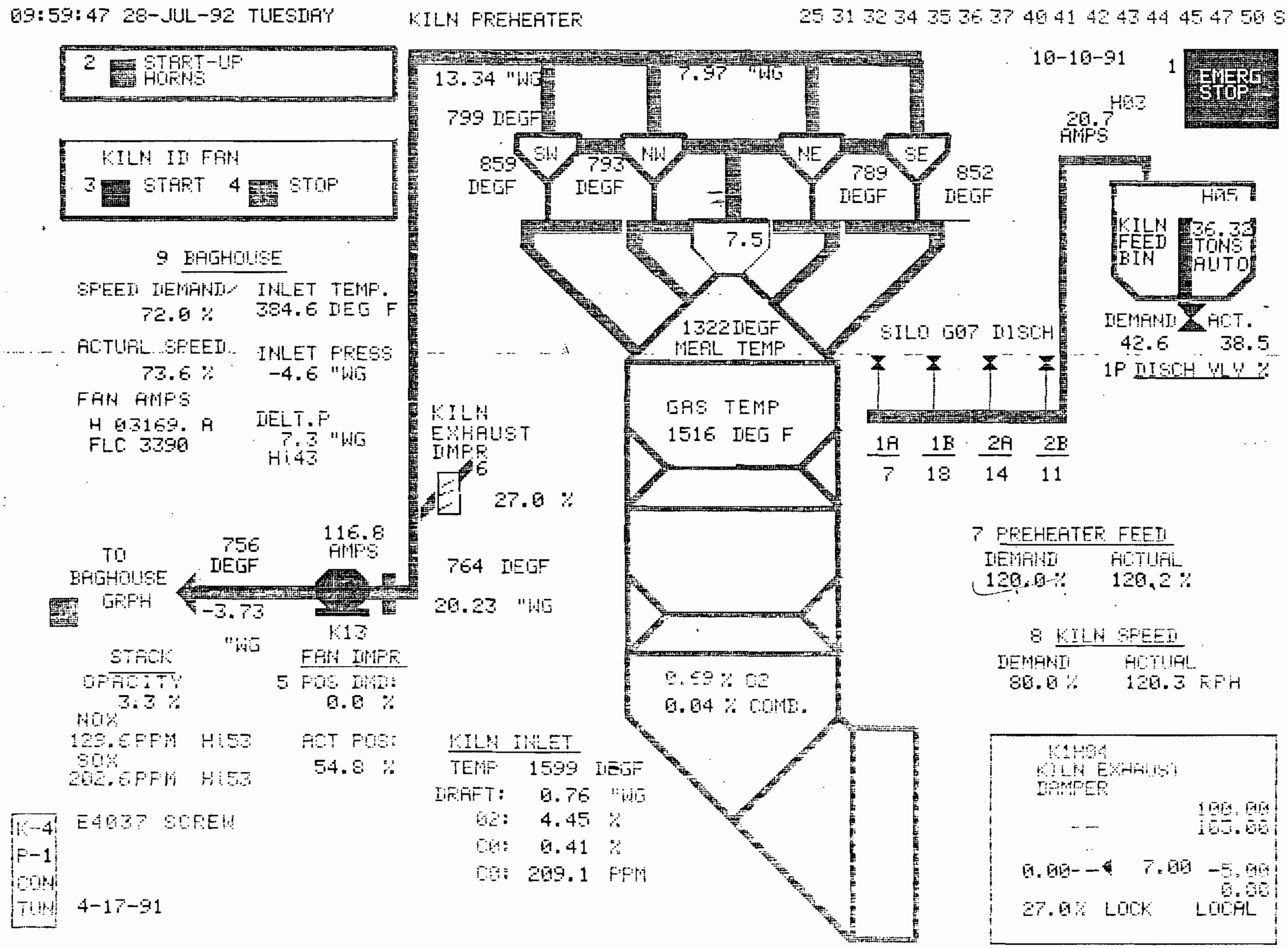
168.68 AMPS

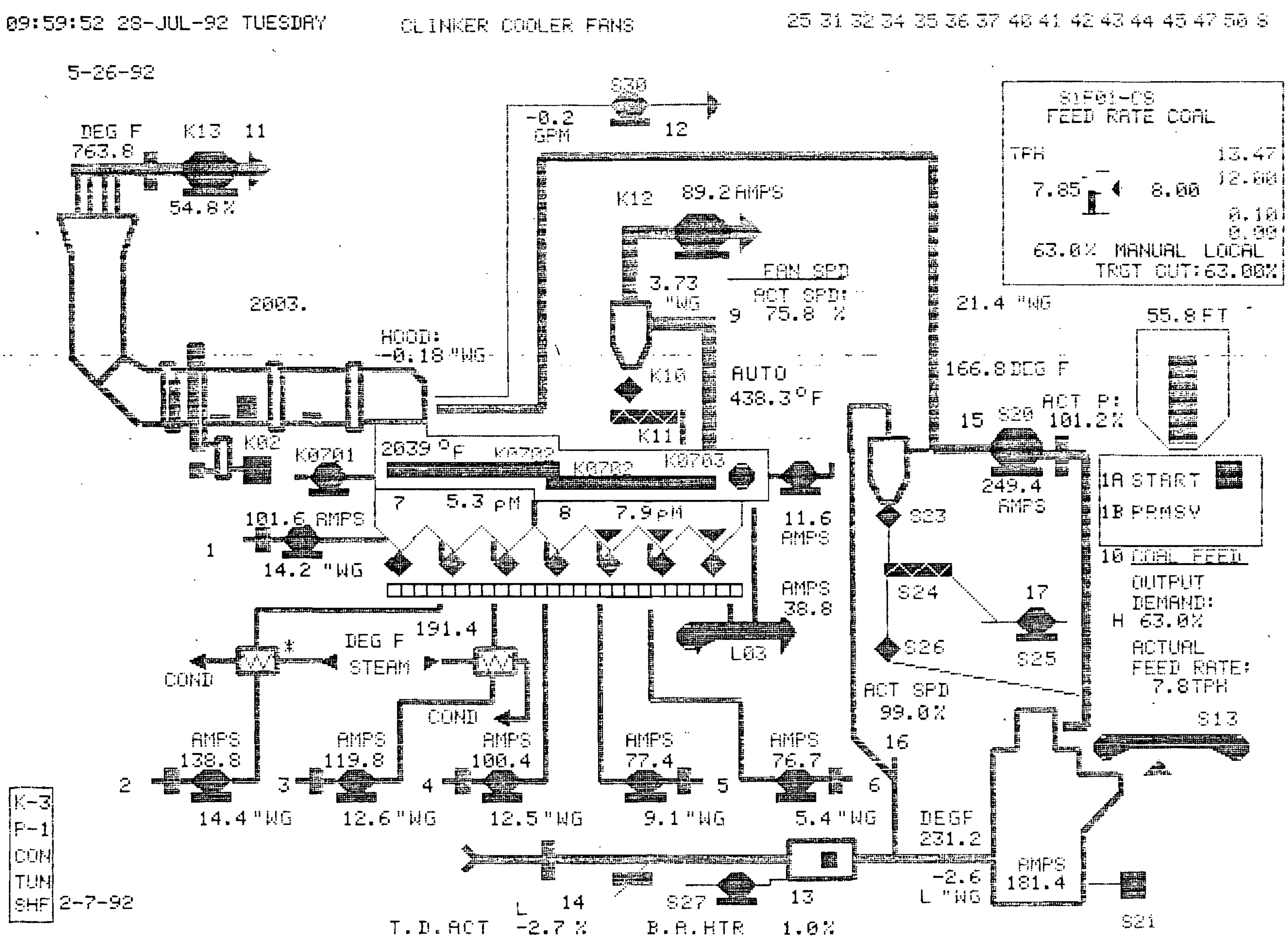
L 0

K-2
P-1
CON
TUN
SHF

10-10-91

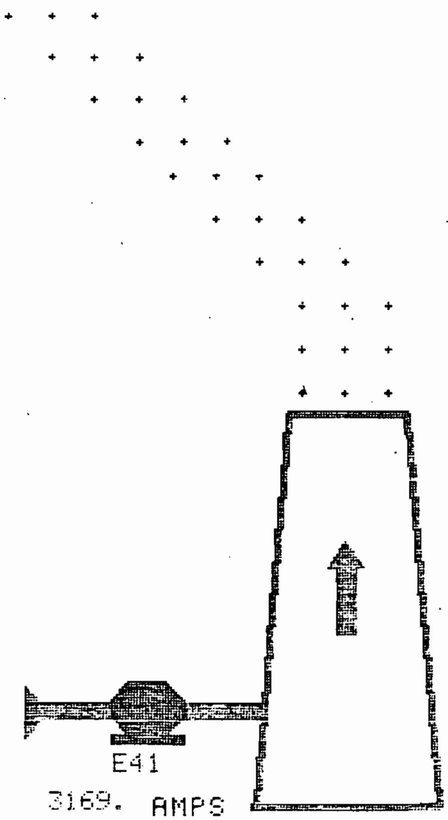
BEST AVAILABLE COPY




09:59:52 28-JUL-92 TUESDAY
CLINKER COOLER FANS
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
5-26-92
DEG F
763.8
K13
11
54.8%
S30
-0.2
GPM
12
K12
89.2 AMPS
3.73
"WG
FAN SPD
ACT SPD:
9 75.8 %
21.4 "WG
2003.
HOOD:
-0.18 "WG
K10
AUTO
438.3 °F
K11
166.8 DEG F
15
S20
ACT P:
101.2%
249.4
AMPS
55.8 FT
S1F01-CS
FEED RATE COAL
TPH
13.47
12.00
7.85
8.00
0.10
0.09
63.0% MANUAL LOCAL
TRGT OUT:63.00%
1A START
1B PRMSV
10 COAL FEED
OUTPUT
DEMAND:
H 63.0%
ACTUAL
FEED RATE:
7.8TPH
K02
K0701
2039 °F
K0702
K0703
7
5.3 pM
8
7.9 pM
11.6
AMPS
101.6 AMPS
1
14.2 "WG
AMPS
38.8
L03
S23
S24
17
S26
S25
ACT SPD
99.0%
16
S13
191.4
DEG F
STEAM
COND
COND
AMPS
138.8
AMPS
119.8
AMPS
100.4
AMPS
77.4
AMPS
76.7
2
3
4
5
6
14.4 "WG
12.6 "WG
12.5 "WG
9.1 "WG
5.4 "WG
DEGF
231.2
-2.6
L "WG
AMPS
181.4
S21
14
S27
13
L
T.D.ACT -2.7 %
B.A.HTR 1.0%
K-3
P-1
CON
TUN
SHF
2-7-92

09:59:50 28-JUL-92 TUESDAY MAIN STACK

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	3.3 %		3.5 %	10.0 %
NOx:	129.6 PPM	374.1 LB/HR	424.9 LB/HR	1205. LB/HR
SO2:	202.6 PPM	763.8 LB/HR	630.7 LB/HR	781.0 LB/HR

O2: 6.33 %

TEMP: 384.6 °F

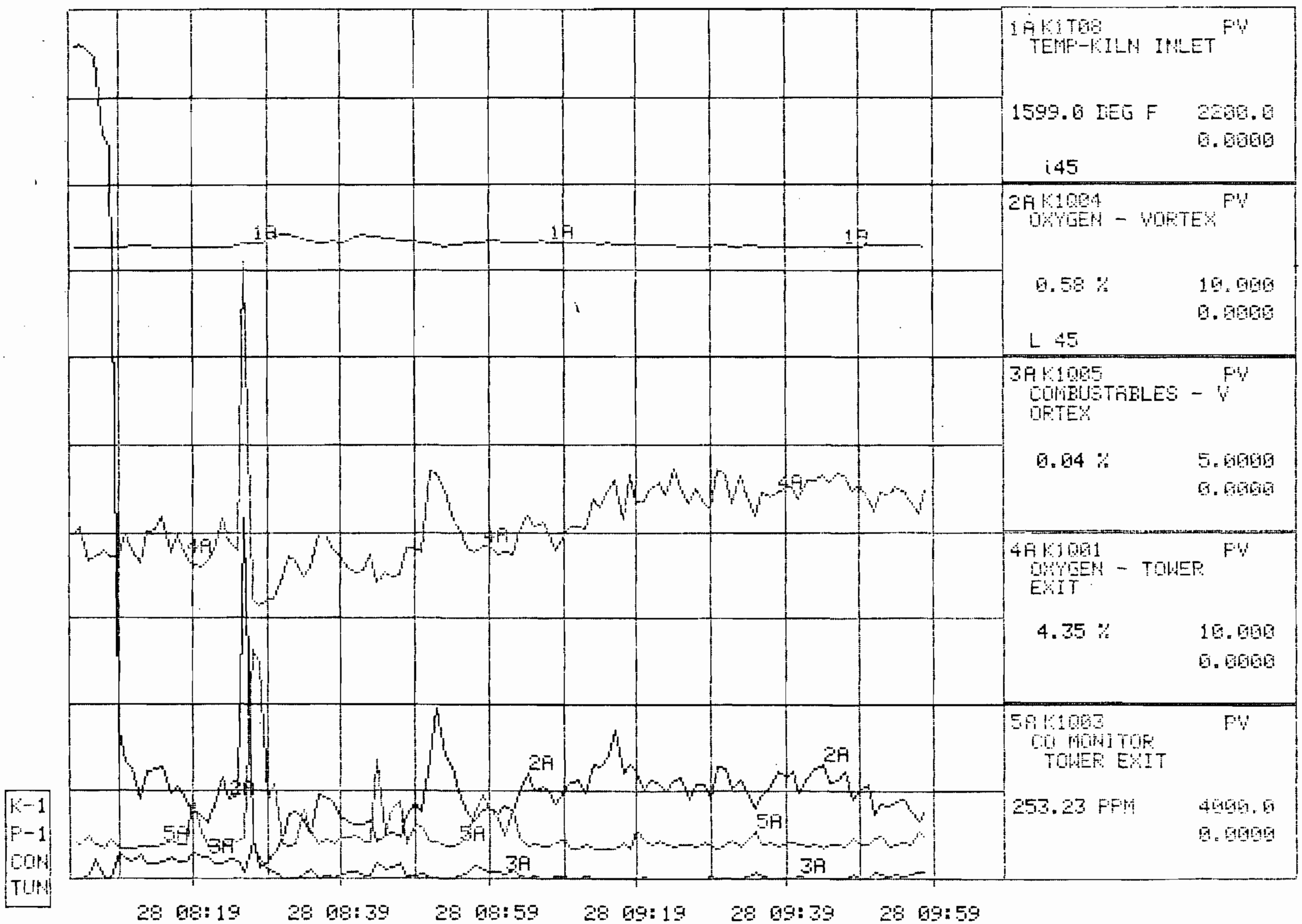
E1T19 156 °F

E1T20 121 °F

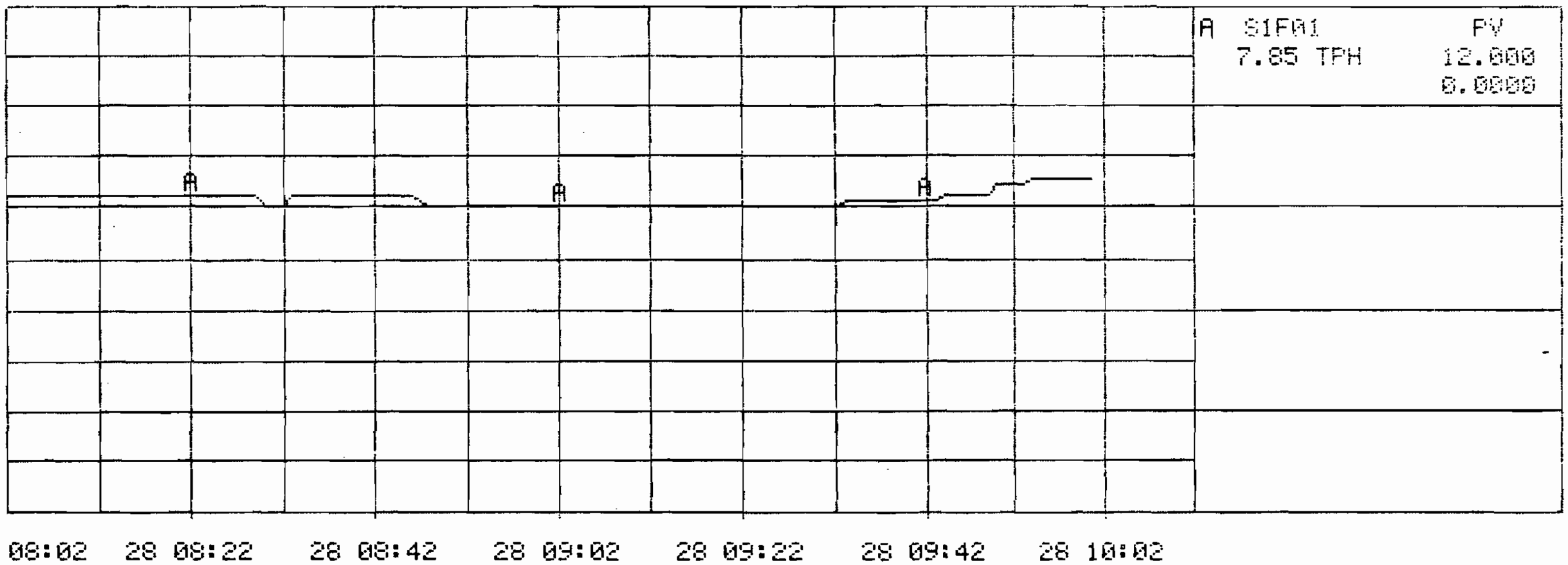
K-2
P-1
CON
TUN
SHF

5-14-92

09:59:54 28-JUL-92 TUESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



10:02:45 28-JUL-92 TUESDAY CM GRINDING CONTROL 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT
121.61 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT
1790.9 TONS

B S1F01-CS
FEED RATE COAL

TPH 13.47
12.00
7.84 8.00
0.10
0.00
%
63.0
MANUAL LOCAL

S1F02-T1
TOTAL NUMBER
OF TIRES
4218.0

D S1F02-S
TIRE FEED SWITCH

RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT
H 0 240424 POUNDS

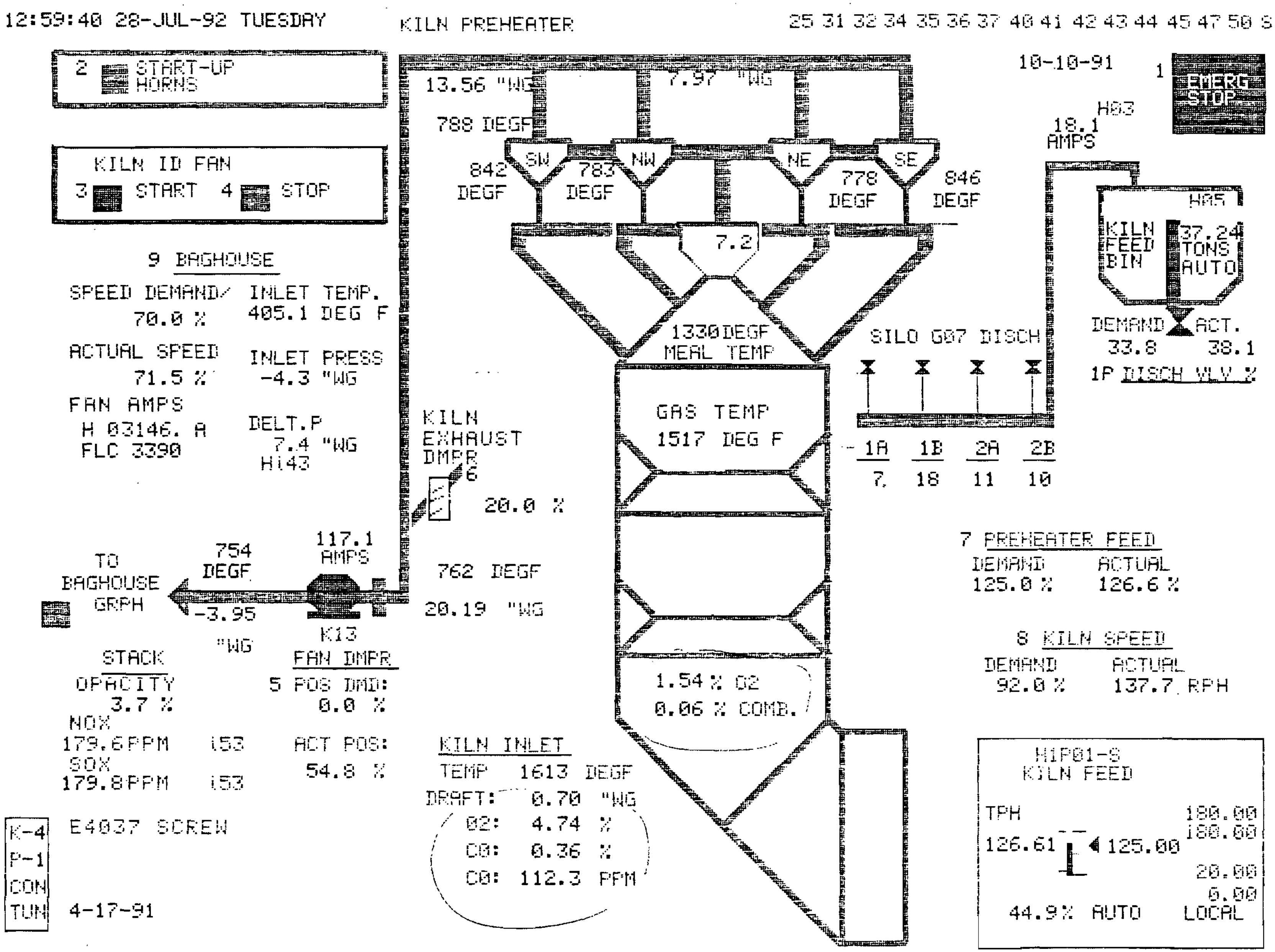
S1I01
COAL MILL DRIVE

177.69 AMPS

L 0

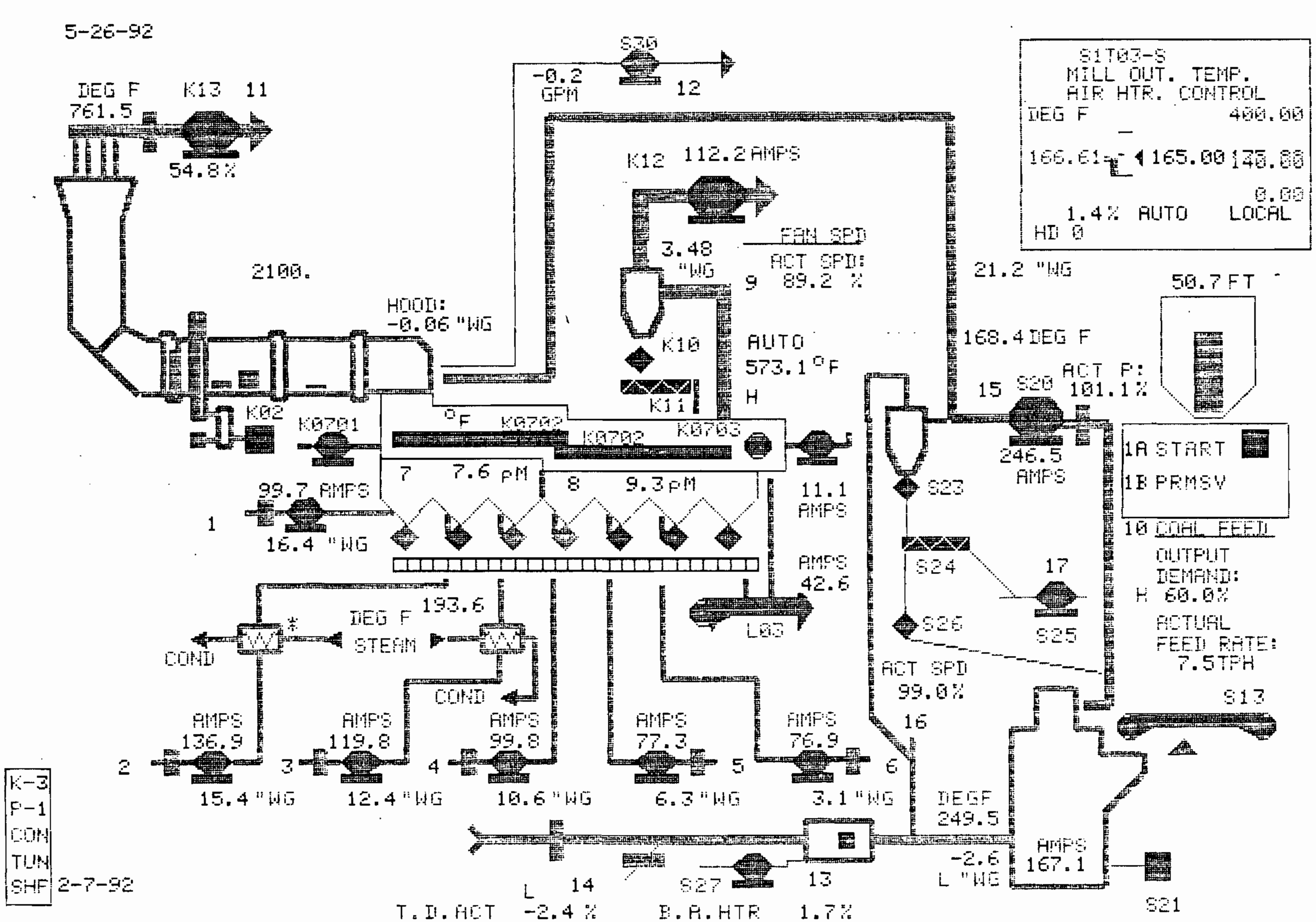
K-2
P-1
CON
TUN
SHF

10-10-91



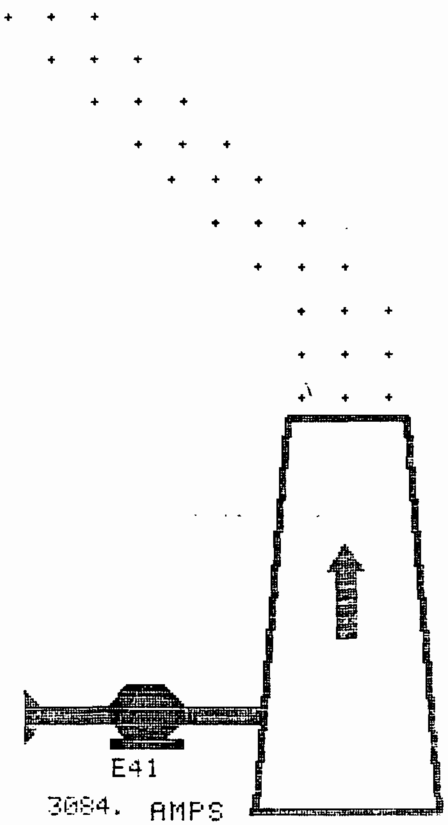
12:59:40 28-JUL-92 TUESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
9 BAGHOUSE
SPEED DEMAND/
70.0 %
ACTUAL SPEED
71.5 %
FAN AMPS
H 03146. A
FLC 3390
INLET TEMP.
405.1 DEG F
INLET PRESS
-4.3 "WG
DELT.P
7.4 "WG
Hi43
13.56 "WG
7.97 "WG
788 DEGF
SW
NW
NE
SE
842 DEGF
783 DEGF
778 DEGF
846 DEGF
7.2
1330 DEGF MEAL TEMP
GAS TEMP
1517 DEG F
1.54 % O2
0.06 % COMB.
10-10-91
1 EMERG STOP
H03
18.1 AMPS
H05
KILN FEED BIN
37.24 TONS AUTO
DEMAND
33.8
ACT.
38.1
1P DISCH VLV %
SILO G07 DISCH
1A 1B 2A 2B
7. 18 11 10
KILN EXHAUST DMPR
6
20.0 %
TO BAGHOUSE GRPH
754 DEGF
-3.95 "WG
117.1 AMPS
K13
FAN DMPR
5 POS DMD:
0.0 %
ACT POS:
54.8 %
762 DEGF
20.19 "WG
STACK OPACITY
3.7 %
NOX
179.6PPM i53
SOX
179.8PPM i53
KILN INLET
TEMP 1613 DEGF
DRAFT: 0.70 "WG
O2: 4.74 %
CO: 0.36 %
CO: 112.3 PPM
7 PREHEATER FEED
DEMAND 125.0 %
ACTUAL 126.6 %
8 KILN SPEED
DEMAND 92.0 %
ACTUAL 137.7 RPH
H1P01-S
KILN FEED
TPH
126.61
125.00
180.00
180.00
20.00
0.00
44.9% AUTO LOCAL
K-4
P-1
CON
TUN
E4037 SCREEN
4-17-91

12:59:42 28-JUL-92 TUESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



12:59:45 28-JUL-92 TUESDAY MAIN STACK

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	3.7 %		3.7 %	10.0 %
NOx:	179.6 PPM	524.8 LB/HR	472.8 LB/HR	1205. LB/HR
SO2:	179.8 PPM	692.7 LB/HR	660.4 LB/HR	781.0 LB/HR

O2: 6.32 %

TEMP: 405.0 °F

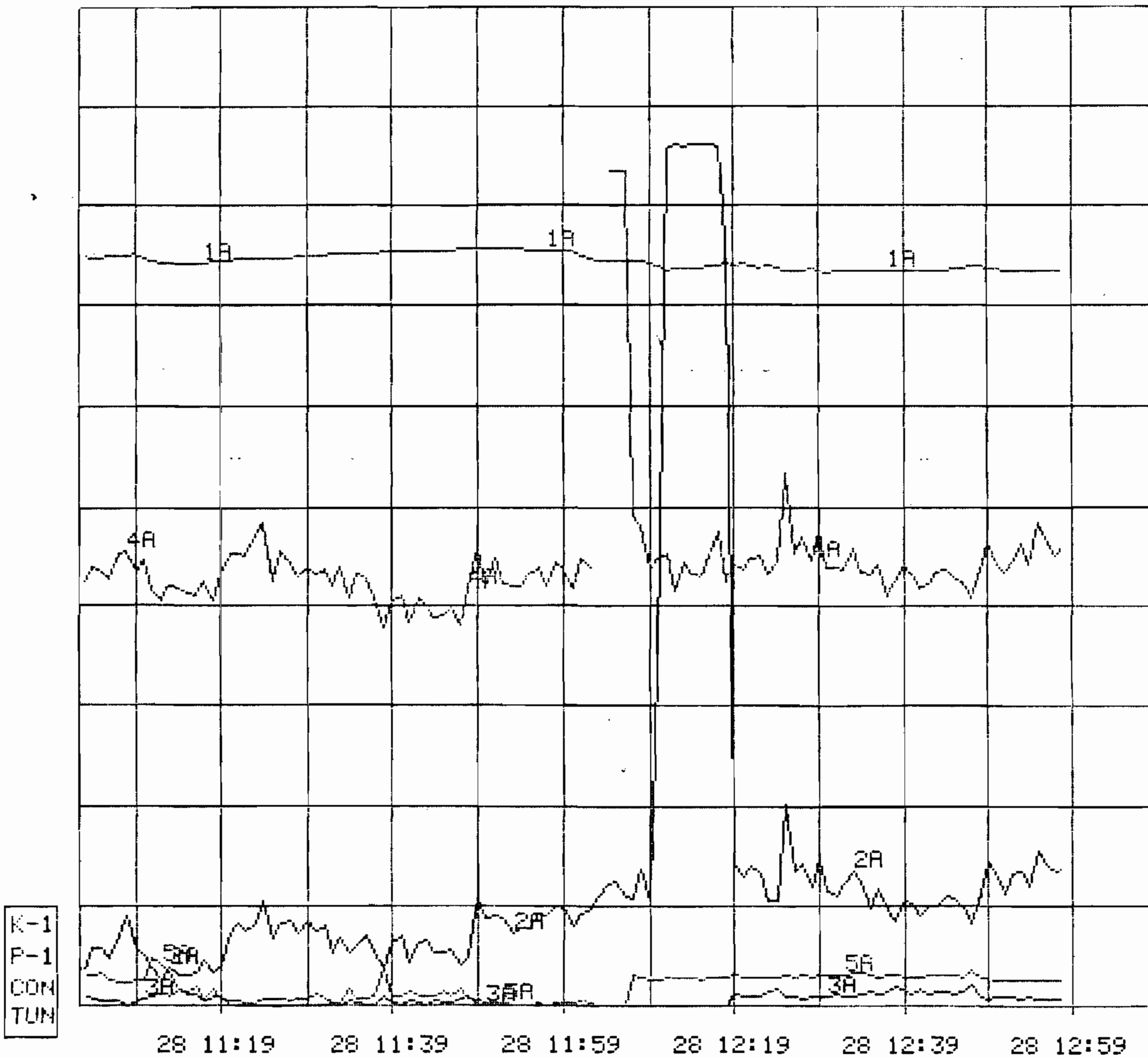
E1T19 156 °F

E1T20 121 °F

K-2
P-1
CON
TUN
SHF

5-14-92

12:59:47 28-JUL-92 TUESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



1A K1T08 PV
TEMP-KILN INLET
1613.2 DEG F 2200.0
0.0000
i45

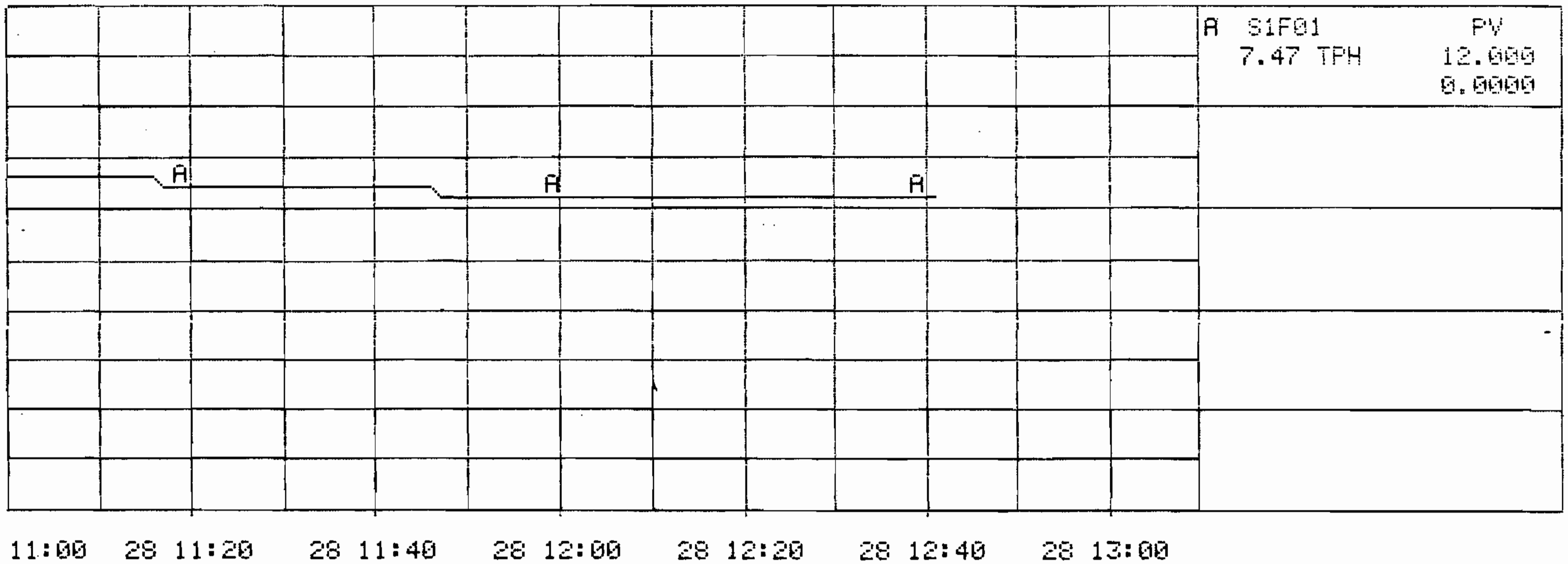
2A K1Q04 PV
OXYGEN - VORTEX
1.54 % 10.000
0.0000

3A K1Q05 PV
COMBUSTABLES - V
ORTEX
0.06 % 5.0000
0.0000

4A K1Q01 PV
OXYGEN - TOWER
EXIT
4.74 % 10.000
0.0000

5A K1Q03 PV
CO MONITOR
TOWER EXIT
111.20 PPM 4000.0
0.0000

13:00:55 28-JUL-92 TUESDAY CM GRINDING CONTROL 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE
50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT
118.79 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT
1806.6 TONS

B S1F01-CS
FEED RATE COAL
TPH 13.47
12.00
7.47 8.00
0.10
0.00
1%
60.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES
4291.0

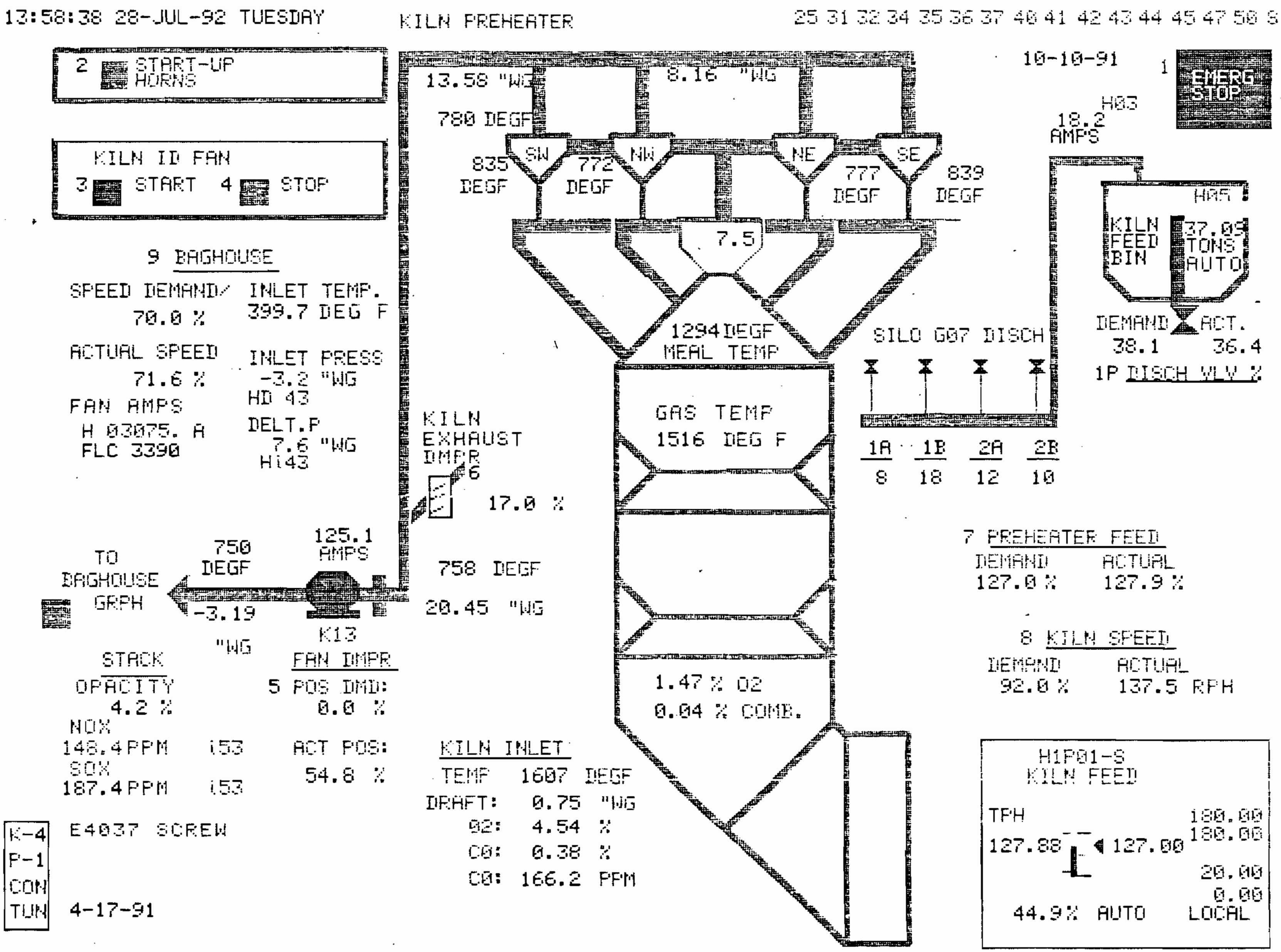
D S1F02-S
TIRE FEED SWITCH
RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT
H 0 245720 POUNDS

S1I01
COAL MILL DRIVE
165.05 AMPS
L 0

K-2
P-1
CON
TUN
SHF

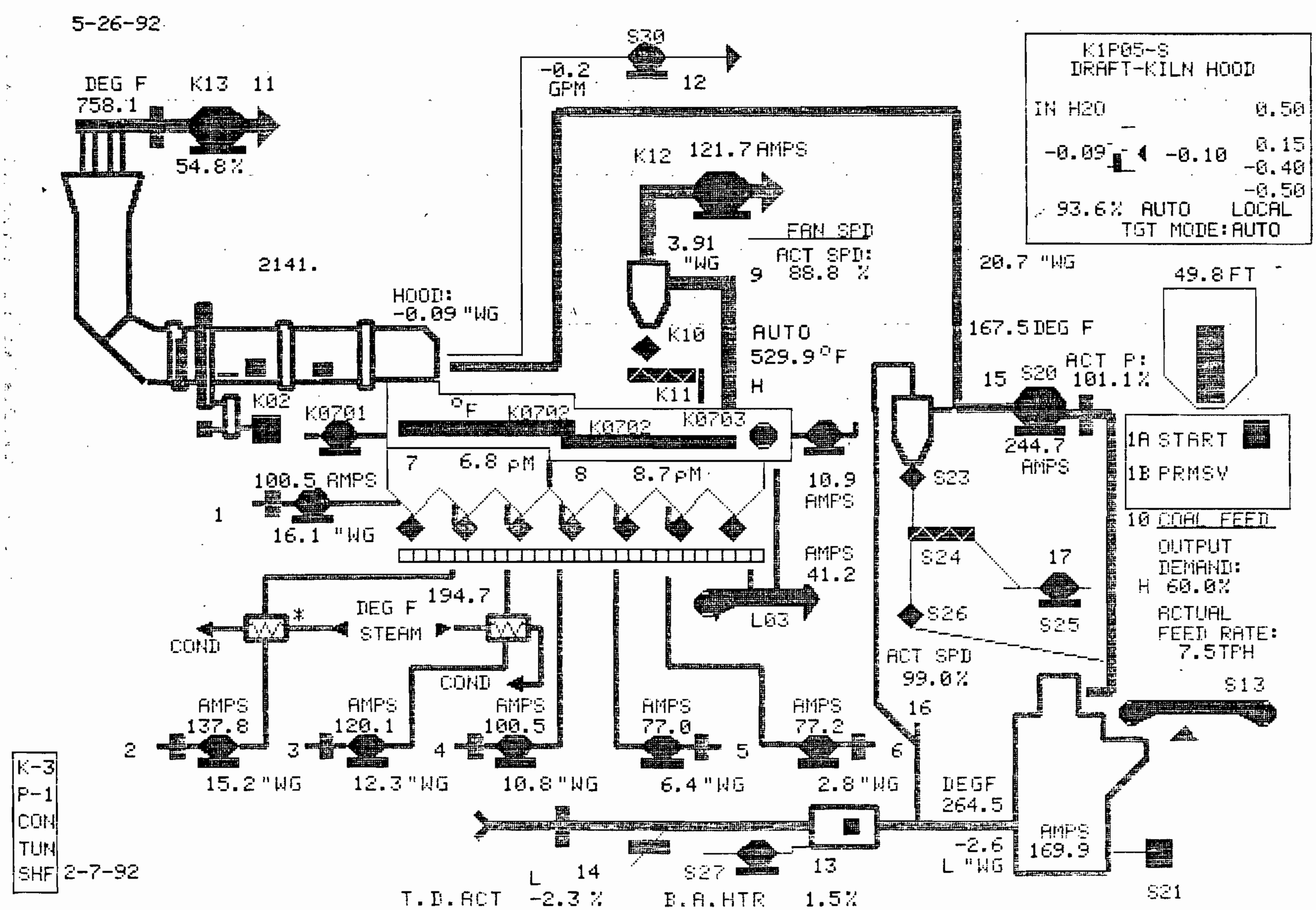
10-10-91



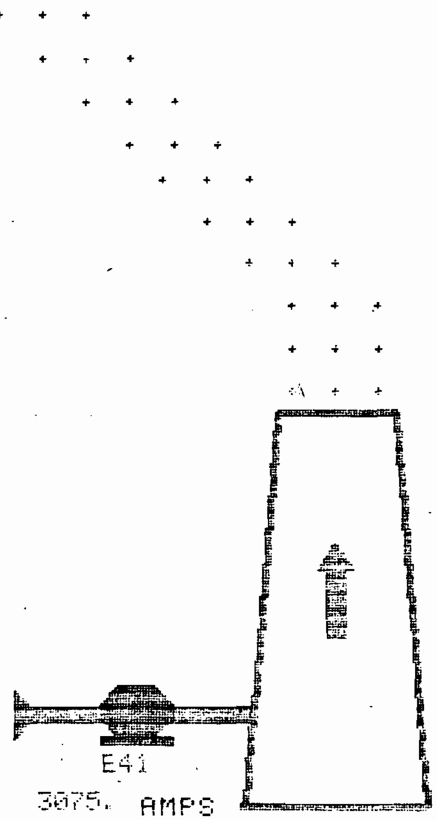
13:58:38 28-JUL-92 TUESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
9 BAGHOUSE
SPEED DEMAND/
70.0 %
ACTUAL SPEED
71.6 %
FAN AMPS
H 03075. A
FLC 3390
INLET TEMP.
399.7 DEG F
INLET PRESS
-3.2 "WG
HD 43
DELT.P
7.6 "WG
Hi43
13.58 "WG
8.16 "WG
780 DEGF
835 DEGF
SW
772 DEGF
NW
NE
777 DEGF
SE
839 DEGF
7.5
1294 DEGF
MEAL TEMP
GAS TEMP
1516 DEG F
1.47 % O2
0.04 % COMB.
10-10-91
1
EMERG STOP
H03
18.2 AMPS
H05
KILN FEED BIN
37.09 TONS AUTO
DEMAND
38.1
ACT.
36.4
1P DISCH VLV %
SILO G07 DISCH
1A 1B 2A 2B
8 18 12 10
KILN EXHAUST DMPR
6
17.0 %
TO BAGHOUSE GRPH
750 DEGF
125.1 AMPS
758 DEGF
20.45 "WG
-3.19 "WG
K13
FAN DMPR
5 POS DMD:
0.0 %
ACT POS:
54.8 %
STACK OPACITY
4.2 %
NOX
148.4 PPM i53
SOX
187.4 PPM i53
KILN INLET
TEMP 1607 DEGF
DRAFT: 0.75 "WG
O2: 4.54 %
CO: 0.38 %
CO: 166.2 PPM
7 PREHEATER FEED
DEMAND
127.0 %
ACTUAL
127.9 %
8 KILN SPEED
DEMAND
92.0 %
ACTUAL
137.5 RPH
H1P01-S
KILN FEED
TPH
127.88
127.00
180.00
180.00
20.00
0.00
44.9% AUTO LOCAL
K-4
P-1
CON
TUN
E4037 SCREW
4-17-91

13:58:41 28-JUL-92 TUESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S

5-26-92



13:58:43 28-JUL-92 TUESDAY MAIN STACK 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



E1T19 156 °F

E1T20 121 °F

	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	4.2 %		4.4 %	10.0 %
NOx:	148.4 PPM	421.4 LB/HR	517.3 LB/HR	1205. LB/HR
SO2:	187.4 PPM	713.6 LB/HR	656.2 LB/HR	781.0 LB/HR

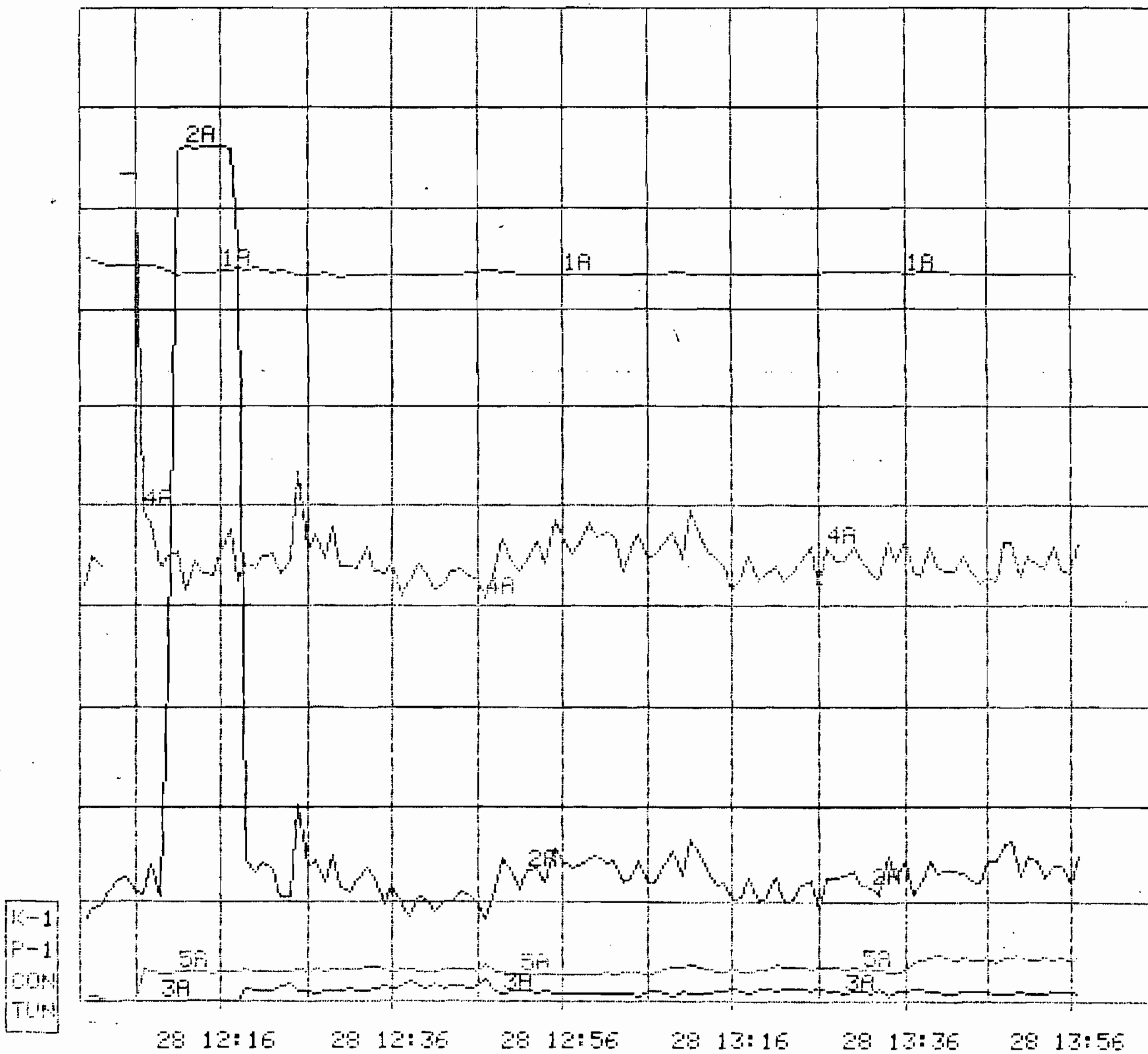
O2: 6.32 %

TEMP: 399.7 °F

K-2
P-1
CON
TUN
SHF

5-14-92

13:58:45 28-JUL-92 TUESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



1A K1T08 PV
TEMP-KILN INLET
1606.9 DEG F 2200.0
0.0000
145

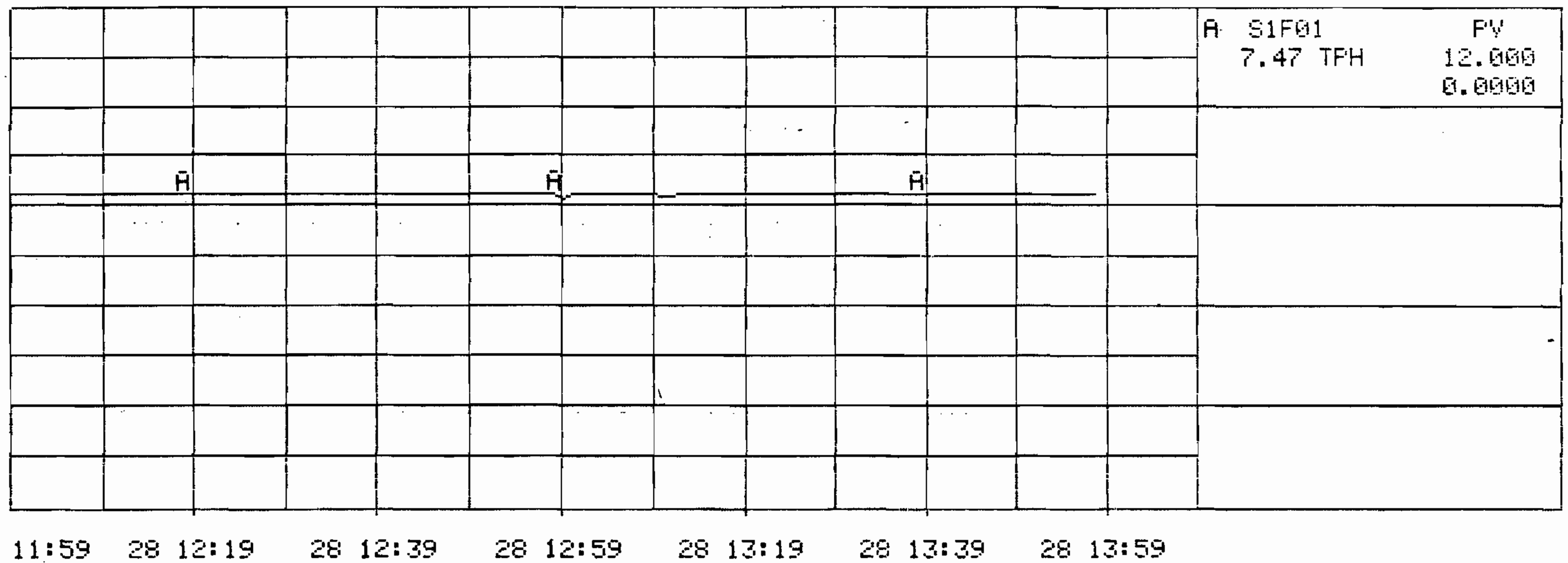
2A K1004 PV
OXYGEN - VORTEX
1.47 % 10.000
0.0000

3A K1005 PV
COMBUSTABLES - V
ORTEX
0.04 % 5.0000
0.0000

4A K1001 PV
OXYGEN - TOWER
EXIT
4.54 % 10.000
0.0000

5A K1003 PV
CO MONITOR
TOWER EXIT
177.26 PPM 4000.0
0.0000

13:59:58 28-JUL-92 TUESDAY   CM GRINDING CONTROL   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT

90.60 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT

1821.0 TONS

B S1F01-CS
FEED RATE COAL

TPH 13.47
12.00
7.47 8.00
0.10
0.00
1%
60.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES

4317.0

D S1F02-S
TIRE FEED SWITCH

RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT

H 0 250792 POUNDS

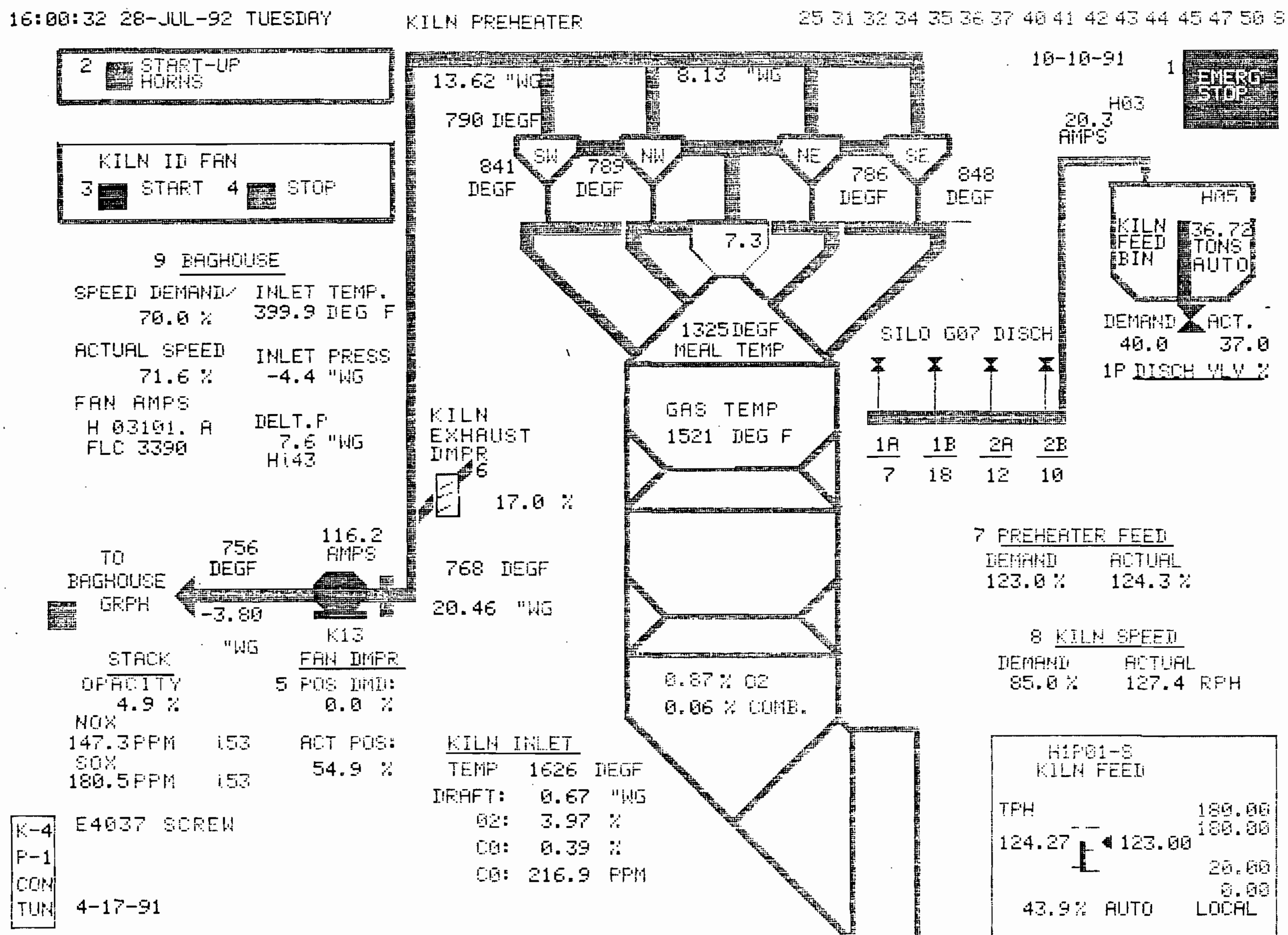
S1I01
COAL MILL DRIVE

166.37 AMPS

L 0

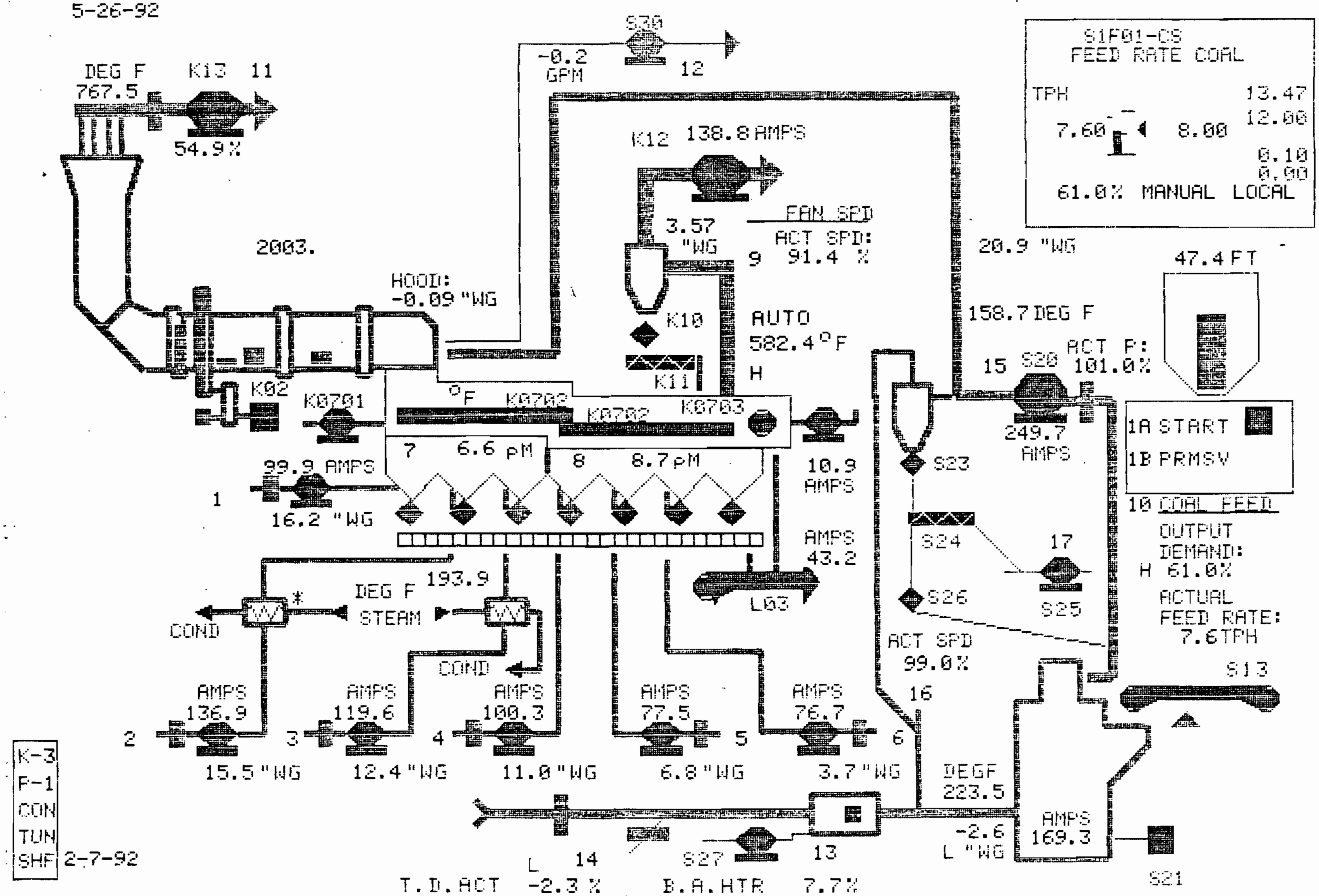
K-2
P-1
CON
TUN
SHF

10-10-91

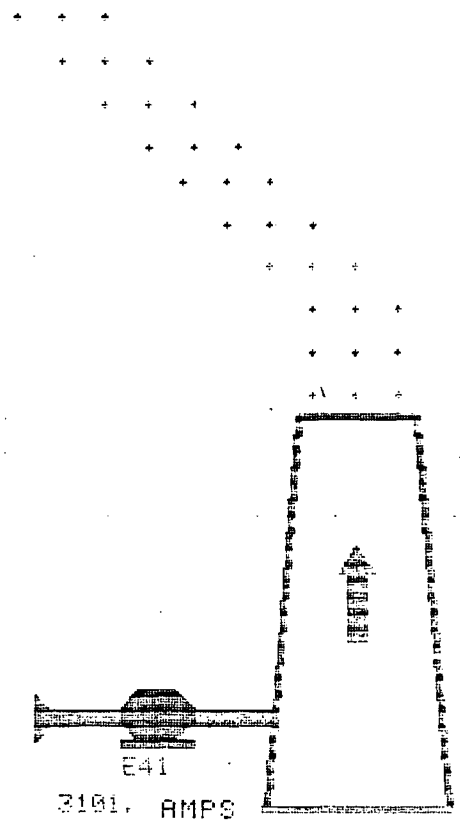

16:00:32 28-JUL-92 TUESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
10-10-91
1 EMERG STOP
13.62 "WG
8.13 "WG
790 DEGF
SW
NW
NE
SE
841 DEGF
789 DEGF
786 DEGF
848 DEGF
7.3
H03
20.3 AMPS
HA5
KILN FEED BIN
36.72 TONS AUTO
DEMAND
ACT.
40.0
37.0
1P DISCH VLV %
9 BAGHOUSE
SPEED DEMAND
70.0 %
INLET TEMP.
399.9 DEG F
ACTUAL SPEED
71.6 %
INLET PRESS
-4.4 "WG
FAN AMPS
H 03101. A
FLC 3390
DELT.P
7.6 "WG
H143
1325 DEGF MEAL TEMP
SILO G07 DISCH
GAS TEMP
1521 DEG F
1A 1B 2A 2B
7 18 12 10
KILN EXHAUST DMPR
6
17.0 %
TO BAGHOUSE
GRPH
756 DEGF
116.2 AMPS
768 DEGF
-3.80 "WG
20.46 "WG
K13
FAN DMPR
5 POS DMD:
0.0 %
ACT POS:
54.9 %
STACK OPACITY
4.9 %
NOX
147.3 PPM I53
SOX
180.5 PPM I53
7 PREHEATER FEED
DEMAND
123.0 %
ACTUAL
124.3 %
8 KILN SPEED
DEMAND
85.0 %
ACTUAL
127.4 RPH
0.87 % O2
0.06 % COMB.
KILN INLET
TEMP 1626 DEGF
DRAFT: 0.67 "WG
02: 3.97 %
C0: 0.39 %
C0: 216.9 PPM
K-4
P-1
CON
TUN
E4037 SCREW
4-17-91
H1P01-S
KILN FEED
TPH
180.00
180.00
124.27
123.00
20.00
0.00
43.9% AUTO
LOCAL

16:00:34 28-JUL-92 TUESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S

5-26-92



16:00:41 28-JUL-92 TUESDAY MAIN STACK 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 5



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	4.9 %		4.2 %	10.0 %
NOx:	136.9 PPM	411.0 LB/HR	512.5 LB/HR	1205. LB/HR
SO2:	180.5 PPM	705.5 LB/HR	682.8 LB/HR	781.0 LB/HR

O2: 6.33 %

TEMP: 399.9 °F

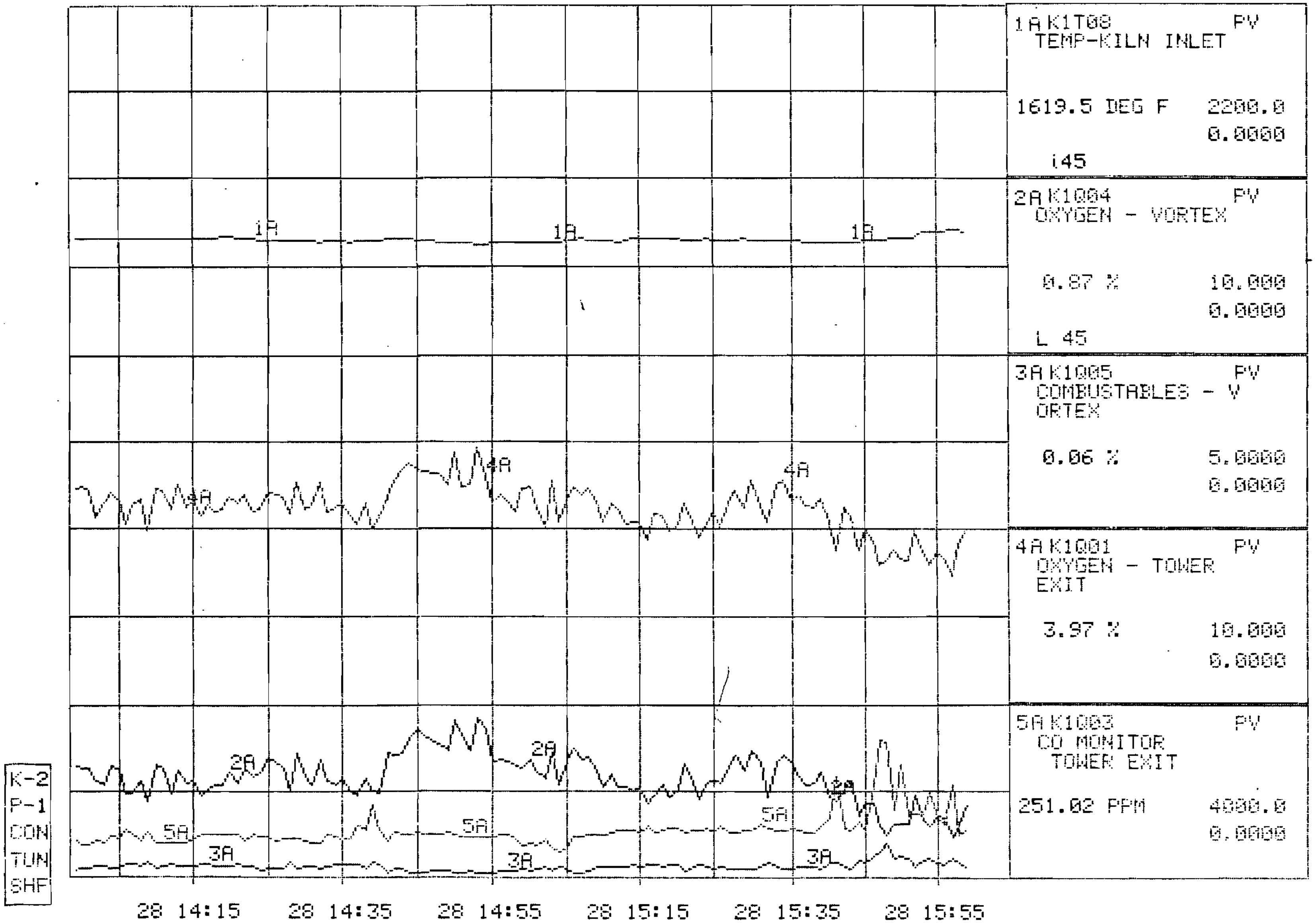
E1T19 156 °F

E1T20 122 °F

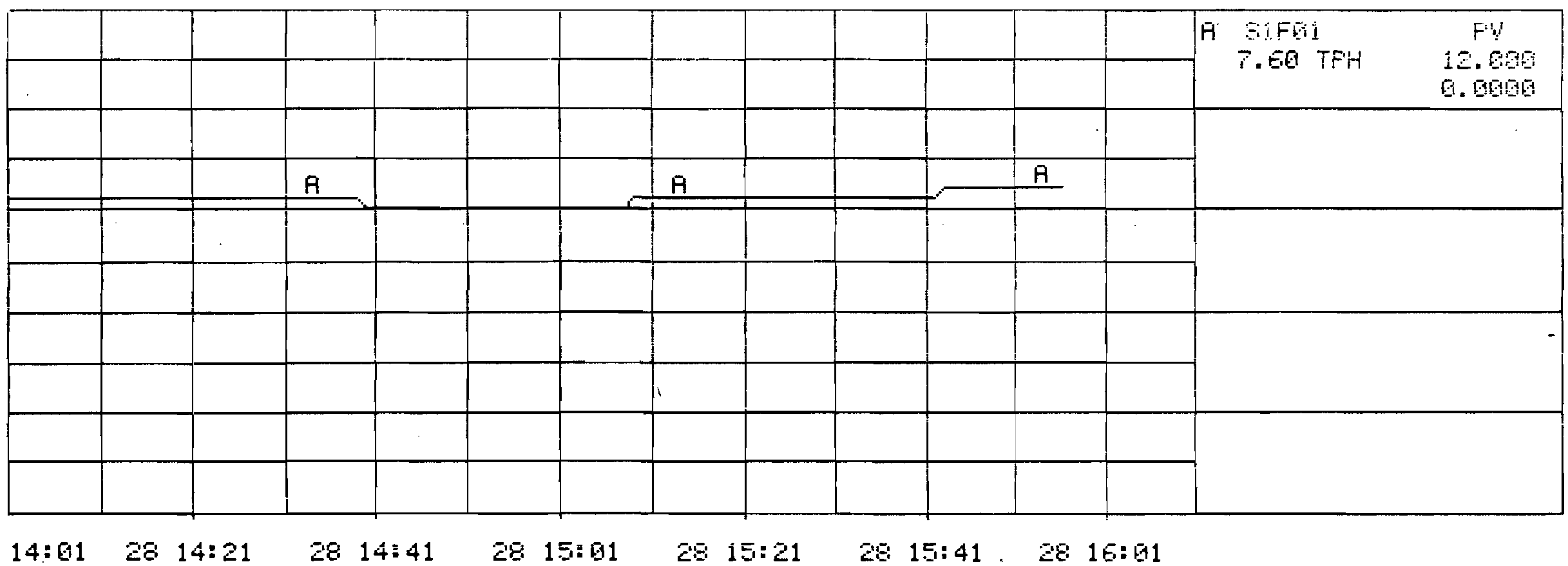
K-1
P-1
CON
TUN

5-14-92

16:00:39 28-JUL-92 TUESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



16:01:58 28-JUL-92 TUESDAY   CM GRINDING CONTROL   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT
119.54 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT
1836.2 TONS

B S1F01-CS
FEED RATE COAL
TPH 13.47
12.00
7.60 8.00
0.10
0.00
%
61.0
MANUAL LOCAL

S1F02-T1
TOTAL NUMBER
OF TIRES
4369.0

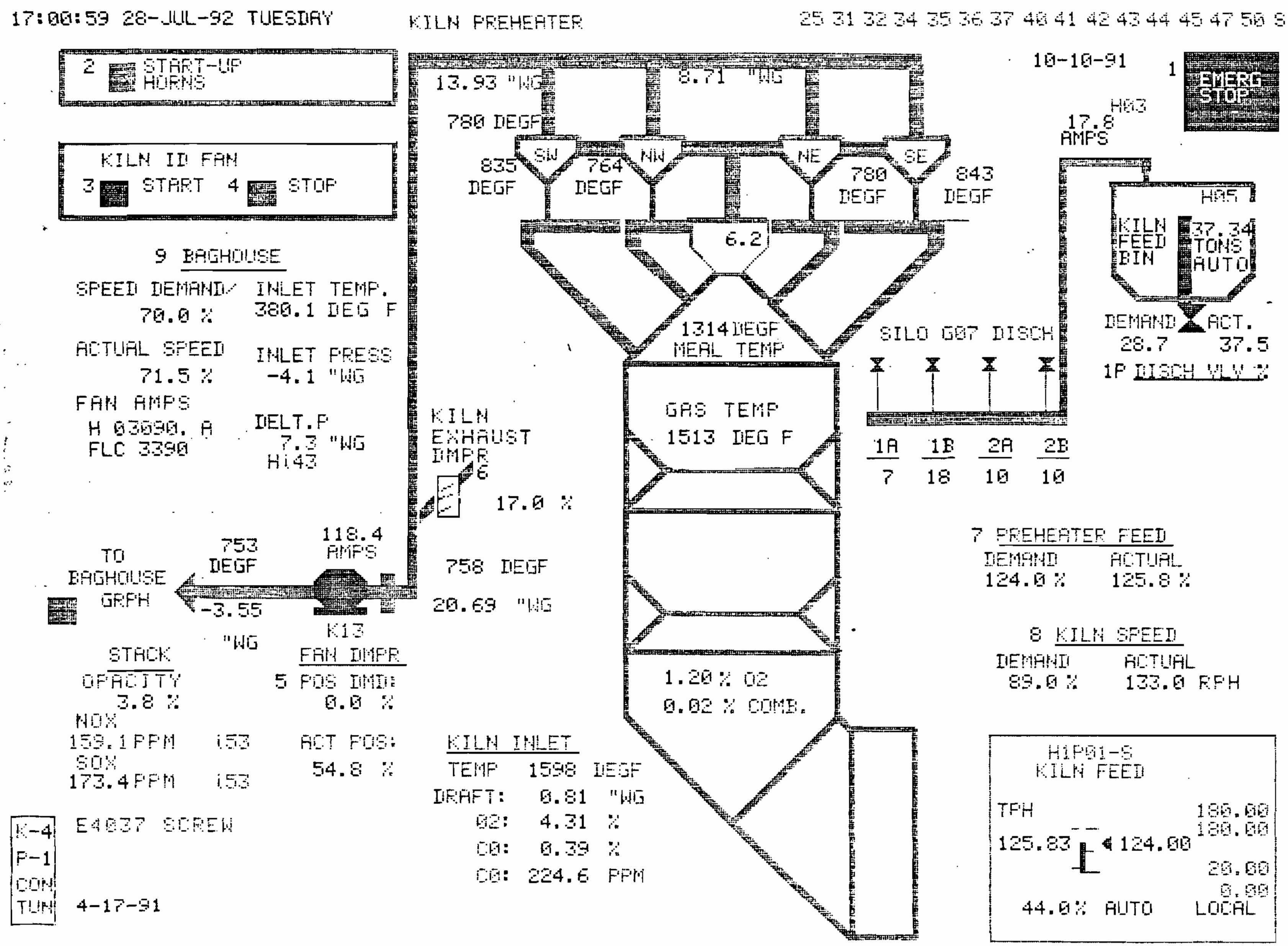
D S1F02-S
TIRE FEED SWITCH
RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT
H 0 256156 POUNDS

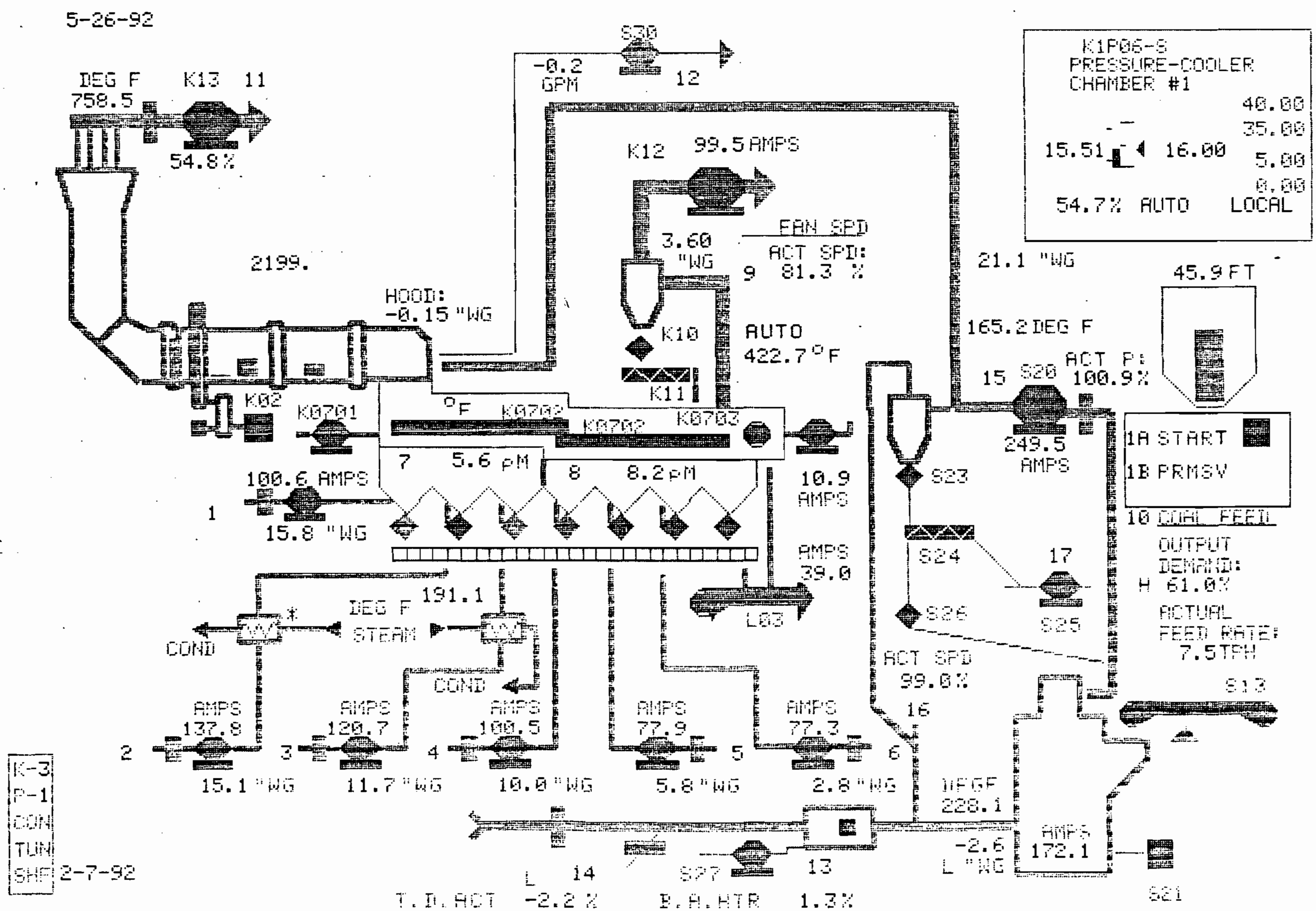
S1I01
COAL MILL DRIVE
169.51 AMPS
L 0

K-1
P-1
CON
TUN

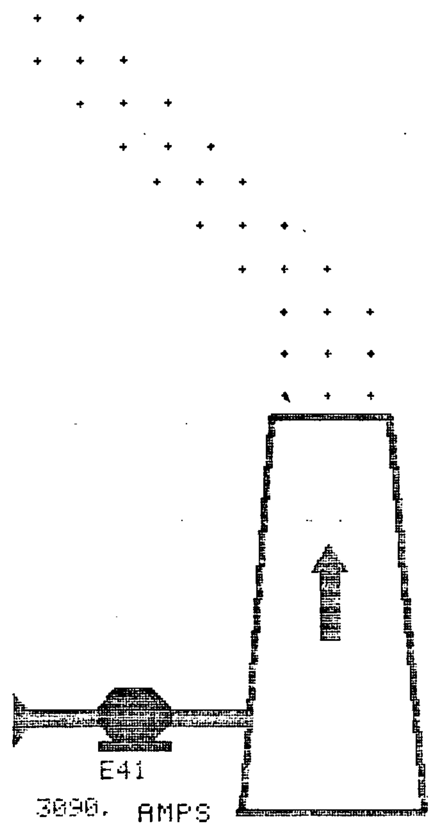
10-10-91


17:00:59 28-JUL-92 TUESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
9 BAGHOUSE
SPEED DEMAND/ 70.0 %
INLET TEMP. 380.1 DEG F
ACTUAL SPEED 71.5 %
INLET PRESS -4.1 "WG
FAN AMPS
H 03090. A
FLC 3390
DELT.P 7.3 "WG
H143
13.93 "WG
8.71 "WG
780 DEGF
SW
NW
NE
SE
835 DEGF
764 DEGF
780 DEGF
843 DEGF
6.2
1314 DEGF MEAL TEMP
GAS TEMP 1513 DEG F
1.20 % O2
0.02 % COMB.
KILN EXHAUST DMPR
6
17.0 %
118.4 AMPS
753 DEGF
TO BAGHOUSE GRPH
-3.55 "WG
758 DEGF
20.69 "WG
K13
FAN DMPR
5 POS DMD: 0.0 %
ACT POS: 54.8 %
STACK
OPACITY 3.8 %
NOX 159.1PPM 153
SOX 173.4PPM 153
KILN INLET
TEMP 1598 DEGF
DRAFT: 0.81 "WG
O2: 4.31 %
CO: 0.39 %
CO: 224.6 PPM
K-4
P-1
CON
TUN
E4037 SCREW
4-17-91
10-10-91
1 EMERG STOP
H03
17.8 AMPS
H05
KILN FEED BIN
37.34 TONS AUTO
DEMAND 28.7
ACT. 37.5
1P DISCH VLV %
SILO G07 DISCH
1A 7
1B 18
2A 10
2B 10
7 PREHEATER FEED
DEMAND 124.0 %
ACTUAL 125.8 %
8 KILN SPEED
DEMAND 89.0 %
ACTUAL 133.0 RPH
H1P01-S
KILN FEED
TPH
180.00
180.00
125.83
124.00
20.00
0.00
44.0% AUTO
LOCAL

17:01:01 28-JUL-92 TUESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



17:01:04 28-JUL-92 TUESDAY MAIN STACK 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	3.8 %		4.4 %	10.0 %
NOx:	159.1 PPM	473.4 LB/HR	493.3 LB/HR	1205. LB/HR
SO2:	173.4 PPM	679.4 LB/HR	688.1 LB/HR	781.0 LB/HR

O2: 6.33 %

TEMP: 380.1 °F

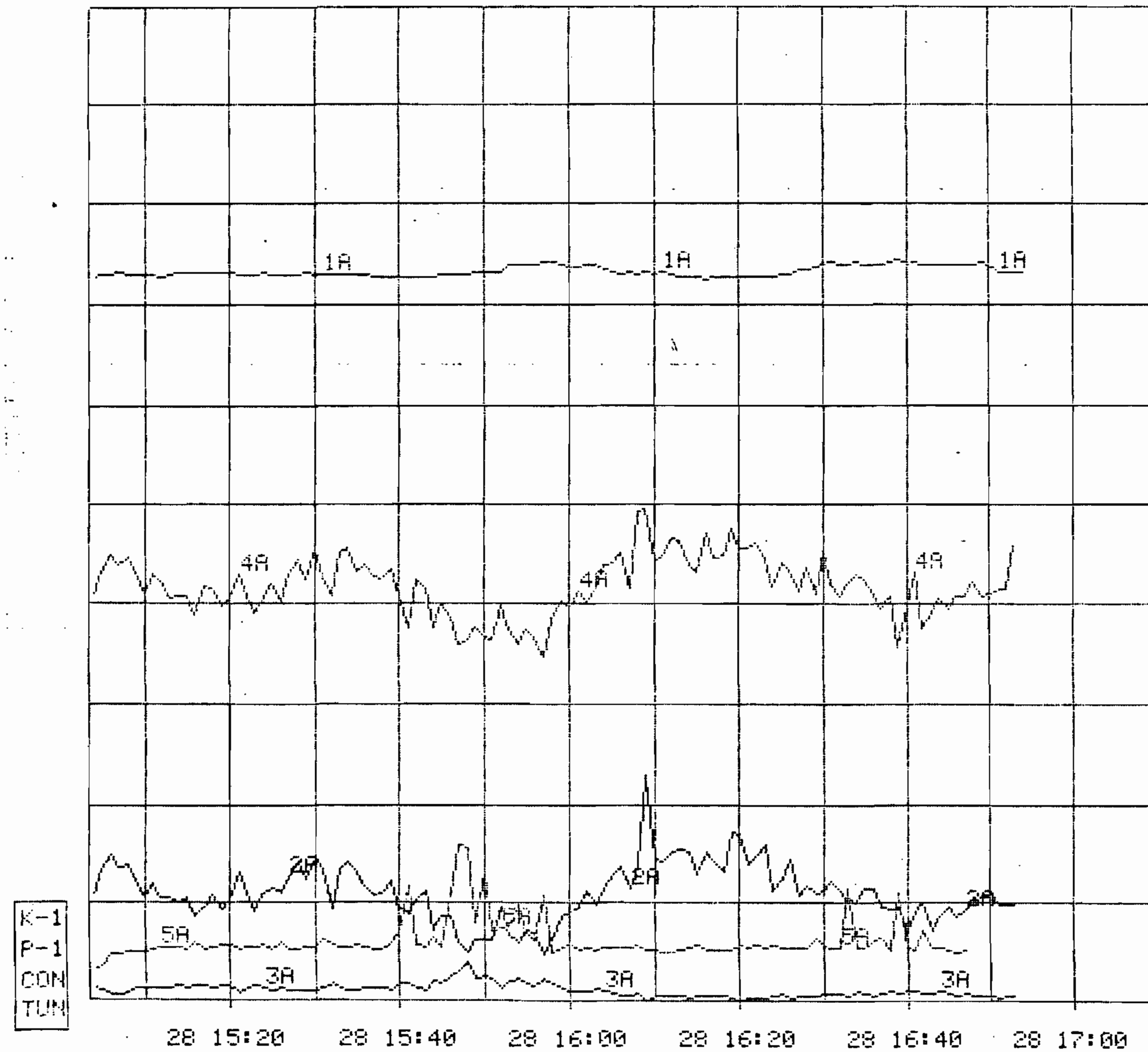
E1T19 155 °F

E1T20 123 °F

K-2
P-1
CON
TUN
SHF

5-14-92

17:01:06 28-JUL-92 TUESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



1A K1T08 PV
TEMP-KILN INLET
1597.8 DEG F 2200.0
0.0000
145

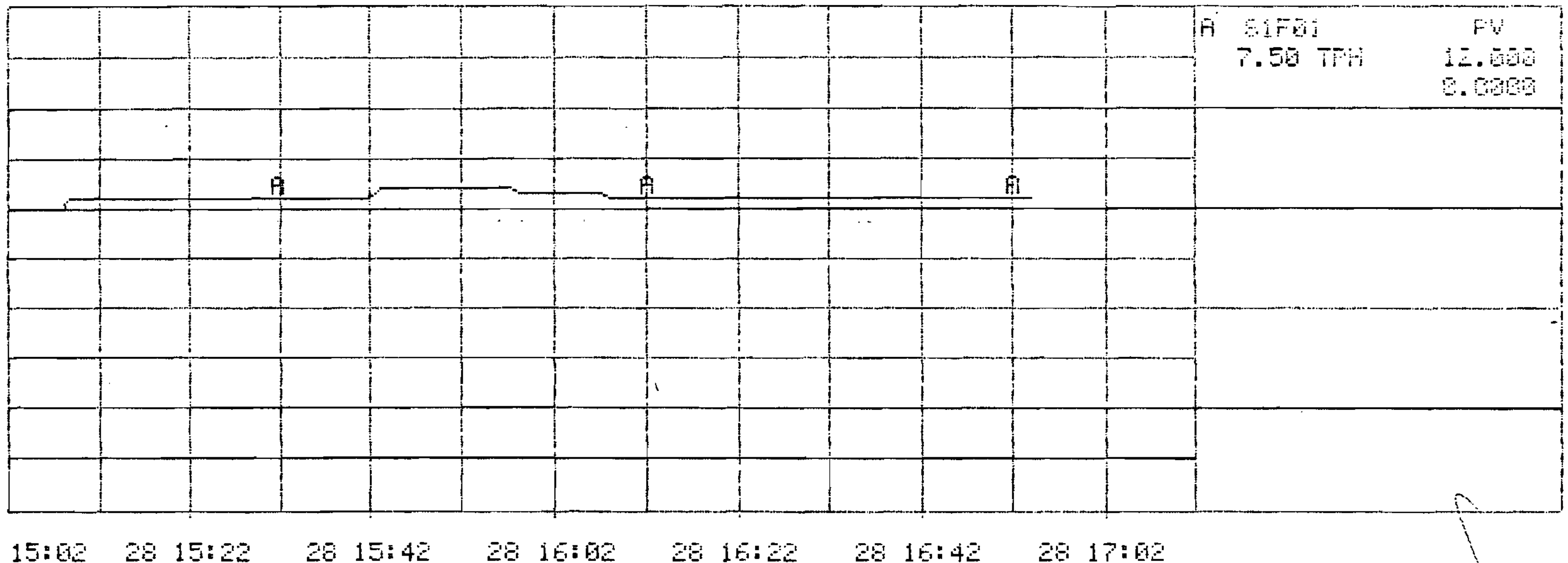
2A K1Q04 PV
OXYGEN - VORTEX
1.21 % 10.000
0.0000

3A K1Q05 PV
COMBUSTABLES - V
ORTEX
0.02 % 5.0000
0.0000

4A K1Q01 PV
OXYGEN - TOWER
EXIT
4.54 % 10.000
0.0000

5A K1Q03 PV
CO MONITOR
TOWER EXIT
224.60 PPM 4000.0
0.0000

17:02:43 28-JUL-92 TUESDAY CM GRINDING CONTROL 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT

106.48 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT

1843.7 TONS

B S1F01-CS
FEED RATE COAL

TPH 13.47
12.00
7.51 8.00
0.10
0.00
1%
61.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES

4394.0

D S1F02-S
TIRE FEED SWITCH

RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT
H 0 258864 POUNDS

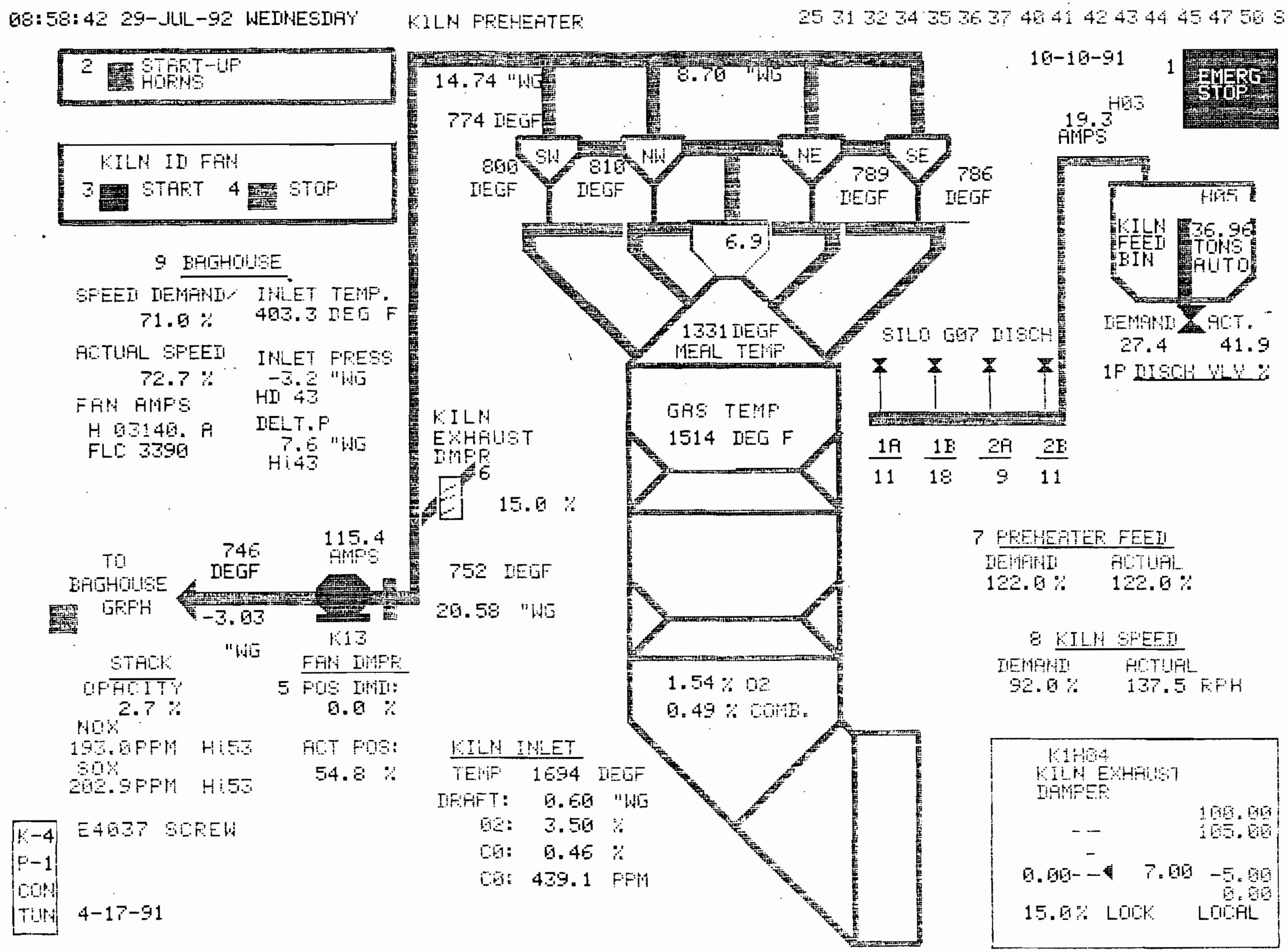
S1I01
COAL MILL DRIVE

166.26 AMPS

L 0

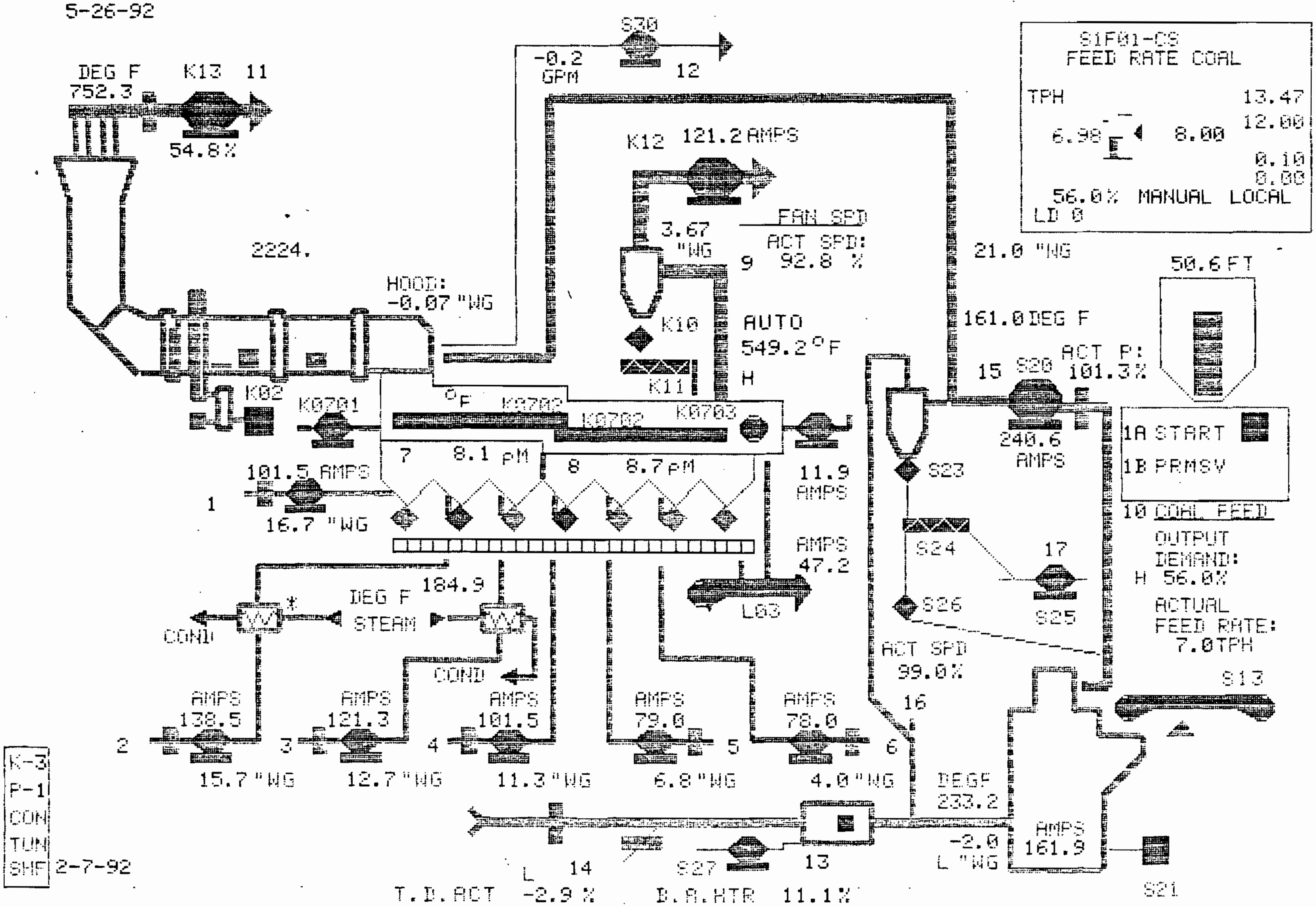
K-1
P-1
CON
TUN

10-10-91

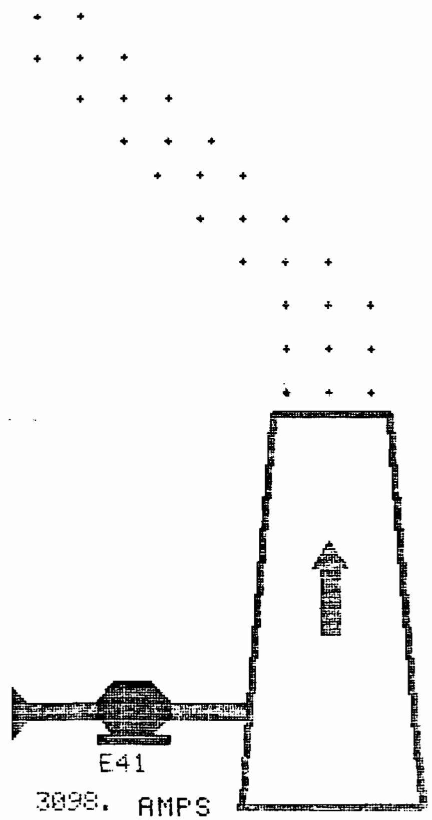

08:58:42 29-JUL-92 WEDNESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
14.74 "WG
8.70 "WG
774 DEGF
10-10-91
1
EMERG STOP
H03
19.3 AMPS
SW
NW
NE
SE
800 DEGF
810 DEGF
789 DEGF
786 DEGF
6.9
HA5
KILN FEED BIN
36.96 TONS AUTO
DEMAND
ACT.
27.4
41.9
1P DISCH VLV %
9 BAGHOUSE
SPEED DEMAND
71.0 %
INLET TEMP.
403.3 DEG F
ACTUAL SPEED
72.7 %
INLET PRESS
-3.2 "WG
HD 43
FAN AMPS
H 03140. A
FLC 3390
DELT.P
7.6 "WG
Hi43
1331 DEGF MEAL TEMP
SILO G07 DISCH
KILN EXHAUST DMPR
6
15.0 %
GAS TEMP
1514 DEG F
1A
1B
2A
2B
11
18
9
11
746 DEGF
115.4 AMPS
TO BAGHOUSE GRPH
-3.03 "WG
752 DEGF
20.58 "WG
7 PREHEATER FEED
DEMAND
ACTUAL
122.0 %
122.0 %
K13
FAN DMPR
5 POS DMD:
0.0 %
ACT POS:
54.8 %
8 KILN SPEED
DEMAND
ACTUAL
92.0 %
137.5 RPH
STACK OPACITY
2.7 %
NOX
193.0PPM Hi53
SOX
202.9PPM Hi53
1.54 % O2
0.49 % COMB.
KILN INLET
TEMP 1694 DEGF
DRAFT: 0.60 "WG
O2: 3.50 %
CO: 0.46 %
CO: 439.1 PPM
K1H04
KILN EXHAUST DAMPER
100.00
105.00
0.00
7.00
-5.00
0.00
15.0% LOCK
LOCAL
K-4
P-1
CON
TUN
E4037 SCREW
4-17-91

08:58:45 29-JUL-92 WEDNESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S

5-26-92



08:58:55 29-JUL-92 WEDNESDAY   MAIN STACK   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



E41

3098. AMPS

E1T19 155 °F

E1T20 121 °F

	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	2.7 %		3.4 %	10.0 %
NOx:	193.0 PPM	559.0 LB/HR	514.1 LB/HR	1205. LB/HR
SO2:	202.9 PPM	770.8 LB/HR	663.5 LB/HR	781.0 LB/HR

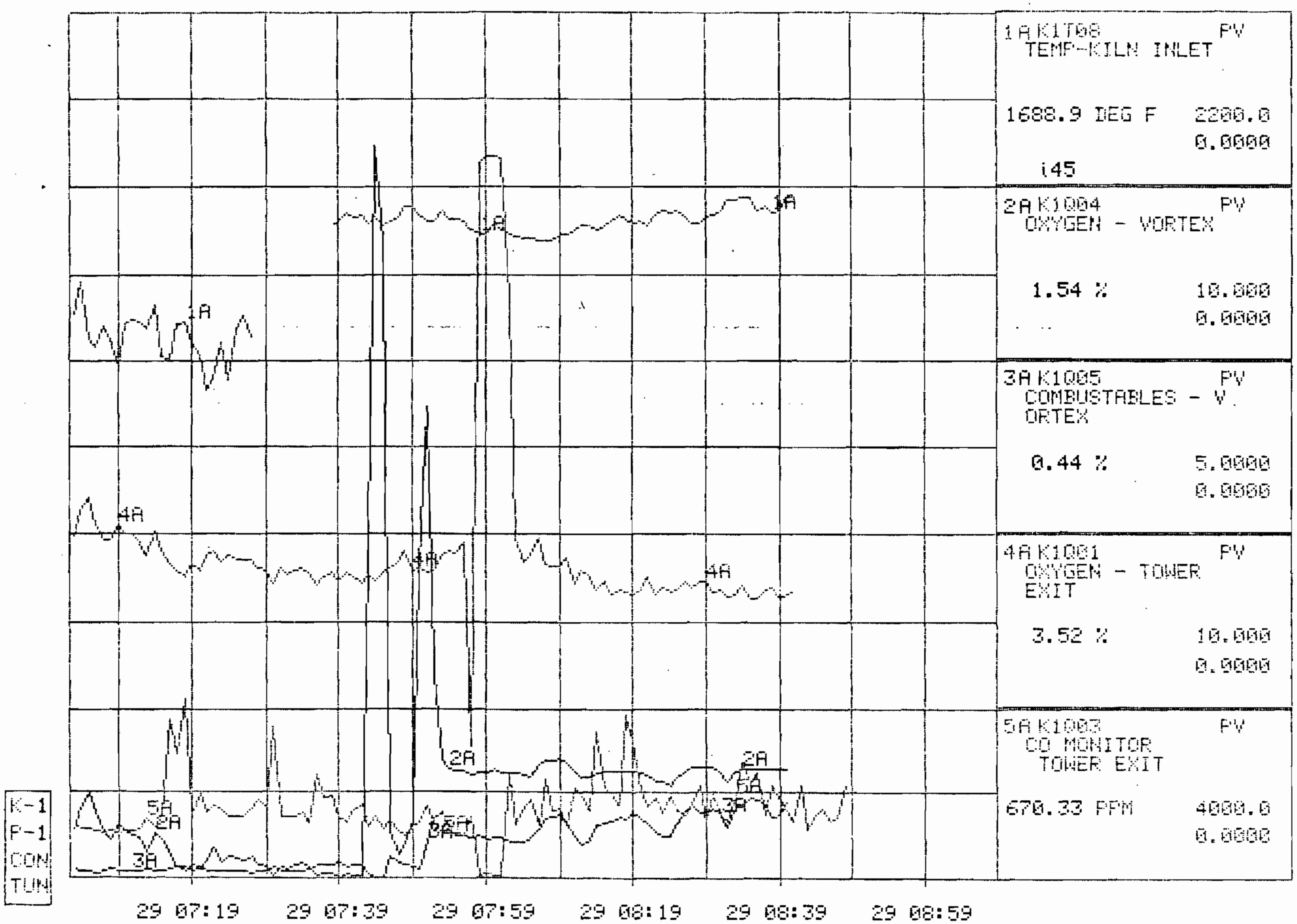
O2: 6.32 %

TEMP: 403.2 °F

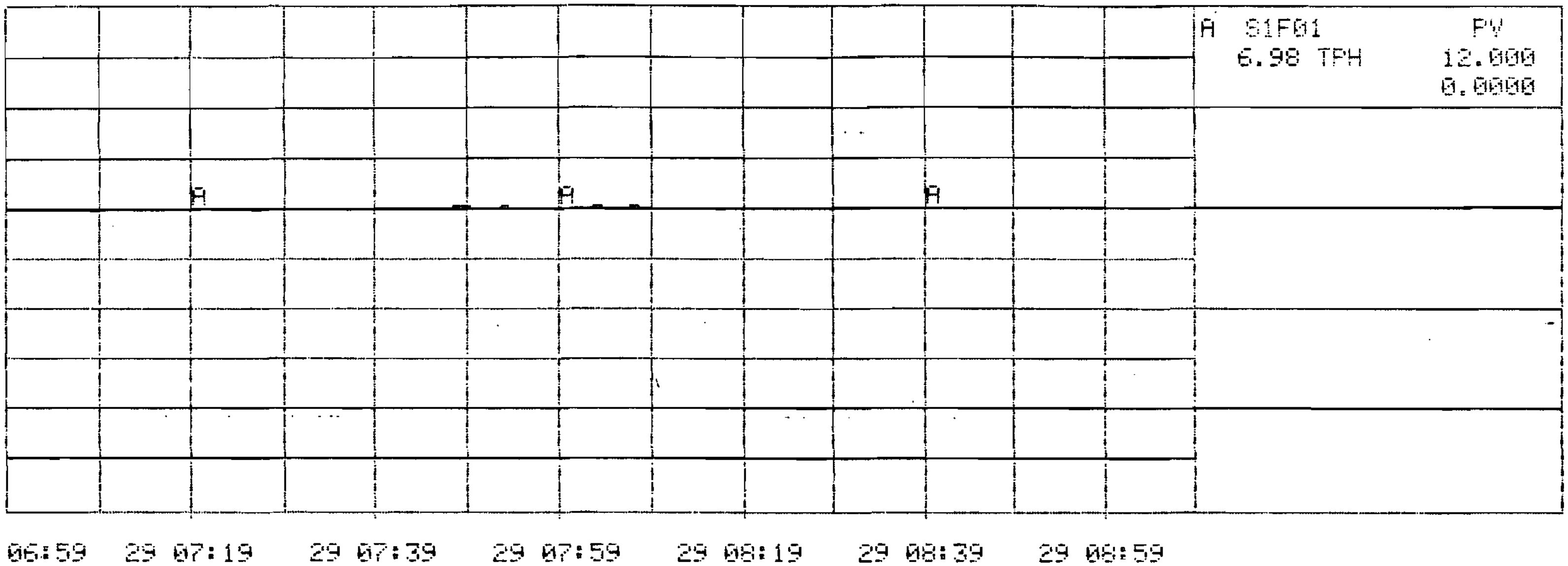
K-2
P-1
CON
TUN
SHF

5-14-92

08:59:14 29-JUL-92 WEDNESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



09:00:13 29-JUL-92 WEDNESDAY   CM GRINDING CONTROL   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE
50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT
91.60 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT
1959.7 TONS

B - S1F01-CS
FEED RATE COAL
TPH 13.47
12.00
6.98 8.00
0.10
0.00
56.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES
4841.0

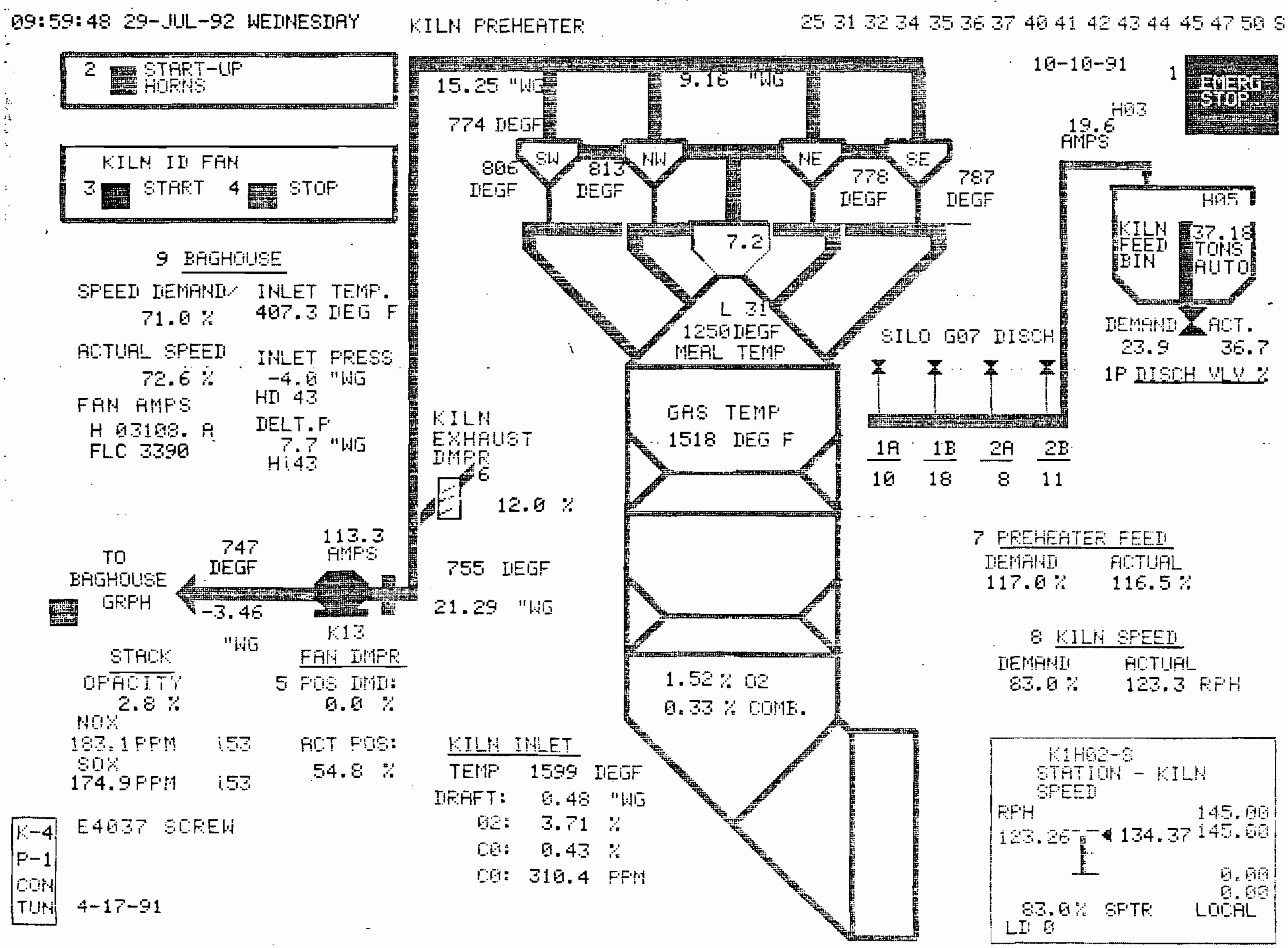
D S1F02-S
TIRE FEED SWITCH
RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT
N 0 299928 POUNDS

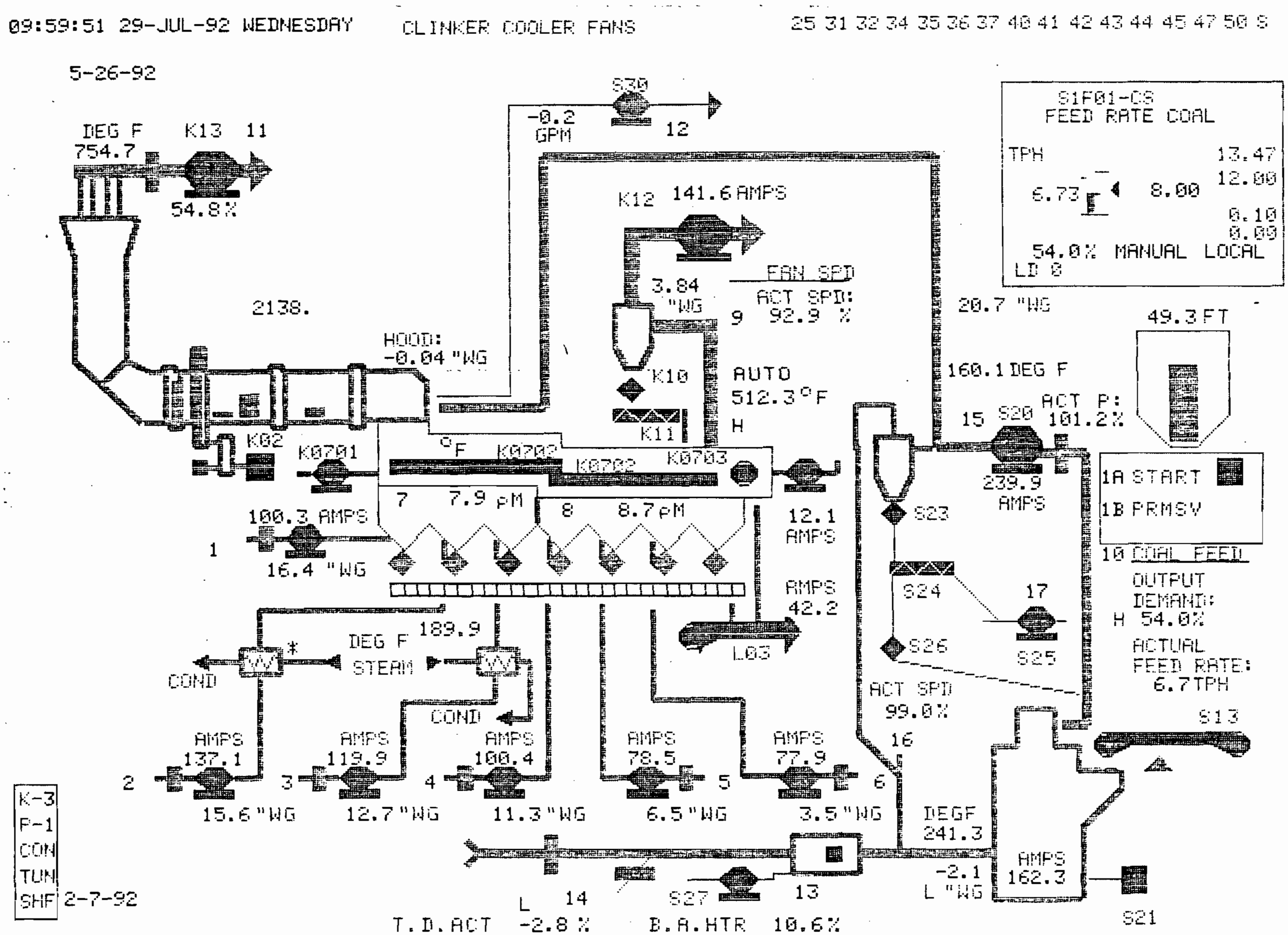
S1I01
COAL MILL DRIVE
164.35 AMPS
L 0

K-2
P-1
CON
TUN
SHF

10-10-91

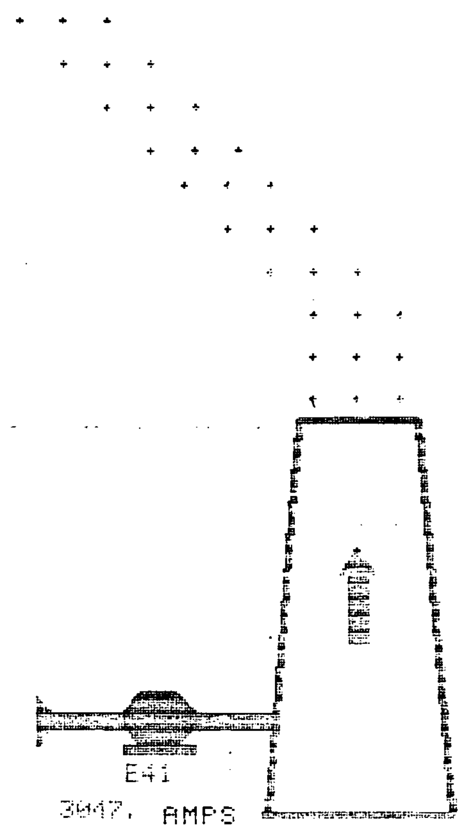


09:59:48 29-JUL-92 WEDNESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
9 BAGHOUSE
SPEED DEMAND/
71.0 %
ACTUAL SPEED
72.6 %
FAN AMPS
H 03108. A
FLC 3390
INLET TEMP.
407.3 DEG F
INLET PRESS
-4.0 "WG
HD 43
DELT.P
7.7 "WG
Hi43
15.25 "WG
774 DEGF
9.16 "WG
SW
NW
NE
SE
806 DEGF
813 DEGF
778 DEGF
787 DEGF
7.2
L 31
1250 DEGF
MEAL TEMP
10-10-91
1
EMERG STOP
H03
19.6 AMPS
HA5
KILN FEED BIN
37.18 TONS AUTO
DEMAND
23.9
ACT.
36.7
1P DISCH VLV %
SILO G07 DISCH
1A 1B 2A 2B
10 18 8 11
KILN EXHAUST DMPR
6
12.0 %
GAS TEMP
1518 DEG F
7 PREHEATER FEED
DEMAND
117.0 %
ACTUAL
116.5 %
8 KILN SPEED
DEMAND
83.0 %
ACTUAL
123.3 RPH
TO BAGHOUSE GRPH
747 DEGF
-3.46 "WG
113.3 AMPS
K13
755 DEGF
21.29 "WG
STACK OPACITY
2.8 %
NOX
183.1 PPM i53
SOX
174.9 PPM i53
FAN DMPR
5 POS DMD:
0.0 %
ACT POS:
54.8 %
1.52 % O2
0.33 % COMB.
KILN INLET
TEMP 1599 DEGF
DRAFT: 0.48 "WG
O2: 3.71 %
CO: 0.43 %
CO: 310.4 PPM
K1H02-S
STATION - KILN SPEED
RPH 145.00
123.26 134.37 145.00
0.00
0.00
83.0 % SPTR LOCAL
LI 0
K-4
P-1
CON
TUN
E4037 SCREW
4-17-91


09:59:51 29-JUL-92 WEDNESDAY
CLINKER COOLER FANS
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
5-26-92
DEG F
754.7
K13
11
54.8%
S30
-0.2
GPM
12
S1F01-CS
FEED RATE COAL
TPH
13.47
12.00
6.73
8.00
0.10
0.00
54.0% MANUAL LOCAL
LD 0
K12
141.6 AMPS
3.84
"WG
FAN SPD
ACT SPD:
9
92.9 %
20.7 "WG
49.3 FT
2138.
HOOD:
-0.04 "WG
K10
AUTO
512.3 °F
H
160.1 DEG F
ACT P:
101.2%
15
S20
K11
K02
°F
K0701
K0702
K0702
K0703
239.9
AMPS
1A START
1B PRMSV
7
7.9 pM
8
8.7 pM
100.3 AMPS
12.1
AMPS
S23
1
16.4 "WG
10 COAL FEED
OUTPUT
DEMAND:
H 54.0%
S24
17
AMPS
42.2
DEG F
189.9
*
STEAM
COND
L03
S26
S25
ACTUAL
FEED RATE:
6.7 TPH
ACT SPD
99.0%
COND
S13
16
AMPS
137.1
AMPS
119.9
AMPS
100.4
AMPS
78.5
AMPS
77.9
2
3
4
5
6
15.6 "WG
12.7 "WG
11.3 "WG
6.5 "WG
3.5 "WG
DEGF
241.3
-2.1
L "WG
AMPS
162.3
S21
K-3
P-1
CON
TUN
SHF
2-7-92
L
14
S27
13
T.D.ACT -2.8 %
B.A.HTR 10.6%

10:00:03 29-JUL-92 WEDNESDAY MAIN STACK

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



E1T19 156 °F

E1T20 123 °F

	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	2.8 %		3.1 %	10.0 %
NOx:	183.1 PPM	497.2 LB/HR	510.0 LB/HR	1205. LB/HR
SO2:	174.9 PPM	635.7 LB/HR	669.4 LB/HR	781.0 LB/HR

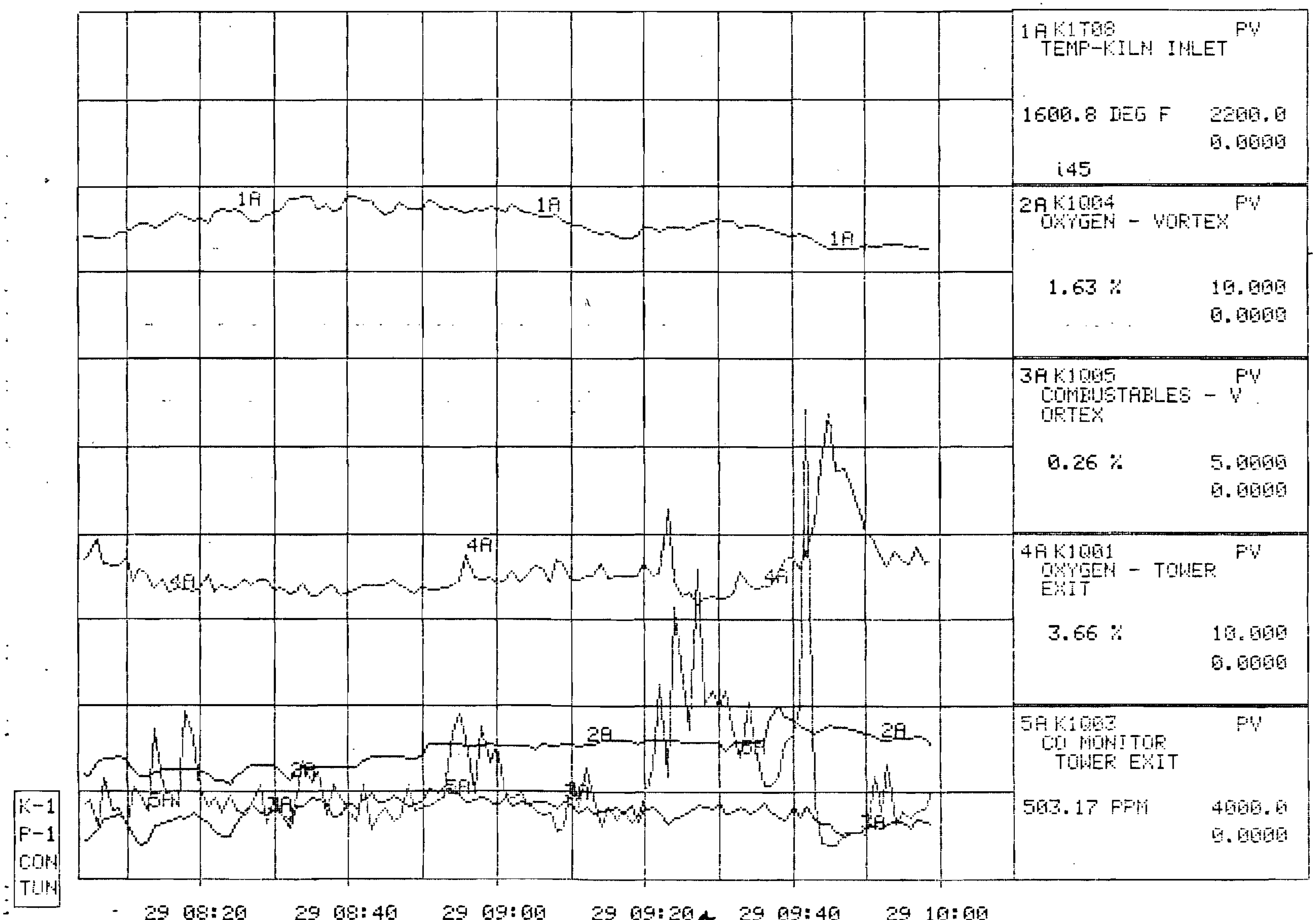
O2: 6.13 %

TEMP: 407.2 °F

K-2
P-1
CON
TUN
SHF

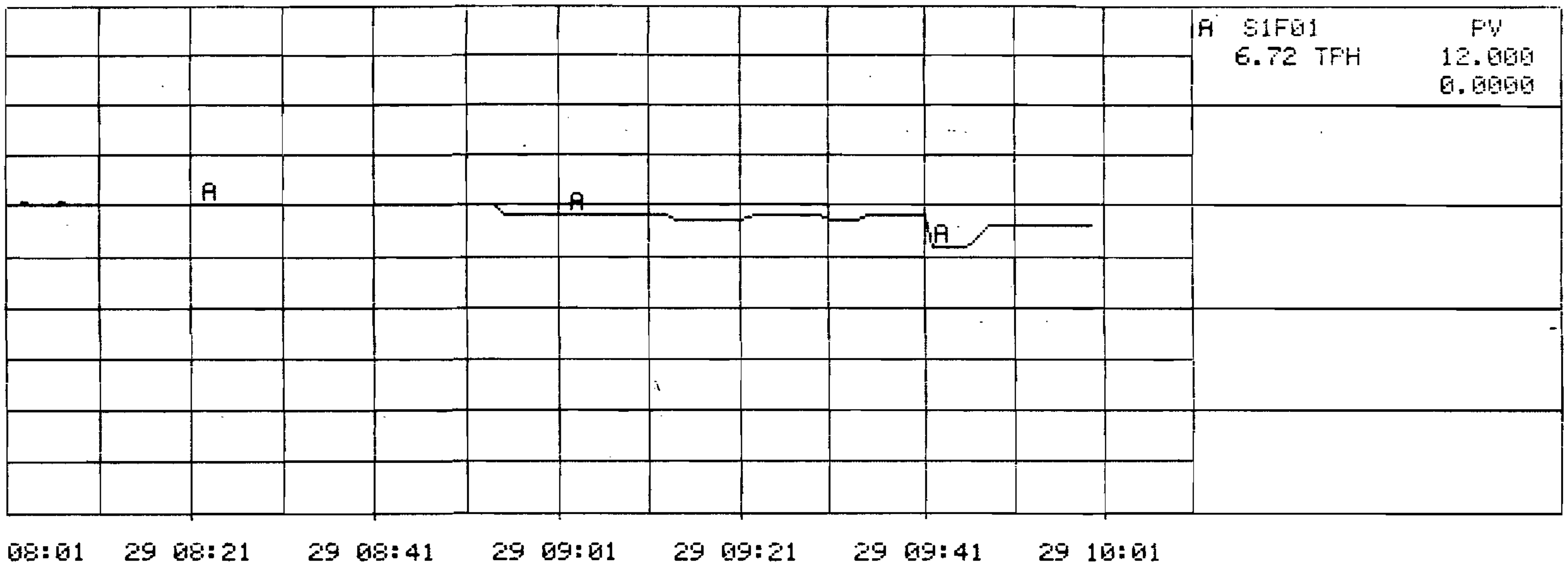
5-14-92

10:00:32 29-JUL-92 WEDNESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



TIRE IN CHUTE

10:01:16 29-JUL-92 WEDNESDAY CM GRINDING CONTROL 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT

89.70 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT

1966.6 TONS

B S1F01-CS
FEED RATE COAL

TPH 13.47
12.00
8.00
6.72
0.10
0.00
1%
54.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES

4866.0

D S1F02-S
TIRE FEED SWITCH

RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT

H 0 302288 POUNDS

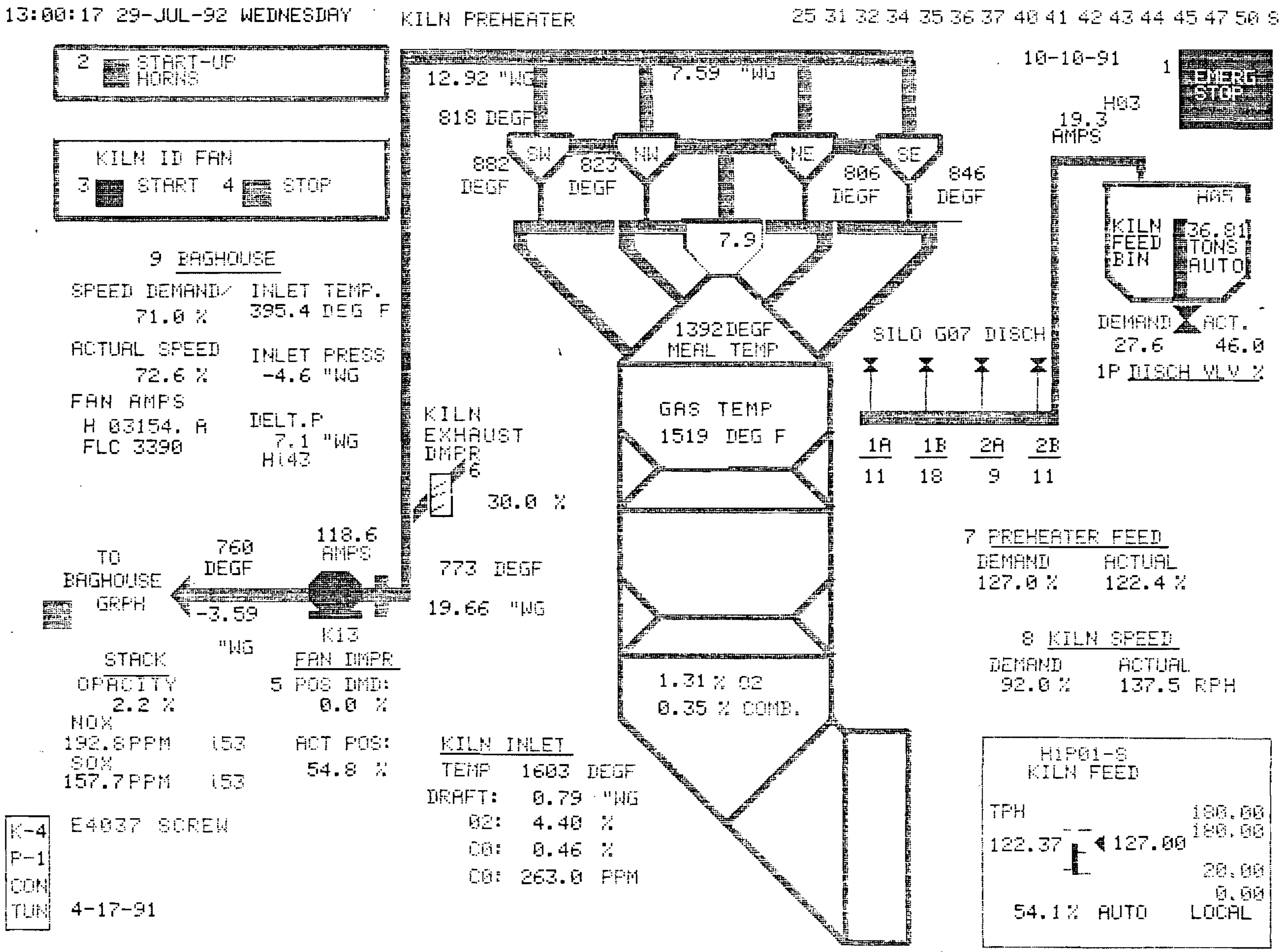
S1I01
COAL MILL DRIVE

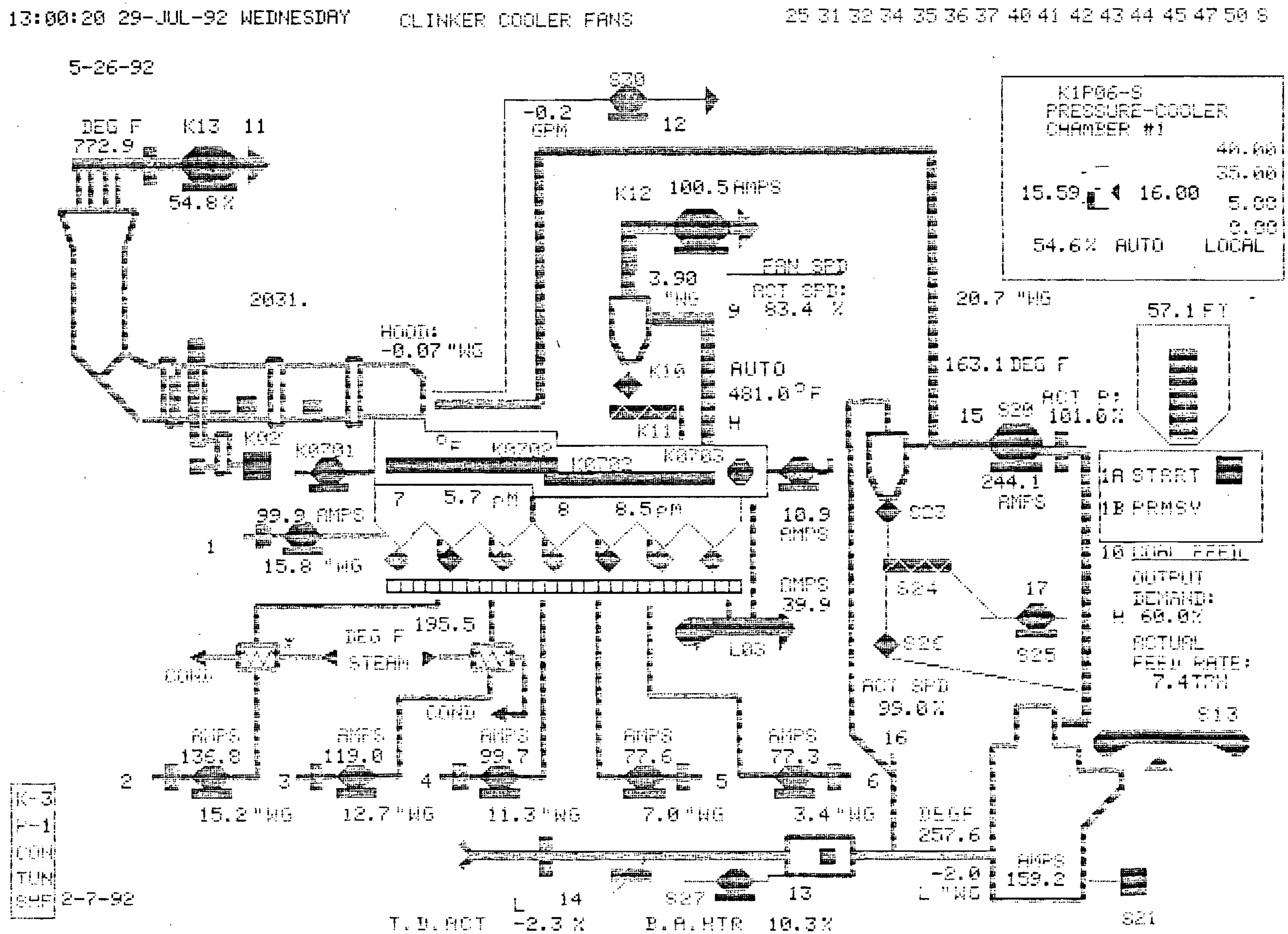
167.64 AMPS

L 0

K-4
P-1
CON
TUN

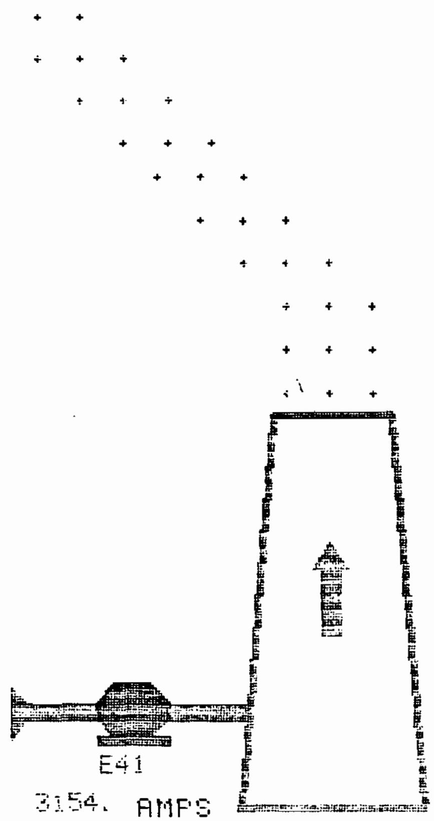
10-10-91


13:00:17 29-JUL-92 WEDNESDAY
KILN PREHEATER
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
2 START-UP HORNS
KILN ID FAN
3 START 4 STOP
9 BAGHOUSE
SPEED DEMAND/
71.0 %
ACTUAL SPEED
72.6 %
FAN AMPS
H 03154. A
FLC 3390
INLET TEMP.
395.4 DEG F
INLET PRESS
-4.6 "WG
DELT.P
7.1 "WG
H143
12.92 "WG
818 DEGF
7.59 "WG
SW
NW
NE
SE
882 DEGF
823 DEGF
806 DEGF
846 DEGF
7.9
1392 DEGF
MEAL TEMP
GAS TEMP
1519 DEG F
10-10-91
1 EMERG STOP
H03
19.3 AMPS
H05
KILN FEED BIN
36.81 TONS AUTO
DEMAND
27.6
ACT.
46.0
1P DISCH VLV %
SILO G07 DISCH
1A 11
1B 18
2A 9
2B 11
KILN EXHAUST DMPR
6
30.0 %
TO BAGHOUSE GRPH
760 DEGF
-3.59 "WG
118.6 AMPS
K13
FAN DMPR
773 DEGF
19.66 "WG
STACK OPACITY
2.2 %
NOX
192.8 PPM
153
SOX
157.7 PPM
153
5 POS DMD:
0.0 %
ACT POS:
54.8 %
7 PREHEATER FEED
DEMAND 127.0 %
ACTUAL 122.4 %
8 KILN SPEED
DEMAND 92.0 %
ACTUAL 137.5 RPH
1.31 % O2
0.35 % COMB.
KILN INLET
TEMP 1603 DEGF
DRAFT: 0.79 "WG
O2: 4.40 %
CO: 0.46 %
CO: 263.0 PPM
K-4
P-1
CON
TUN
E4037 SCREW
4-17-91
H1P01-S
KILN FEED
TPH
180.00
180.00
122.37
127.00
20.00
0.00
54.1 % AUTO
LOCAL


13:00:20 29-JUL-92 WEDNESDAY
CLINKER COOLER FANS
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S
5-26-92
DEG F
772.9
K13
11
54.8%
S20
-0.2
GPM
12
K12
100.5 AMPS
FAN SPD
ACT SPD:
9 83.4 %
3.90
"WG
2031.
HOOD:
-0.07 "WG
K10
AUTO
481.0 °F
K11
K1P06-S
PRESSURE-COOLER
CHAMBER #1
40.00
35.00
15.59
16.00
5.00
0.00
54.6% AUTO LOCAL
20.7 "WG
57.1 FT
163.1 DEG F
15
S20
ACT P:
101.0%
244.1
AMPS
1A START
1B PRMSV
10 COAL FEED
OUTPUT
DEMAND:
H 60.0%
ACTUAL
FEED RATE:
7.4TPH
K02
K0701
K0702
K0703
°F
7
5.7 pM
8
8.5pM
99.9 AMPS
1
15.8 "WG
10.9
AMPS
AMPS
39.9
L03
S23
S24
17
S26
S25
ACT SPD
99.0%
16
S13
DEG F
195.5
STEAM
COND
COND
AMPS 136.8
AMPS 119.0
AMPS 99.7
AMPS 77.6
AMPS 77.3
2
3
4
5
6
15.2 "WG
12.7 "WG
11.3 "WG
7.0 "WG
3.4 "WG
DEGF
257.6
AMPS
159.2
-2.0
L "WG
S21
14
13
S27
L
T.D.ACT -2.3 %
B.A.HTR 10.3%
K-3
P-1
CON
TUN
SHF
2-7-92

13:00:22 29-JUL-92 WEDNESDAY MAIN STACK

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



3154. AMPS

E1T19 157 °F

E1T20 122 °F

	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	3.7 %		2.7 %	10.0 %
NOx:	192.8 PPM	566.7 LB/HR	516.4 LB/HR	1205. LB/HR
SO2:	157.7 PPM	605.3 LB/HR	624.9 LB/HR	781.0 LB/HR

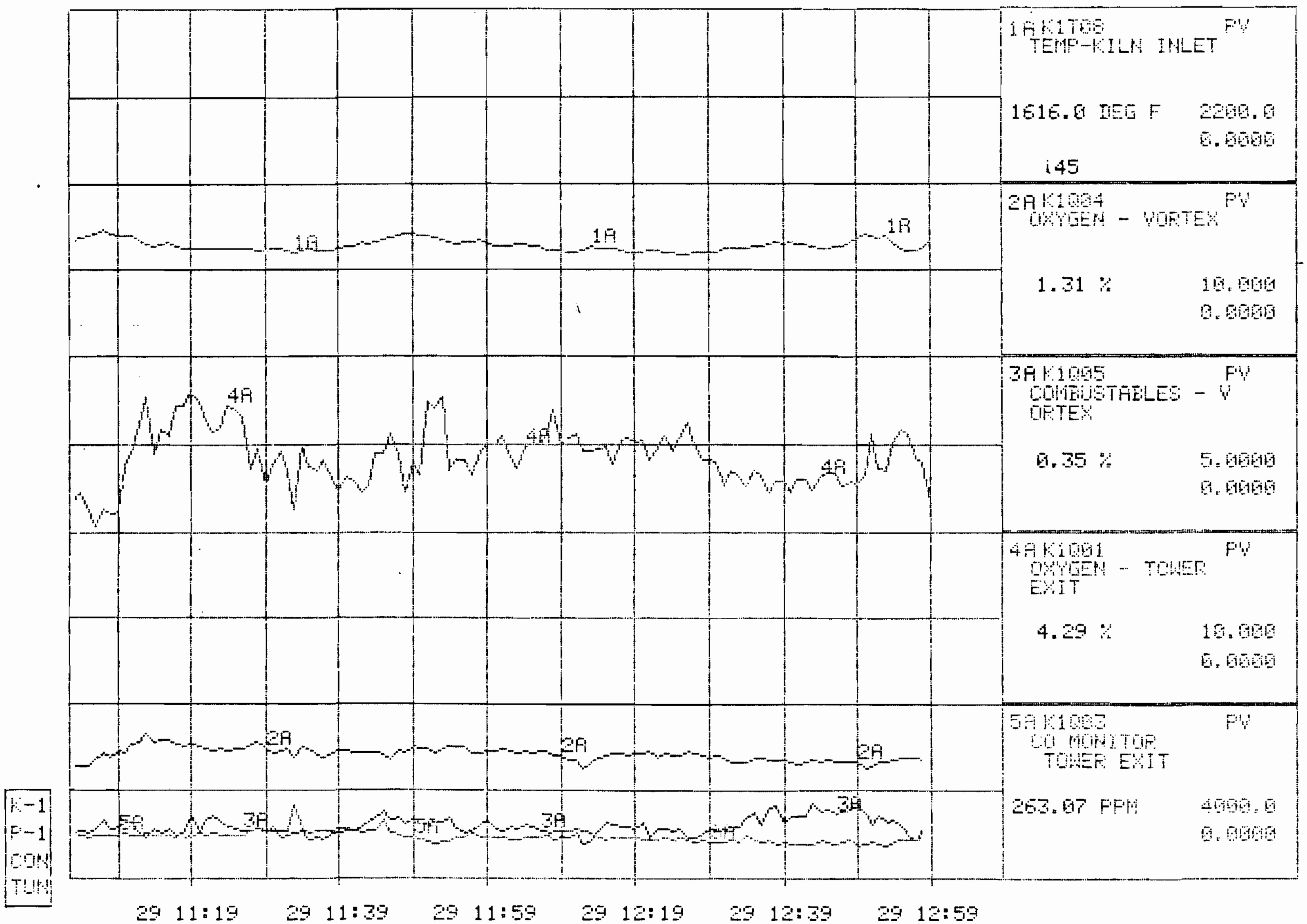
O2: 6.43 %

TEMP: 395.4 °F

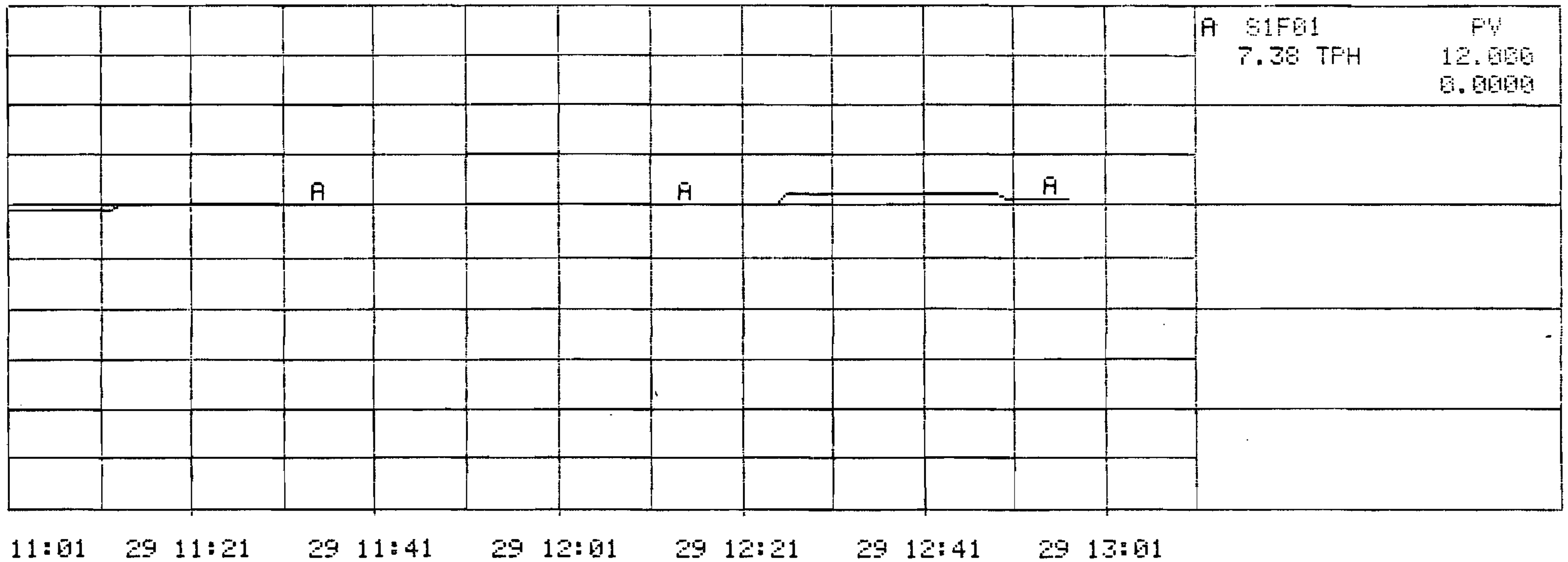
K-2
P-1
CON
TUN
SHF

5-14-92

13:00:24 29-JUL-92 WEDNESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



13:01:41 29-JUL-92 WEDNESDAY   CM GRINDING CONTROL   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT

81.68 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT

1988.0 TONS

B S1F01-CS
FEED RATE COAL

TPH 13.47
12.00
7.38 8.00
0.10
0.00
%
60.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES

4944.0

D S1F02-S
TIRE FEED SWITCH

RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT

H 0 310216 POUNDS

S1I01
COAL MILL DRIVE

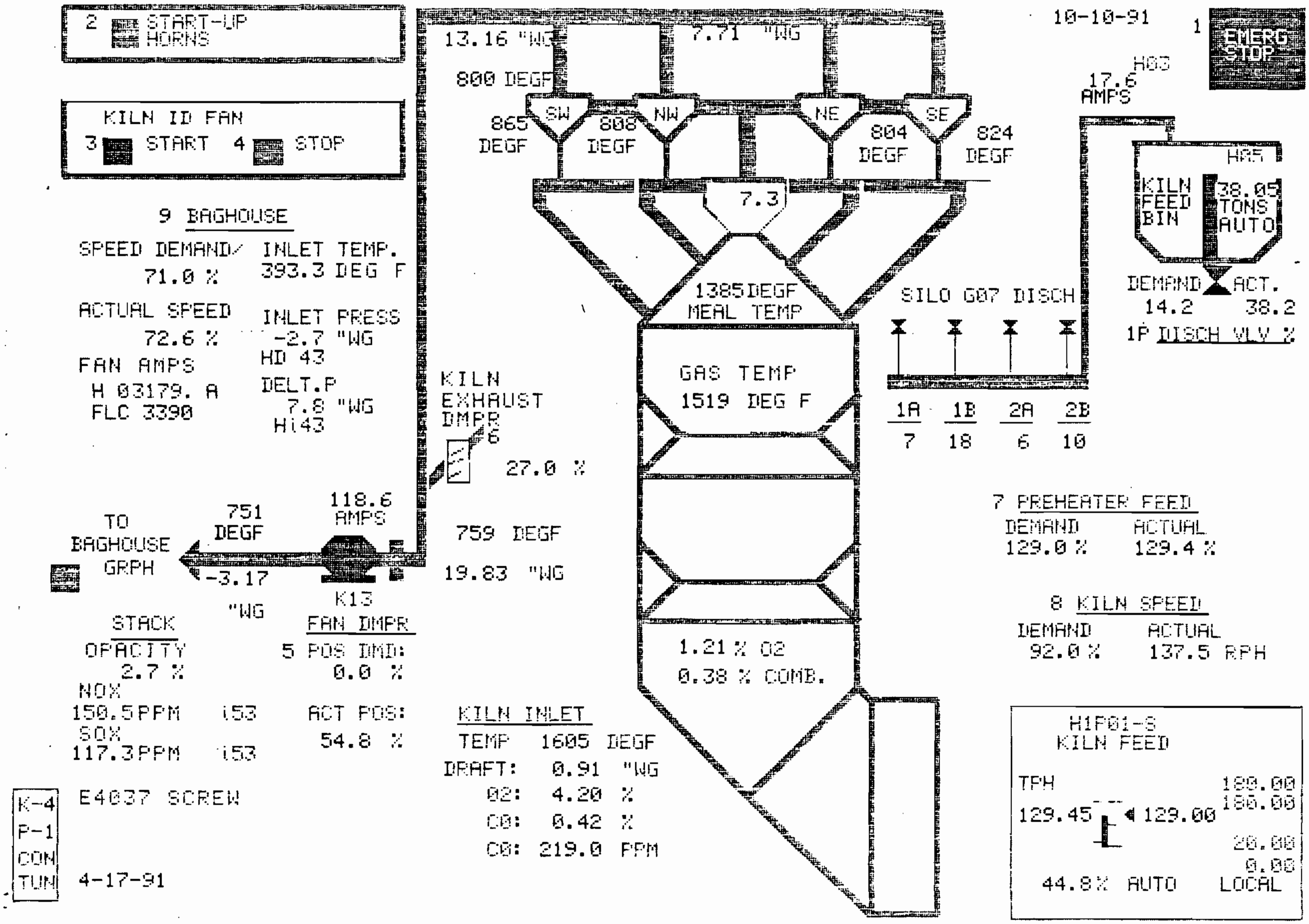
164.46 AMPS

L 0

K-2
P-1
CON
TUN
SHF

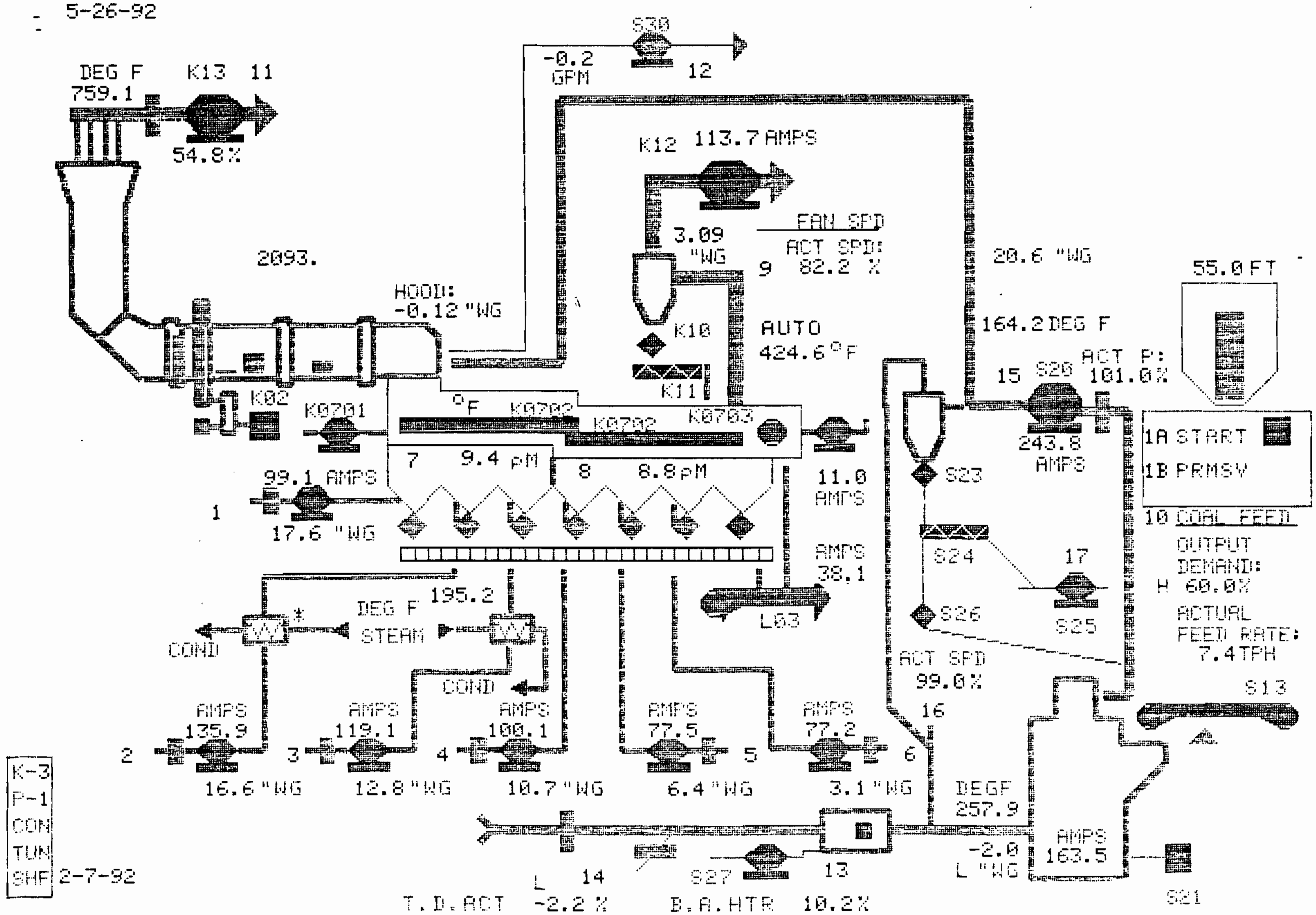
10-10-91

13:59:11 29-JUL-92 WEDNESDAY KILN PREHEATER 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



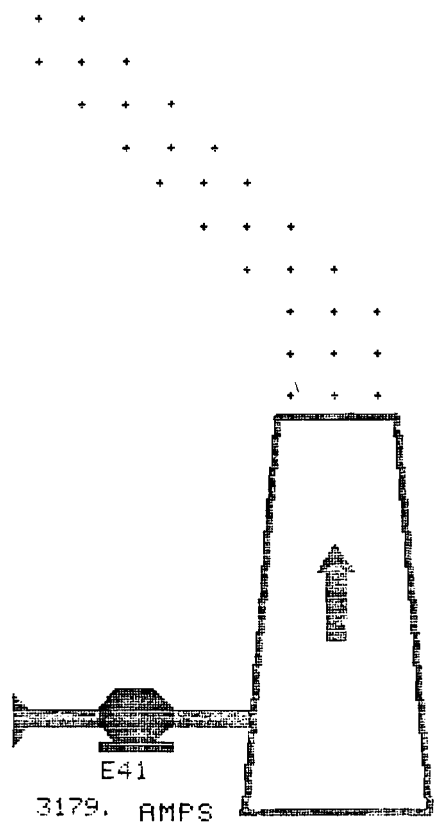
13:59:13 29-JUL-92 WEDNESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S

5-26-92



13:59:15 29-JUL-92 WEDNESDAY MAIN STACK

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	5.0 %		3.3 %	10.0 %
NOx:	150.5 PPM	453.9 LB/HR	527.2 LB/HR	1205. LB/HR
SO2:	117.3 PPM	444.3 LB/HR	606.8 LB/HR	781.0 LB/HR

O2: 6.07 %

TEMP: 393.6 °F

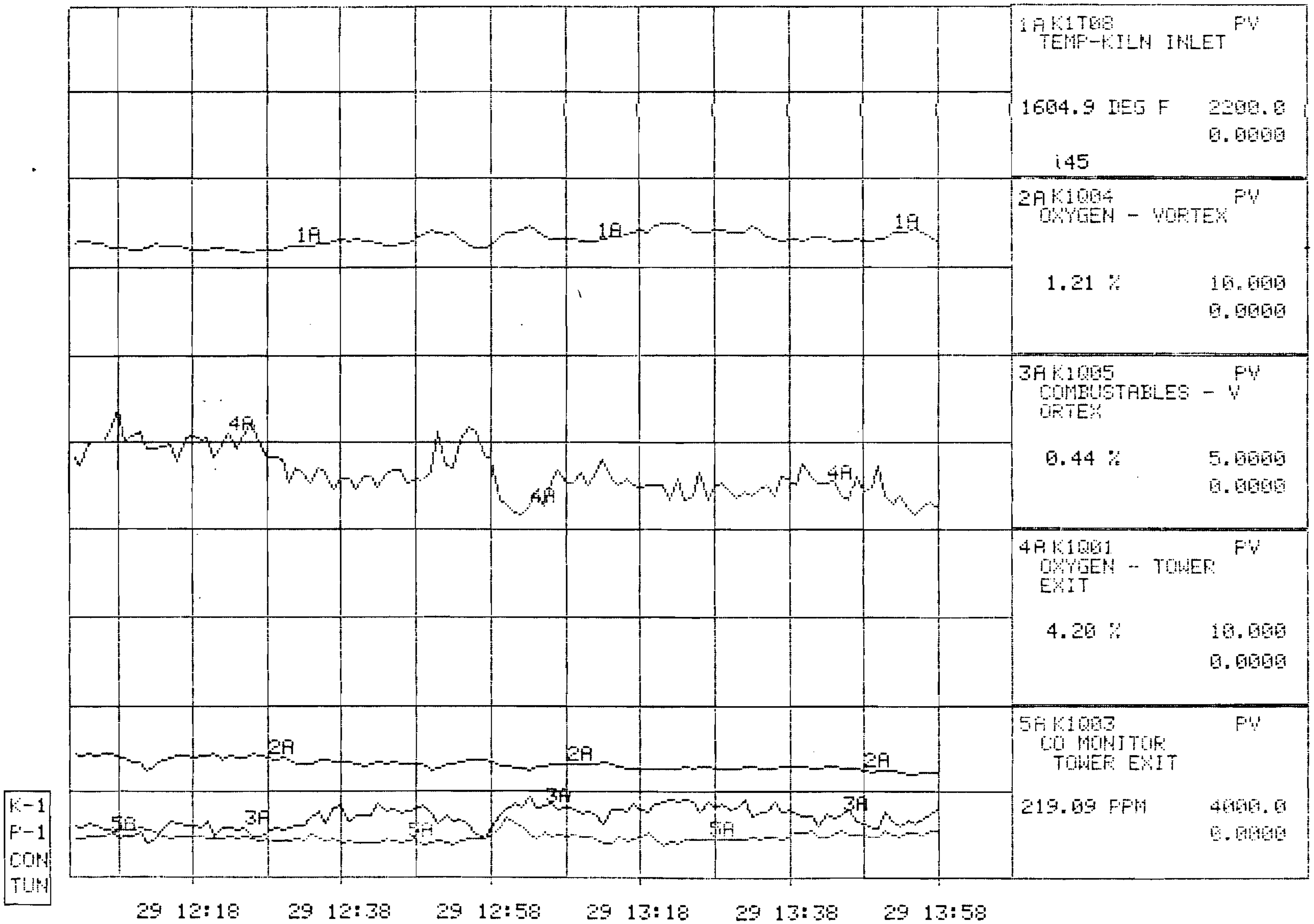
E1T19 157 °F

E1T20 122 °F

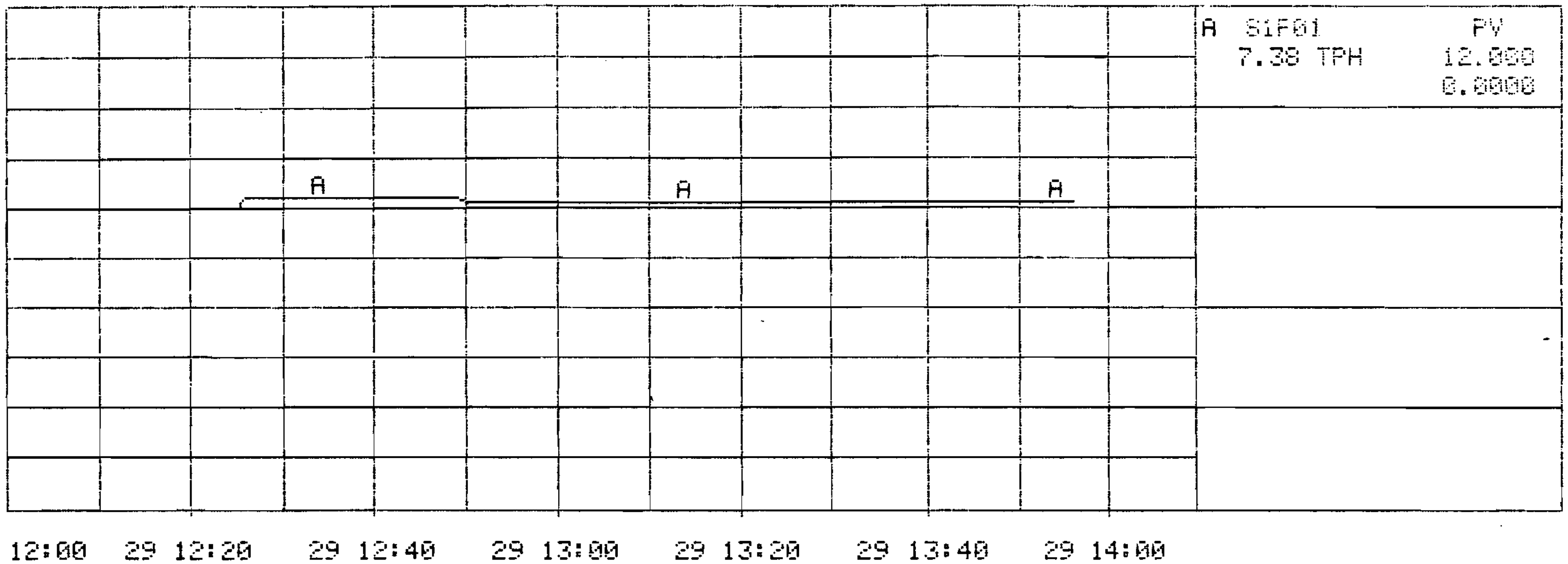
K-2
P-1
CON
TUN
SHF

5-14-92

13:59:17 29-JUL-92 WEDNESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



14:00:45 29-JUL-92 WEDNESDAY   CM GRINDING CONTROL   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE

50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT

47.87 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT

1995.2 TONS

B S1F01-CS
FEED RATE COAL

TPH 13.47
12.00
7.38 8.00
0.10
0.00
%
60.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES

4968.0

D S1F02-S
TIRE FEED SWITCH

RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT

H 0 312840 POUNDS

S1I01
COAL MILL DRIVE

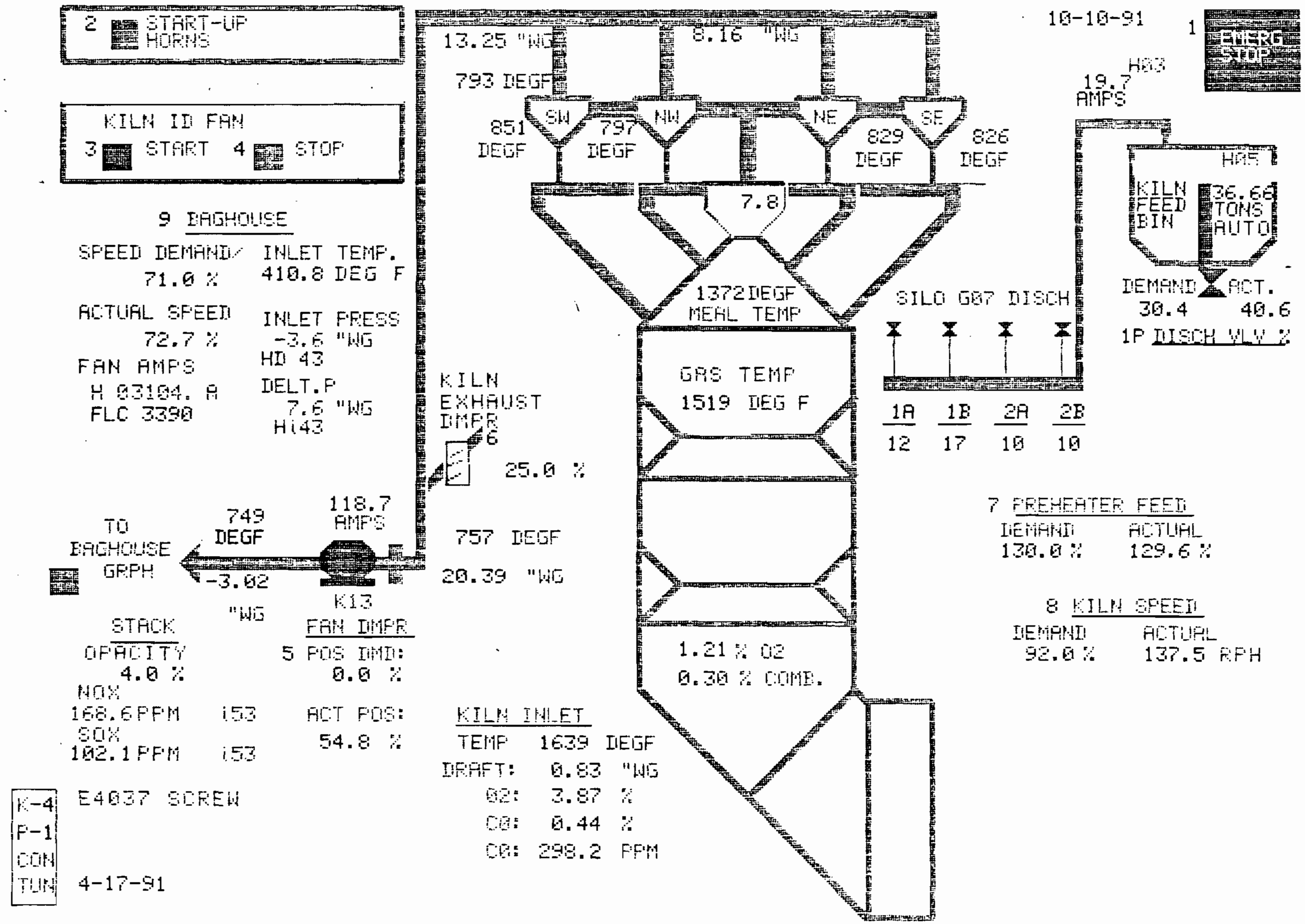
167.98 AMPS

L 0

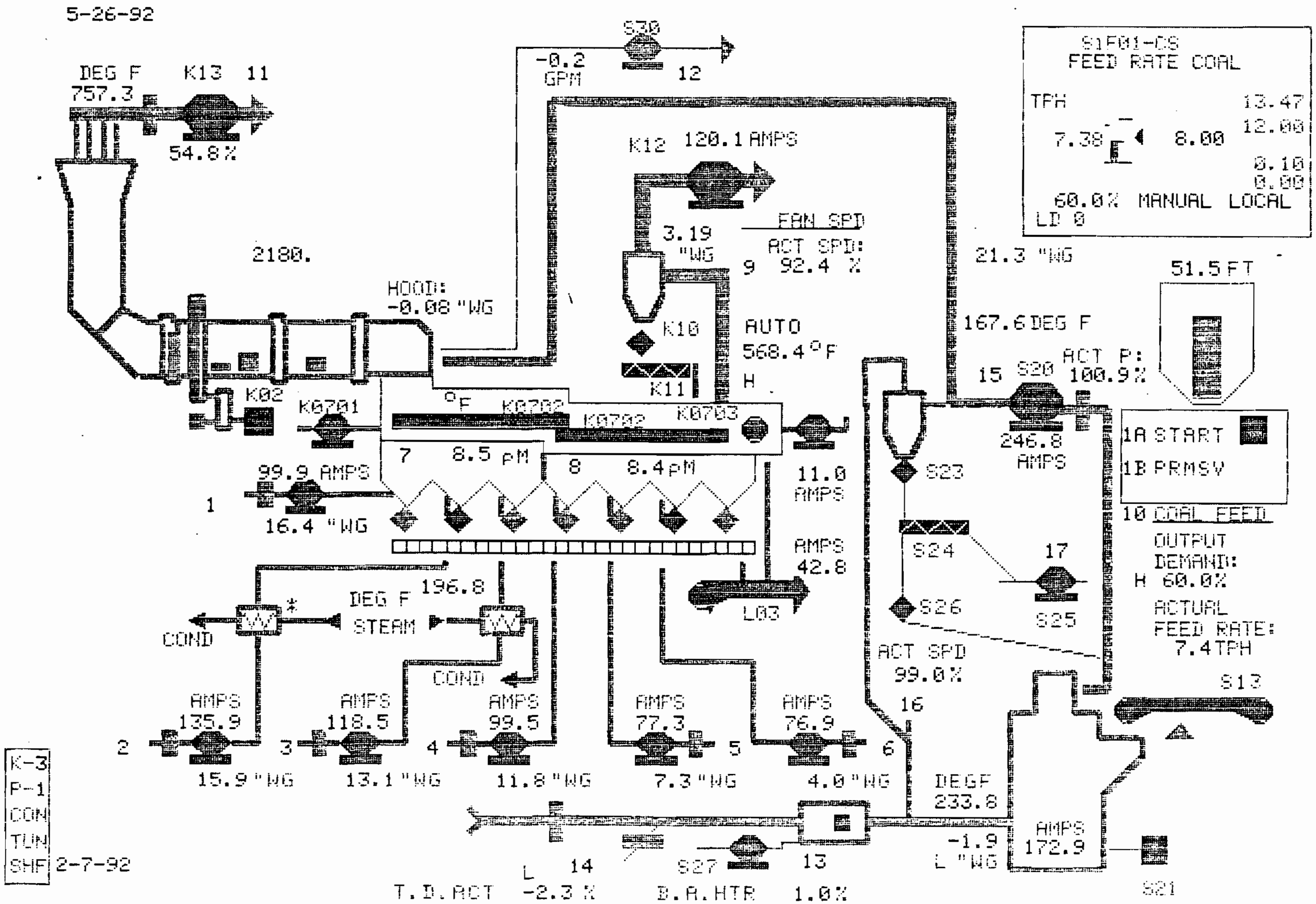
K-2
P-1
CON
TUN
SHF

10-10-91

16:01:27 29-JUL-92 WEDNESDAY KILN PREHEATER 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S

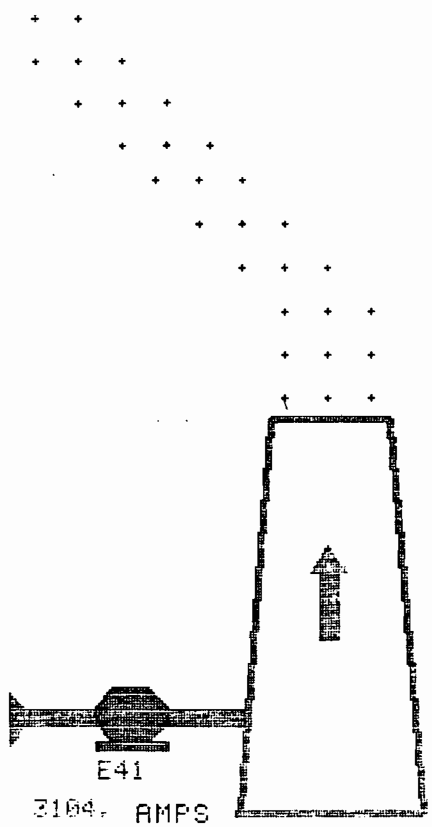


16:01:30 29-JUL-92 WEDNESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



16:01:33 29-JUL-92 WEDNESDAY MAIN STACK

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	4.0 %		3.3 %	10.0 %
NOx:	173.3 PPM	500.8 LB/HR	543.0 LB/HR	1205. LB/HR
SO2:	92.46 PPM	352.9 LB/HR	491.8 LB/HR	781.0 LB/HR

O2: 6.08 %

TEMP: 410.8 °F

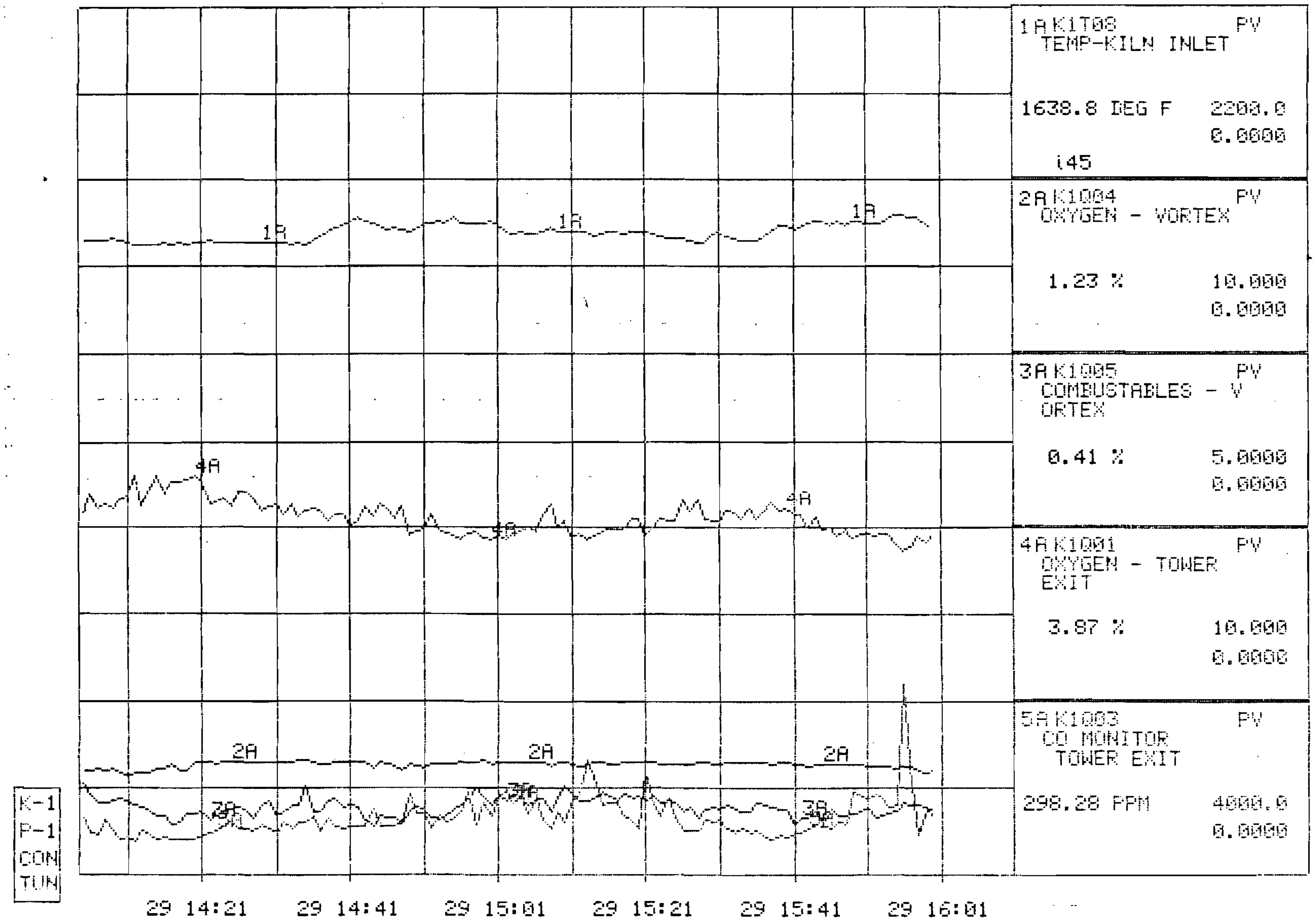
E1T19 157 °F

E1T20 124 °F

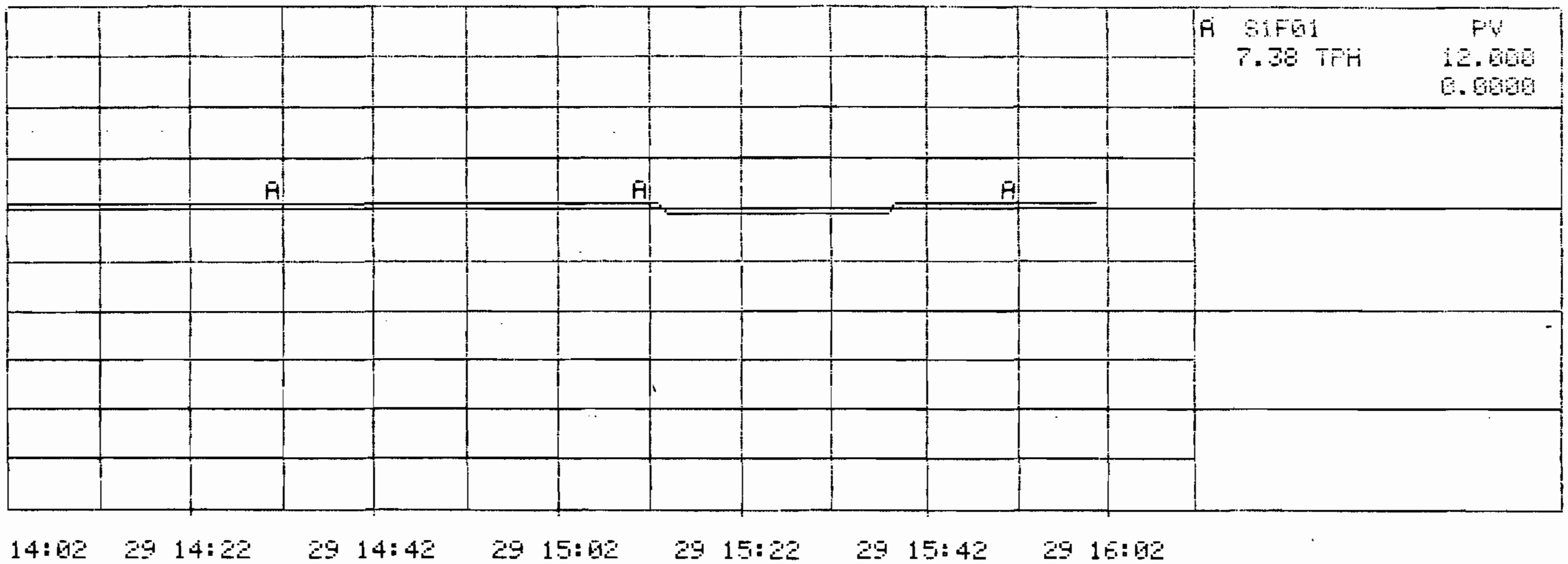
K-2
P-1
CON
TUN
SHF

5-14-92

16:01:36 29-JUL-92 WEDNESDAY TDF 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 8



16:02:53 29-JUL-92 WEDNESDAY   CM GRINDING CONTROL   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



C S1F02-O
TIRE FEED RATE
50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT
109.20 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT
2010.1 TONS

B S1F01-CS
FEED RATE COAL
TPH 13.47
12.00
7.38 8.00
0.10
0.00
1%
60.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES
5022.0

D S1F02-S
TIRE FEED SWITCH
RUN
STOP

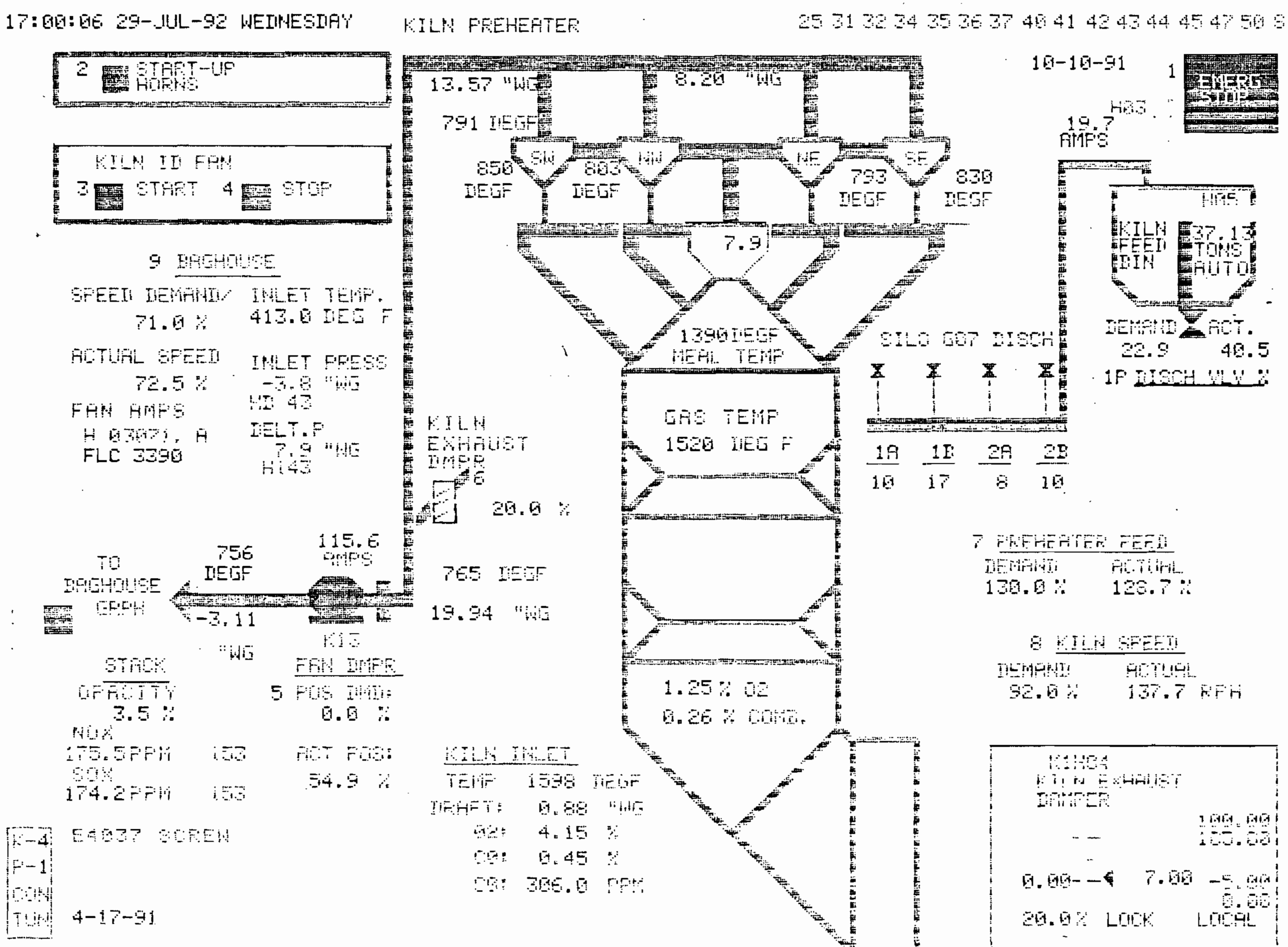
S1F02-T2
TOTAL TIRE
WEIGHT
H 0 318216 POUNDS

S1I01
COAL MILL DRIVE
167.32 AMPS
L 0

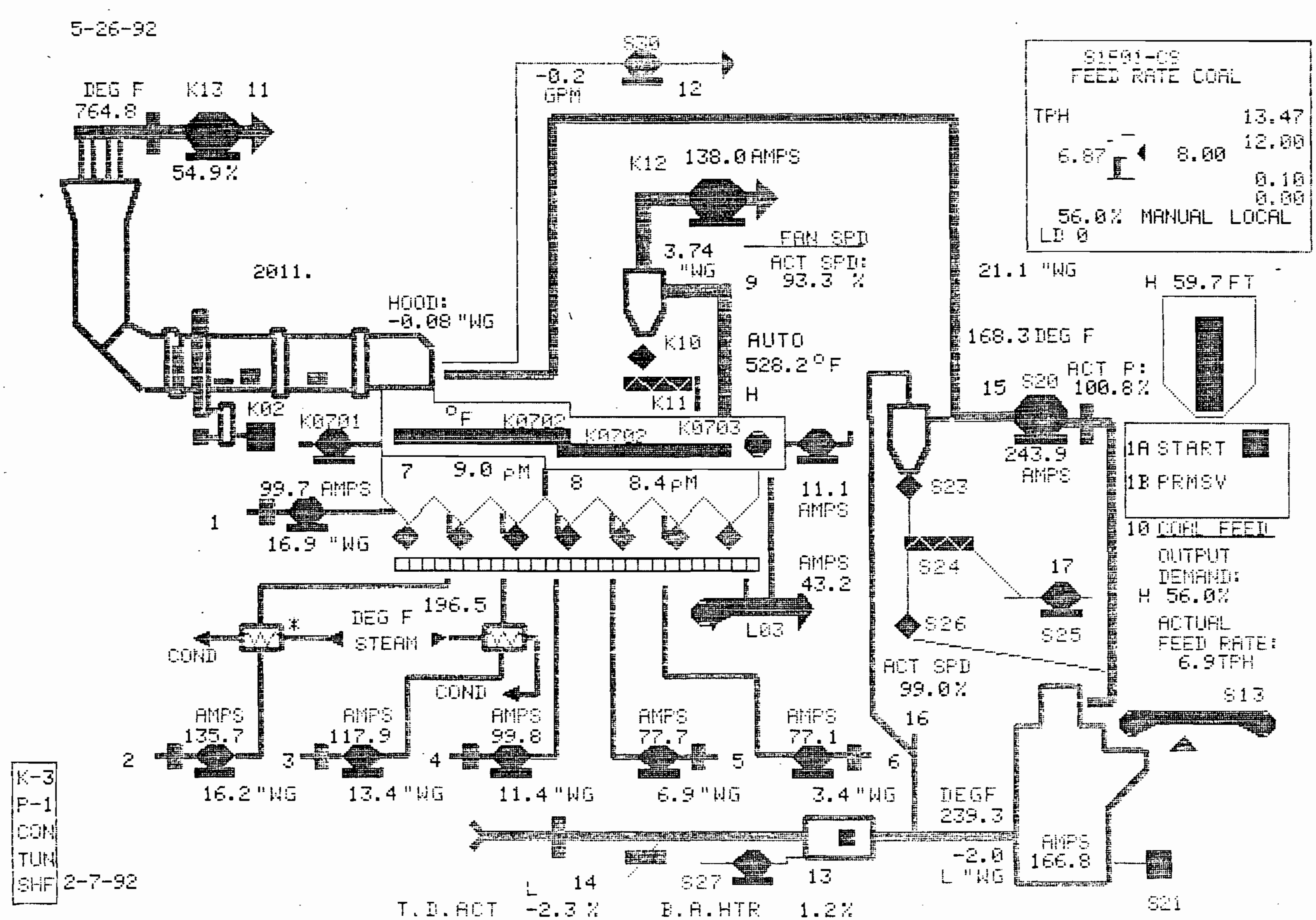
K-2
P-1
CON
TUN
SHF

10-10-91

BEST AVAILABLE COPY

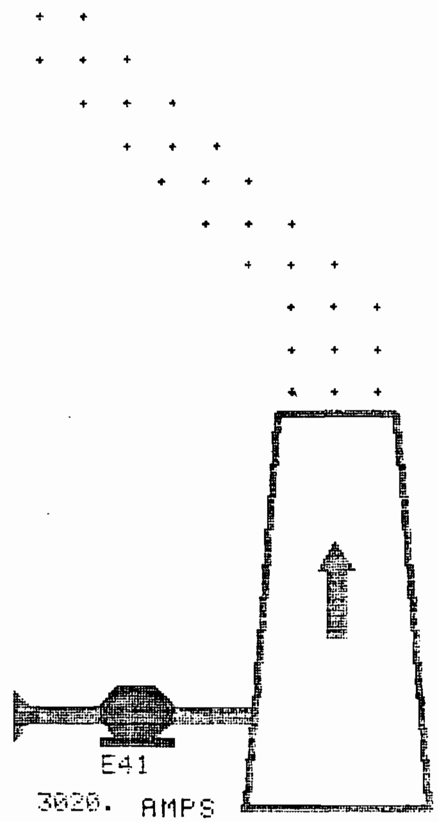


17:00:09 29-JUL-92 WEDNESDAY CLINKER COOLER FANS 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



17:00:16 29-JUL-92 WEDNESDAY MAIN STACK

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



	MEAS.	CALC.	AVER.	LIMIT
OPACITY:	3.5 %		2.7 %	10.0 %
NOx:	175.5 PPM	522.6 LB/HR	522.8 LB/HR	1205. LB/HR
SO2:	174.2 PPM	662.2 LB/HR	469.7 LB/HR	781.0 LB/HR

O2: 6.10 %

TEMP: 412.9 °F

E1T19 157 °F

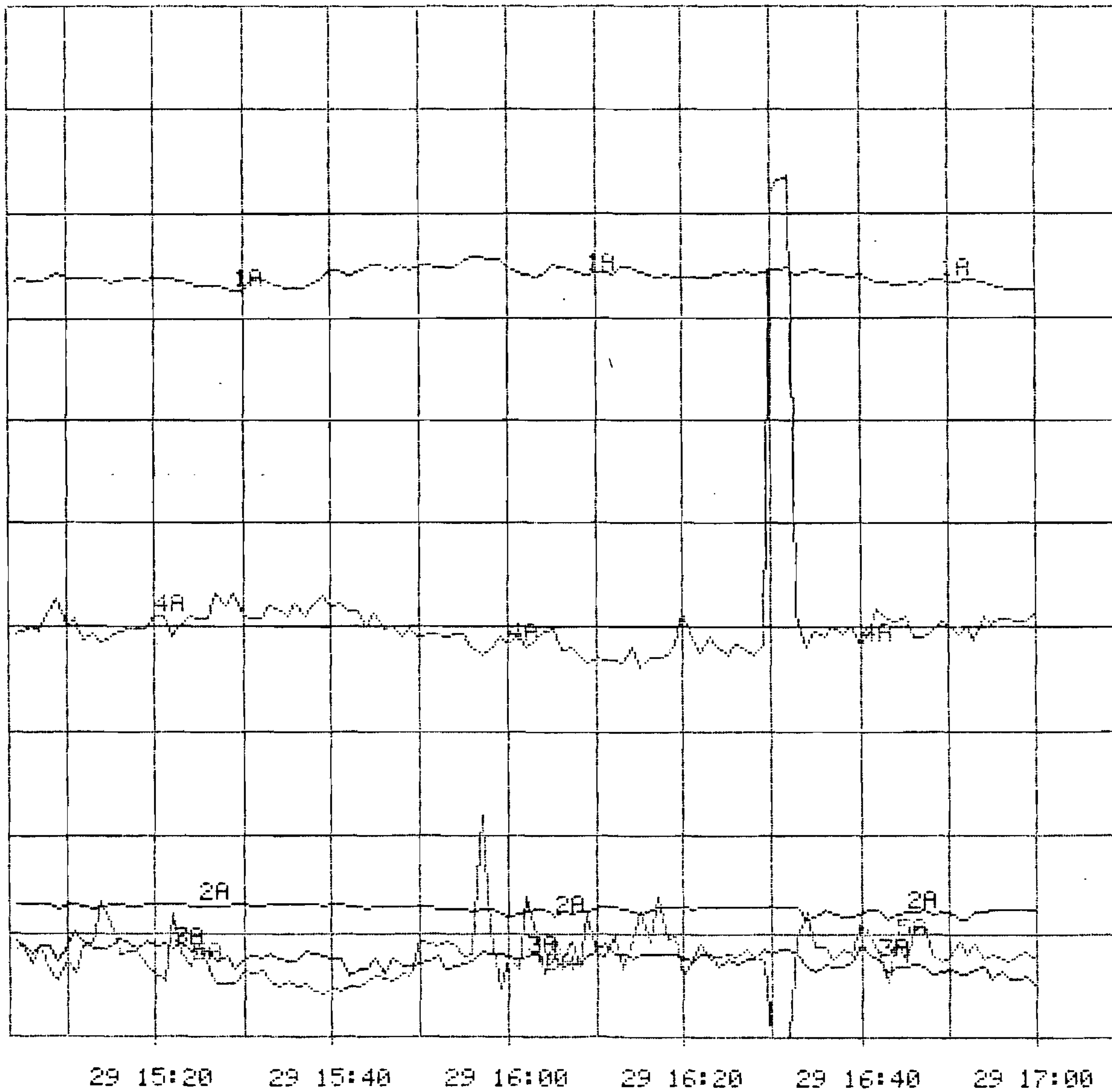
E1T20 124 °F

K-2
P-1
CON
TUN
SHF

5-14-92

17:00:18 29-JUL-92 WEDNESDAY TDF

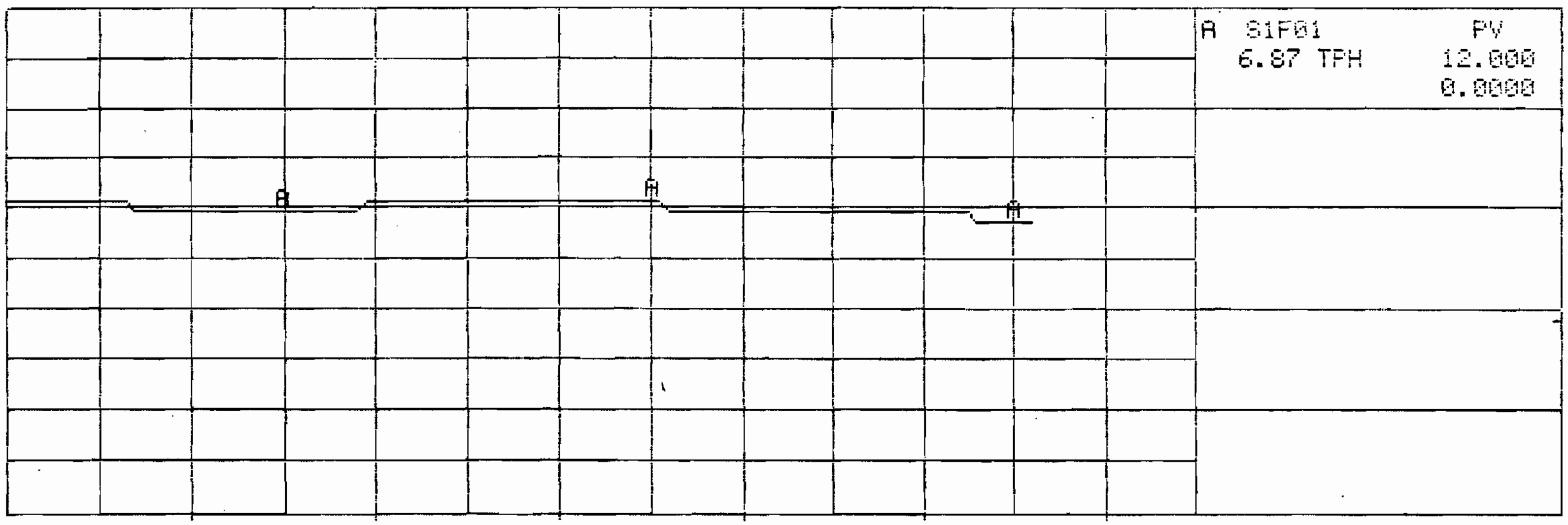
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



1A K1T08 TEMP-KILN INLET		PV
1597.6 DEG F		2200.0
		0.0000
145		
2A K1004 OXYGEN - VORTEX		PV
1.25 %		10.000
		0.0000
3A K1005 COMBUSTABLES - VORTEX		PV
0.26 %		5.0000
		0.0000
4A K1001 OXYGEN - TOWER EXIT		PV
4.15 %		10.000
		0.0000
5A K1003 CO MONITOR TOWER EXIT		PV
306.08 PPM		4000.0
		0.0000

K-1
F-1
CON
TUN

17:01:14 29-JUL-92 WEDNESDAY   CM GRINDING CONTROL   25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 S



15:01 29 15:21 29 15:41 29 16:01 29 16:21 29 16:41 29 17:01

C S1F02-O
TIRE FEED RATE
50.00
44.33 LB/MIN
0.00

S1F02-I
TIRE WEIGHT
109.37 POUNDS

S1F01-INT
TOTAL COAL FLOW
- CEMENT PLANT
2017.1 TONS

B S1F01-CS
FEED RATE COAL
TPH 13.47
12.00
8.00
6.87
0.10
0.00
%
56.0
MANUAL LOCAL
LD 0

S1F02-T1
TOTAL NUMBER
OF TIRES
5047.0

D S1F02-S
TIRE FEED SWITCH
RUN
STOP

S1F02-T2
TOTAL TIRE
WEIGHT
H 0 320800 POUNDS

S1I01
COAL MILL DRIVE
163.30 AMPS
L 0

K-2
P-1
CON
TUN
SHF

10-10-91

Best Available Copy

FLORIDA C

C/P/L/ MI) CONTROL REPORT

DATE 7-28-92 KF # 5595

RAW MILL FEEDERS / CONTROL TESTS

TIME					C_3A	S/R	SO_3	SiO_2	Al_2O_3	AVG.	Fe_2O_3	AVG.	CAO	C_3S	AVG	CL.	+70	SILO	TPH	T.T.	HRS	
7AM					7.9	2.3	.36	13.5	3.07	3.07	2.42	3.44	43.5	93	85	.099	1.1	2	150	300	2	
8AM					7.6	2.4	.36	13.6	3.01	3.05	1.99	2.96	43.6	79	83	.105	1.1	2	150	450	3	
9AM					7.5	2.5	.34	13.4	3.04	3.05	1.98	2.72	43.6	80	82	.098	1.2	2	150	600	4	
10AM					7.7	2.5	.25	13.6	3.27	3.09	2.09	2.79	43.3	73	81	.088	1.2	2	150	750	5	
11AM					7.8	2.5	.33	13.2	3.40	3.14	2.17	2.69	43.1	70	79	.077	.93	2	150	900	6	
12PM					7.9	2.4	.35	13.4	3.49	3.19	2.19	2.62	43.2	72	78	.098	1.2	2	150	1050	7	
1PM	T 13.1 B 13.1	3.25 3.25	2.32 2.25	60 60	7.9	2.4	.42	12.9	3.64	3.25	2.42	2.60	43.1	76	78	.099	1.3	2	150	1200	8	Blen
2PM					6.0	1.8	.38	12.5	3.63	—	3.38	—	43.0	78	—	.096	1.2	1	150	150	1	
3PM					5.9	1.9	.38	11.1	2.96	3.30	2.38	2.88	45.2	118	98	.102	1.2	1	150	300	2	
4PM					6.1	2.4	.41	15.0	2.76	3.12	1.84	2.55	43.6	64	.87	.108	1.1	1	150	450	3	
5PM	T 14.5 B 14.7	3.43 3.48	2.31 2.40	59 53	8.1	2.4	.45	19.7	4.40	3.38	3.16	2.66	39.4	-35	65	.098	1.29	2	150	1350	9	Blen
6PM	T 14.6 B 14.3	3.46 3.46	2.38 2.31	63 57	6.8	2.6	.45	19.8	3.65	3.25	2.31	2.49	41.1	-17	61	.109	1.16	1	150	600	4	
7PM					7.4	2.7	.38	18.3	3.90	3.38	2.24	2.44	41.9	30	49	.095	1.19	1	150	750	5	
8PM					7.4	2.7	.32	16.7	3.22	3.35	2.29	2.42	42.8	35	47	.104	.95	1	150	900	6	
9PM					6.5	2.8	.34	17.2	1.73	3.12	2.19	2.39	46.1	123	58	.112	.63	1	150	1050	7	
10PM	T 11.9 B 13.5	4.04 3.17	2.86 1.91	103 83	5.9	2.8	.27	10.5	1.59	2.93	2.07	2.35	47.2	152	70	.109	.75	1	150	1200	8	
11PM					—	—	.46	17.1	3.91	3.58	2.64	2.37	40.9	10	51	.102	1.6	2	150	1500	10	
12AM	T 13.2 B 15.1	3.05 3.05	2.01 1.97	85 87			.35	10.1	2.27	3.40	1.01	2.25	47.3	153	60	.109	1.1	2	150	1650	11	Blend
1AM					5.7	3.0	.28	8.3	1.39	2.76	.55	2.15	49.1	195	84	.111	.86	1	150	1350	9	
2AM					6.1	2.9	.43	11.3	3.31	2.82	1.62	2.10	45.9	117	87	.101	1.2	1	150	1500	10	
3AM					6.0	2.8	.40	11.3	3.22	2.86	3.07	2.19	45.3	112	89	.089	1.5	1	150	1650	11	
4AM					5.9	2.7	.38	12.3	3.72	2.93	4.18	2.36	43.8	82	88	.077	1.3	1	150	1800	12	
5AM					5.9	2.6	.38	14.9	5.01	3.09	5.58	2.61	40.6	16	82	.070	1.5	1	150	1950	13	
6AM	13.7 14.9	3.44 3.43	2.78 2.82	82 80	5.9	2.5	.36	14.7	4.69	3.20	5.03	2.78	41.3	25	78	.069	1.6	2	150	2100	14	Blend
AVG.																						

FINISH MILL CONTROL

TIME	SILO NO.	FREE CaO	LOSS	SURF AREA	% SO_3	325	FLOW	PUMP FLOW	SP.G. G.A.		CAO	MGO	K_2O	C_3S	C_2S	C_3A
7 ~~8AM~~	1		1.6	3600	2.77	95.7					64.8	.77	.45	56.8	17.9	6.2
~~10AM~~	1		1.8	3670	2.94	95.4					64.5	.79	.52	54.3	19.4	6.3
~~12PM~~	1		1.8	3710	2.91	95.6					64.3	.79	.53	55.9	22.5	6.2
2PM				[illegible]												
4PM																
6PM																
8PM																
16 ~~10PM~~			1.7	4190	3.01	97.7		—	—		64.0	.79	.53	52.1	21.9	6.2
12AM	2		—	4200	3.12	—	2020	.36	1.038	—	64.0	.79	.53	51.9	21.9	6.1
1 ~~2AM~~	2		1.7	3960	3.02	97.0	—	.33	—		64.0	.79	.55	52.4	21.5	6.1
3 ~~4AM~~	2		1.6	3920	2.86	96.8	—	.33	—		64.1	.79	.54	52.9	21.3	6.2
5 ~~6AM~~	2		1.5	3960	2.93	97.8	—	.33	—		64.1	.80	.54	52.8	21.3	6.2
AVG.																

COAL

SHIFT:	H20	+50	SULFUR	-200
1st				
2nd	1.41	.24	.748	88.7
3rd				

MIXMEN NOTES:

CLINKER CONTROL

TIME	SiO_2	Al_2O_3	Fe_2O_3	CaO	MGO	SO_3	S/M	C_3S	C_2S	C_3A	C_4AF	L.S.F.	TOTAL	SILO	K_2O	CL.	TEMP.
7 AM	21.3	5.21	4.18	65.3	.88	.69	2.3	60.9	15.3	6.7	12.7	94.3	98.2	HQ	.56	.010	
9 AM	21.4	5.16	4.13	65.4	.87	.89	2.3	60.6	15.7	6.7	12.6	94.2	99.7	HQ	.70	.000	
11 AM	21.6	5.03	4.21	65.2	.87	.89	2.3	59.5	17.1	6.2	12.9	95.4	98.7	HQ	.66	.000	
1 PM	21.4	5.16	4.19	65.9	.87	.48	2.3	63.8	13.1	6.6	12.8	95.3	98.4	HQ	.43	.000	
3 PM	21.4	5.20	4.23	65.5	.86	.76	2.3	61.4	15.0	6.6	12.9	94.5	98.6	HQ	.60	.003	
5 PM	21.5	5.00	3.96	65.9	.86	.85	2.4	63.2	14.0	6.6	12.1	96.5	99.9	HQ	.69	.006	
7 PM	21.3	5.20	4.24	66.0	.87	.58	2.3	64.3	12.6	6.6	12.9	95.6	98.9	HQ	.52	.008	
9 PM	21.1	5.27	4.25	66.2	.87	.59	2.2	65.8	10.9	6.7	13.1	96.4	98.5	HQ	.51	.003	
11 PM	21.1	5.30	4.19	66.3	.85	.65	2.2	66.4	10.4	7.0	12.8	96.7	98.9	HQ	.44	.002	
1 AM	21.2	5.08	4.19	66.1	.82	.95	2.3	65.0	11.8	6.4	12.8	95.9	99.1	HQ	.57	.002	
3 AM	21.2	5.15	4.17	65.9	.82	1.08	2.3	63.7	12.7	6.6	12.7	95.5	99.0	HQ	.54	.008	
5 AM	21.2	5.22	4.30	66.2	.80	.61	2.2	65.6	11.2	6.6	13.1	96.2	98.8	HQ	.38	.013	
AVG.																	

CLINKER

TIME	% F. LIME
7 ~~8AM~~	.31
9 ~~10AM~~	.22
11 AM ~~12PM~~	1.02
1 ~~2PM~~	.19
3 ~~4PM~~	.09
5 ~~6PM~~	.43
7 ~~8PM~~	.36
9 ~~10PM~~	.23
11 ~~12AM~~	.23
2AM	.18
4AM	.32
6AM	.35
AVG.	

QUALITY CONTROL TECHNICIANS

1st JC

2nd Rich

3rd PT

TARGETS

CONTROL	PS	$CaCO_3$	F.LIME	AL_2O_3	Fe_2O_3	CaO	SO_3	325	C_3S	LOSS	BLAINE 1	BLAINE 2
R.M.				3.2	2.5				68			
CLK			2.0							2.0	3650	3950
F.M.			2.0				2.85			2.0	3750	4050

KILN FEED

SHIFT	SO_3	+70	SiO_2	Al_2O_3	Fe_2O_3	CaO	MGO	TOTAL	L.S.F.	C_3S	C_2S	C_3A	C_4AF	CL.
1st 8 AM	.38 .36	.92	13.6 13.9	3.21 3.10	2.43 2.42	43.6 43.1	.48 .47	76.8 76.9	99.6 97.5	73 73	— —	6.77 6.34	— —	.002 .004
2nd 3 PM	.32 .32	1.08	13.4 13.7	3.33 3.27	2.43 2.35	43.2 43.4	.44 .46	76.8 76.2	100.1 69.6	74 75	=	7.26 6.40	=	.053 .044
3rd 12 AM	.38 .42	.82	14.0 12.9	3.36 3.27	2.45 2.28	42.8 44.1	.30 .48	76.8 76.8	95.6 106.7	64 .6		7.3 7.4		.095 .109
AVG.														

FLORIDA C
C/P/L/ MIX CONTROL REPORT

DATE 7-29-92 KF# 8493

TIME	RAW MILL FEEDERS				CONTROL TESTS C3A	S/R	SO3	SiO2	Al2O3	AVG.	Fe2O3	AVG.	CAO	C3S	AVG	CL.	+70	SILO	TPH	T.T.	HRS	
7AM					8.1	1.9	.43	12.9	3.91	—	3.01	—	43.8	77	—	.095	1.2	2	150	150	1	
8AM					10.4	2.0	.42	12.4	4.30	4.11	1.90	2.46	44.4	84	80	.101	.87	2	150	300	2	
9AM					11.5	2.0	.41	12.4	4.56	4.21	1.84	2.25	44.2	81	80	.103	1.0	2	150	450	3	
10AM					11.1	2.1	.36	16.2	4.08	4.22	2.63	2.35	42.2	27	67	.095	.89	2	150	600	4	
11AM					5.9	2.5	.38	14.0	3.74	3.24	3.35	2.82	43.2	61	77	.083	1.3	1	150	2250	15	
12PM	T 14.0 B 14.4	3.30 3.31	2.28 2.42	73 66	6.1	2.6	.39	16.0	3.20	3.24	1.59	2.74	43.6	50	75	.091	1.3	1	150	2400	16	Blend
1PM					10.5	2.4	.39	15.5	2.95	3.97	1.41	2.39	44.0	61	66	.096	.75	2	150	750	5	
2PM					9.8	2.5	.41	12.3	2.71	3.76	1.84	2.30	45.6	110	73	.101	.93	2	150	900	6	
3PM					8.95	2.46	.40	10.9	2.46	3.57	1.39	2.31	46.3	132	81	.103	.89	2	150	1050	7	
4PM					8.94	2.44	.45	11.6	2.47	3.43	1.62	2.35	45.9	120	85	.111	.92	2	150	1200	8	
5PM					7.89	2.44	.50	16.4	3.34	3.42	3.29	2.45	42.4	32	79	.107	1.4	2	150	1350	9	
6PM	13.5 13.6	3.46 3.45	2.60 2.47	77 76	7.58	2.45	.51	15.2	3.06	3.38	1.97	2.50	43.4	56	77	.103	1.2	2	150	1500	10	Blend
7PM					5.11	2.22	.48	13.2	3.09	—	2.88	—	44.4	85	—	.096	1.0	1	150	150	1	
8PM					6.74	2.56	.47	12.4	2.92	3.01	1.36	2.12	45.8	108	97	.096	1.3	1	150	300	2	
9PM					8.56	2.54	.45	13.3	3.91	3.31	1.44	1.89	44.2	78	91	.080	1.4	1	150	450	3	
10PM					10.2	2.38	.40	14.9	5.32	3.81	2.46	2.03	41.5	25	75	.064	2.2	1	150	600	4	
11PM					9.5	2.2	.32	13.8	4.37	3.92	4.27	2.48	42.0	47	69	.065	1.7	1	150	750	5	
12AM	T 12.8 B 12.7	3.74 3.71	2.70 2.60	81 84	8.3	2.0	.27	13.3	3.75	3.69	5.06	2.91	42.5	61	68	.060	1.4	1	150	900	6	
1AM																						
2AM																						
3AM					8.6	2.0	.54	12.5	4.10	3.92	2.51	2.85	44.1	82	70	.113	.60	1	150	1050	7	
4AM					9.0	2.0	.46	13.6	4.38	3.98	2.37	2.79	43.5	63	69	.101	1.0	1	150	1200	8	
5AM					8.3	2.1	.21	12.3	2.00	3.76	2.22	2.73	46.1	119	75	.074	.80	1	150	1350	9	
6AM	T 13.2 B 13.2	3.58 3.63	2.50 2.45	80 79	7.5	2.3	.14	15.7	1.17	3.50	2.93	2.75	44.7	76	75	.080	.76	1	150	1500	10	Blend
AVG.																						

FINISH MILL CONTROL

TIME	SILO NO.	FREE CaO	LOSS	SURF AREA	% SO3	325	FLOW	PUMP FLOW	SP.G. G.A.		CAO	MGO	K2O	C3S	C2S	C3A
8AM	2		1.6	3910	2.67	97.0					64.1	.80	.51	53.0	21.2	6.2
10AM	2		1.6	3960	2.94	97.5					64.0	.81	.54	51.9	22.1	6.2
12PM					↓	@	10 45									
2PM																
4PM																
6PM																
8PM																
10PM																
12AM	1		1.3	3970	2.95	97.1	2100	.38	1.038		63.9	.90	.55	51.2	22.7	6.1
2AM	1		1.6	3740	2.95	96.3	—	.35	—		63.9	.80	.54	51.7	22.2	6.2
4AM	1		1.7	3730	2.93	96.1	—	.35	—		64.1	.80	.53	52.8	21.3	6.1
6AM	1		1.5	3800	2.87	96.5	—	.35	—		64.1	.79	.51	53.5	20.6	6.1
AVG.																

COAL

SHIFT:	H20	+50	SULFUR	-200
1st				
2nd	1.372	.22	.774	87.6
3rd	1.36	.25	.770	84.2

MIXMEN NOTES:
RM↓ 11:50 AM Reclaimer
RM↓ 2:05 AM

CLINKER CONTROL

TIME	SiO2	Al2O3	Fe2O3	CaO	MGO	SO3	S/M	C3S	C2S	C3A	C4AF	L.S.F.	TOTAL	SILO	K2O	CL.	TEMP.
7 AM	21.0	5.31	4.38	66.4	.90	.59	2.2	67.3	9.4	6.7	13.3	97.1	99.0	HQ	.40	.002	
9 AM	21.2	5.15	4.29	66.7	.88	.28	2.3	68.9	9.8	6.4	13.0	97.3	99.8	HQ	.35	.004	
11 AM	20.9	5.33	4.14	66.1	.91	.76	2.2	66.4	10.0	7.1	12.6	96.9	98.9	HQ	.61	.002	
1 PM	20.8	5.34	4.39	65.3	.90	1.23	2.1	61.9	13.1	6.7	13.4	95.3	98.7	HQ	.66	.002	
3 PM	21.0	5.57	4.59	65.9	.90	.46	2.1	64.8	11.3	6.47	14.0	96.1	98.7	HQ	.39	.001	
5	20.8	5.51	4.76	66.1	.91	.34	2.0	65.5	9.40	6.55	14.5	97.0	98.9	HQ	.34	.002	
7	21.0	5.25	4.50	65.5	.87	1.21	2.15	61.9	13.5	6.30	13.7	95.0	99.0	HQ	.68	.004	
9	21.1	5.19	4.31	66.2	.97	.83	2.22	66.0	10.7	6.47	13.1	96.4	99.1	HQ	.57	.003	
11 PM	21.1	5.11	4.49	66.2	.93	.82	2.2	65.6	11.1	6.0	13.7	96.1	99.1	HQ	.44	.006	
1 AM	21.0	5.07	4.15	66.5	.83	.92	2.3	68.5	8.7	6.4	12.6	97.4	99.1	HQ	.50	.010	
3 AM	21.1	5.16	4.42	67.1	.86	.30	2.2	71.3	6.6	6.2	13.5	98.3	99.1	HQ	.20	.002	
5 AM	21.0	5.03	4.43	66.6	.92	.95	2.2	68.4	8.7	5.8	13.5	97.2	99.5	HQ	.50	.011	
AVG.																	

CLINKER

TIME	% F. LIME
8AM	.13
10AM	.13
12PM	.15
2PM	.11
4PM	.12
6PM	.25
8PM	.23
10PM	.30
12AM	.42
2AM	.83
4AM	.22
6AM	.63
AVG.	

QUALITY CONTROL TECHNICIANS

1st [illegible]

2nd [illegible]

3rd [illegible]

TARGETS

CONTROL	PS	CaCO3	F.LIME	AL2O3	Fe2O3	CaO	SO3	325	C3S	LOSS	BLAINE 1	BLAINE 2
R.M.				3.2	2.5				68			
CLK			2.0							2.0	3650	3950
F.M.			2.0				2.85			2.0	3750	4050

KILN FEED

SHIFT	SO3	+70	SiO2	Al2O3	Fe2O3	CaO	MGO	TOTAL	L.S.F.	C3S	C2S	C3A	C4AF	CL.
8AM 1st	.39 .41	.91	13.7 13.4	3.50 3.25	2.53 2.40	43.6 43.7	.50 .47	76.0 77.2	95.0 101.7	64 78	— —	7.04 7.00	— —	.09 .105
5PM 2nd	.37 .35	.73	13.6 14.1	3.25 3.26	2.43 2.60	43.3 43.5	.48 .48	77.0 77.5	99.6 101.1	74 67	=		=	.09 .09
11PM 3rd	.43 .39	.81	13.5 13.9	3.34 3.29	2.20 2.33	44.2 44.0	.47 .47	77.4 77.4	102.5 99.4	80 74		7.9 7.4		.102 .102
AVG.														

20:00:16 28-JUL-92 TUESDAY NET GENERATION

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 61 62 63 64 65 66 67 71 73 78 79 80 81 82 99

GENERATED 0.38 MWH THIS HOUR

TIME		SCHED	ACTUAL	INADV
0100	1A	110.00	107.03	-2.97
0200	1B	110.00	106.26	-3.74
0300	1C	110.00	108.18	-1.82
0400	1D	110.00	107.12	-2.88
0500	1E	110.00	106.16	-3.84
0600	1F	110.00	106.93	-3.07
0700	1G	110.00	105.39	-4.61
0800	1H	110.00	103.18	-6.82
0900	1I	110.00	108.18	-1.82
1000	1J	110.00	112.22	2.22
1100	1K	110.00	112.51	2.51
1200	1L	110.00	112.80	2.80
ON P1			548.91	-1.10
1300	1M	110.00	112.32	2.32
1400	1N	110.00	111.65	1.65
1500	1O	110.00	110.01	0.01
1600	1P	110.00	110.78	0.78
1700	1Q	110.00	110.97	0.97
ON P2			555.73	5.73
1800	1R	110.00	110.01	0.01
1900	1S	110.00	109.43	-0.57
2000	1T	110.00	111.46	1.07
2100	1U	110.00	0.19	-110.0
2200	1V	110.00	0.00	-110.0
2300	1W	110.00	0.00	-110.0
ON P3			329.65	-329.9
2400	1X	110.00	0.00	-110.0
OFFPEAK			747.08	-132.9
TOTAL			2181.5	[redacted]

RESET= A TRANSFER= B

K-2
P-1
CON
TUN
SHF

SCH 1Y	110.00
ON HOUR	" 21 "
ADVANCE	2Y

F.P.L.

DEMAND	109.62 MWH
OFFSET	0.04 MW
NET GEN	99.00 MW

C.P.L.

GROSS	122.00 MW
AUX LOAD	11.23 MW
NET OUT	110.82 MW

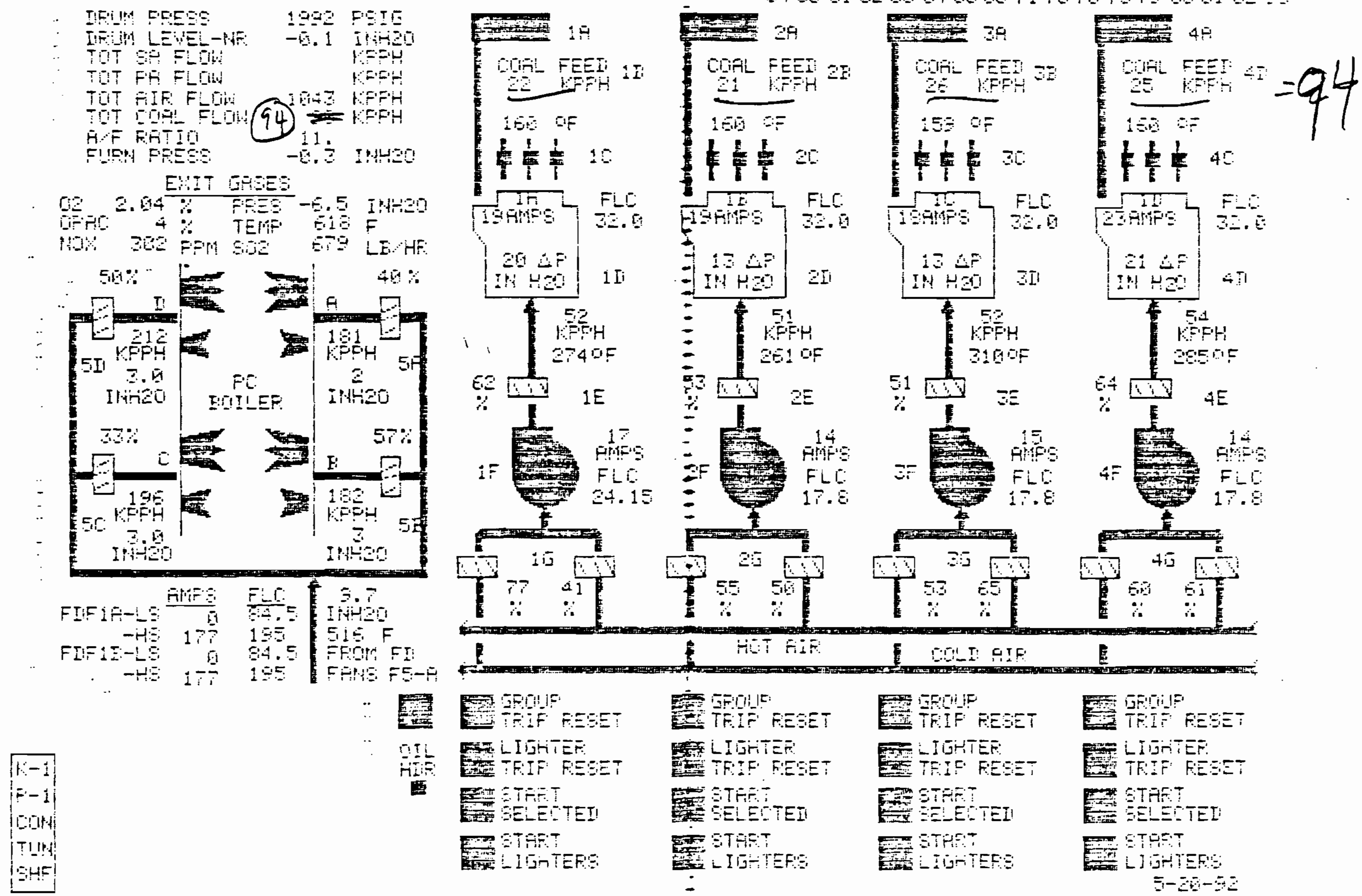
BAGHOUSE

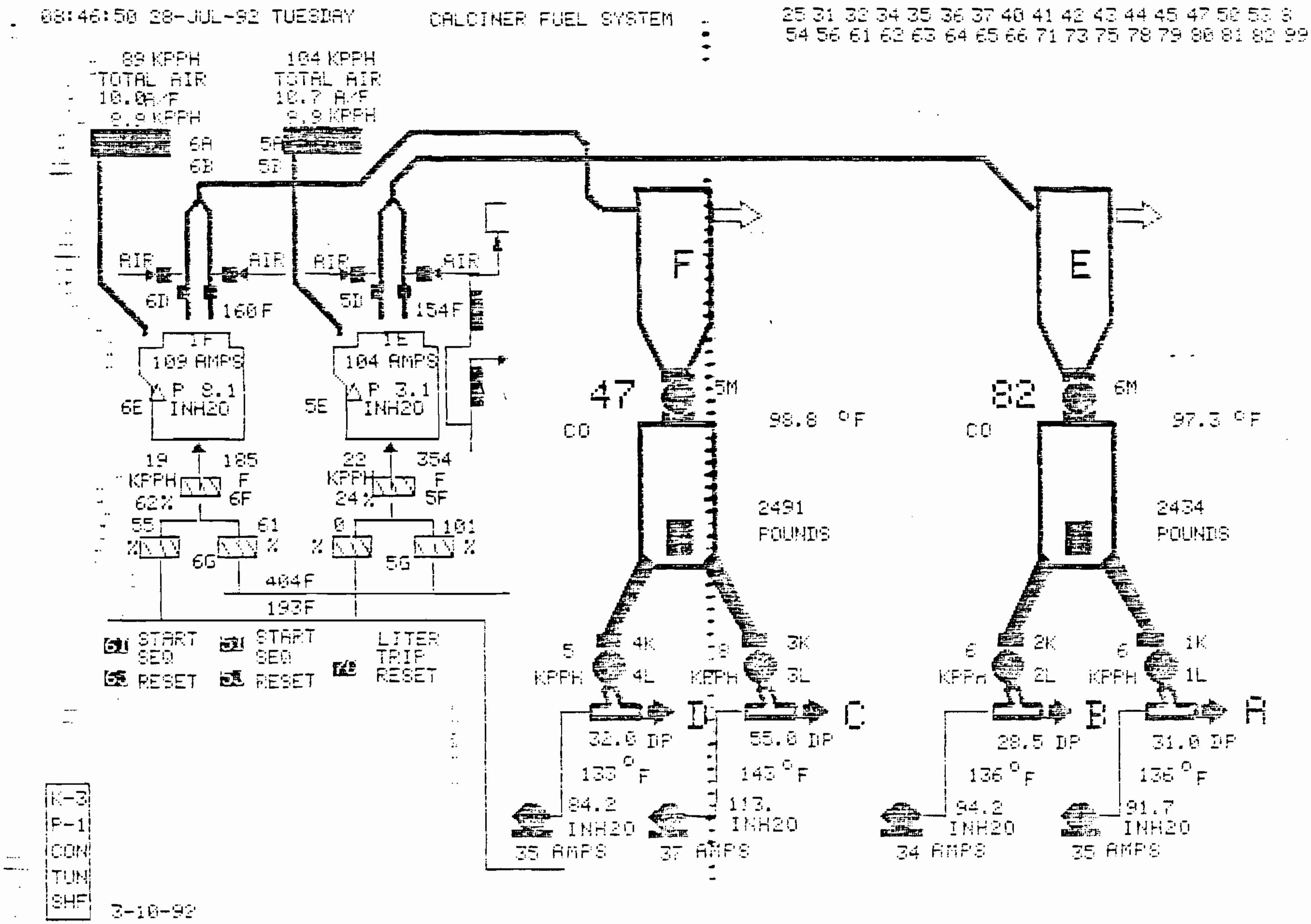
INSTANT	1350.0 KW
PWR USED	6677 MWH
CMT USED	7535 MWH

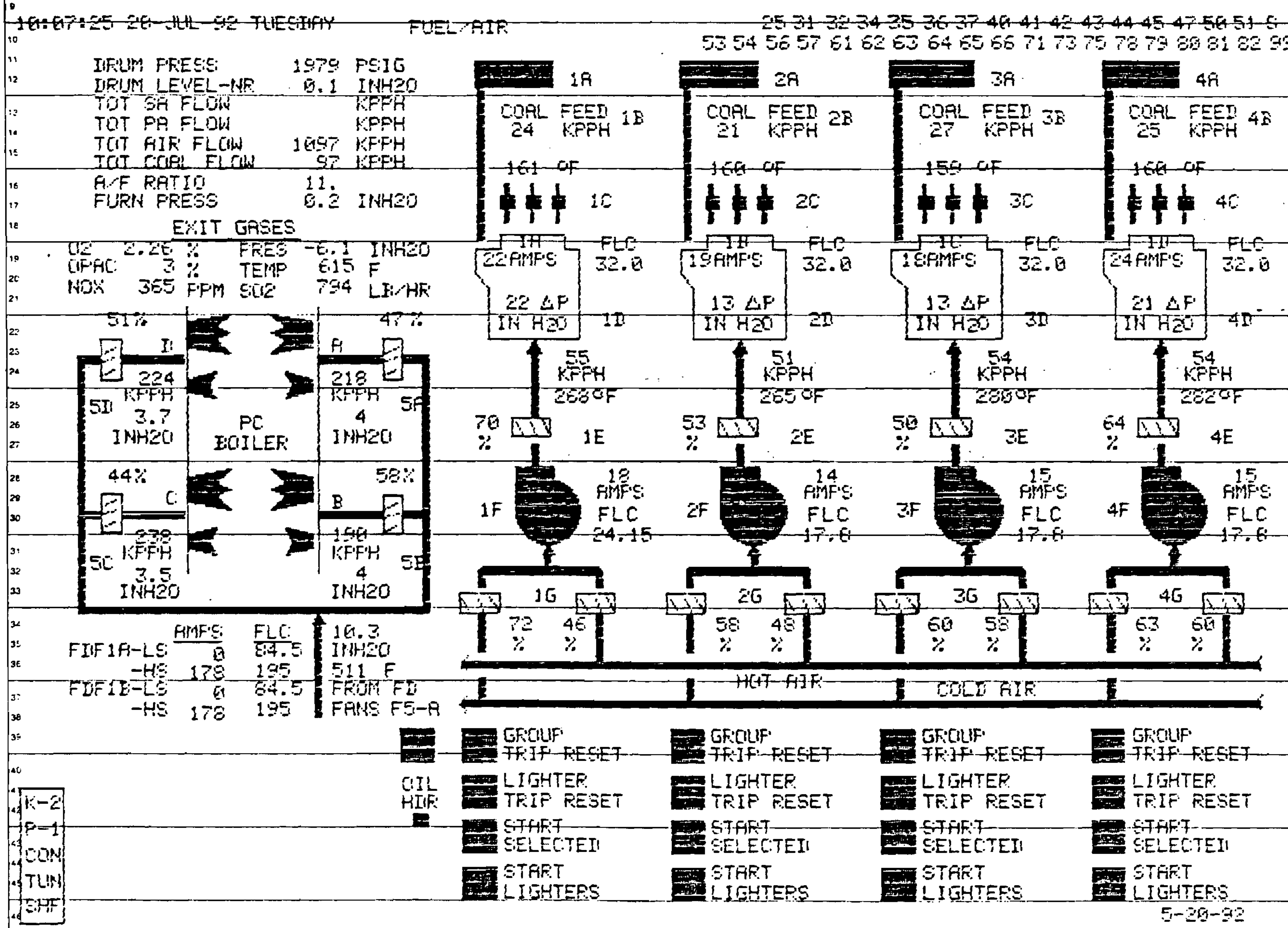
12-04-90

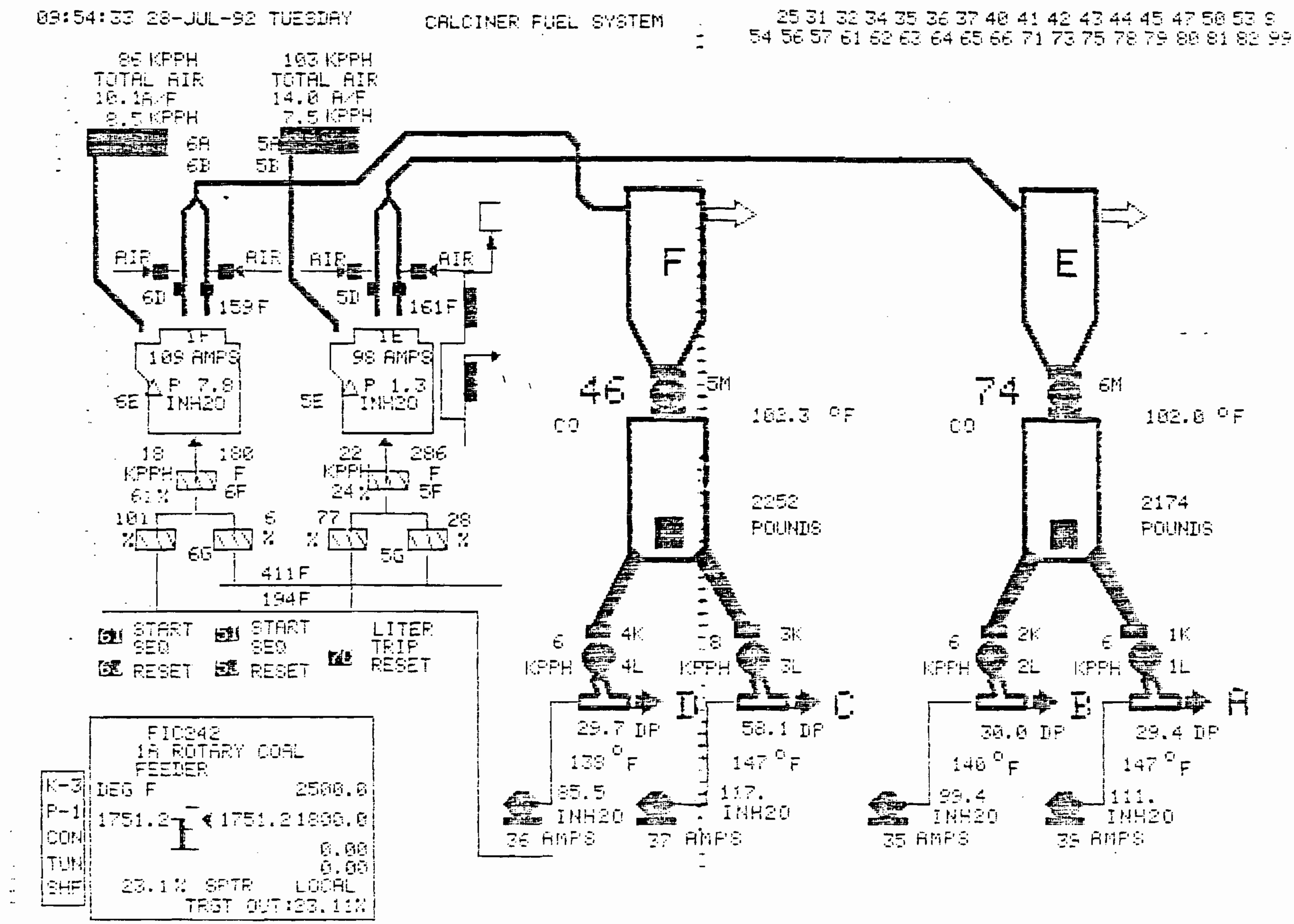
08:47:49 28-JUL-92 TUESDAY FUEL/AIR

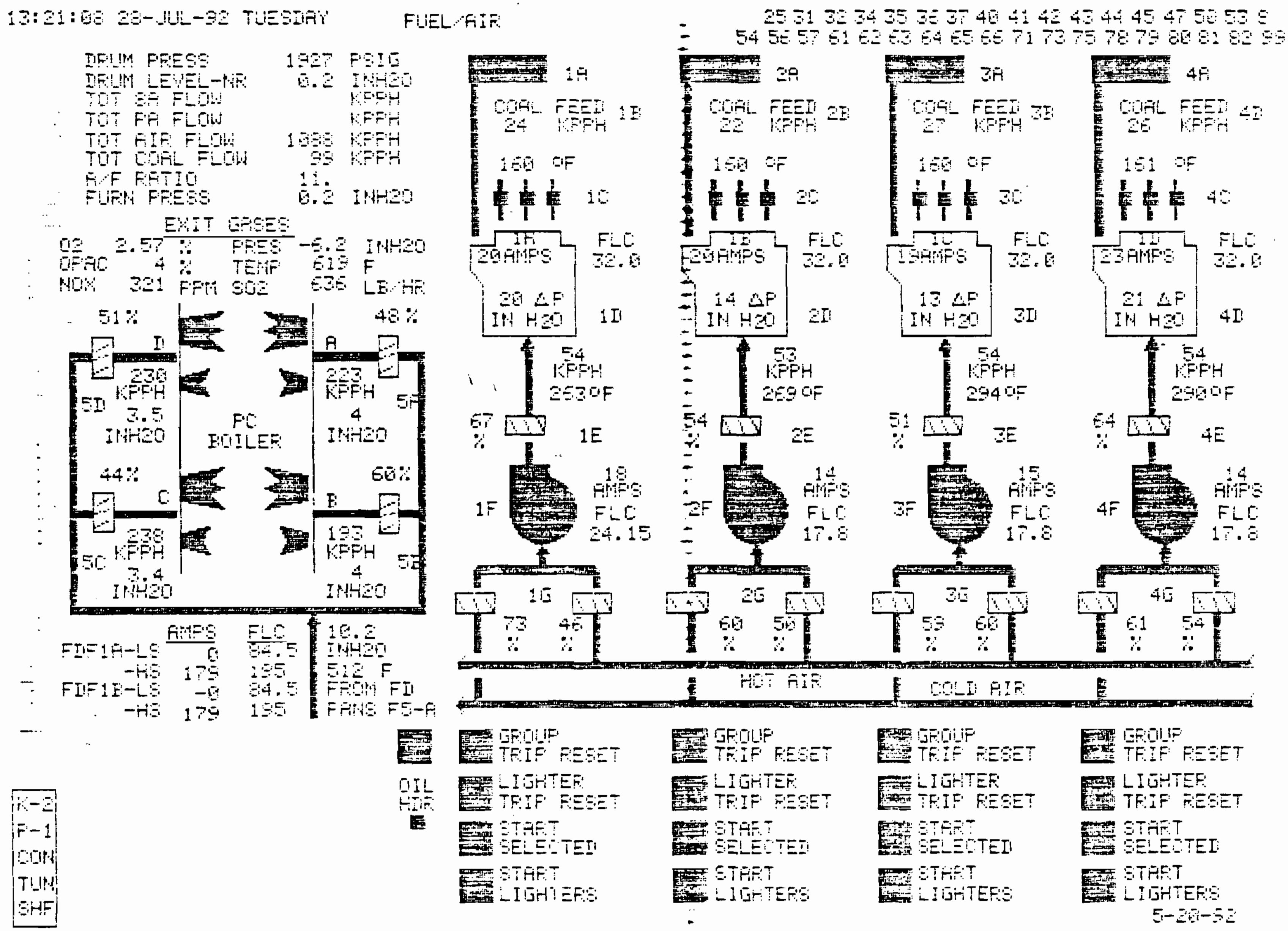
28 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99




08:46:50 28-JUL-92 TUESDAY
CALCINER FUEL SYSTEM
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
89 KPPH
TOTAL AIR
10.0A/F
8.9 KPPH
104 KPPH
TOTAL AIR
10.7 A/F
9.9 KPPH
6A
6B
5A
5B
AIR
AIR
AIR
AIR
6D
160 F
5D
154 F
1F
109 AMPS
P 8.1
INH2O
6E
1E
104 AMPS
P 3.1
INH2O
5E
19
KPPH
62%
185
F
6F
22
KPPH
24%
354
F
5F
55
%
61
%
6G
0
%
101
%
5G
404F
193F
START
SEQ
RESET
START
SEQ
RESET
LITER
TRIP
RESET
F
E
47
82
CO
CO
5M
6M
98.8 °F
97.3 °F
2491
POUNDS
2434
POUNDS
5
KPPH
4K
4L
8
KPPH
3K
3L
6
KPPH
2K
2L
6
KPPH
1K
1L
D
C
B
A
32.0 DP
55.0 DP
28.5 DP
31.0 DP
133 °F
143 °F
136 °F
136 °F
84.2
INH2O
113.
INH2O
94.2
INH2O
91.7
INH2O
35 AMPS
37 AMPS
34 AMPS
35 AMPS
K-3
P-1
CON
TUN
SHF
3-10-92

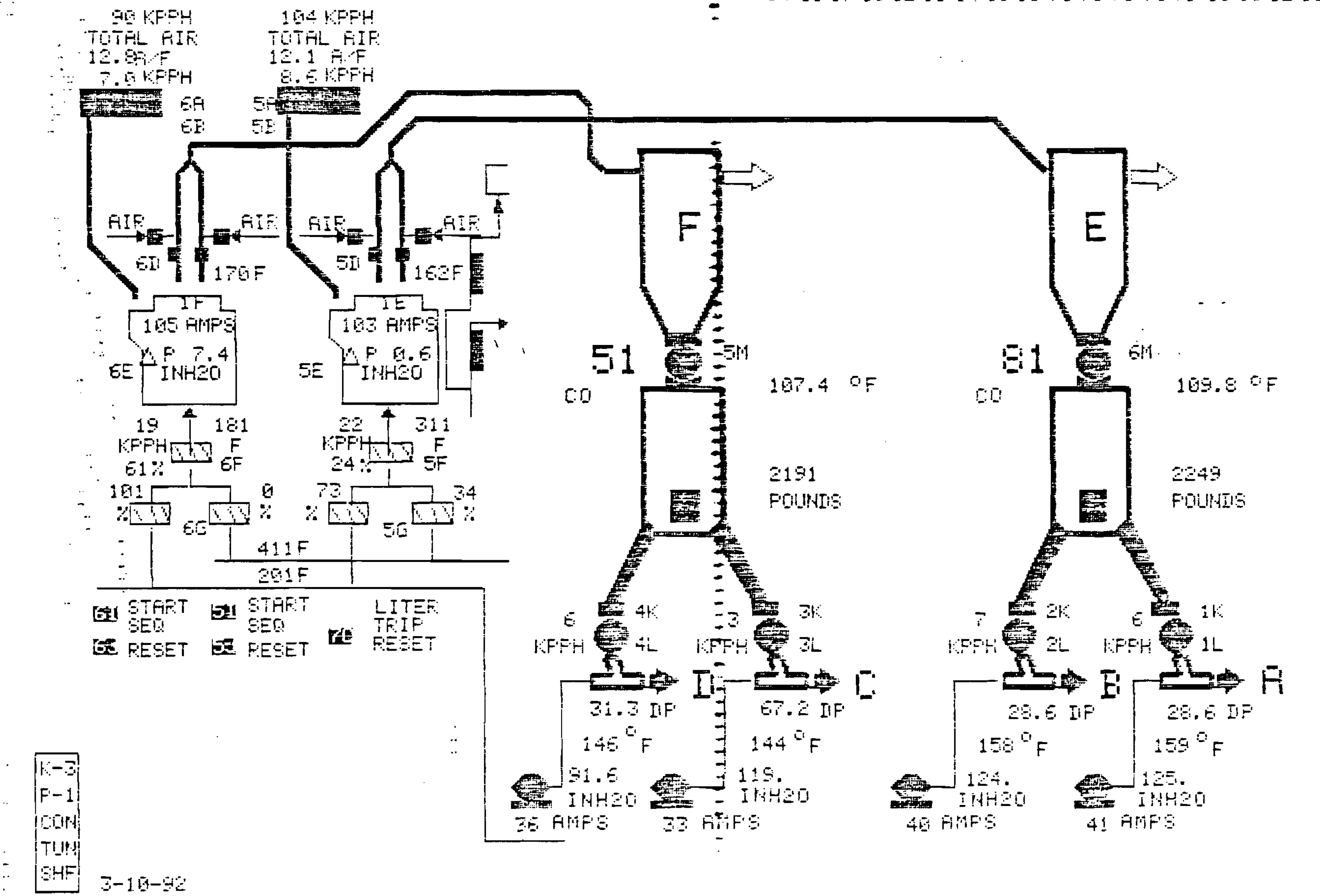

10:07:25 28-JUL-92 TUESDAY
FUEL/AIR
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 51 S
53 54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
DRUM PRESS 1979 PSIG
DRUM LEVEL-NR 0.1 INH2O
TOT SA FLOW KPPH
TOT PA FLOW KPPH
TOT AIR FLOW 1097 KPPH
TOT COAL FLOW 97 KPPH
A/F RATIO 11.
FURN PRESS 0.2 INH2O
EXIT GASES
O2 2.26 %
OPAC 3 %
NOX 365 PPM
PRES -6.1 INH2O
TEMP 615 F
SO2 794 LB/HR
51%
47%
D
A
224 KPPH
5D
3.7 INH2O
PC BOILER
218 KPPH
5A
4 INH2O
44%
58%
C
B
238 KPPH
5C
3.5 INH2O
190 KPPH
5B
4 INH2O
AMPS FLC
FDF1A-LS 0 84.5
-HS 178 195
FDF1B-LS 0 84.5
-HS 178 195
10.3 INH2O
511 F
FROM FD FANS F5-A
1A
COAL FEED 24 KPPH 1B
161 OF
1C
1A
22AMPS
FLC 32.0
22 ΔP IN H2O
1D
55 KPPH
268 OF
70 %
1E
1F
18 AMPS FLC 24.15
1G
72 %
46 %
2A
COAL FEED 21 KPPH 2B
160 OF
2C
1B
19AMPS
FLC 32.0
13 ΔP IN H2O
2D
51 KPPH
265 OF
53 %
2E
2F
14 AMPS FLC 17.6
2G
58 %
48 %
3A
COAL FEED 27 KPPH 3B
159 OF
3C
1C
18AMPS
FLC 32.0
13 ΔP IN H2O
3D
54 KPPH
280 OF
50 %
3E
3F
15 AMPS FLC 17.6
3G
60 %
58 %
4A
COAL FEED 25 KPPH 4B
160 OF
4C
1D
24AMPS
FLC 32.0
21 ΔP IN H2O
4D
54 KPPH
282 OF
64 %
4E
4F
15 AMPS FLC 17.6
4G
63 %
60 %
HOT AIR
COLD AIR
OIL HDR
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
K-2
P-1
CON
TUN
SHF
5-20-92


09:54:33 28-JUL-92 TUESDAY
CALCINER FUEL SYSTEM
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 9
54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
TOTAL AIR
TOTAL AIR
14.0 A/F
7.5 KPPH
6A
6B
5B
AIR
AIR
AIR
AIR
6D
5D
161F
1F
109 AMPS
1E
98 AMPS
5E
6E
INH2O
INH2O
KPPH
KPPH
6F
5F
6G
5G
411F
194F
START
SEQ
RESET
START
SEQ
RESET
LITER
TRIP
RESET
F
E
46
74
CO
CO
5M
6M
102.3 °F
2252
POUNDS
2174
POUNDS
4K
4L
3K
3L
2K
2L
1K
1L
KPPH
KPPH
KPPH
KPPH
D
C
B
A
29.7 DP
58.1 DP
30.0 DP
29.4 DP
138 °F
147 °F
146 °F
147 °F
85.5
INH2O
117.
INH2O
99.4
INH2O
111.
INH2O
36 AMPS
37 AMPS
35 AMPS
35 AMPS
FIC242
1A ROTARY COAL
FEEDER
K-3
P-1
CON
TUN
SHF
DEG F
2500.0
1751.2
1751.2
1800.0
0.00
0.00
23.1% SPTR
LOCAL
TRGT OUT:23.11%

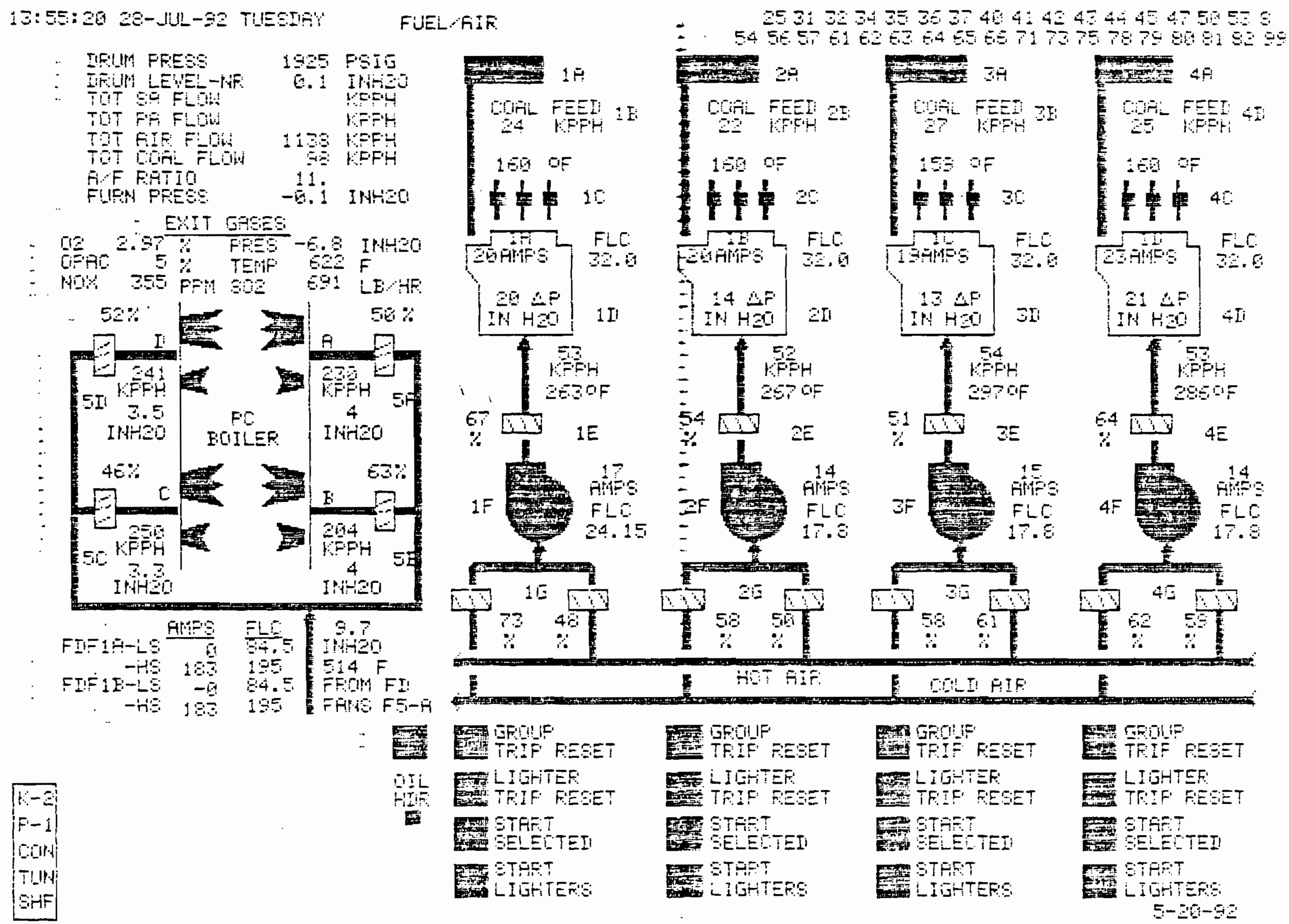

13:21:08 28-JUL-92 TUESDAY
FUEL/AIR
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
DRUM PRESS 1927 PSIG
DRUM LEVEL-NR 0.2 INH20
TOT SA FLOW KPPH
TOT PA FLOW KPPH
TOT AIR FLOW 1088 KPPH
TOT COAL FLOW 99 KPPH
A/F RATIO 11.
FURN PRESS 0.2 INH20
EXIT GASES
02 2.57 % PRES -6.2 INH20
OPAC 4 % TEMP 619 F
NOX 321 PPM SO2 636 LB/HR
51% D 230 KPPH 5D 3.5 INH20
48% A 223 KPPH 5A 4 INH20
PC BOILER
44% C 238 KPPH 5C 3.4 INH20
60% B 193 KPPH 5B 4 INH20
AMPS FLC
FDF1A-LS 0 84.5
-HS 179 195
FDF1B-LS -0 84.5
-HS 179 195
10.2 INH20
512 F
FROM FD FANS FS-A
1A COAL FEED 24 KPPH 1B
160 °F 1C
1A 20AMPS FLC 32.0
20 ΔP IN H20 1D
54 KPPH 263 °F
67 % 1E
1F 18 AMPS FLC 24.15
1G 73 % 46 %
2A COAL FEED 22 KPPH 2B
160 °F 2C
1B 20AMPS FLC 32.0
14 ΔP IN H20 2D
53 KPPH 269 °F
54 % 2E
2F 14 AMPS FLC 17.8
2G 60 % 50 %
3A COAL FEED 27 KPPH 3B
160 °F 3C
1C 19AMPS FLC 32.0
13 ΔP IN H20 3D
54 KPPH 294 °F
51 % 3E
3F 15 AMPS FLC 17.8
3G 59 % 60 %
4A COAL FEED 26 KPPH 4B
161 °F 4C
1D 23AMPS FLC 32.0
21 ΔP IN H20 4D
54 KPPH 290 °F
64 % 4E
4F 14 AMPS FLC 17.8
4G 61 % 54 %
HOT AIR
COLD AIR
OIL HDR
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
K-2
P-1
CON
TUN
SHF
5-20-92

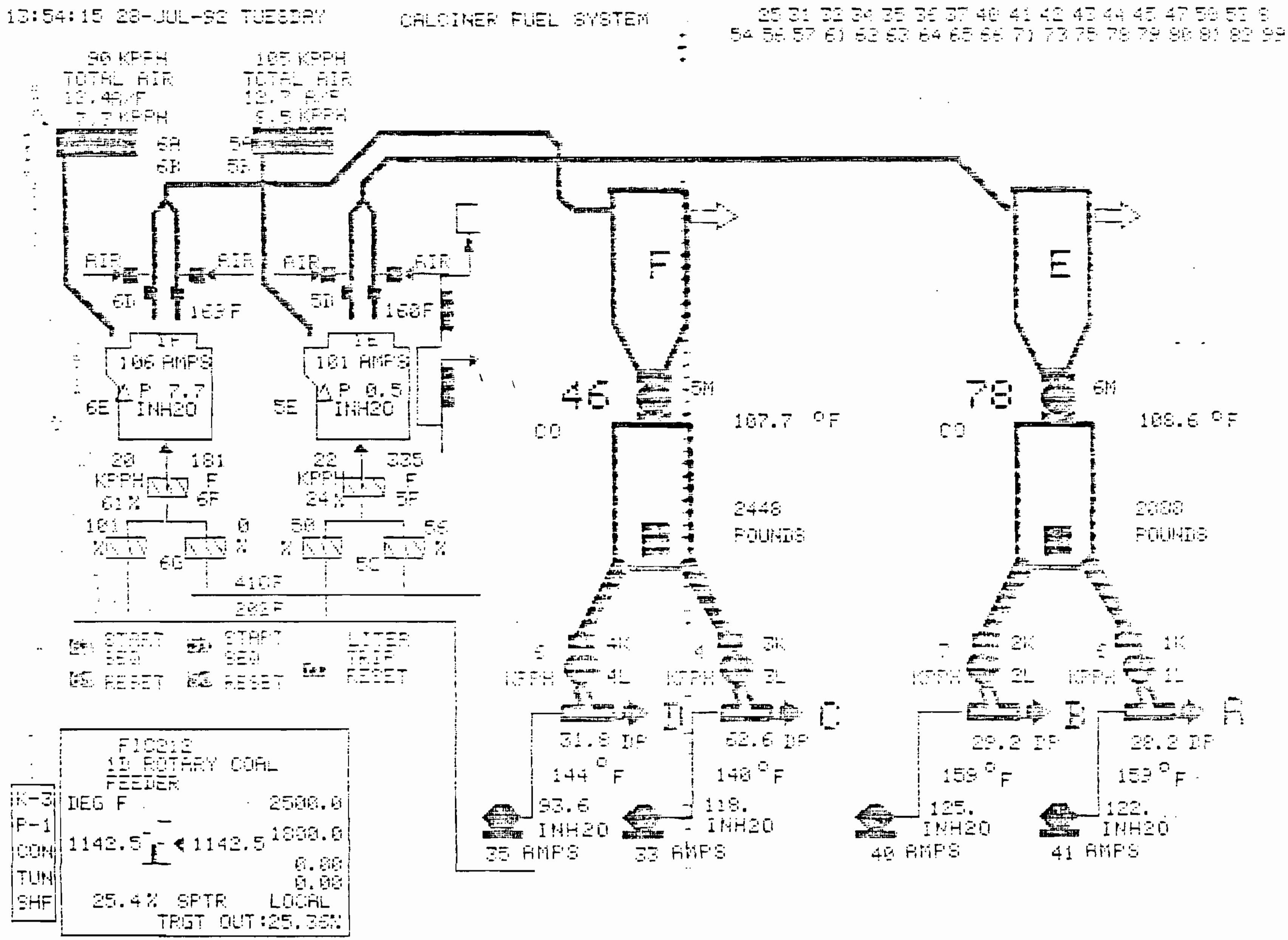
13:19:58 28-JUL-92 TUESDAY   CALCINER FUEL SYSTEM

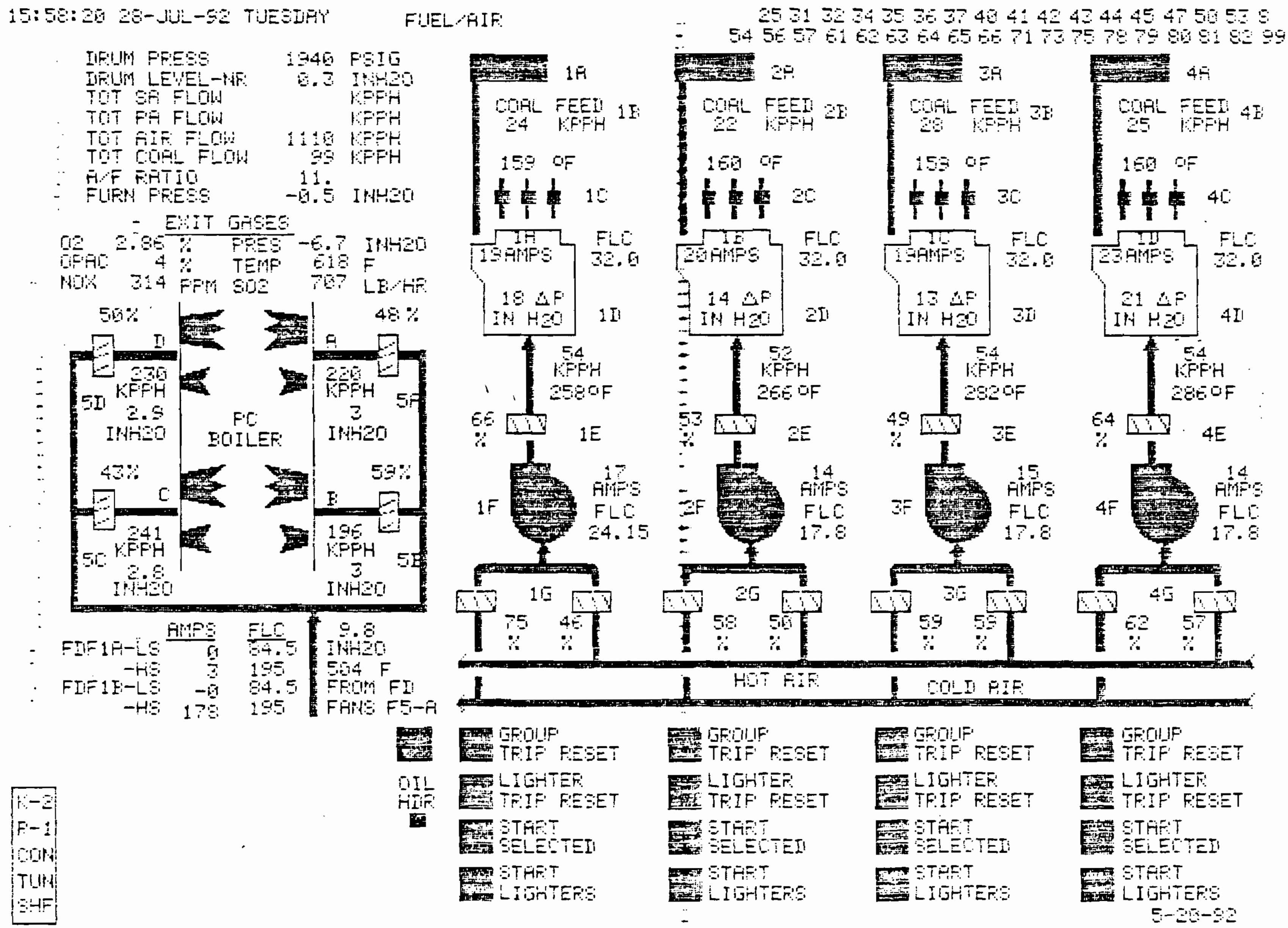
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99



3-10-92

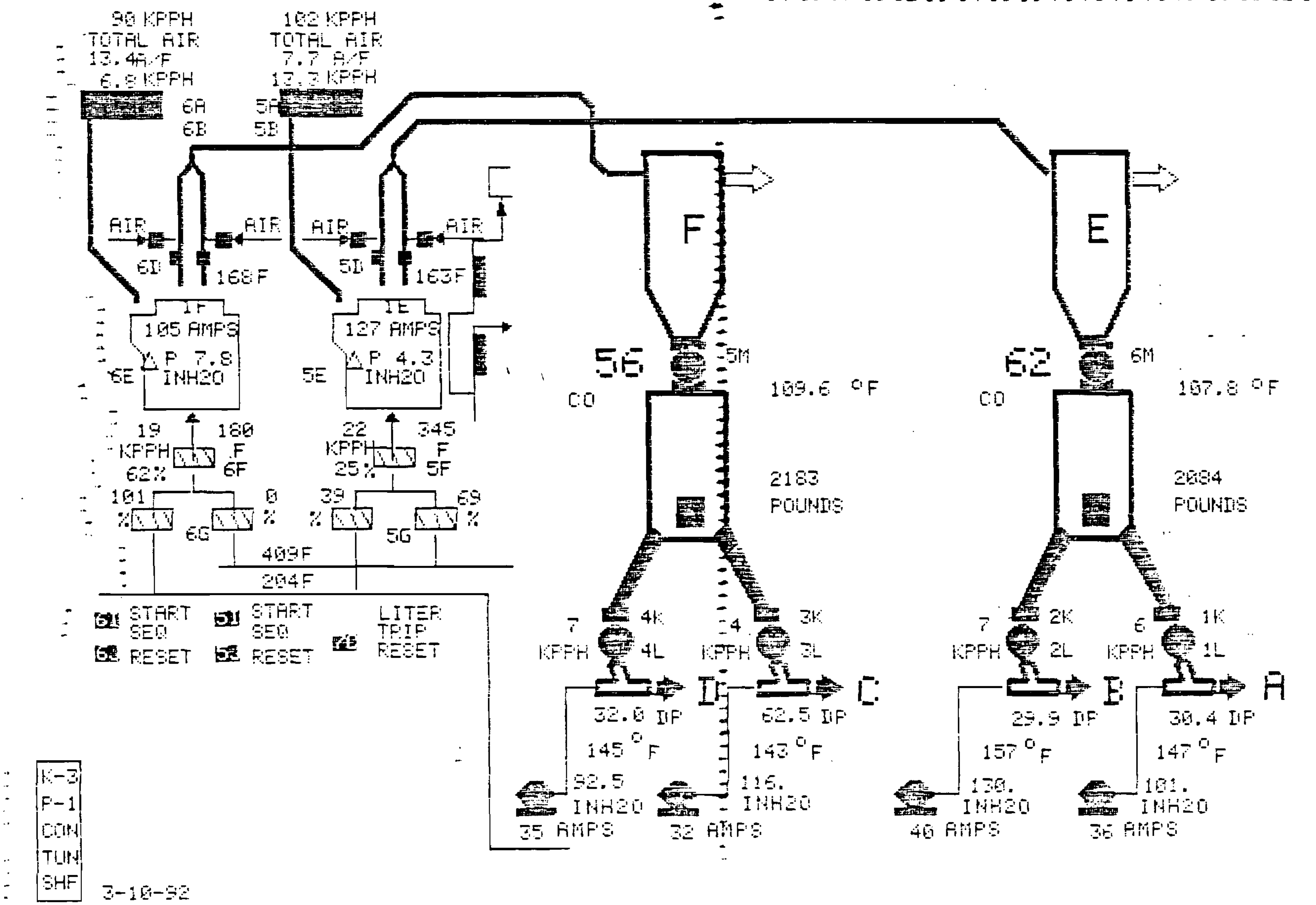

13:55:20 28-JUL-92 TUESDAY
FUEL/AIR
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 S
54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
DRUM PRESS 1925 PSIG
DRUM LEVEL-NR 0.1 INH20
TOT SA FLOW KPPH
TOT PA FLOW KPPH
TOT AIR FLOW 1138 KPPH
TOT COAL FLOW 98 KPPH
A/F RATIO 11.
FURN PRESS -0.1 INH20
EXIT GASES
O2 2.97 % PRES -6.8 INH20
OPAC 5 % TEMP 622 F
NOX 355 PPM SO2 691 LB/HR
52% D 241 KPPH 5D 3.5 INH20
50% A 230 KPPH 5A 4 INH20
PC BOILER
46% C 250 KPPH 5C 3.3 INH20
63% B 204 KPPH 5B 4 INH20
AMPS FLC
FDF1A-LS 0 84.5
-HS 183 195
FDF1B-LS -0 84.5
-HS 183 195
9.7 INH20
514 F
FROM FD FANS F5-A
OIL HDR
1A COAL FEED 24 KPPH 1B
160 OF 1C
1A 20AMPS FLC 32.0
20 ΔP IN H2O 1D
53 KPPH 263 OF
67 % 1E
1F 17 AMPS FLC 24.15
1G 73 % 48 %
2A COAL FEED 22 KPPH 2B
160 OF 2C
1B 20AMPS FLC 32.0
14 ΔP IN H2O 2D
52 KPPH 267 OF
54 % 2E
2F 14 AMPS FLC 17.8
2G 58 % 50 %
3A COAL FEED 27 KPPH 3B
159 OF 3C
1C 19AMPS FLC 32.0
13 ΔP IN H2O 3D
54 KPPH 297 OF
51 % 3E
3F 15 AMPS FLC 17.8
3G 58 % 61 %
4A COAL FEED 25 KPPH 4B
160 OF 4C
1D 23AMPS FLC 32.0
21 ΔP IN H2O 4D
53 KPPH 286 OF
64 % 4E
4F 14 AMPS FLC 17.8
4G 62 % 59 %
HOT AIR
COLD AIR
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
K-2
P-1
CON
TUN
SHF
5-20-92


13:54:15 28-JUL-92 TUESDAY
CALCINER FUEL SYSTEM
90 KPPH
TOTAL AIR
105 KPPH
TOTAL AIR
6A
6B
5A
5B
AIR
AIR
AIR
AIR
6D
5D
168 F
106 AMPS
181 AMPS
6E
5E
INH2O
INH2O
KPPH
KPPH
6F
5F
6G
5G
F
E
46
78
CO
CO
5M
6M
2448
POUNDS
POUNDS
4K
3K
2K
1K
4L
3L
2L
1L
KPPH
KPPH
KPPH
KPPH
D
C
B
A
INH2O
INH2O
INH2O
INH2O
35 AMPS
33 AMPS
40 AMPS
41 AMPS
START
SEQ
RESET
START
SEQ
RESET
TRIP
RESET
1D ROTARY COAL
FEEDER
DEG F
2500.0
1142.5
1142.5
25.4% SPTR
LOCAL
K-3
P-1
CON
TUN
SHF



15:58:20 28-JUL-92 TUESDAY
FUEL/AIR
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 S
54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
DRUM PRESS 1940 PSIG
DRUM LEVEL-NR 0.3 INH2O
TOT SA FLOW KPPH
TOT PA FLOW KPPH
TOT AIR FLOW 1110 KPPH
TOT COAL FLOW 99 KPPH
A/F RATIO 11.
FURN PRESS -0.5 INH2O
EXIT GASES
O2 2.86 % PRES -6.7 INH2O
OPAC 4 % TEMP 618 F
NOX 314 PPM SO2 707 LB/HR
50%
D
230 KPPH 2.9 INH2O
5D
43%
C
241 KPPH 2.8 INH2O
5C
PC BOILER
48 %
A
220 KPPH 3 INH2O
5A
59%
B
196 KPPH 3 INH2O
5B
AMPS FLC
FDF1A-LS 0 84.5
-HS 3 195
FDF1B-LS -0 84.5
-HS 178 195
9.8 INH2O
504 F
FROM FD FANS F5-A
OIL HDR
1A COAL FEED 24 KPPH 1B
159 °F 1C
1A 19AMPS FLC 32.0
18 ΔP IN H2O 1D
54 KPPH 258°F
66 % 1E
1F 17 AMPS FLC 24.15
1G 75 % 46 %
2A COAL FEED 22 KPPH 2B
160 °F 2C
2A 20AMPS FLC 32.0
14 ΔP IN H2O 2D
52 KPPH 266°F
53 % 2E
2F 14 AMPS FLC 17.8
2G 58 % 50 %
3A COAL FEED 28 KPPH 3B
159 °F 3C
3A 19AMPS FLC 32.0
13 ΔP IN H2O 3D
54 KPPH 282°F
49 % 3E
3F 15 AMPS FLC 17.8
3G 59 % 59 %
4A COAL FEED 25 KPPH 4B
160 °F 4C
4A 23AMPS FLC 32.0
21 ΔP IN H2O 4D
54 KPPH 286°F
64 % 4E
4F 14 AMPS FLC 17.8
4G 62 % 57 %
HOT AIR
COLD AIR
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
K-2
R-1
CON
TUN
SHF
5-20-92

15:56:27 28-JUL-92 TUESDAY CALCINER FUEL SYSTEM 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8 54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99



3-10-92

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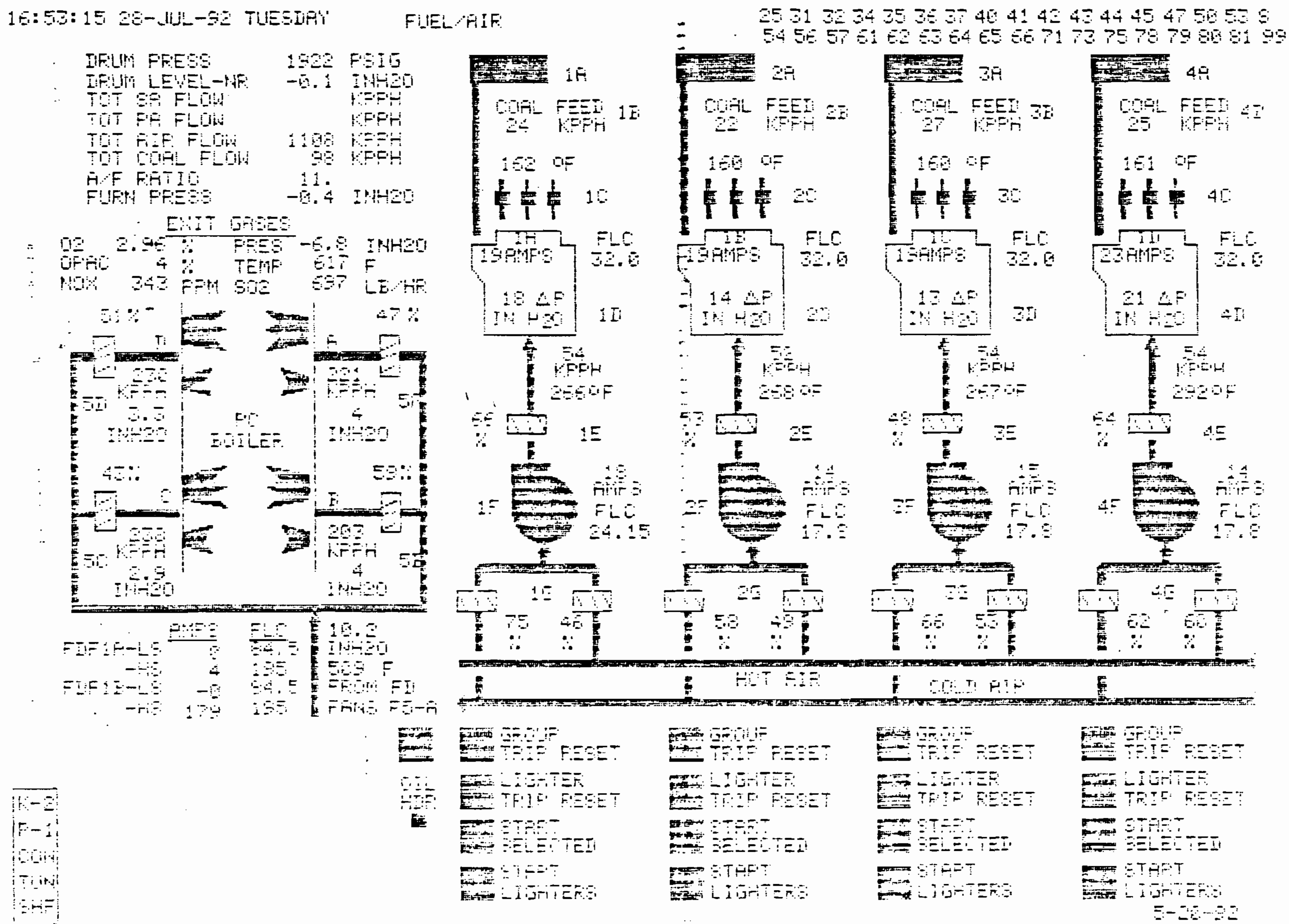
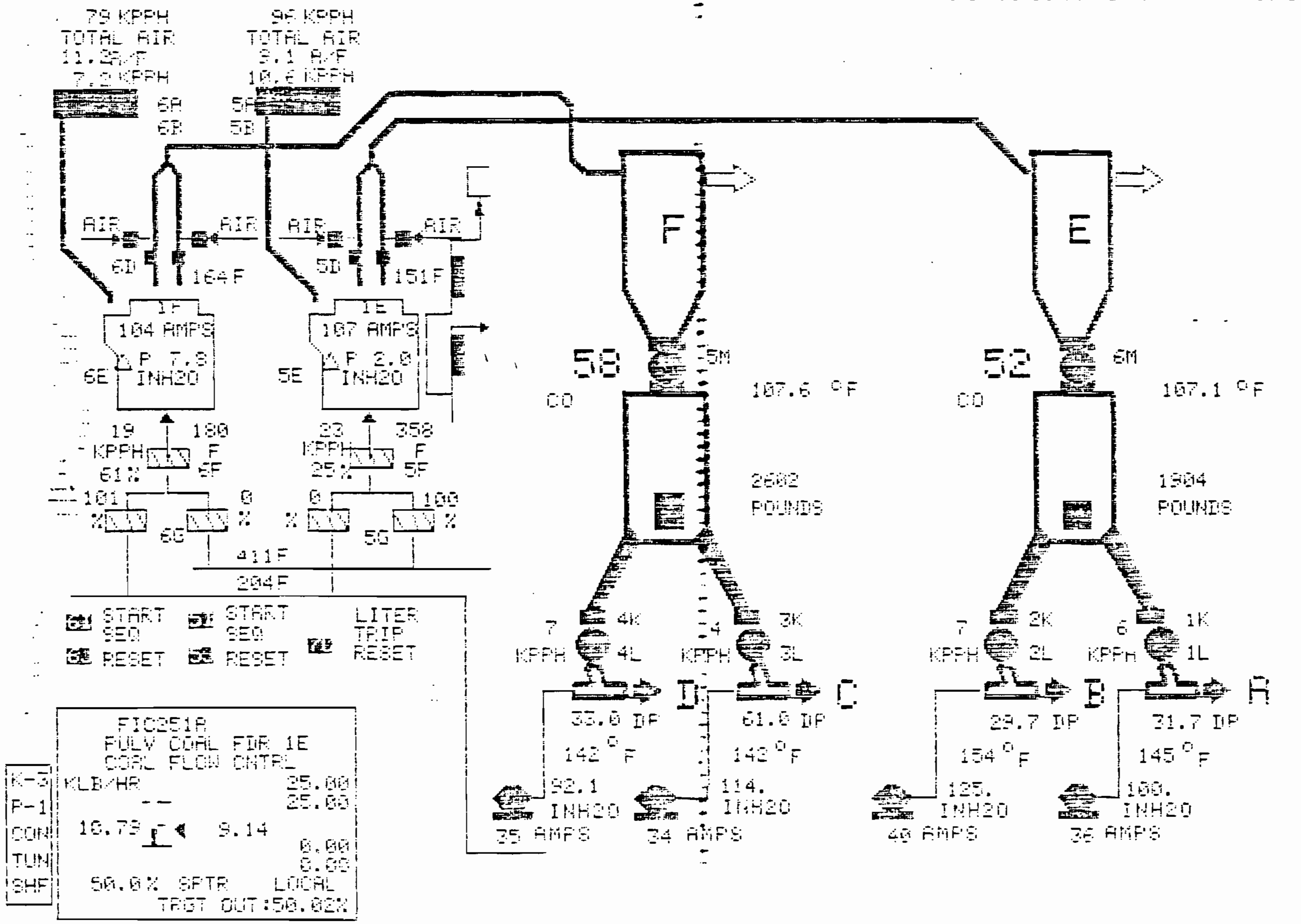


16:52:08 28-JUL-92 TUESDAY CALCINER FUEL SYSTEM

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 57 61 62 63 64 65 66 71 73 75 78 79 80 81 99



19:55:42 29-JUL-92 WEDNESDAY NET GENERATION

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 S
54 56 61 62 63 64 65 66 67 71 73 75 78 79 80 81 99

GENERATED 102.31 MWH THIS HOUR

TIME		SCHED	ACTUAL	INADV
0100	1A	110.00	110.40	0.40
0200	1B	110.00	111.17	1.17
0300	1C	110.00	110.11	0.11
0400	1D	110.00	110.88	0.88
0500	1E	110.00	110.40	0.40
0600	1F	110.00	110.68	0.68
0700	1G	110.00	110.11	0.11
0800	1H	110.00	110.97	0.97
0900	1I	110.00	109.05	-0.95
1000	1J	110.00	111.07	1.07
1100	1K	110.00	112.22	2.22
1200	1L	110.00	111.17	1.17
ON P1			554.48	4.48
1300	1M	110.00	109.53	-0.47
1400	1N	110.00	108.76	-1.24
1500	1O	110.00	112.03	2.03
1600	1P	110.00	111.55	1.55
1700	1Q	110.00	110.30	0.30
ON P2			552.17	2.17
1800	1R	110.00	109.82	-0.18
1900	1S	110.00	111.84	1.84
2000	1T	110.00	102.21	-8.75
2100	1U	110.00	0.00	-110.0
2200	1V	110.00	0.00	-110.0
2300	1W	110.00	0.00	-110.0
ON P3			323.59	-336.4
2400	1X	110.00	0.00	-110.0
OFFPEAK			773.73	-106.2
TOTAL			2204.0	-43.60 X-14

K-3
P-1
CON
TUN
SHF

RESET= A TRANSFER= B

SCH 1Y	110.00
ON HOUR " 20 "	
ADVANCE	2Y

F.P.L.

DEMAND	7.69 MWH
OFFSET	-0.22 MW
NET GEN	110.28 MW

C.P.L.

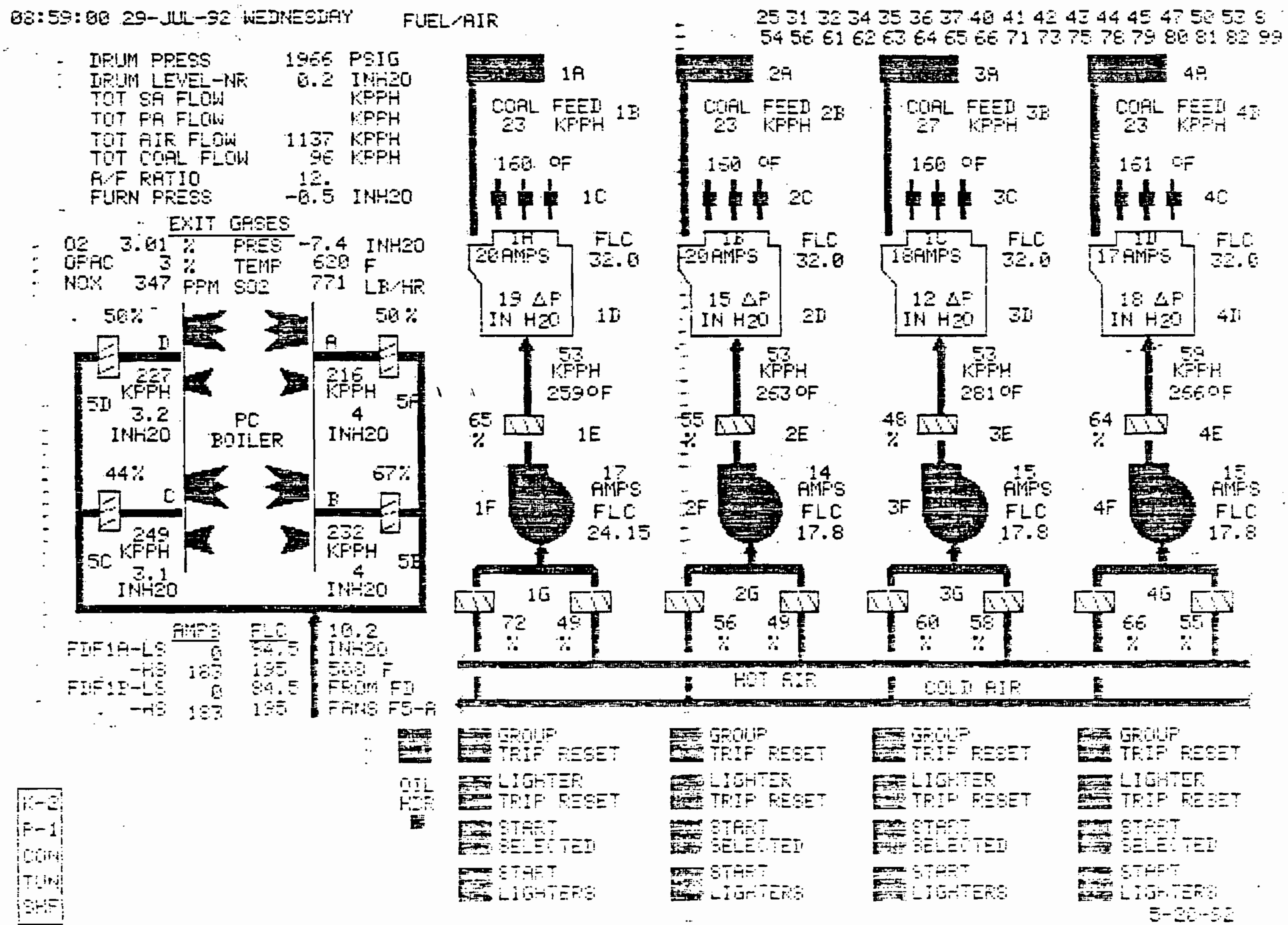
GROSS	117.29 MW
AUX LOAD	11.30 MW
NET OUT	106.00 MW

BAGHOUSE

INSTANT	1973.8 KW
PWR USED	6724 MWH
CMT USED	7535 MWH

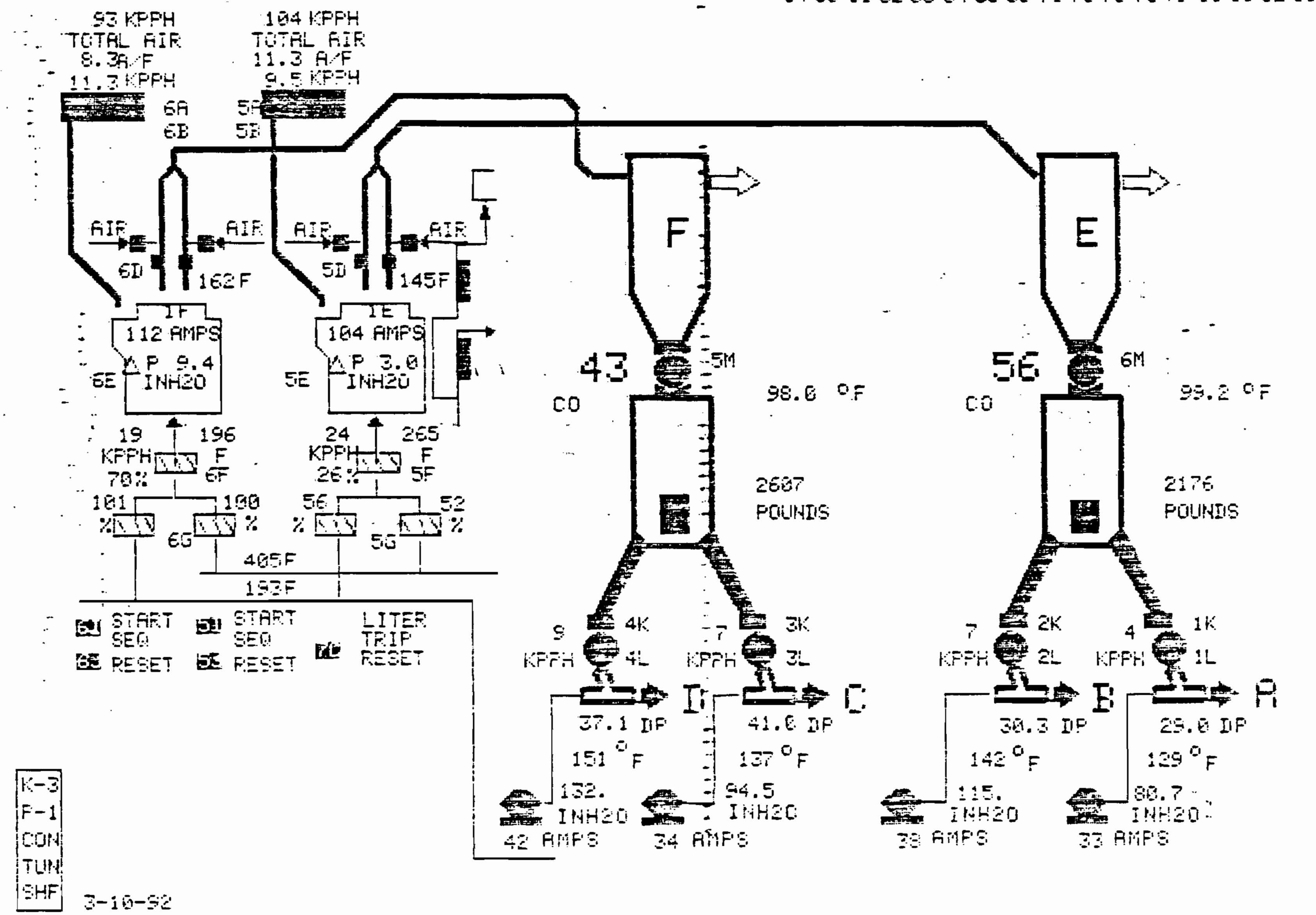
12-04-90

BEST AVAILABLE COPY

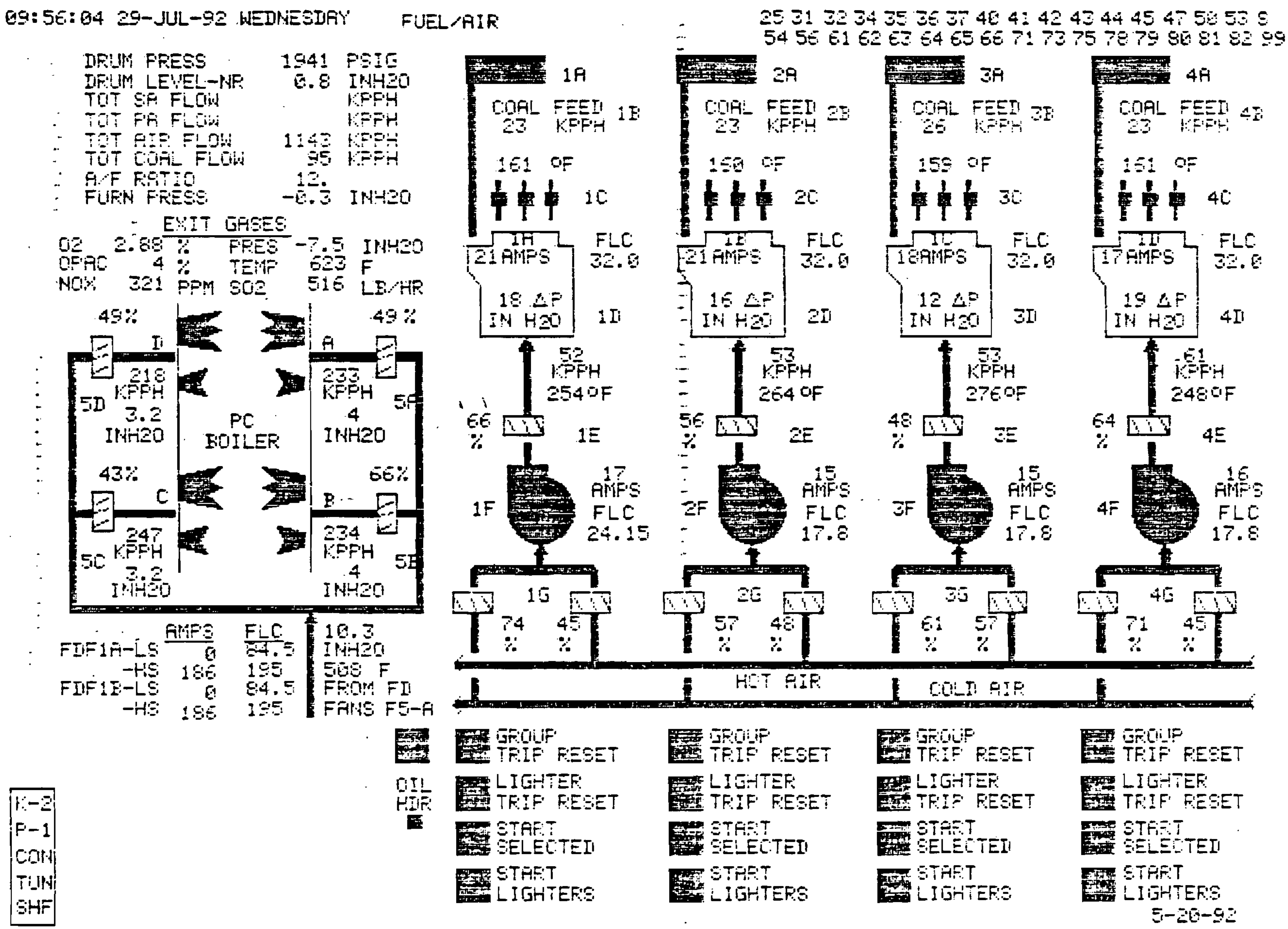


08:56:33 29-JUL-92 WEDNESDAY CALCINER FUEL SYSTEM

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99



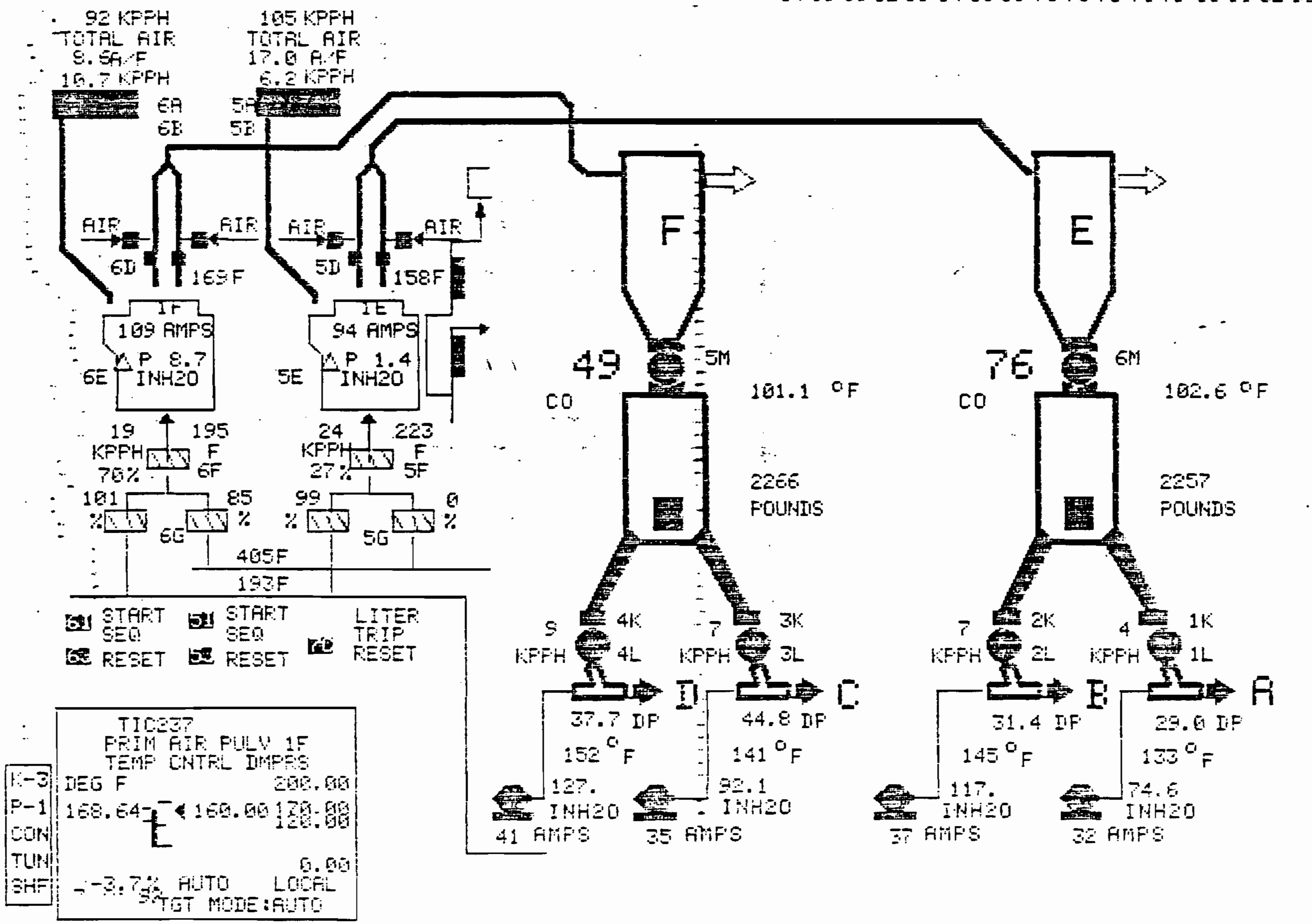
3-10-92



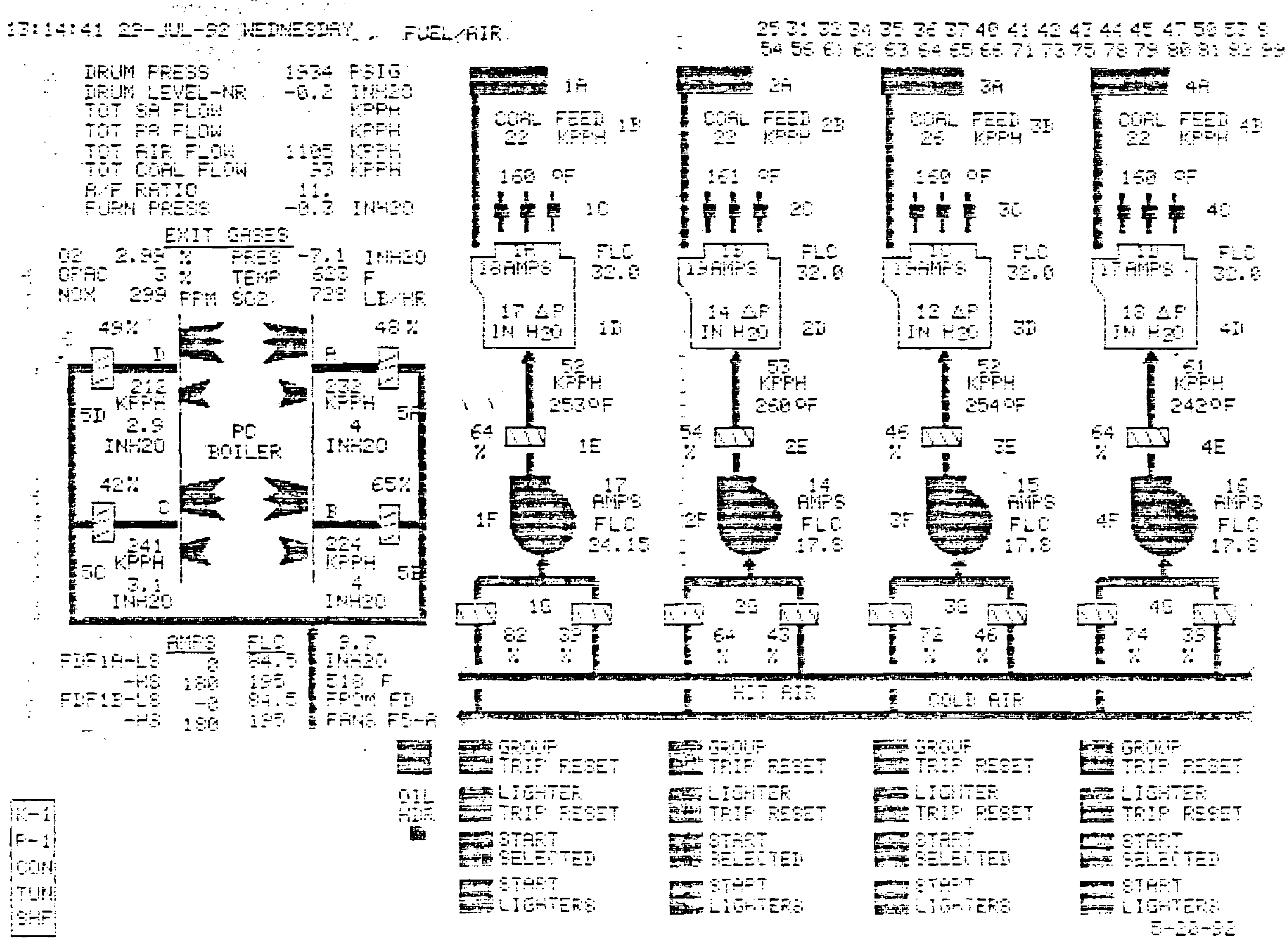
09:56:04 29-JUL-92 WEDNESDAY
FUEL/AIR
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 S
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
DRUM PRESS 1941 PSIG
DRUM LEVEL-NR 0.8 INH2O
TOT SA FLOW KPPH
TOT PA FLOW KPPH
TOT AIR FLOW 1143 KPPH
TOT COAL FLOW 95 KPPH
A/F RATIO 12.
FURN PRESS -0.3 INH2O
EXIT GASES
O2 2.88 %
OPAC 4 %
NOX 321 PPM
PRES -7.5 INH2O
TEMP 623 F
SO2 516 LB/HR
49%
D
218 KPPH
3.2 INH2O
5D
PC BOILER
A
49 %
233 KPPH
4 INH2O
5A
43%
C
247 KPPH
3.2 INH2O
5C
66%
B
234 KPPH
4 INH2O
5B
AMPS
FLC
FDF1A-LS 0 84.5
-HS 186 195
FDF1B-LS 0 84.5
-HS 186 195
10.3 INH2O
508 F
FROM FD FANS F5-A
1A
COAL FEED 23 KPPH 1B
161 °F
1C
1A 21 AMPS
FLC 32.0
18 ΔP IN H2O
1D
52 KPPH
254 °F
66 %
1E
1F
17 AMPS FLC 24.15
1G
74 %
45 %
2A
COAL FEED 23 KPPH 2B
150 °F
2C
1B 21 AMPS
FLC 32.0
16 ΔP IN H2O
2D
53 KPPH
264 °F
56 %
2E
2F
15 AMPS FLC 17.8
2G
57 %
48 %
3A
COAL FEED 26 KPPH 3B
159 °F
3C
1C 18 AMPS
FLC 32.0
12 ΔP IN H2O
3D
53 KPPH
276 °F
48 %
3E
3F
15 AMPS FLC 17.8
3G
61 %
57 %
4A
COAL FEED 23 KPPH 4B
161 °F
4C
1D 17 AMPS
FLC 32.0
19 ΔP IN H2O
4D
61 KPPH
248 °F
64 %
4E
4F
16 AMPS FLC 17.8
4G
71 %
45 %
HOT AIR
COLD AIR
OIL HDR
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
K-2
P-1
CON
TUN
SHF
5-20-92

09:54:27 29-JUL-92 WEDNESDAY CALCINER FUEL SYSTEM

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 S
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99

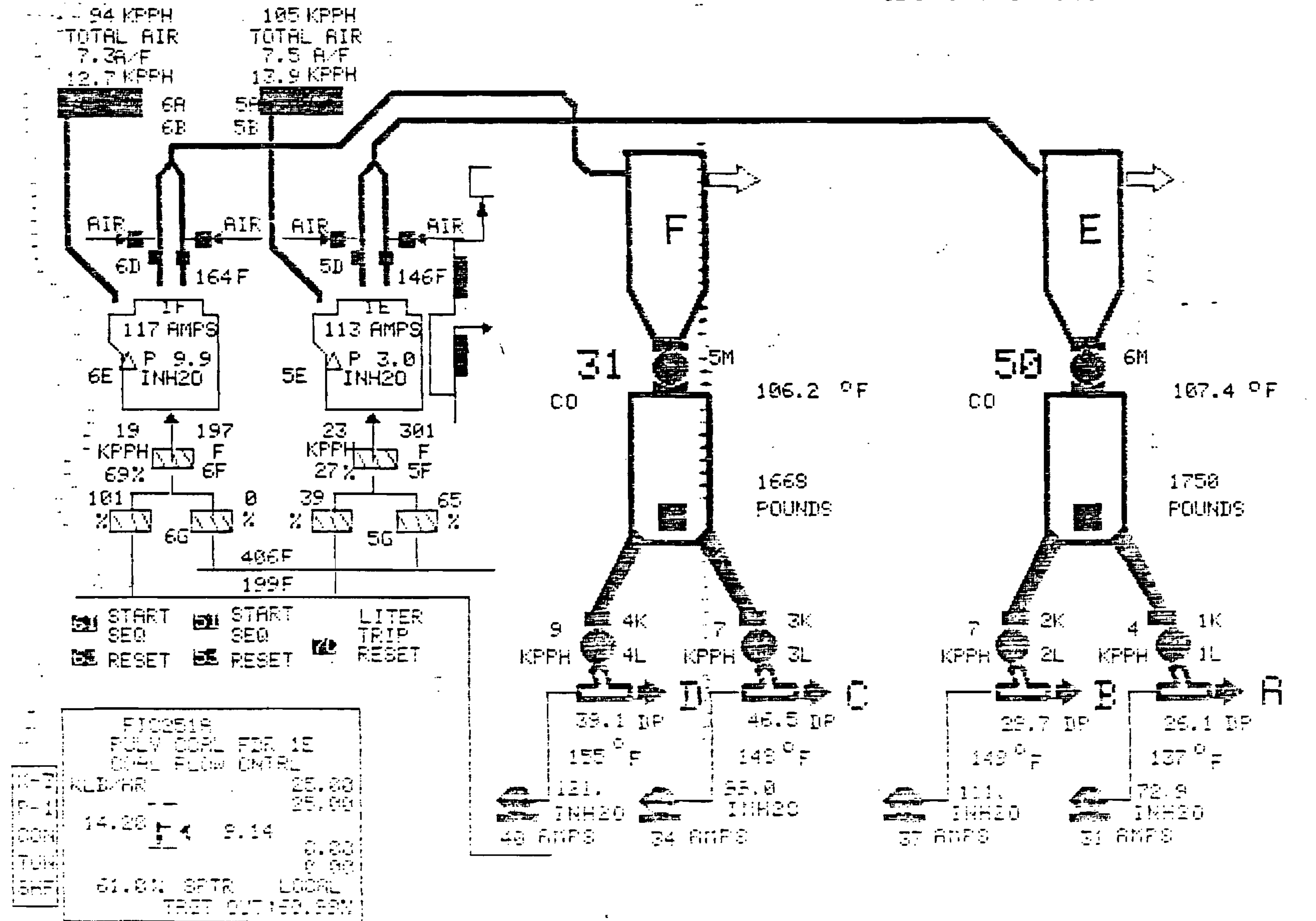


BEST AVAILABLE COPY

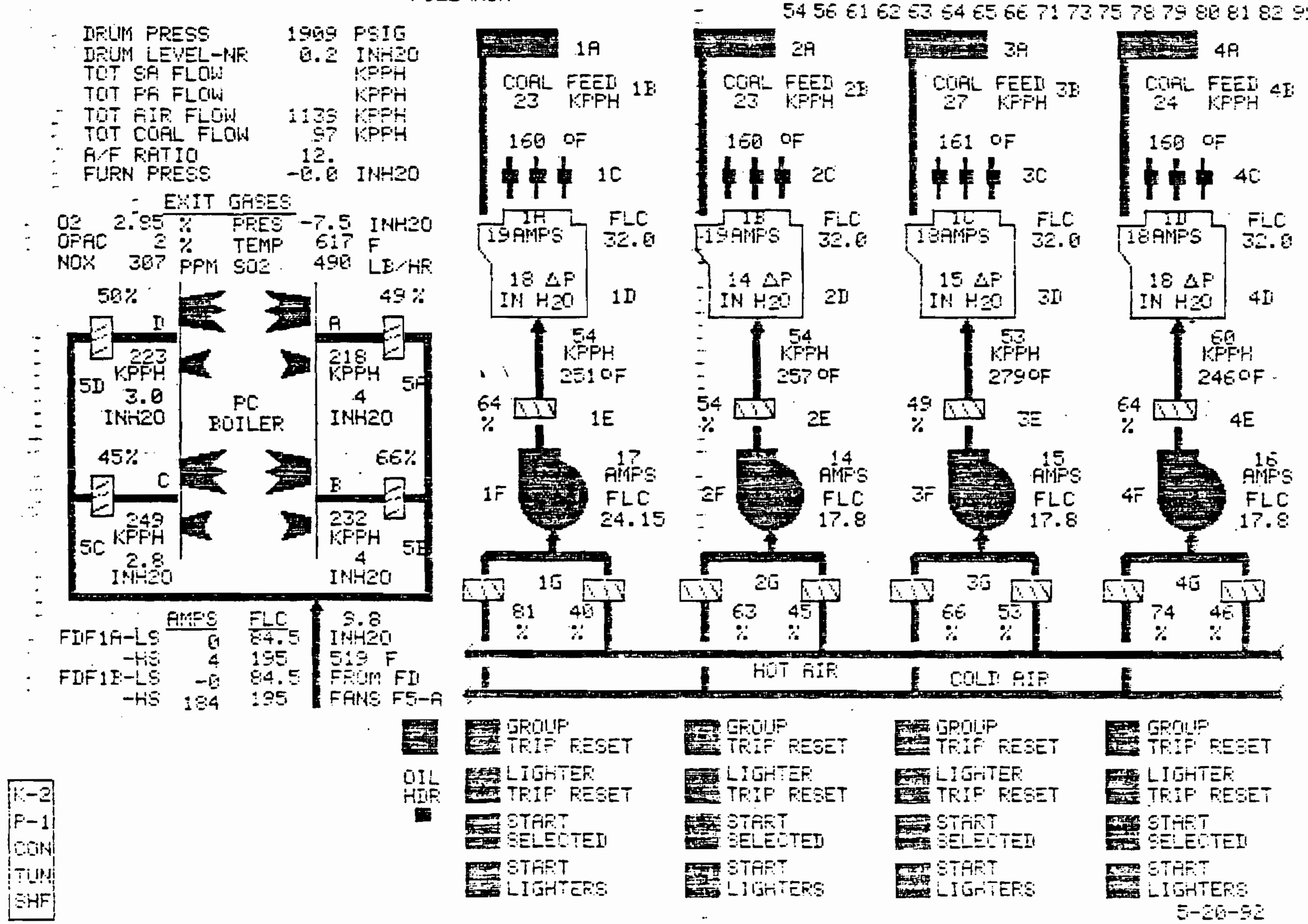


BEST AVAILABLE COPY

13:08:01 29-JUL-92 WEDNESDAY CALCINER FUEL SYSTEM 25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 8 54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99

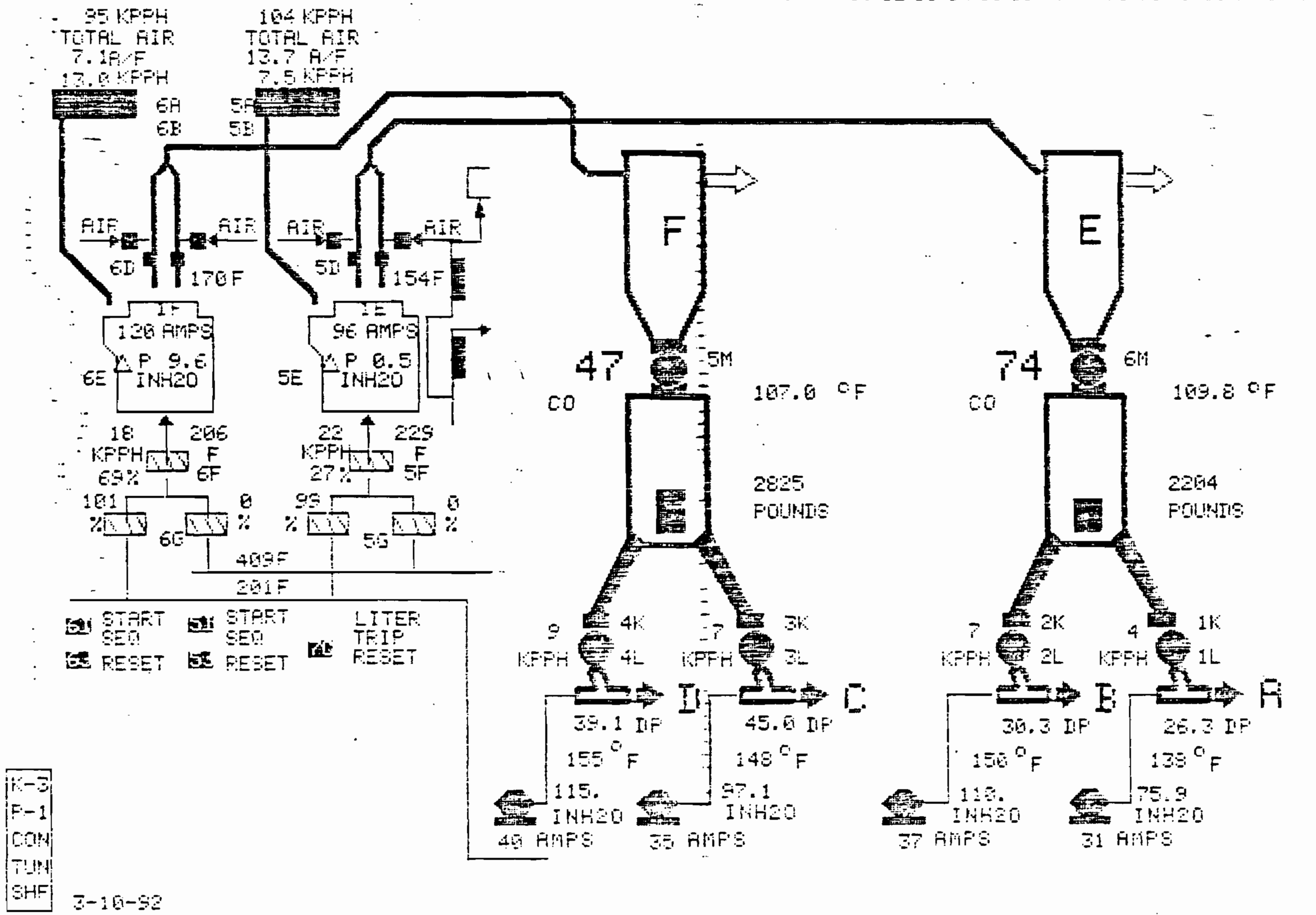


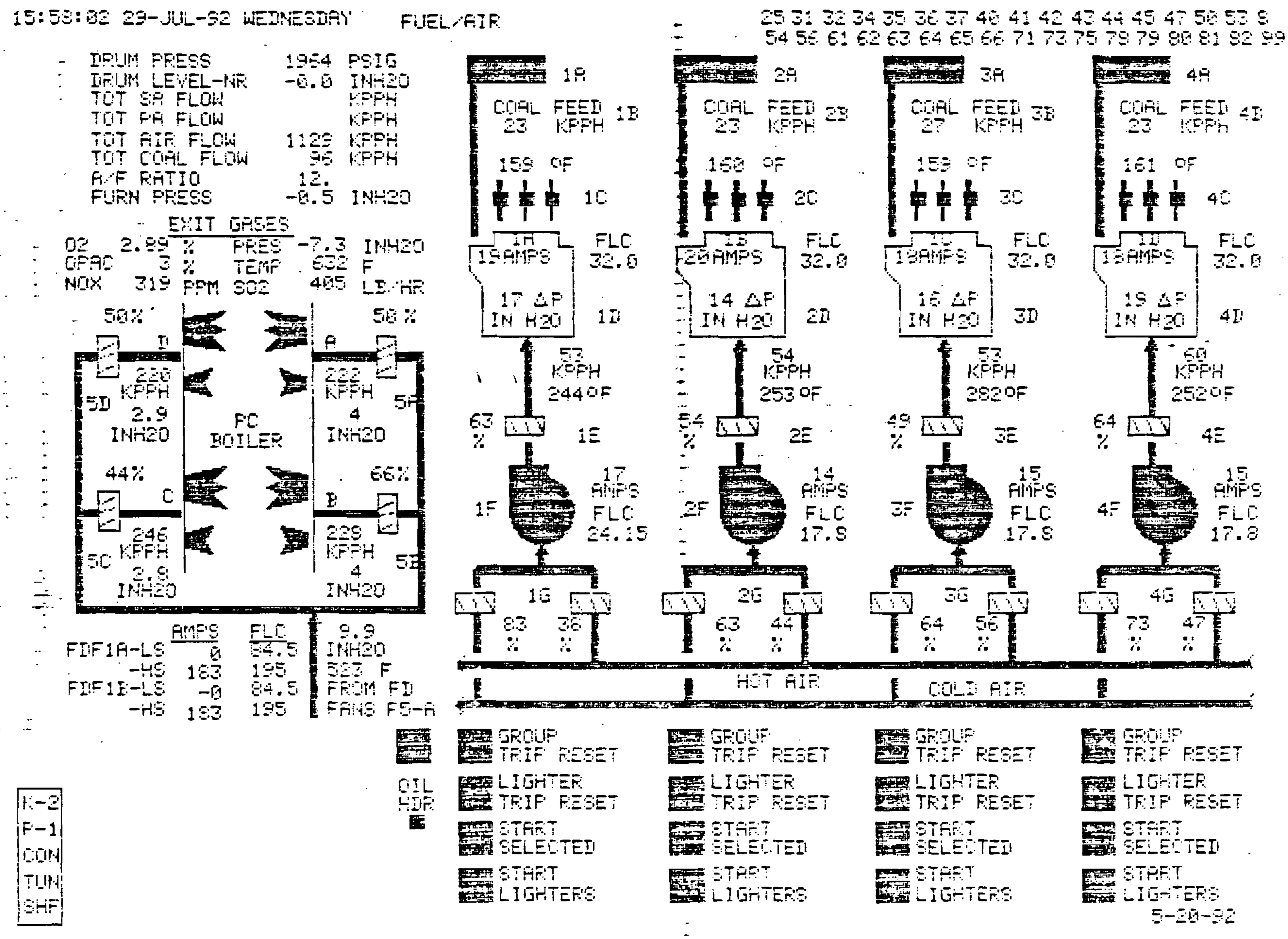
14:02:47 29-JUL-92 WEDNESDAY FUEL/AIR



13:59:41 29-JUL-92 WEDNESDAY CALCINER FUEL SYSTEM

25 31 33 34 35 36 37 40 41 42 43 44 45 47 50 53 8
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99

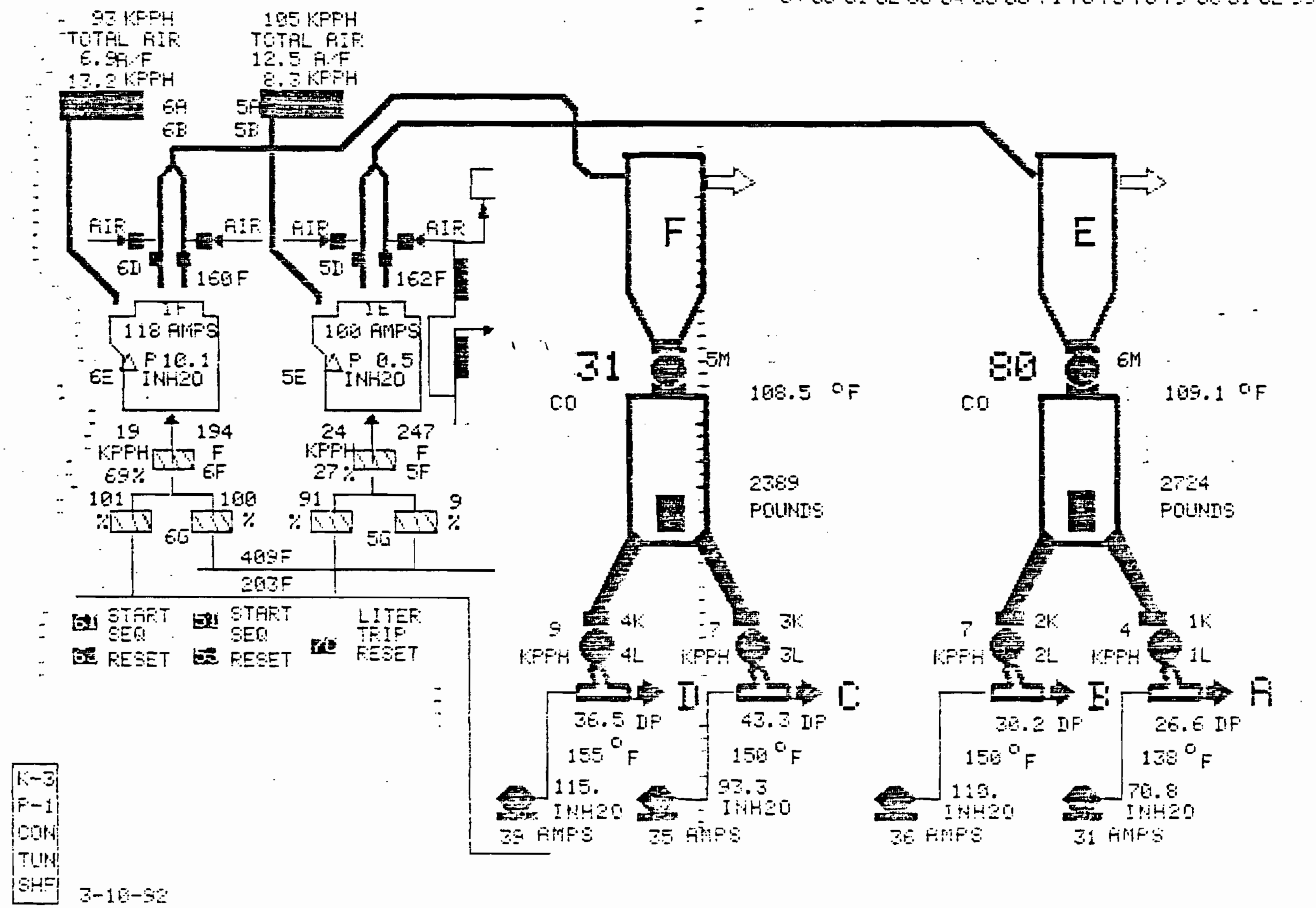


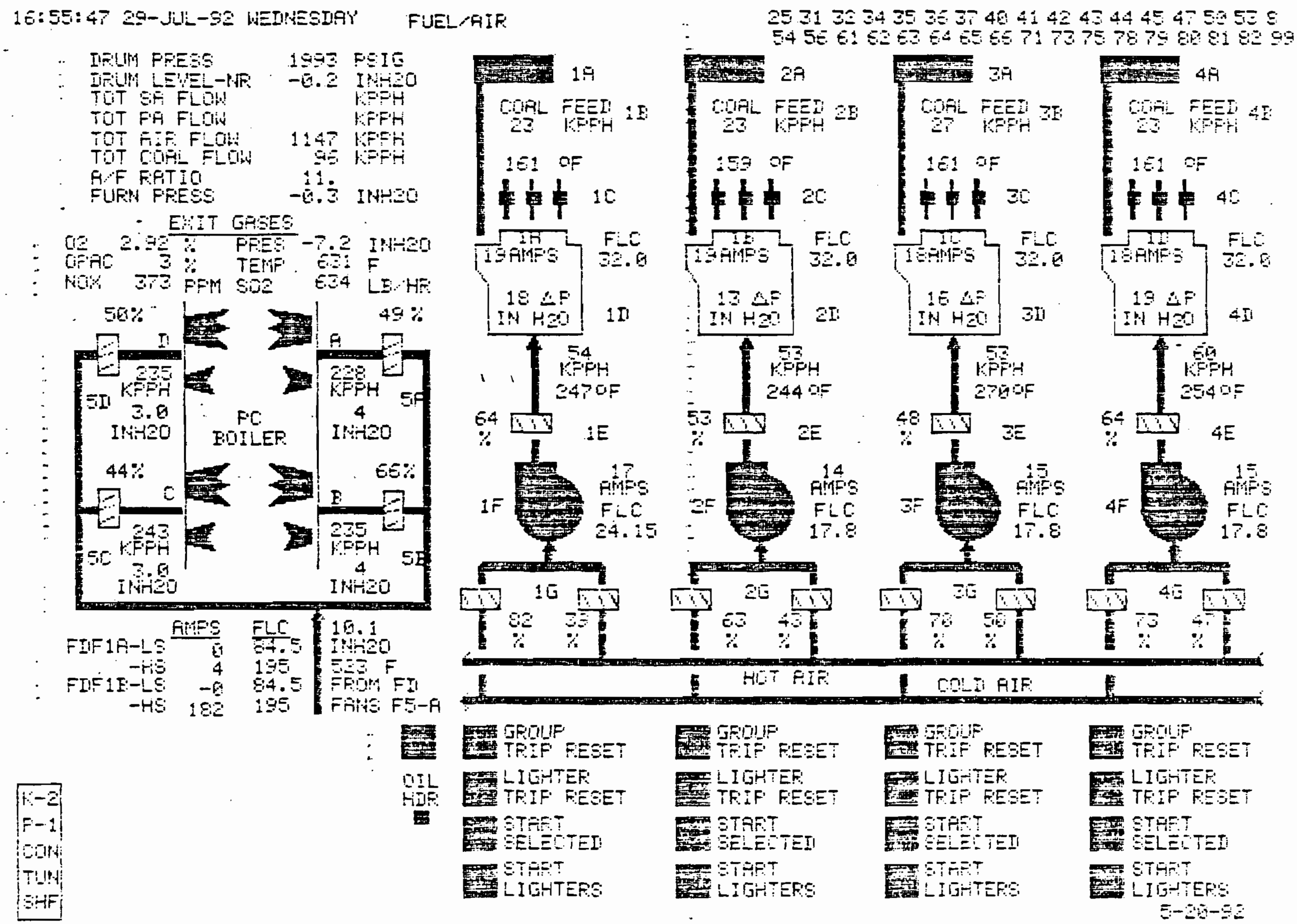


15:58:02 29-JUL-92 WEDNESDAY FUEL/AIR
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 S
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
DRUM PRESS 1964 PSIG
DRUM LEVEL-NR -0.0 INH2O
TOT SA FLOW KPPH
TOT PA FLOW KPPH
TOT AIR FLOW 1129 KPPH
TOT COAL FLOW 96 KPPH
A/F RATIO 12.
FURN PRESS -0.5 INH2O
EXIT GASES
O2 2.89 % PRES -7.3 INH2O
OPAC 3 % TEMP 632 F
NOX 319 PPM SO2 405 LB/HR
50% D A 50 %
220 KPPH 2.9 INH2O 5D
222 KPPH 4 INH2O 5A
PC BOILER
44% C B 66%
246 KPPH 2.9 INH2O 5C
229 KPPH 4 INH2O 5B
AMPS FLC
FDF1A-LS 0 84.5
-HS 183 195
FDF1B-LS -0 84.5
-HS 183 195
9.9 INH2O
523 F
FROM FD
FANS F5-A
1A COAL FEED 23 KPPH 1B
159 OF 1C
1A 19AMPS FLC 32.0
17 ΔP IN H2O 1D
53 KPPH 244 OF
63 % 1E
17 AMPS FLC 24.15 1F
1G 83 % 38 %
2A COAL FEED 23 KPPH 2B
160 OF 2C
1B 20AMPS FLC 32.0
14 ΔP IN H2O 2D
54 KPPH 253 OF
54 % 2E
14 AMPS FLC 17.9 2F
2G 63 % 44 %
3A COAL FEED 27 KPPH 3B
159 OF 3C
1C 18AMPS FLC 32.0
16 ΔP IN H2O 3D
53 KPPH 282 OF
49 % 3E
15 AMPS FLC 17.8 3F
3G 64 % 56 %
4A COAL FEED 23 KPPH 4B
161 OF 4C
1D 18AMPS FLC 32.0
19 ΔP IN H2O 4D
60 KPPH 252 OF
64 % 4E
15 AMPS FLC 17.8 4F
4G 73 % 47 %
HOT AIR
COLD AIR
OIL HDR
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
K-2
P-1
CON
TUN
SHF
5-20-92

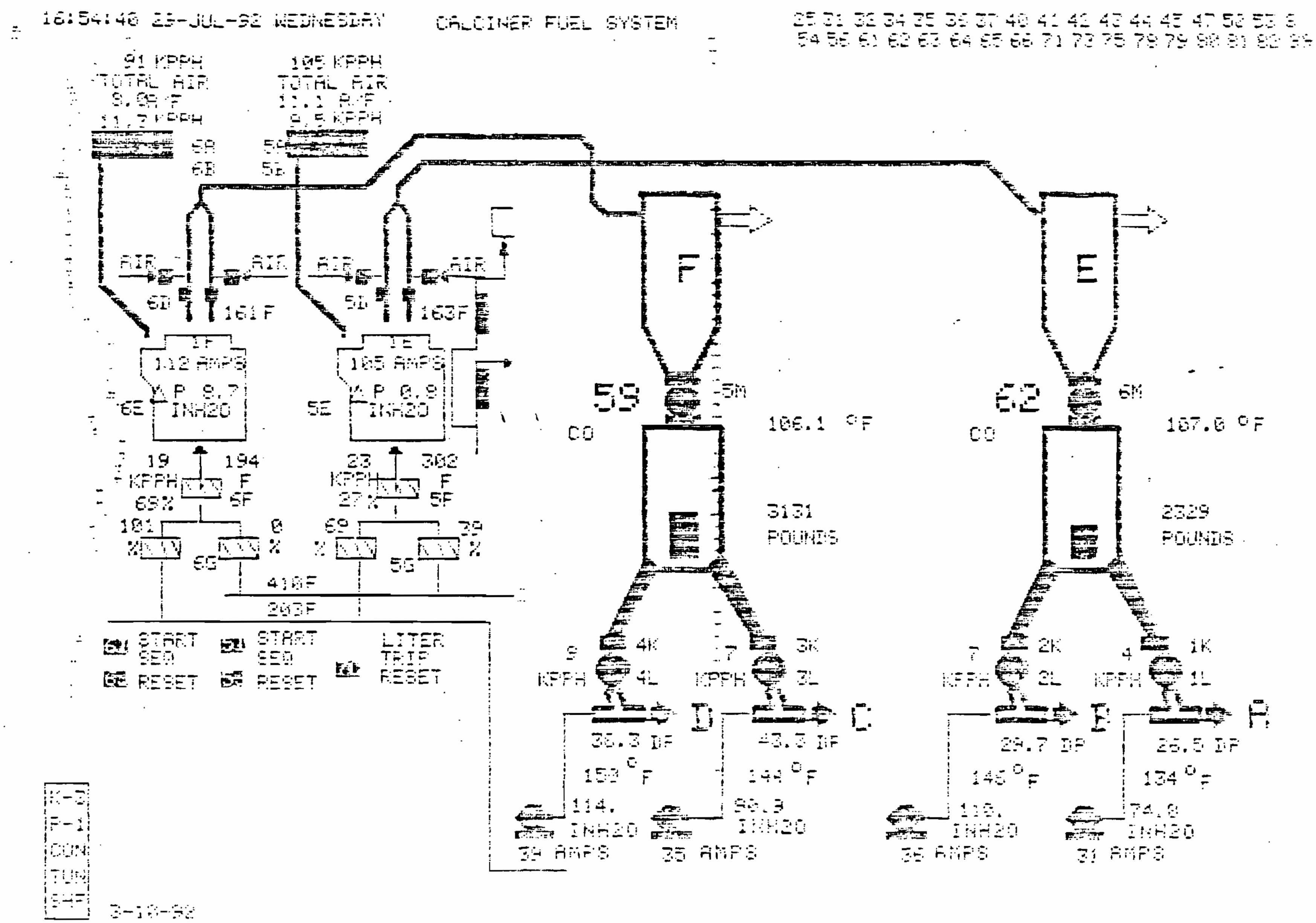
15:54:57 29-JUL-92 WEDNESDAY   CALCINER FUEL SYSTEM

25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 S
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99




16:55:47 29-JUL-92 WEDNESDAY
FUEL/AIR
25 31 32 34 35 36 37 40 41 42 43 44 45 47 50 53 9
54 56 61 62 63 64 65 66 71 73 75 78 79 80 81 82 99
DRUM PRESS 1993 PSIG
DRUM LEVEL-NR -0.2 INH20
TOT SA FLOW KPPH
TOT PA FLOW KPPH
TOT AIR FLOW 1147 KPPH
TOT COAL FLOW 96 KPPH
A/F RATIO 11.
FURN PRESS -0.3 INH20
EXIT GASES
02 2.92 %
OPAC 3 %
NOX 373 PPM
PRES -7.2 INH20
TEMP 631 F
SO2 634 LB/HR
50%
49 %
D
A
235 KPPH 3.0 INH20
228 KPPH 4 INH20
5D
5A
PC BOILER
44%
66%
C
B
243 KPPH 3.0 INH20
235 KPPH 4 INH20
5C
5B
AMPS
FLC
FDF1A-LS 0 84.5
-HS 4 195
FDF1B-LS -0 84.5
-HS 182 195
10.1 INH20
523 F
FROM FD
FANS F5-A
OIL HDR
1A
COAL FEED 23 KPPH
1B
161 OF
1C
1A 19 AMPS
FLC 32.0
18 ΔP IN H20
1D
54 KPPH 247 OF
64 %
1E
1F
17 AMPS FLC 24.15
1G
82 %
35 %
2A
COAL FEED 23 KPPH
2B
159 OF
2C
1B 19 AMPS
FLC 32.0
13 ΔP IN H20
2D
53 KPPH 244 OF
53 %
2E
2F
14 AMPS FLC 17.8
2G
63 %
43 %
3A
COAL FEED 27 KPPH
3B
161 OF
3C
1C 18 AMPS
FLC 32.0
16 ΔP IN H20
3D
53 KPPH 270 OF
48 %
3E
3F
15 AMPS FLC 17.8
3G
78 %
56 %
4A
COAL FEED 23 KPPH
4B
161 OF
4C
1D 18 AMPS
FLC 32.0
19 ΔP IN H20
4D
60 KPPH 254 OF
64 %
4E
4F
15 AMPS FLC 17.8
4G
73 %
47 %
HOT AIR
COLD AIR
GROUP TRIP RESET
LIGHTER TRIP RESET
START SELECTED
START LIGHTERS
K-2
P-1
CON
TUN
SHF
5-20-92

BEST AVAILABLE COPY



P 710 058 521

UNITED STATES POSTAL SERVICE

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Randy Thompson	
Street & No. Fla. Crushed Stone	
P.O., State & ZIP Code Leesburg, Fl 34749	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 7-23-92 AC 27-118674 PSD-FI-091	

PS Form **3800**, June 1990

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

July 20, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Randy Thompson
Environmental Department
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Thompson:

Re: Letter Amendment to the Construction Permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), to Conduct Performance Tests for Pollutant Emissions on the Facility's Cement Kiln While Utilizing/Firing Whole Tires

The Department has reviewed the request that you provided on May 15, 1992. We have also considered the Department's legal authority to allow Florida Crushed Stone Company (FCSC) to conduct the requested performance tests. Paragraph 403.061(15), Florida Statutes (F.S.) authorizes the Department to consult with any person proposing to construct, install, or otherwise acquire a pollution control device or system concerning the efficacy of such device or system, or the pollution problem which may be related to the source, device, or system. Paragraph 403.061(16), F.S., authorizes the Department to encourage voluntary cooperation by persons in order to achieve the purposes of the state environmental control act. Paragraph 403.061(18), F.S., authorizes the Department to encourage and conduct studies, investigations, and research relating to the causes and control of pollution. Florida Administrative Code (F.A.C.) Rule 17-2.250(5) authorizes the Department to consider variation in industrial equipment and make allowances for excess emissions that provide practical regulatory controls consistent with the public interest.

In accordance with the provisions of Paragraphs 403.061(15), (16), and (18), F.S., and F.A.C. Rule 17-2.250(5), you are hereby authorized to conduct performance tests for pollutant emissions on FCSC's cement kiln while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather data regarding pollutant emissions while utilizing/firing whole tires, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990: shredded tires; October 14-16, 1991: whole tires). Screening for a modification and Prevention of Significant Deterioration (PSD) shall be in accordance with Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1991 version), which will compare the actual pollutant emissions of the baseline tests to the actual pollutant emissions of the performance tests while utilizing whole tires. The performance test results will be evaluated by the Department's BAR and involved parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.).

The performance tests shall be subject to the following conditions:

1. The permittee shall notify, in writing, the Department's Southwest District and Bureau of Air Regulation (BAR) offices at least 15 days prior to commencement of the performance tests. A written report shall be submitted to these offices within 45 days upon completion of the last test run.

2. Prior to or after conducting performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln (Post-tests), performance tests (Pre-tests/baseline) for pollutant emissions shall be conducted while operating under normal operating conditions with the presently permitted kiln fuels and feed material. The pollutant emissions results of the "Pre-tests" shall be compared to the pollutant emissions results of the "Post-tests" to determine if:

    a) PSD or non-PSD emissions review is required where actual emissions increased (baseline versus whole tire firing), which includes the construction permit application and the appropriate processing fee; or,

    b) the construction permits, Nos. AC 27-118674 and PSD-FL-091, can be amended to allow the utilization/firing of whole tire in the facility's cement kiln on a continuous basis.

3. All "Post-test" emissions results shall be compared to "actual emissions" for PSD review purposes (see Region IV, U.S. EPA's letter dated April 4, 1990).

4. The contents of Dr. John B. Koogler's letter with enclosure received July 13, 1992, via FAX, are adopted by reference, with the following exceptions:

   - From the initial date of utilizing/firing whole tires in the facility's cement kiln, which shall be documented in writing to the Department, the permittee shall be limited to a maximum of 56 days, which is to include 5 days of continuous firing of tires to establish steady-state operation, 2 days to conduct the Type I audit performance tests, and an additional 49 days to collect clinker production data and continuous emission monitoring data on nitrogen oxides, carbon monoxide, volatile organic compounds, and oxygen.

   - If additional time is needed, the permittee shall provide the Department with documentation of the progress accomplished to date and shall identify what is left to be done to complete the performance tests.

   - Daily accounting of the cement kiln operations while utilizing/firing whole tires shall be required. On a daily basis, a weekly progress report of these activities shall be submitted to the Department's Southwest District and Bureau of Air Regulation offices to account for each calendar day of tire utilization.

   - A Type I audit is required and shall be coordinated with the Department's Southwest District office.

   - Documentation of the utilization/firing rates of whole tires (i.e., actual utilization/firing rate by weight) shall be required.

   - The Department will take the responsibility of providing a cover letter to and mailing the performance test results to the reviewing parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.).

5. These authorized performance tests shall not result in the release of objectionable odors pursuant to F.A.C. Rule 17-2.620(2).

6. Performance testing shall immediately cease upon the occurrence of a valid environmental complaint by a citizen or other party, or a nuisance or danger to public health or welfare. Performance testing shall not resume until appropriate measures to correct the problem have been implemented.

7. The performance tests for pollutant emissions shall be conducted under the direct supervision and responsible charge of a professional engineer registered in Florida.

8. This Department action is just to authorize the performance tests for pollutant emissions on the facility's cement kiln while utilizing/firing whole tires. Any utilization/firing of whole tires after the last performance test run is completed will be deemed a violation of the current construction permits, Nos. AC 27-118674 and PSD-FL-091.

9. Complete documentation (recording) of any utilization/firing of whole tires in the facility's cement kiln shall be required (i.e., testing results; materials utilized, by weight; etc.) and kept on file for a minimum of two years.

10. The Department shall be notified in writing on the date of the last test run completion.

11. The performance tests shall be conducted while the cement plant, the power plant, and the lime plant are all operation (i.e., 90-100% capacity).

12. Attachments (See Attachment Section) are incorporated.

The Department has relied on the information referenced in the attachments and conversations with representatives of the FCSC, U.S. EPA-Region IV, Department of Interior's National Park Service, and Hernando County in authorizing this permit amendment to construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C). Any continuous burning of whole tires, if permitted subsequent to this test burn, will be allowed pursuant to the terms set forth in Attachment A (draft letter authorizing continuous utilization of whole tires), incorporated herein. Any such authorization of continuous burning will be subject to third party challenge and provide a clear point of entry for challenge pursuant to Section 120.57, F.S.

This letter constitutes proposed agency action. A person whose substantial interests are affected by the Department's proposed permitting decision to permit continuous utilization/firing of whole tires at the source may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the applicant of the permit amendment and the parties listed below must be filed within 14 days of receipt of this letter. The appropriateness of screening the test burn data for actual emission increases in accordance with Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July, 1991 version), as opposed to any other methodology, may be raised in any petition for administrative proceedings filed challenging the Department's determination to authorize continuous utilization/firing of whole tires at the source. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department.

This letter amendment and its Attachments must be attached to the air construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), and shall become a part of the permits.

Sincerely,

Carol M. Browner
Secretary

CB/rbm

Attachments

c: B. Thomas, SWD
J. Koogler, Ph.D., P.E., K&A
J. Harper, EPA
C. Shaver, NPS
C. Hetrick, HCBCC
W. Congdon, Esq., DER
P. Comer, Esq., DER
T. Mountain, FCSC
L. Sellers, Jr., Esq., H&K
T. Cleveland, Esq., OHF&C

<u>Attachment Section</u>

1. Dr. John B. Koogler's letter with enclosures received May 15, 1992.
2. Dr. John B. Koogler's letter and processing fee received May 19, 1992.
3. 40 CFR (July, 1991 version).
4. Ms. Jewell A. Harper's letter dated April 4, 1990.
5. Ms. Jewell A. Harper's letter dated August 20, 1990.
6. Intent to Issue package dated May 29, 1992.
7. Mr. Tom Mountain's letter received June 1, 1992, via FAX.
8. Mr. Lawrence E. Sellers, Jr.'s letter with enclosures received June 3, 1992, via FAX.
9. "Request For Extension of Time In Which To File A Petition For Formal Administrative Proceeding" received June 12, 1992.
10. "Order Granting Request For Extension Of Time To File Petition For Hearing" received June 23, 1992.
11. Public Notice verification received July 1, 1992.
12. Draft revised test protocol received from Dr. John B. Koogler on July 1, 1992, via FAX.
13. Dr. John B. Koogler's letter with enclosure received July 13, 1992, via FAX.
14. Dr. John B. Koogler's letter received July 14, 1992, via FAX.
15. Final Determination dated July 14, 1992.
16. Letter amendment authorizing performance testing dated July 20, 1992.

Attachment A

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

DRAFT

October xx, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Randy Thompson
Environmental Department
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Thompson:

Re: Letter Amendment to the Construction Permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), Authorizing Continuous Utilization/Firing of Whole Tires in the Facility's Cement Kiln

The Department has reviewed the request for an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), that you provided in a letter received on May 19, 1992. The request was for authorization to continuously utilize/fire whole tires in the facility's cement kiln only after the pollutant emissions results of the performance tests have been reviewed by the Department's Bureau of Air Regulation and involved parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.). Based on the test results and pursuant to Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July, 1991 version), there was not an actual emissions increase of any pollutant. Therefore, the request to utilize/fire whole tires in the facility's cement kiln is acceptable and the following Specific Conditions and Attachments are changed and/or added:

<u>Specific Conditions</u>:

- The cement kiln's maximum utilization/firing rate of whole tires shall not exceed 15.0% of the total Btu heat input (1.33 tons per hour).

- The utilization/firing rate of whole tires shall be quantified (weighed) and recorded and the records shall be kept on file for a minimum of two years.

- The quantity of all deliveries of whole tires shall be documented and kept on record/file for a minimum of two years.

- Objectionable odors shall not be allowed off the facility's property in accordance with F.A.C. Rule 17-2.620(2).

- All references to the Title 40 Code of Federal Regulations shall be of the July, 1991 version.

<u>Attachments to be Incorporated</u>:

1. Dr. John B. Koogler's letter with enclosures received May 15, 1992.
2. Dr. John B. Koogler's letter and processing fee received May 19, 1992.
3. 40 CFR (July, 1991 version).
4. Ms. Jewell A. Harper's letter dated April 4, 1990.
5. Ms. Jewell A. Harper's letter dated August 20, 1990.
6. Intent to Issue package dated May 29, 1992.
7. Mr. Tom Mountain's letter received June 1, 1992, via FAX.
8. Mr. Lawrence E. Sellers, Jr.'s letter with enclosures received June 3, 1992, via FAX.
9. "Request For Extension of Time In Which To File A Petition For Formal Administrative Proceeding" received June 12, 1992.
10. "Order Granting Request For Extension Of Time To File Petition For Hearing" received June 23, 1992.
11. Public Notice verification received July 1, 1992.
12. Draft revised test protocol received from Dr. John B. Koogler on July 1, 1992, via FAX.
13. Dr. John B. Koogler's letter with enclosure received July 13, 1992, via FAX.
14. Dr. John B. Koogler's letter received July 14, 1992, via FAX.
15. The Department's Final Determination and letter amendment authorizing performance testing dated July 14, 1992.
16. Dr. John B. Koogler's letter with enclosures (performance test results of the pollutant emissions) received (to be dated).
17. Mr. C. H. Fancy's letter transmitting the performance test results of the pollutant emissions to the involved parties dated (to be dated).
18. The Department's Final Determination and letter amendment dated (to be dated).

This letter constitutes proposed agency action. A person whose substantial interests are affected by the Department's proposed permitting decision to permit continuous utilization/firing of whole tires at the source may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the applicant of the permit amendment and the parties listed below must be filed within 14 days of receipt of this letter. The appropriateness of screening the test burn data for actual emission

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increases in accordance with Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July, 1991 version), as opposed to any other methodology, may be raised in any petition for administrative proceedings filed challenging the Department's determination to authorize continuous utilization/firing of whole tires at the source. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department.

DRAFT

This letter must be attached to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), and shall become a part of the permits.

Sincerely,

Carol M. Browner
Secretary

CB/rbm

Attachments

cc: B. Thomas, SWD
J. Koogler, Ph.D., P.E., K&A
J. Harper, EPA
C. Shaver, NPS
C. Hetrick, HCBCC
W. Congdon, Esq., DER
P. Comer, Esq., DER
T. Mountain, FCSC
L. Sellers, Jr., Esq., H&K
T. Cleveland, Esq., OHF&C

Attachments Available Upon Request

Final Determination

July 14, 1992

Florida Crushed Stone Company

Amendment to AC 27-118674 and PSD-FL-091 (PSD-FL-091C)

The construction permit amendment application package has been reviewed by the Department. The Department's Intent to Issue was distributed on June 2, 1992, and available for public inspection at the Department's Southwest District and Bureau of Air Regulation offices and the Hernando County Board of County Commission office. Public Notice of the Department's Intent to Issue was published in The Tampa Tribune on June 6, 1992. A revised testing protocol was received from Dr. John B. Koogler during the public notice period. The following is the Department's response to the proposed revised testing protocol and finds it acceptable. However, the following condition will be added to require daily accounting of operations and a weekly progress report to be sent to the Department's Southwest District and Bureau of Air Regulation offices in order to establish the exact time-frame of ongoing tests:

o Daily accounting of the cement kiln operations while utilizing/firing whole tires shall be required. On a daily basis, a weekly progress report of these activities shall be submitted to the Department's Southwest District and Bureau of Air Regulation offices to account for each calendar day of tire utilization.

Therefore, it is recommended that the construction permit amendment be issued as drafted, with the above changes and additions incorporated.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Carol Browner

FROM: Howard L. Rhodes

DATE: July 14, 1992

SUBJ: Approval of a Construction Permit Amendment
AC 27-118674 and PSD-FL-091 (PSD-FL-091C)
Florida Crushed Stone Company: Cement Kiln

Attached for your approval and signature is a construction permit amendment prepared by the Bureau of Air Regulation for the above referenced company to conduct emissions tests on the facility's cement kiln. Florida Crushed Stone Company's cement kiln normally fires coal to provide heat to dry the raw materials feed into the kiln. The company desires to supplement the coal feed with used tires and is requesting permission to conduct pollutant emissions tests while firing both tires and coal. Two tests will be conducted for comparative purposes, one while firing/utilizing coal (baseline) and one while firing/utilizing whole tires and coal. The facility is located outside of Brooksville, Hernando County, Florida. A revised testing protocol was received during the public notice period.

I recommend your approval and signature.

HR/CHF/rbm

FLORIDA CRUSHED STONE COMPANY

CEMENT / POWER / LIME PLANT

T D F   TEST DATA

POWER/ LIME PLANTS

7-21-92   *0600 - 2400 Hours*

Net Generation - 2059 MWH/114.4 MW

Power Plant Coal - 851.6 Tons/47.3 TPH

Lime Plant Coal - 157.6 Tons/8.8 TPH

Lime Feed - 260 Tons/14.4 TPH

7-22-92   *MN - 1800 Hours*

Net Generation - 2059 MWH/114.4 MW

Power Plant Coal - 860.3 Tons/47.8 TPH

Lime Plant Coal - 145.9 Tons/8.1 TPH

Lime Feed - 332 Tons/18.4 TPH

DATA SOURCES:

Generation - From FPC inadvertant report

Coal - From Bailey Logs

Lime Feed - Calculated from dryer production scale and D-16 silo measurement

7-29-92

#1 Run: 8:51 - 11:12 a.m. — Data @ (9:10) a.m.

#2 Run: 12:28 - 2:47 — (1:2) pm

#3 Run: 4:00 - — (4:5) pm

	#1	x̄	#2	x̄	#3	x̄
Lime Plant						
coal feed rate (lbs/hr)	27,000 / 29,000	28,000	26,000 / 27,000	26,500	27,000 / 27,000	27,000
limestone " " (TPH)	21.0 / 20.0	22.0	22.0 / 20.0	21.0	20.0 / 20.0	20.0
Power Plant						
coal feed rate (lbs/hr)	96,000 / 95,000	95,500	93,000 / 97,000	95,000	96,000 / 96,000	96,000
load (MW)	109 / 111	110	109.5 / 108.7	109.1	111.5 / 110.7	111.1
Cement Plant						
coal feed rate (TPH)	7.0 / 6.7	6.85	7.4 / 7.4	7.4	7.4 / 6.9	7.15
TDF " " (TPH)	1.33 / 1.33	1.33	1.33 / 1.33	1.33	1.33 / 1.33	1.33
kiln " " (TPH)	122 / 117	119.5	127 / 129	128	130 / 130	130
clinker prod. rate (TPH) (to be calc.)						
Baghouse						
inlet Temp. (°F)	403.3 / 407.3	405.3	395.4 / 393.3	394.35	410.8 / 413.0	411.9
fan speed (%)	71 / 71	71	71 / 71	71	71 / 71	71
fan current (amps)	3140 / 3108	3124	3390 / 3390	3390	3104.0 / 3307.1	3205.55
ΔP (in-H_2O)	7.6 / 7.7	7.65	7.1 / 7.8	7.45	7.6 / 7.9	7.75
Cement Plant Fan						
inlet Temp. (°F)	752 / 755	753.5	773 / 759	766	757 / 765	761
fan current (amps)	115.4 / 113.3	114.35	118.6 / 118.6	118.6	118.7 / 115.6	117.15
damper setting (%)	54.8 / 54.8	54.8	54.8 / 54.8	54.8	54.8 / 54.8	54.8
O_2 (%)	3.50 / 3.71	3.605	4.40 / 4.20	4.30	3.87 / 4.15	4.01
CO (ppm)	439.1 / 310.4	374.75	263.0 / 219.0	241.0	298.2 / 306.0	302.1
Pre-Heater						
exit gas Temp (°F)	774 / 774	774	818 / 800	809	793 / 791	792
internal gas Temp (°F)	1514 / 1518	1516	1519 / 1519	1519	1519 / 1520	1519.5
raw mill Temp. (°F)	1331 / 1250	1290.5	1392 / 1385	1388.5	1372 / 1390	1381

7-29-92
(Data cont.)

		#1	$\bar{x}$	#2	$\bar{x}$	#3	$\bar{x}$
Kiln Inlet							
	gas Temp (°F)	1694	1646.5	1603	1604	1639	1618.5
		1599		1605		1598	
	draft (in. H_2O)	0.60	0.54	0.79	0.80	0.83	0.855
		0.48		0.91		0.88	
	O_2 (%)	1.54	1.53	1.31	1.26	1.21	1.23
		1.52		1.21		1.25	
	combustibles (%)	0.49	0.41	0.35	0.365	0.30	0.28
		0.33		0.38		0.26	
Stack							
	O_2 (%)	6.32	6.225	6.43	6.25	6.08	6.09
		6.13		6.07		6.10	
	NO_x (ppm)	193.0	188.05	192.8	171.65	168.6	172.05
		183.1		150.5		175.5	
	Opacity (%)	2.7	2.75	2.2	2.45	4.0	3.75
		2.8		2.7		3.5	
	velocity head (stack test)						

Mountain
Mr. Ramirez : Lime & Power Op.
Mr. Carter : Cement Op.

7-28-92
8:10 – 9:10 am : #1
12:02 – 1:02 : #2
: #3

	7/21/92	7/22/92	7/28/92 #1	7/28/92 #2
Lime Plant				
Coal Feed Rate (#/hr)	11,000	12,000	26,000	22,000
Limestone Feed Rate (Ton/hr)	5.0	5.0	20.0 ~~4.28~~	20.0
Power Plant				
Coal Feed Rate (#/hr)	94,000	93,000	96,000	99,000
Load (MW)	110	109.5	110.6	111.0
Cement Plant				
Coal Feed Rate (TPH)	9.4	8.0	7.2	7.5
TDF Feed Rate (TPH)			1.33	1.33
Kiln Feed Rate (TPH)	121.7	119.4	130.0	125.0
Clinker Prod Rate (TPH)	79.1	77.6		
Baghouse				
Inlet Temp (°F)	391.2	393.7	407.9	405.0
Fan Speed (%)	73.6	71.6	72.0%	70.0%
Fan Current (amps)	3180	3258	3177	3146
ΔP (in-H_2O)	8.4	7.3	8.1	7.4
Cement Plant Fan				
Inlet Temp (°F)	740	767	774	762
Fan Current (amps)	120.6	119.2	115.6	117.0
Damper Setting (%)	53.1	53.1	54.8%	54.8%
O_2 (%)	4.38%	6.29%	4.06%	4.74%
CO (ppm)	752	161.8	150.8	112.3

	7/21/92	7/22/92	7/28/92
PRE HEATER			
EXIT GAS TEMP (°F)	777	795	~~797/788~~
INTERNAL GAS TEMP (°F)	1399	1212	~~1516/151[illegible]~~
RAW MEAL TEMP (°F)	1364	1320	~~1331/1330~~
KILN INLET			
GAS TEMP (°F)	1658	1540	~~1606/1613~~
DRAFT (in-H_2O)	0.67	0.84	~~0.6[illegible]/0.70~~
O_2 (%)	8.67	1.81	~~1.75 %/1.5[illegible]~~
COMBUSTIBLES (%)	0	0	~~0.04 %/0.0[illegible]~~
STACK			
O_2	6.30	6.96	6.32/6.32
NO_X	130.2	170.1	153.9/179.6
Opacity	5.3	3.8	4.8/3.7
Velocity Head	from stack test		

Mt. Mountain
Mr. Ramirez : Lime / Power Op.
Mr. Carter : Cement Op.

7-28-92
8:10 – 9:10 am : #1
12:02 – 1:02 : #2
: #3

	7/21/92	7/22/92	7/28/92 #1	7/28/92 #2
Lime Plant				
Coal Feed Rate (#/hr)	11,000	12,000	26,000	22,000
Limestone Feed Rate (70%)	5.0	5.0	20.0 ~~4.26~~	20.0
Power Plant				
Coal Feed Rate (#/hr)	94,000	93,000	96,000	99,000
Load (mw)	110	109.5	110.6	111.0
Cement Plant				
Coal Feed Rate (TPH)	9.4	8.0	7.2	7.5
TDF Feed Rate (TPH)			1.33	1.33
Kiln Feed Rate (TPH)	121.7	119.4	130.0	125.0
Clinker Prod Rate (TPH)	79.1	77.6		
Baghouse				
Inlet Temp (°F)	391.2	393.7	407.9	405.0
Fan Speed (%)	73.6	71.6	72.0%	70.0%
Fan Current (amps)	3180	3258	3177	3146
ΔP (in-H_2O)	8.4	7.3	8.1	7.4
Cement Plant Fan				
Inlet Temp (°F)	740	767	774	762
Fan Current (amps)	120.6	119.2	115.6	117.0
Damper Setting (%)	53.1	53.1	54.8%	54.8%
O_2 (%)	4.38%	6.29%	4.06%	4.74%
CO (ppm)	752	161.8	150.8	112.3

	7/21/92	7/22/92	7/28/92
PRE HEATER			
Exit Gas Temp (°F)	777	795	797/788
Internal Gas Temp (°F)	1399	1212	1516/151
Raw Meal Temp (°F)	1364	1320	1331/1330
KILN INLET			
Gas Temp (°F)	1658	1540	1606/1613
Draft (in-H_2O)	0.67	0.84	0.64/0.70
O_2 (%)	8.67	1.81	1.75%/1.5
Combustibles (%)	0	0	0.04%/0.0
STACK			
O_2	6.30	6.96	6.32/6.32
NO_x	130.2	170.1	153.9/179.6
Opacity	5.3	3.8	4.8/3.7
Velocity Head	from stack test		

7-29-92

#1 Run: 8:51 – 11:12 a.m. Data @ (9:10) a.m.

#2 Run:

#3 Run:

Lime Plant						
coal feed rate (lbs/hr)	27,000 / 29,000	28,000				
limestone " " (TPH)	24.0 / 20.0	22.0				
Power Plant						
coal feed rate (lbs/hr)	96,000 / 95,000	95,500				
load (MW)	109 / 111	110				
Cement Plant						
coal feed rate (TPH)	7.0 / 6.7	6.85				
TDF " " (TPH)	1.33 / 1.33	1.33				
kiln " " (TPH)	122 / 117	119.5				
clinker prod. rate (TPH) (to be calc.)						
Baghouse						
inlet Temp. (°F)	403.3 / 407.3	405.3				
fan speed (%)	71 / 71	71				
fan current (amps)	3140 / 3108	3124				
ΔP (in-H_2O)	7.6 / 7.7	7.65				
Cement Plant Fan						
inlet Temp. (°F)	752 / 755	753.5				
fan current (amps)	115.4 / 113.3	114.35				
damper setting (%)	54.8 / 54.8	54.8				
O_2 (%)	3.50 / 3.71	3.605				
CO (ppm)	439.1 / 310.4	374.75				
Pre-Heater						
exit gas Temp (°F)	774 / 774	774				
internal gas Temp (°F)	1514 / 1518	1516				
raw mill Temp. (°F)	1331 / 1250	1290.5				

Kiln Inlet						
gas Temp (°F)	1694 / 1599	1646.5				
draft (in. H_2O)	0.60 / 0.48	0.54				
O_2 (%)	1.54 / 1.52	1.53				
combustibles (%)	0.49 / 0.33	0.41				
Stack						
O_2 (%)	6.32 / 6.13	6.225				
NO_x (ppm)	193.0 / 183.1	188.05				
Opacity (%)	2.7 / 2.8	2.75				
velocity head (stack test)						

FCS

FLORIDA CRUSHED STONE COMPANY

CEMENT / POWER / LIME PLANT

T D F TEST DATA

POWER/ LIME PLANTS

7-21-92 *0600 - 2400 Hours*

Net Generation - 2059 MWH/114.4 MW

Power Plant Coal - 851.6 Tons/47.3 TPH

Lime Plant Coal - 157.6 Tons/8.8 TPH

Lime Feed - 260 Tons/14.4 TPH

7-22-92 *MN - 1800 Hours*

Net Generation - 2059 MWH/114.4 MW

Power Plant Coal - 860.3 Tons/47.8 TPH

Lime Plant Coal - 145.9 Tons/8.1 TPH

Lime Feed - 332 Tons/18.4 TPH

DATA SOURCES:

Generation - From FPC inadvertant report

Coal - From Bailey Logs

Lime Feed - Calculated from dryer production scale and D-16 silo measurement

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

FAX TRANSMITTAL FORM

TO: Bruce Mitchell

FROM: John Koogler

P#: 307-90-01

SENT BY: Megan

DATE: 7/30

FAX PHONE: 904-377-7158

The text being transmitted consists of 2 pages PLUS this one.

REMARKS:

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

July 20, 1992

KA 307-90-01

Sent Via Fax

Mr. Chi-Sun Lee
Florida Department of
Environmental Regulation
Southwest District
4520 Oak Fair Blvd.
Tampa, FL 33610-7347

Subject: Baseline and Whole Tire Derived Fuel (TDF) Emission Testing at Florida Crushed Stone

Dear Mr. Lee:

Koogler & Associates Environmental Services will conduct emission measurements at the Florida Crushed Stone CPL plant in Brooksville for:

Particulate Matter	Front-half of EPA Method 26
Hydrogen Chloride	EPA Method 26
Visible Emissions	EPA Method 9
Metals	EPA Method 0012
Nitrogen Oxide	EPA Method 7e
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
Carbon Dioxide/Oxygen	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temperature	EPA Methods 1,2,4
Speciated Volatile Organic Compounds	EPA Method 0030

These tests have been rescheduled for July 21 and 22, 1992 for baseline conditions and July 28 and 29, 1992 for Whole Tire Derived Fuel.

For each of the test conditions (baseline and WTDF) three 2-hour test runs will be conducted.

If you have any questions about tne proposed test procedures or methods, give me a call.

Very truly yours,

KOOGLER & ASSOCIATES

N. Mason Joye, Jr.

N. Mason Joye, Jr.

JBK:NMJ:mem

c: Mr. Bruce Mitchell, FDER, Tallahassee
Mr. Charles Hetrick, Hernando County
Mr. Lawrence Jennings, Hernando County
Mr. Carl Lunderstadt, FCS, Leesburg
Mr. Joe Piermatteo, FCS, Brooksville
Mr. Thomas Mountain, FCS, Brooksville
Mr. Lawrence Sellers, Holland & Knight
Mr. Segundo Fernandez, Oertel,Hoffman et al
Mr. David Buff, KBN Engineering

I N T E R O F F I C E   M E M O R A N D U M

Date: 15-Jul-1992 10:24am EST
From: Rebecca Brown TAL
BROWN_R
Dept: Office General Counsel
Tel No: (904)488-9730
SUNCOM:

TO: Richard Garrity TPA (GARRITY_R)

CC: Patty Adams TAL (ADAMS_P)

Subject: Extension received

On July 9, 1992, we received a request for extension of time concerning Hernando County, Permit No. AC27-118674.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

KA 307-90-01

July 13, 1992

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Florida Crushed Stone Company
Hernando County, Florida
Test Protocol for Evaluating CPL Plant
Operating Conditions Under Baseline
and TDF/Coal Firing Conditions

Dear Mr. Mitchell:

Attached is a copy of the performance test protocol dated July 13, 1992, for assessing the effects of tire derived fuel on the Florida Crushed Stone CPL plant. This version of the protocol has been agreed to by Florida Crushed Stone (FCS) and Hernando County and is the protocol that will be followed during the emission testing that is schedule to be conducted at the FCS CPL plant on July 14 and 15 and July 21 and 22, 1992. Your office, the FDER Southwest District Office in Tampa and all interested parties were notified of the emission test schedule by copy of my letter dated June 30, 1992.

As the test program is scheduled to begin in the very near future, we would appreciate your expeditious preparation of the final Department approval allowing FCS to proceed with the testing described in the attached protocol. The approval, for which the Intent to Issue is dated May 29, 1992, should include a reference to the attached protocol as the protocol has changed from that transmitted under cover of my letter of May 14, 1992, to Tom Mountain of FCS.

I appreciate your cooperation on this matter and am available to answer any questions you may have regarding the test protocol or other procedural matters.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa
Enc.

c: Mr. Chi-Sun Lee, FDER, Tampa
Mr. Carl Lunderstadt, FCS, Leesburg
Mr. Randy Thompson, FCS, Leesburg
Mr. Joe Piermatteo, FCS, Brooksville
Mr. Tom Mountain, FCS, Brooksville
Mr. Larry Sellers, Holland & Knight
Mr. Charles Hetrick, Hernando County
Mr. Larry Jennings, Hernando County
Ms. Kathy Liles, Hernando County
Mr. David Buff, KBN Engineering
Mr. Anthony Cleveland, Oertel, Hoffman

KOOGLER & ASSOCIATES

PROTOCOL FOR A PERFORMANCE TEST TO
EVALUATE THE OPERATIONS OF THE
FLORIDA CRUSHED STONE CPL PLANT
UNDER BASELINE AND TDF/COAL
FIRING CONDITIONS

1.0 INTRODUCTION

The Florida Crushed Stone Company (FCS) operates a cement, power and lime plant (CPL plant) in Hernando County, Florida. Under normal operating conditions, the cement plant operates at a clinker production rate of 75 tons per hour, the power plant operates at a electric power production rate of 125 megawatts and the lime plant operates at a lime production rate not greater than 22 tons per hour. Under these conditions, coal is used to provide the heat input to all three plants and the gas streams from the three plants are exhausted through a common baghouse for particulate matter control and through a common stack to the atmosphere. The permitted emissions from the CPL plant are summarized in Table 1.

Florida Crushed Stone has requested approval from the Florida Department of Environmental Regulation to use tire derived fuel (TDF) to provide up to 15 percent of the heat input to the kiln of the cement plant with the remainder of the heat input being provided by coal. The permits issued by FDER for the cement plant (AC27-118674 and A027-183508) specify that the kiln is to be fired with coal only at a maximum rate not to exceed 10.3 tons per hour or a maximum heat input rate of 248.0 million BTU per hour. The permit amendment requested by Florida Crushed Stone will allow the use of TDF to provide up to 15 percent of the heat input to the cement kiln or up to 37.2 million BTU per hour. Coal will supply the remainder of the heat input to the kiln or up to 210.8 million BTU per hour.

This protocol established criteria for a performance test including emission measurements and CPL plant monitoring that will demonstrate the affects of TDF burning in the cement kiln on air pollutant emissions from the CPL plant and defines the procedure for evaluating the test data.

The performance test will begin on or about July 13, 1992. On Day 1 of the performance test, the test crew will arrive on site and mobilize in preparation for conducting baseline emission measurements. The baseline emission measurements (with coal being used to provide 100 percent of the heat input to all plants) is scheduled to be conducted during Day 2 and Day 3 of the performance test.

On the day following the conclusion of the baseline emission measurements (scheduled as Day 4), TDF firing will commence. The TDF will be used to provide approximately 15 percent of the heat input to the cement plant. A period of at least five days will be allowed for the CPL plant to reach steady-state operating conditions with TDF being fired to the cement plant.

On Day 9 of the performance test, TDF emission measurements are scheduled to begin. The TDF emission measurements are scheduled to be conducted during Day 9 and Day 10 of the performance test. If time in addition to two test days are required to conduct the baseline emission measurements (Day 2 and Day 3), the time period for conducting the TDF emission measurements will be shifted accordingly; i.e., to allow at least five days for the CPL plant to achieve steady-state operating conditions before the TDF tests.

Following the conclusion of the TDF emission measurements (scheduled Day 10), the performance test will continue for approximately 49 additional days with TDF being used to provide approximately 15 percent of the heat input to the cement plant. The entire 56 day performance test period during which coal and TDF will be fired to the cement plant is defined as 56 days of cement plant operations (56 operating days) and will not include periods of time when the cement plant is not operating due to scheduled or unscheduled downtime. The approximate 56 day operating performance test period may require more than 56 calendar days because of scheduled or unscheduled outages of the cement plant. The calendar day period of the performance test period will be automatically extended under the conditions of this protocol by the number of calendar days of cement plant downtime.

2.0 BASELINE TESTS

The performance test period will begin on or about July 13, 1992. At the beginning of the test period and during the time period preceding the test period, the CPL plant will be, and will have been, operating under normal conditions with coal being used to provide 100 percent of the heat input to the CPL plant.

On Day 1 of the performance test period, the test crew will arrive on site and mobilize in preparation for conducting baseline emission measurements. The baseline emission measurements (with coal being used to provide 100 percent of the heat input and with the cement, power and lime plants operating under steady-state conditions) is scheduled to be conducted during Day 2 and Day 3 of the performance test period. The entire CPL plant (cement kiln, power plant and lime plant), however, will be on-line and operating at least 12 hours prior to the two day baseline test period in order to assure steady-state operating conditions. Due to unforeseen circumstances, it is possible that the baseline emission measurements may require time in addition to the scheduled two day period. If additional test time is required, the additional time will not affect the validity of the baseline emission measurements nor the validity of the overall performance test program.

During each day that emission measurements are conducted, it is anticipated that the test crew will be on-site approximately 12 hours. During the time on-site, the measurements described in the following paragraphs will be conducted. Each of the manual measurements (particulate matter, metals, volatile organic compounds by Method 0030, hydrogen chloride and the associated stack gas flow, moisture and temperature) will consist of three replicate test runs with each test run being two hours in duration.

Visible emission observations will be conducted for a one-hour period between the first and second replicate test runs for particulate matter/HCl, for a one-hour period between the second and third replicate test runs for particulate matter/HCl and for similar periods during the metals measurements. This will result in four hours of visible emission observations during the baseline test period.

The emission measurements that are made by instrumental methods (nitrogen oxides, carbon monoxide, volatile organic compounds and oxygen) will be conducted for the approximate 12-hour period during each of the two days required for baseline emission measurements. The continuous measurements for nitrogen oxides, carbon monoxide and volatile organic compounds will be made with instrumentation provided by Koogler & Associates. The continuous oxygen measurements will be made with an oxygen monitor permanently installed in the CPL plant stack. The continuous oxygen measurements will be supplemented with oxygen measurements made with Koogler & Associates equipment during each of the three replicate test runs for particulate matter/HCl and during each of the three replicate test runs for metals.

Emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Method 26 (HCl) Sample Train
Hydrogen Chloride (HCl)	EPA Method 26 (0050)
Visible Emissions	EPA Method 9
Metals: Arsenic Chromium (Total) Lead Mercury Zinc	EPA Method 0012
NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10

Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 1, 2 and 4 (in conjunction with EPA Methods 26 and 0012)
Speciated Volatile Organic Compounds*	VOST (EPA Method 0030)

*To be restricted to analyses for acetone, benzene, toluene, trichloroethylene, chlorobenzene, ethylbenzene, xylene, styrene, bromomethane, carbon disulfide, hexane and 1,1,1-trichloroethane.

During the time period when baseline emission measurements are conducted (two or more days), two coal samples (representing each of the two baseline test days) will be collected by Koogler & Associates personnel. An ultimate fuel analysis plus analyses for arsenic, total chromium, lead, mercury, zinc and chlorides will be conducted on the coal. Also, during the period of time when the baseline emission measurements are conducted, all CPL plant operating parameters specified in the following paragraphs will be monitored.

Beginning on Day 1 of the baseline test period and continuing through the end of the approximate 56 operating day TDF performance test period, the following plant operating parameters, which are continuously monitored by FCS instrumentation will be documented:

Lime Plant

Coal Feed Rate	(tph)
Limestone Feed Rate	(tph)

Power Plant

Coal Feed Rate	(tph)
Power Generating Rate	(mw)

Cement Plant

Coal Feed Rate	(tph)
TDF Feed Rate	(tph)
Kiln Feed Rate	(tph)
Kiln Feed Analysis	(See attached FCS Mix Control Report)
Clinker Production Rate	(tph)
Clinker Analysis	(See attached FCS Mix Control Report)

Main Baghouse

Inlet Temperature	(^oF)
Fan Speed	(%)
Fan Current	(amps)
Pressure Drop	(inches of water)

Cement Plant Fan

Inlet Temperature	(^oF)
Fan Current	(amps)
Damper Setting	(%)
Oxygen	(%)
Carbon Monoxide	(ppm)

Pre-heater

Exit Gas Temperature	(^oF)
Internal Gas Temperature	(^oF)
Raw Meal Temperature	(^oF)

Kiln Inlet (base of pre-heater)

Gas Temperature	(^oF)
Draft	(inches H_2O)
Oxygen	(%)
Combustibles (CO)	(%)

Stack

Oxygen	(%)
NOx	(ppm)
Opacity	(%)
Velocity Head	(inches H_2O)

During the performance test period, kiln feed will be sampled periodically by FCS personnel with samples composited once per eight-hour shift in accordance with normal plant operating procedures. Samples will be analyzed in the FCS quality control laboratory in accordance with normal plant operating procedures (see attached FCS Mix Control Report). The results of these analyses will be available for review by the Hernando County consultant for purposes of explaining excursions in plant operating conditions, excursions in measured emission data, or for other legitimate reasons mutually agreed upon by Hernando County and FCS.

During the performance test period, clinker will be sampled on a nominal two hour schedule by FCS personnel in accordance with normal plant operating procedures (see attached FCS Mix Control Report). These samples will be analyzed in the FCS quality assurance laboratory by Florida Crushed Stone personnel in accordance with normal plant operating procedures (see attached FCS Mix Control Report). Three composite clinker samples will be retained each day (representing each of three 8-hour shifts during the 24-hour operating day) to be reanalyzed for constituents or properties normally reported (see attached FCS Mix Control Report) if questions should arise regarding the validity of the initially reported analyses. These duplicate samples will be retained by FCS and will be discarded 30 days following the receipt of the Hernando County consultants report by the County.

The results of the clinker analyses will be available for review by the Hernando County consultant. A duplicate sample or samples will be analyzed only if there is a legitimate concern regarding the validity of the original analyses of that sample or samples.

3.0 TDF/COAL BURN PERIOD

On the day following the conclusion of the baseline emission measurements (scheduled as Day 4), tire derived fuel TDF firing will commence. TDF will be used to provide up to 15 percent of the heat input to the cement kiln of the CPL plant with coal providing the balance of the heat input for a period of approximately eight weeks (approximately 56 days) beginning on or about July 16, 1992. This performance test period will include approximately 56 days of cement plant operations (56 operating days) and will not include periods of time when the cement plant is not operating due to scheduled or unscheduled downtime. The approximate 56 operating day performance test period may require more than 56 calendar days because of the scheduled or unscheduled outages of the cement plant. The calendar day period will be automatically extended under the conditions of this protocol by the number of calendar days of cement plant downtime.

During the approximate 56 operating day performance test period of the cement plant, the lime plant or the lime plant and power plant may experience scheduled or unscheduled outages. Outages of the lime plant or lime plant and power plant will not interrupt the approximate 56 operating day period for the cement plant as the cement plant is designed to operate either with or without the power plant and lime plant, nor will these outages affect the validity of the data collected during the approximate 56 operating day performance test period. The entire CPL plant (cement kiln, power plant and lime plant), however, will be on-line and operating at least 12 hours prior to the two day TDF/coal emission test period scheduled to begin on or about Day 9 of the performance test period in order to assure steady-state operating conditions.

The purpose of the approximate 56 operating day performance test period with TDF and the associated testing described herein is to conclusively and unambiguously establish that using TDF for 15 percent of the heat input to the cement plant does not negatively affect regulated air pollutant emissions or clinker quality and that the air permit amendments proposed by FCS are acceptable to Hernando County.

Beginning on or about Day 9 of the performance test period and the sixth day of the TDF/coal burn period and with the cement, power and lime plants operating under steady-state conditions, emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Method 26 (HCl) Sample Train
Hydrogen Chloride (HCl)	EPA Method 26 (0050)
Visible Emissions	EPA Method 9
Metals: Arsenic Chromium (Total) Lead Mercury Zinc	EPA Method 0012
NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 1, 2 and 4 (in conjunction with EPA Method 26 and 0012)
Speciated Volatile Organic Compounds*	VOST (EPA Method 0030)

*To be restricted to analyses for acetone, benzene, toluene, trichloroethylene, chlorobenzene, ethylbenzene, xylene, styrene, bromomethane, carbon disulfide, hexane and 1,1,1-trichloroethane.

Due to unforeseen circumstances, it is possible that the TDF emission measurements may require time in addition to the scheduled two day period. If additional test time is required, the additional time will not affect the validity of the TDF emission measurements nor the validity of the overall performance test program.

During each day that TDF emission measurements are conducted, it is anticipated that the test crew will be on-site approximately 12 hours. During the time on-site, the measurements described in the preceding paragraphs will be conducted. Each of the manual measurements (particulate matter, metals, volatile organic compounds by Method 0030, hydrogen chloride and the associated stack gas flow, moisture and temperature) will consist of three replicate test runs with each test run being two hours in duration.

Visible emission observations will be conducted for a one-hour period between the first and second replicate test runs for particulate matter/HCl, for a one-hour period between the second and third replicate test runs for particulate matter/HCl and for similar periods during the metals measurements. This will result in four hours of visible emissions observations during the TDF test period.

The emission measurements that are made by instrumental methods (nitrogen oxides, carbon monoxide, volatile organic compounds and oxygen) will be conducted for the approximate 12-hour period during each of the two days required for TDF emission measurements. The continuous measurements for nitrogen oxides, carbon monoxide and volatile organic compounds will be made with instrumentation provided by Koogler & Associates. The continuous oxygen measurements will be made with an oxygen monitor permanently installed in the CPL plant stack. The continuous oxygen measurements will be supplemented with oxygen measurements made with Koogler & Associates equipment during each of the three replicate test runs for particulate matter/HCl and during each of the three replicate test runs for metals.

test runs for metals.

During the time period when TDF emission measurements are conducted (two or more days), two fuel samples (both coal and TDF), representing each of the two days of TDF testing, will be collected by Koogler & Associates personnel. An ultimate fuel analysis and analyses for arsenic, total chromium, lead, mercury, zinc and chlorides will be conducted on each fuel sample. Also, during the period of time when the emission measurements are conducted, all plant operating parameters previously specified will continue to be monitored. The monitoring of plant parameters will continue through the end of the TDF performance test period.

5.0 COMPARISON OF TEST RESULTS

Plant operating data from the baseline and TDF periods will be used to demonstrate normal fluctuations in plant operating conditions and to provide a long-term comparison of plant operating conditions under the two fuel firing scenarios.

Some differences in the temperature profile across the pre-heater are expected under the two fuel firing scenarios. During the baseline period (with coal providing 100 percent heat input to the cement plant), there will be a single fuel burning zone at the discharge end of the kiln. During the time TDF is used to provide up to 15 percent of the heat input to the kiln, there will be a coal burning zone at the discharge end of the kiln and a TDF burning zone at the kiln inlet. Differences in the temperature profile across the pre-heater under the two fuel firing scenarios will not, by themselves, indicate differences in cement plant operating conditions.

Also, spikes in the concentrations of gases (CO, NOx, and/or total hydrocarbons) that will be continuously monitored in the CPL plant stack during the two emission measurement periods will not, by themselves, indicate differences in plant operating conditions or emission rates.

E.R. Hansen in a paper entitled, *The Carbon Monoxide and Other Gases for Process Control* (IEEE Conference, 1985), discusses the factors affecting carbon monoxide levels in the gases exhausted from a dry process Portland cement plant and also discusses the relationship between carbon monoxide and nitrogen oxides concentrations. Hansen states that when a cement kiln is operating under optimum conditions the oxygen concentration in the gas stream discharged from the kiln is in the range of 1.5-2.0 percent, and that at this operating condition, significant changes in the carbon monoxide in the kiln off-gas can be expected. This is referred to as operating on a "ragged edge" due to the ragged (spiked) appearance of the carbon monoxide concentration trace on a strip chart.

The average emission rates of constituents measured during each test run, including spiked concentrations in the averages, will be used as points of comparisons. Also, clinker quality, which will be monitored during both the baseline and the TDF test periods, will be used to demonstrate the similarity of cement plant operating conditions. Data from the continuous emission monitors located in the CPL plant stack and oxygen and carbon monoxide monitors located in the cement plant will provide a continuous record of emission related parameters which can also be compared to demonstrate similarity of plant operating conditions during the two test periods.

The average emission rates of the regulated air pollutants measured during the TDF emission measurement period will be compared with average emission rates measured during the baseline period to determine if the use of TDF to provide up to 15 percent of the heat input to the cement kiln affects emission rates from the plant. The comparison of emission rates will be made in accordance with the methods set forth in 40 CFR 60, Appendix C.

With respect to the emissions of HCl and the volatile organic compounds, acetone, toluene, trichloroethylene, chlorobenzene, ethylbenzene, xylene, bromomethane, carbon disulfide, styrene, 1,1,1-trichloroethane and hexane, the concentration of each in the ambient air will be determined at the

FCS property line using emission rates measured during the baseline and TDF test periods and the air quality modeling procedures set forth in the *Guideline for Air Quality Models* (Revised), EPA, 1990. These concentrations will be compared with the guideline No Threat Levels (NTLs) developed by FDER. The test report will also contain a description of the methodology, model(s) and other data describing the modeling procedure.

Attainment of the applicable guideline NTLs and applicable ambient air quality standards will demonstrate that FDER permitting criteria have been met regarding the emissions of HCl and the referenced volatile organic compounds.

A conclusive report comparing the emission rates of designated air pollutants and plant operating conditions measured during the TDF and baseline test periods described herein and comparing predicted ambient concentrations of selected constituents with NTLs will be prepared by FCS and submitted to Hernando County, its consultants and its legal counsel within approximately 23 days of the completion of the TDF test period. This report will also include data documenting CPL plant operating conditions during approximately the first 30 days of the TDF test period and data documenting CPL plant operating data during baseline operating periods. The remaining plant operating data will be provided twice weekly through the conclusion of the approximate 56 day TDF performance test period.

The County's consultant will review the emission test data and the first 30 days of plant data representing TDF operations and file a conclusive report with the County and FCS as expeditiously as possible, but no later than 30 days following the receipt of the FCS report. If the report prepared by the Hernando County consultant concludes:

1. the tests were properly conducted,
2. the test results are valid,
3. there were no increases in the emission rates of any of the air pollutants designated in this protocol as determined in

accordance with 40 CFR 60, Appendix C,

4. that a comparable quality clinker was produced both during the TDF and baseline test periods, and

5. that no FDER ambient air quality standard or NTLs will be exceeded,

the County shall inform the Florida Department of Environmental Regulation, Bureau of Air Regulation, Tallahassee, Florida (FDER) of its finding and advise FDER that the County has no objection to amendments to all permits necessary to allow FCS to use TDF to provide up to 15 percent of the heat input to the CPL plant cement kiln. If the testing described herein demonstrates there is an increase in the emission rate of one or more of the constituents measured as described herein (as defined by 40 CFR 60, Appendix C), FCS shall have the right to pursue with FDER, modifications to all necessary air permits to allow this increase, without undue objection of Hernando County, if the increase is permittable under FDER rules.

TABLE 1

SUMMARY OF PLANT EMISSION LIMITING STANDARDS

FLORIDA CRUSHED STONE CPL
HERNANDO COUNTY, FLORIDA

Plant Operating Scenario(1)	Permitted Emission Limit(2) Particulate Matter (lb/hr)	Visible Emissions (%)	Sulfur Dioxide (lb/hr)	Nitrogen Oxides (lb/hr)
1. Cement	49.5(3)	10	50(4)	359(5)
2. Power	37.0(6)	20(7)	770(8)	846(9)
3. Power/Lime	37.0(6)	20(7)	770(8)	846(9)
4. Cement/Power	86.5(10)	10	781(11)	1205(10)
5. Cement/Power/Lime	86.5(10)	10	781(11)	1205(10)

(1) Lime Plant cannot operate unless Power Plant is operating.

(2) Cement (kiln and cooler)/Power and Lime Plants all exhaust through a common baghouse and stack.

(3) 0.3 lb/ton of kiln feed from kiln and 0.1 lb/ton of kiln feed from cooler; not to exceed 49.5 lb/hr.

(4) 0.6 lb/ton of kiln feed; not to exceed 50 lb/hr.

(5) 2.9 lb/ton of kiln feed; not to exceed 359 lb/hr.

(6) 0.03 lb/MMBTU; not to exceed 37 lb/hr.

(7) Opacity of 27% allowed for 6 minutes in any one hour.

(8) 1.2 lb/MMBTU; not to exceed 770 lb/hr.

(9) 0.7 lb/MMBTU; not to exceed 846 lb/hr.

(10) Sum of Operating Conditions 1 and 2.

(11) Sum of Operating Conditions 1 and 2; not to exceed 781 lb/hr.

File Copy

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

July 14, 1992

KA 307-90-01

Sent Via Fax

Mr. Chi-Sun Lee
Florida Department of
Environmental Regulation
Southwest District
4520 Oak Fair Blvd.
Tampa, FL 33610-7347

Subject: Baseline and Whole Tire Derived Fuel (TDF) Emission Testing at Florida Crushed Stone

Dear Mr. Lee:

Koogler & Associates Environmental Services will conduct emission measurements at the Florida Crushed Stone CPL plant in Brooksville for:

Particulate Matter	Front-half of EPA Method 26
Hydrogen Chloride	EPA Method 26
Visible Emissions	EPA Method 9
Metals	EPA Method 0012
Nitrogen Oxide	EPA Method 7e
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
Carbon Dioxide/Oxygen	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temperature	EPA Methods 1,2,4
Speciated Volatile Organic Compounds	EPA Method 0030

These tests have been rescheduled for July 20 and 21, 1992 for baseline conditions and July 27 and 28, 1992 for Whole Tire Derived Fuel.

For each of the test conditions (baseline and WTDF) three 2-hour test runs will be conducted.

If you have any questions about the proposed test procedures or methods, give me a call.

Very truly yours,

KOOGLER & ASSOCIATES

N. Mason Joye, Jr. /mem

N. Mason Joye, Jr.

JBK:NMJ:mem

c: Mr. Bruce Mitchell, FDER, Tallahassee
Mr. Charles Hetrick, Hernando County
Mr. Lawrence Jennings, Hernando County
Mr. Carl Lunderstadt, FCS, Leesburg
Mr. Joe Piermatteo, FCS, Brooksville
Mr. Thomas Mountain, FCS, Brooksville
Mr. Lawrence Sellers, Holland & Knight
Mr. Segundo Fernandez, Oertel,Hoffman et al
Mr. David Buff, KBN Engineering

1771

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
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904/377-5822 • FAX 377-7158

FAX TRANSMITTAL FORM

TO: Mr. Bruce Mitchell

FROM: John B. Koogler

PROJECT: 307-90-01

SENT BY: Megan

DATE: 9/14

FAX PHONE: 904-377-7158

The text being transmitted consists of 2 pages PLUS this one.

REMARKS: ref - revised FCS baseline and WTDF test schedule.

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

FAX TRANSMITTAL FORM

TO: Bruce Mitchell

FROM: John Koogler

PROJECT: 307-90-01

SENT BY: Shegan

DATE: 7/1

FAX PHONE: 904-377-7158

The text being transmitted consists of 15 pages PLUS this one.

REMARKS:

TEST PROTOCOL FOR EVALUATING CPL PLANT OPERATIONS UNDER BASELINE AND TDF/COAL FIRING CONDITIONS

1.0 INTRODUCTION

The Florida Crushed Stone Company (FCS) operates a cement, power and lime plant (CPL plant) in Hernando County, Florida. Under normal operating conditions, the cement plant operates at a clinker production rate of 75 tons per hour, the power plant operates at a electric power production rate of 125 megawatts and the lime plant operates at a lime production rate not greater than 22 tons per hour. Under these conditions, coal is used to provide the heat input to all three plants and the gas streams from the three plants are exhausted through a common baghouse for particulate matter control and through a common stack to the atmosphere. The permitted emissions from the CPL plant are summarized in Table 1.

Florida Crushed Stone has requested approval from the Florida Department of Environmental Regulation to use tire derived fuel (TDF) to provide up to 15 percent of the heat input to the kiln of the cement plant with the remainder of the heat input being provided by coal. The permits issued by FDER for the cement plant (AC27-118674 and A027-183508) specify that the kiln is to be fired with coal only at a maximum rate not to exceed 10.3 tons per hour or a maximum heat input rate of 248.0 million BTU per hour. The permit amendment requested by Florida Crushed Stone will allow the use of TDF to provide up to 15 percent of the heat input to the cement kiln or up to 37.2 million BTU per hour. Coal will supply the remainder of the heat input to the kiln or up to 210.8 million BTU per hour.

This protocol sets forth the emission measurements and CPL plant monitoring that will demonstrate the affects of TDF burning in the cement kiln on air pollutant emissions from the CPL plant and defines the procedure for evaluating the test data.

The test period will begin on or about July 13, 1992. On Day 1 of the test period, the test crew will arrive on site and mobilize in preparation for conducting baseline emission measurements. The baseline emission measurements (with coal being used to provide 100 percent of the heat input to all plants) is scheduled to be conducted during Day 2 and Day 3 of the test period.

On the day following the conclusion of the baseline emission measurements (scheduled as Day 4), TDF firing will commence. The TDF will be used to provide approximately 15 percent of the heat input to the cement plant. A period of at least five days will be allowed for the CPL plant to reach steady-state operating conditions with TDF being fired to the cement plant.

On Day 9 of the test program, TDF emission measurements are scheduled to begin. The TDF emission measurements are scheduled to be conducted during Day 9 and Day 10 of the test program. If time in addition to two test days are required to conduct the baseline emission measurements (Day 2 and Day 3), the time period for conducting the TDF emission measurements will be shifted accordingly; i.e., to allow at least five days for the CPL plant to achieve steady-state operating conditions before the TDF tests.

Following the conclusion of the TDF emission measurements (scheduled Day 10), the CPL plant will operate for approximately 49 additional days with TDF being used to provide approximately 15 percent of the heat input to the cement plant. The entire 56 day period during which coal and TDF will be fired to the cement plant is defined as 56 days of cement plant operations (56 operating days) and will not include periods of time when the cement plant is not operating due to scheduled or unscheduled downtime. The approximate 56 day operating test period may require more than 56 calendar days because of scheduled or unscheduled outages of the cement plant. The calendar day period will be automatically extended under the conditions of this protocol by the number of days of cement plant downtime.

2.0 BASELINE TESTS

The test period will begin on or about July 13, 1992. At the beginning of the test period and during the time period preceding the test period, the CPL plant will be, and will have been, operating under normal conditions with coal being used to provide 100 percent of the heat input to the CPL plant.

On Day 1 of the test period, the test crew will arrive on site and mobilize in preparation for conducting baseline emission measurements. The baseline emission measurements (with coal being used to provide 100 percent of the heat input and with the entire cpl plant operating) is scheduled to be conducted during Day 2 and Day 3 of the test period. Due to unforeseen circumstances, it is possible that the baseline emission measurements may require time in addition to the scheduled two day period. If additional test time is required, the additional time will not affect the validity of the baseline emission measurements nor the validity of the overall test program.

During each day that emission measurements are conducted, it is anticipated that the test crew will be on-site approximately 12 hours. During the time on-site, the measurements described in the following paragraphs will be conducted. Each of the manual measurements (particulate matter, metals, volatile organic compounds by Method 0030, hydrogen chloride and the associate stack gas flow, moisture and temperature) will consist of three replicate test runs with each test run being two hours in duration.

Visible emission observations will be conducted for a one-hour period between the first and second replicate test runs for particulate matter/HCl, for a one-hour period between the second and third replicate test runs for particulate matter/HCl and for similar periods during the metals measurements. This will result in four hours of visible emission observations during the baseline test period.

The emission measurements that are made by instrumental methods (nitrogen oxides, carbon monoxide, volatile organic compounds and oxygen) will be conducted for the approximate 12-hour period during each of the two days required for baseline emission measurements. The continuous measurements for nitrogen oxides, carbon monoxide and volatile organic compounds will be made with instrumentation provided by Koogler & Associates. The continuous oxygen measurements will be made with an oxygen monitor permanently installed in the CPL plant stack. The continuous oxygen measurements will be supplemented with oxygen measurements made with Koogler & Associates equipment during each of the three replicate test runs for particulate matter/HCl and during each of the three replicate test runs for metals.

Emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Method 26 (HCl) Sample Train
Hydrogen Chloride (HCl)	EPA Method 26 (0050)
Visible Emissions	EPA Method 9
Metals: Arsenic Chromium (Total) Lead Mercury Zinc	EPA Method 0012
NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 1, 2 and 4 (in conjunction with EPA Methods 26 and 0012)

Speciated Volatile Organic Compounds*	VOST (EPA Method 0030)

*To be restricted to analyses for acetone, benzene, toluene, trichloroethylene, chlorobenzene, ethylbenzene, xylene, styrene, bromomethane, carbon disulfide, hexane and 1,1,1-trichloroethane.

During the time period when baseline emission measurements are conducted (two or more days), two coal samples (representing each of the two baseline test days) will be collected by Koogler & Associates personnel. An ultimate fuel analysis plus analyses for arsenic, total chromium, lead, mercury, zinc and chlorides will be conducted on the coal. Also, during the period of time when the baseline emission measurements are conducted, all CPL plant operating parameters specified in the following paragraphs will be monitored.

Beginning on Day 1 of the baseline test period and continuing through the end of the approximate 56 operating day TDF period, the following plant operating parameters, which are continuously monitored by FCS instrumentation will be documented:

Lime Plant

Coal Feed Rate	(tph)
Limestone Feed Rate	(tph)

Power Plant

Coal Feed Rate	(tph)
Power Generating Rate	(mw)

Cement Plant

Coal Feed Rate	(tph)
TDF Feed Rate	(tph)
Kiln Feed Rate	(tph)
Kiln Feed Analysis	(See attached FCS Mix Control Report)
Clinker Production Rate	(tph)
Clinker Analysis	(See attached FCS Mix Control Report)

Main Baghouse

Inlet Temperature	(°F)
Fan Speed	(%)
Fan Current	(amps)
Pressure Drop	(inches of water)

Cement Plant Fan

Inlet Temperature	(°F)
Fan Current	(amps)
Damper Setting	(%)
Oxygen	(%)
Carbon Monoxide	(ppm)

Pre-heater

Exit Gas Temperature	(°F)
Internal Gas Temperature	(°F)
Raw Meal Temperature	(°F)

Kiln Inlet (base of pre-heater)

Gas Temperature	(°F)
Draft	(inches H_2O)
Oxygen	(%)
Combustibles (CO)	(%)

Stack

Oxygen	(%)
NOx	(ppm)
Opacity	(%)
Velocity Head	(inches H_2O)

During the test period, kiln feed will be sampled periodically by FCS personnel with samples composited once per eight-hour shift in accordance with normal plant operating procedures. Samples will be analyzed in the FCS quality control laboratory in accordance with normal plant operating procedures (see attached FCS Mix Control Report). The results of these analyses will be available for review by the Hernando County consultant for purposes of explaining excursions in plant operating conditions, excursions in measured emission data, or for other legitimate reasons mutually agreed upon by Hernando County and FCS.

During the test period, clinker will be sampled on a nominal two hour schedule by FCS personnel in accordance with normal plant operating procedures (see attached FCS Mix Control Report). These samples will be analyzed in the FCS quality assurance laboratory by Florida Crushed Stone personnel in accordance with normal plant operating procedures (see attached FCS Mix Control Report). Three composite clinker samples will be retained each day (representing each of three 8-hour shifts during the 24-hour operating day) to be reanalyzed for constituents or properties normally reported (see attached FCS Mix Control Report) if questions should arise regarding the validity of the initially reported analyses. These duplicate samples will be retained by FCS and will be discarded 30 days following the receipt of the Hernando County consultants report by the County.

The results of the clinker analyses will be available for review by the Hernando County consultant for purposes of explaining excursions in monitored plant operating conditions, excursions in measured emission data, or for other legitimate reasons mutually agreed upon by Hernando County and FCS. A duplicate sample or samples will be analyzed only if there is a legitimate concern regarding the validity of the original analyses of that sample or samples.

3.0 TDF/COAL BURN PERIOD

On the day following the conclusion of the baseline emission measurements (scheduled as Day 4), tire derived fuel TDF firing will commence. TDF will be used to provide up to 15 percent of the heat input to the cement kiln of the CPL plant with coal providing the balance of the heat input for a period of approximately eight weeks (approximately 56 days) beginning on or about July 16, 1992. This test period will include approximately 56 days of cement plant operations (56 operating days) and will not include periods of time when the cement plant is not operating due to scheduled or unscheduled downtime. The approximate 56 operating day test period may require more than 56 calendar days because of the scheduled or unscheduled outages of the cement plant. The calendar day period will be automatically extended under the conditions of this protocol by the number of days of cement plant downtime.

During the approximate 56 operating day period of the cement plant, the lime plant or the lime plant and power plant may experience scheduled or unscheduled outages. Outages of the lime plant or lime plant and power plant will not interrupt the approximate 56 operating day period for the cement plant as the cement plant is designed to operate either with or without the power plant and lime plant, nor will these outages affect the validity of the data collected during the approximate 56 operating day period.

The purpose of the approximate 56 operating day period with TDF and the associated testing described herein is to conclusively and unambiguously establish that using TDF for 15 percent of the heat input to the cement plant does not negatively affect regulated air pollutant emissions or clinker quality and that the air permit amendments proposed by FCS are acceptable to Hernando County.

Beginning on or about Day 9 of the test period and the sixth day of the TDF/coal burn period and with the entire CPL plant operating, emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Method 26 (HCl) Sample Train
Hydrogen Chloride (HCl)	EPA Method 26 (0050)

Visible Emissions	EPA Method 9
Metals:	EPA Method 0012
Arsenic Chromium (Total) Lead Mercury Zinc	
NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 1, 2 and 4 (in conjunction with EPA Method 26 and 0012)
Speciated Volatile Organic Compounds*	VOST (EPA Method 0030)

*To be restricted to analyses for acetone, benzene, toluene, trichloroethylene, chlorobenzene, ethylbenzene, xylene, styrene, bromomethane, carbon disulfide, hexane and 1,1,1-trichloroethane.

Due to unforeseen circumstances, it is possible that the TDF emission measurements may require time in addition to the scheduled two day period. If additional test time is required, the additional time will not affect the validity of the TDF emission measurements nor the validity of the overall test program.

During each day that TDF emission measurements are conducted, it is anticipated that the test crew will be on-site approximately 12 hours. During the time on-site, the measurements described in the preceding paragraphs will be conducted. Each of the manual measurements (particulate matter, metals, volatile organic compounds by Method 0030, hydrogen chloride and the associate stack gas flow, moisture and temperature) will consist of three replicate test runs with each test run being two hours in duration.

Visible emission observations will be conducted for a one-hour period between the first and second replicate test runs for particulate matter/HCl, for a one-hour period between the second and third replicate test runs for particulate matter/HCl and for similar periods during the metals measurements. This will result in four hours of visible emissions observations during the TDF test period.

The emission measurements that are made by instrumental methods (nitrogen oxides, carbon monoxide, volatile organic compounds and oxygen) will be conducted for the approximate 12-hour period during each of the two days required for TDF emission measurements. The continuous measurements for nitrogen oxides, carbon monoxide and volatile organic compounds will be made with instrumentation provided by Koogler & Associates. The continuous oxygen measurements will be made with an oxygen monitor permanently installed in the CPL plant stack. The continuous oxygen measurements will be supplemented with oxygen measurements made with Koogler & Associates equipment during each of the three replicate test runs for particulate matter/HCl and during each of the three replicate test runs for metals.

During the time period when TDF emission measurements are conducted (two or more days), two fuel samples (both coal and TDF), representing each of the two days of TDF testing, will be collected by Koogler & Associates personnel. An ultimate fuel analysis and analyses for arsenic, total chromium, lead, mercury, zinc and chlorides will be conducted on each fuel sample. Also, during the period of time when the emission measurements are conducted, all plant operating parameters previously specified will continue to be monitored. The monitoring of plant parameters will continue through the end of the TDF test burn period.

5.0 COMPARISON OF TEST RESULTS

Plant operating data from the baseline and TDF periods will be used to demonstrate normal fluctuations in plant operating conditions and to provide a long-term comparison of plant operating conditions under the two fuel firing scenarios.

Some differences in the temperature profile across the pre-heater are expected under the two fuel firing scenarios. During the baseline period (with coal providing 100 percent heat input to the cement plant), there will be a single fuel burning zone at the discharge end of the kiln. During the time TDF is used to provide up to 15 percent of the heat input to the kiln, there will be a coal burning zone at the discharge end of the kiln and a TDF burning zone at the kiln inlet. Differences in the temperature profile across the pre-heater under the two fuel firing scenarios will not, by themselves, indicate differences in cement plant operating conditions.

Also, spikes in the concentrations of gases (CO, NOx, and/or total hydrocarbons) that will be continuously monitored in the CPL plant stack during the two emission measurement periods will not, by themselves, indicate differences in plant operating conditions or emission rates. E.R. Hansen in a paper entitled, *The Carbon Monoxide and Other Gases for Process Control* (IEEE Conference, 1985), discusses the factors affecting carbon monoxide levels in the gases exhausted from a dry process Portland cement plant and also discusses the relationship between carbon monoxide and nitrogen oxides concentrations. Hansen states that when a cement kiln is operating under optimum conditions the oxygen concentration in the gas stream discharged from the kiln is in the range of 1.5-2.0 percent, and that at this operating condition, significant changes in the carbon monoxide in the kiln off-gas can be expected. This is referred to as operating on a "ragged edge" due to the ragged (spiked) appearance of the carbon monoxide concentration trace on a strip chart.

The average emission rates of constituents measured during each test run, including spiked concentrations in the averages, will be used as points of comparisons. Also, clinker quality, which will be monitored during both the baseline and the TDF test periods, will be used to demonstrate the similarity of cement plant operating conditions. Data from the continuous emission monitors located in the CPL plant stack and oxygen and carbon monoxide monitors located in the cement plant will provide a continuous record of emission related parameters which can also be compared to demonstrate similarity of plant operating conditions during the two test periods.

The average emission rates of the regulated air pollutants measured during the TDF emission measurement period will be compared with average emission rates measured during the baseline period to determine if the use of TDF to provide up to 15 percent of the heat input to the cement kiln affects emission rates from the plant. The comparison of emission rates will be made in accordance with the methods set forth in 40CFR60, Appendix C.

As the emissions of HCl and the volatile organic compounds, acetone, toluene, trichloroethylene, chlorobenzene, ethylbenzene, xylene, bromomethane, carbon disulfide, styrene, 1,1,1-trichloroethane and hexane from cement plants are not regulated by EPA or FDER, changes in the emission rates of these constituents will not in themselves constitute reason for Hernando County to challenge a FDER permit amendment to allow FCS to use TDF on a continuing basis. The concentration of each of the above referenced constituents in the ambient air will be determined at the FCS property line using emission rates measured during the baseline and TDF test periods and the air quality modeling procedures set forth in the *Guideline for Air Quality Models* (Revised), EPA, 1990. These concentrations will be compared with the guideline No Threat Levels (NTLs) developed by FDER. Compliance with the guideline NTLs will be demonstration that no further concern is justified regarding the emissions of any of the referenced volatile organic compounds or HCl.

A conclusive report comparing the emission rates of designated air pollutants and plant operating conditions measured during the TDF and baseline test periods described herein and comparing predicted ambient concentrations of selected constituents with NTLs will be prepared by FCS and submitted to Hernando County, its consultants and its legal counsel within approximately 23 days of the completion of the TDF test period. This report will also include data documenting CPL plant operating conditions during approximately the first 30 days of the TDF test period and data documenting CPL plant operating data during baseline operating periods. The remaining plant operating data will be provided twice weekly through the conclusion of the approximate 56 day TDF test period.

The County's consultant will have 15 days from the receipt of the emission test data and the first 30 days of plant data representing TDF operations to review the test data and file a conclusive report with Hernando County. If the report prepared by the Hernando County consultant concludes there were no significant increases in the emission rates of any of the designated air pollutants in accordance with 40CFR60, Appendix C, that a comparable quality clinker was produced both during the TDF and baseline test periods and that no NTLs will be exceeded, the County shall inform the Florida Department of Environmental Regulation, Bureau of Air Regulation, Tallahassee, Florida (FDER) of its finding and advise FDER that the County has no objection to amendments to all permits necessary to allow FCS to use whole and shredded TDF to provide up to 15 percent of the heat input to the CPL plant cement kiln. If the testing described herein demonstrates there is an increase in the emission rate of one or more of the constituents measured as described herein (as defined by 40CFR60, Appendix C), FCS shall have the right to pursue with FDER, modifications to all necessary air permits to allow this increase, without undue objection of Hernando County, if the increase is permittable under FDER rules.

TABLE 1

SUMMARY OF CPL PLANT EMISSION LIMITING STANDARDS

FLORIDA CRUSHED STONE CPL
HERNANDO COUNTY, FLORIDA

Plant Operating Scenario(1)	Permitted Emission Limit (2) Particulate Matter (lb/hr)	Visible Emissions (%)	Sulfur Dioxide (lb/hr)	Nitrogen Oxides (lb/hr)
1. Cement	49.5 (3)	10	50 (4)	359 (5)
2. Power	74.0 (6)	20 (7)	770 (8)	846 (9)
3. Power/Lime	74.0 (6)	20 (7)	770 (8)	846 (9)
4. Cement/Power	123.5 (10)	10	781 (11)	1205 (10)
5. Cement/Power/Lime	123.5 (10)	10	781 (11)	1205 (10)

(1) Lime Plant cannot operate unless Power Plant is operating.

(2) Cement (kiln and cooler)/Power and Lime Plants all exhaust through a common baghouse and stack.

(3) 0.3 lb/ton of kiln feed from kiln and 0.1 lb/ton of kiln feed from cooler; not to exceed 49.5 lb/hr.

(4) 0.6 lb/ton of kiln feed; not to exceed 50 lb/hr.

(5) 2.9 lb/ton of kiln feed; not to exceed 359 lb/hr.

(6) 0.03 lb/MMBTU; not to exceed 74 lb/hr.

(7) Opacity of 27% allowed for 6 minutes in any one hour.

(8) 1.2 lb/MMBTU; not to exceed 770 lb/hr.

(9) 0.7 lb/MMBTU; not to exceed 846 lb/hr.

(10) Sum of Operating Conditions 1 and 2.

(11) Sum of Operating Conditions 1 and 2; not to exceed 781 lb/hr.

KOOGLER & ASSOCIATES

BEST AVAILABLE COPY

FLORIDA CRUSHED STONE

C/P/L/ MIX CONTROL REPORT

DATE

RAW MILL FEEDERS / CONTROL TESTS

				C_3A	S/R	SO_3	SiO_2	Al_2O_3	AVG	Fe_2O_3	AVG.	CAO	C_3S	AVG	CL.	+70	SILO	TPH		KPS

FINISH MILL CONTROL

TIME	SILO NO.	FREE CaO	LOSS	SURF. AREA	% SO_3	325	FLOW	PUMP FLOW	SP.G G.A.		CAO	MGO	C_2O	C_3S	C_2S	C_3A
8AM																
10AM																
12PM																
2PM																
4PM																
6PM																
8PM																
10PM																
12AM																
2AM																
4AM																
6AM																
AVG.																

COAL

SHIFT	+20	+50	SULFUR	20
1st				
2nd				
3rd				

FOREMEN NOTES:

CLINKER CONTROL

TIME	SO_3	Al_2O_3	Fe_2O_3	CaO	MGO	SO_3	S/V	C_3S	C_2S	C_3A	C_4AF	L.S.F.	TOTAL	SILO	K_2O	CL	TEMP
AVG																	

CLINKER

TIME	% F. LIME
AVG.	

QUALITY CONTROL TECHNICIANS

1st ______________________

2nd ______________________

3rd ______________________

TARGETS

CONTROL	PS	$CaCO_3$	F.LIME	Al_2O_3	Fe_2O_3	CaO	SO_3	325	C_3S	LOSS	BLAINE 1	BLAINE 2
R.M.												
C.K.												
F.M.												

KILN FEED

SHIFT	SO_3	+20	SiO_2	Al_2O_3	Fe_2O_3	CAO	MGO	TOTAL	L.S.F.	C_2O	C_3S	C_3A	C_4AF	CL
1st														
2nd														
3rd														
AVG														

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

RECEIVED
JUL 06 1992
Division of Air
Resources Management

June 30, 1992

KA 307-90-01

Sent Via Fax

Mr. Chi-Sun Lee
Florida Department of
Environmental Regulation
Southwest District
4520 Oak Fair Blvd.
Tampa, FL 33610-7347

Subject: Baseline and Whole Tire Derived Fuel (TDF) Emission Testing at Florida Crushed Stone

Dear Mr. Lee:

Koogler & Associates Environmental Services will conduct emission measurements at the Florida Crushed Stone CPL plant in Brooksville for:

Particulate Matter	Front-half of EPA Method 26
Hydrogen Chloride	EPA Method 26
Visible Emissions	EPA Method 9
Metals	EPA Method 0012
Nitrogen Oxide	EPA Method 7e
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
Carbon Dioxide/Oxygen	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temperature	EPA Methods 1,2,4
Speciated Volatile Organic Compounds	EPA Method 0030

These tests are scheduled for July 14 and 15, 1992 for baseline conditions and July 21 and 22, 1992 for Whole Tire Derived Fuel.

For each of the test conditions (baseline and WTDF) three 2-hour test runs will be conducted.

If you have any questions about the proposed test procedures or methods, give me a call.

Very truly yours,

KOOGLER & ASSOCIATES

N. Mason Joye, Jr.

N. Mason Joye, Jr.

JBK:NMJ:mem

c: Mr. Bruce Mitchell, FDER, Tallahassee
Mr. Charles Hetrick, Hernando County
Mr. Lawrence Jennings, Hernando County
Mr. Carl Lunderstadt, FCS, Leesburg
Mr. Joe Piermatteo, FCS, Brooksville
Mr. Thomas Mountain, FCS, Brooksville
Mr. Lawrence Sellers, Holland & Knight
Mr. Segundo Fernandez, Oertel,Hoffman et al
Mr. David Buff, KBN Engineering

KOOGLER & ASSOCIATES

FCS

D. E. R.

FLORIDA CRUSHED STONE COMPANY

CEMENT / POWER / LIME PLANT

JUN 30 1992

SOUTHWEST DISTRICT
TAMPA

June 25, 1992

Mr. Bill Thomas
Florida Department of Environmental Regulation
4520 Oak Fair Boulevard
Tampa, Florida 33610-3747

RE: Cement Kiln
AC27-118674, PSD-FL-091C-PSD-FL-091D

The public notice on the above referenced permitted source to utilize TDF was published on June 6, 1992. Attached, please find a copy of the affidavit for the publication.

If there are any questions, please call me at your convenience.

Sincerely,

Tom Mountain

Tom Mountain
Environmental Manager

TM/nc

P.O. BOX 1508 / 10311 CEMENT PLANT ROAD / BROOKSVILLE, FL 34605-1508 / PHONE (904) 799-7881 / FAX (904) 796-6281

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. Preston Lewis — Air BAR Tallahassee
2.
3.
4.

Remarks:

FCS sent the attached to the S.W. District Office. This is for one of Tallahassee's "Intents to Issue".

We made a copy for our file.

RECEIVED
JUL 10 1992
Division of Air Resources Management

From: Gary Maier

Date 7-7-92

Phone S.C. 542-6100 ext. 408

THE TAMPA TRIBUNE

Published Daily
Tampa, Hillsborough County, Florida

State of Florida } ss.
County of Hillsborough }

Before the undersigned authority personally appeared R. Putney, who on oath says that he is Accounting Manager of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE PASCO

in the matter of

STATE OF FLORIDA

was published in said newspaper in the issues of

JUNE 6, 1992

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa, in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm, or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Sworn to and subscribed before me, this 8 *day of* JUNE *, A.D. 19* 92

(SEAL)

[illegible]A S. KENNEDY
Notary Public, State of Florida
[illegible] Expires Mar. 22, 1996
No. [illegible]37731

State of Florida
Department of
Environmental Regulation
Notice of Intent to Issue

Amendments to: AC 27-118674
PSD-FL-091C
PSD-FL-091D

The Department of Environmental Regulation (Department) hereby gives notice of its intent to issue to Florida Crushed Stone Company (FCSC) an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), authorizing performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, and an amendment to the construction permits, Nos. AC-27-118674 and PSD-FL-091 (PSD-FL-091D), authorizing continuous utilization/firing of whole tires in the source, as detailed in the application package. The Department is issuing this intent to issue for the reasons stated below and in the proposed amendments.

The applicant, FCSC, Post Office Box 490300, Leesburg, Florida 34749-0300, submitted a request on May 19, 1992, to the Department's Bureau of Air Regulation (BAR) for authorization to conduct additional pollutant emissions tests on the facility's cement kiln while utilizing/firing whole tires in the facility's cement kiln and to utilize/fire whole tires in the source on a continuous basis after evaluation of the test results. The performance tests for pollutant emissions will be conducted at baseline conditions and while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather data regarding the pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990: shredded tires; October 14-16, 1991: whole tires). Screening for a modification and Prevention of Signification (PSD) will be in accordance with Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulation (CFR; July, 1991 version).

If, after the performance test results are evaluated by the Department's BAR and affected parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.) and it is determined that actual pollutant emissions did not increase while utilizing/firing whole tires, then an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), will be issued with certain Specific Conditions authorizing continuous utilization/firing of whole tires in the source. However, if there is an actual emissions increase in pollutant emissions, FCSC will not be permitted to utilize/fire whole tries without further evaluation by the Department's BAR and involved parties.

The proposed project will occur at the applicant's facility located on U.S. Highway 98 NW of Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July, 1991 version). The project is not exempt from permitting procedures. The Department has determined that permit amendments are required for the proposed activity.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:
(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the requests/applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The requests/applications are available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of
Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida
32399-2400

Department of
Environmental Regulation
Southwest District Office
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

Hernando County Board of
County Commission
20 North Main Street
Room 460
Brooksville, Florida 34601

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

BV1173 6/6/92

File Copy

FLORIDA CRUSHED STONE COMPANY
CEMENT / POWER / LIME PLANT

June 25, 1992

Mr. Bruce Mitchell
Florida Department of Environmental Regulation
2600 Blairstone Road
Tallahassee, Florida 32399-2405

RE: Cement Kiln
AC27-118674, PSD-FL-091C, PSD-FL-091D

The public notice on the above referenced permitted source to utilize TDF was published on June 6, 1992. Attached, please find a copy of the affidavit for the publication.

If there are any questions, please call me at your convenience.

Sincerely,

Tom Mountain

Tom Mountain
Environmental Manager

TM/nc

Bruce Mitchell
Charles Hefrick, HCBCC } 7-1-92 RS
Bill Thomas, SWD

RECEIVED

JUL 01 1992

Division of Air
Resources Management

P.O. BOX 1508 / 10311 CEMENT PLANT ROAD / BROOKSVILLE, FL 34605-1508 / PHONE (904) 799-7881 / FAX (904) 796-6281

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. Bruce Mitchell

2.

3.

4.

Remarks:

test burn in Hernando Co. Koogler will fax amended protocol. Call Tony Cleveland ~~before~~ amended authorization goes out. He wants to look at it, but apparently everything has been worked out.

From: Clair

Date 7/1

Phone

THE TAMPA TRIBUNE

Published Daily
Tampa, Hillsborough County, Florida

State of Florida
County of Hillsborough } ss.

Before the undersigned authority personally appeared R. Putney, who on oath says that he is Accounting Manager of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE PASCO

in the matter of STATE OF FLORIDA

was published in said newspaper in the issues of JUNE 6, 1992

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa, in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm, or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

R. Putney

Sworn to and subscribed before me, this 8 *day of* JUNE, *A.D. 19*92

Ina S. Kennedy

(SEAL)

INA S. KENNEDY
Notary Public, State of Florida
My Comm. Expires Mar. 22, 1996
No. CC187731

State of Florida
Department of
Environmental Regulation
Notice of Intent to Issue

Amendments to: AC 27-118674
PSD-FL-091C
PSD-FL-091D

The Department of Environmental Regulation (Department) hereby gives notice of its intent to issue to Florida Crushed Stone Company (FCSC) an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), authorizing performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, and an amendment to the construction permits, Nos. AC-27-118674 and PSD-FL-091 (PSD-FL-091D), authorizing continuous utilization/firing of whole tires in the source, as detailed in the application package. The Department is issuing this Intent to Issue for the reasons stated below and in the proposed amendments.

The applicant, FCSC, Post Office Box 490300, Leesburg, Florida 34749-0300, submitted a request on May 1?, 1992, to the Department's Bureau of Air Regulation (BAR) for authorization to conduct additional pollutant emissions tests on the facility's cement kiln while utilizing/firing whole tires in the facility's cement kiln and to utilize/fire whole tires in the source on a continuous basis after evaluation of the test results. The performance tests for pollutant emissions will be conducted at baseline conditions and while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather data regarding the pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990: shredded tires; October 14-16, 1991: whole tires). Screening for a modification and Prevention of Signification (PSD) will be in accordance with Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulation (CFR; July, 1991 version).

If, after the performance test results are evaluated by the Department's BAR and affected parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.) and it is determined that actual pollutant emissions did not increase while utilizing/firing whole tires, then an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), will be issued with certain Specific Conditions authorizing continuous utilization/firing of whole tires in the source. However, if there is an actual emissions increase in pollutant emissions, FCSC will not be permitted to utilize/fire whole tries without further evaluation by the Department's BAR and involved parties.

The proposed project will occur at the applicant's facility located on U.S. Highway 98 NW of Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July, 1991 version). The project is not exempt from permitting procedures. The Department has determined that permit amendments are required for the proposed activity.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department of 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the requests/applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The requests/applications are available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of
Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida
32399-2400

Department of
Environmental Regulation
Southwest District Office
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

Hernando County Board of
County Commission
20 North Main Street
Room 460
Brooksville, Florida 34601

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

BV1173 6/6/92

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

HERNANDO COUNTY,

Petitioner,

vs. OGC CASE NO. 91-1808

FLORIDA CRUSHED STONE COMPANY
and STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION,

Respondents.

_________________________________/

ORDER GRANTING REQUEST FOR EXTENSION OF TIME TO FILE PETITION FOR HEARING

This cause has come before me upon receipt of a request made by Petitioner, HERNANDO COUNTY, pursuant to Florida Administrative Code Rule 17-103.070, to grant an extension of time to file a petition for administrative hearing concerning the Department's Application No. AC27-118674. See Exhibit 1 attached.

Counsel for Petitioner has discussed this request with counsel for Respondent, State of Florida Department of Environmental Regulation (DER), and the DER has no objection to it. Therefore,

IT IS ORDERED:

The request for an extension of time to file a petition for administrative proceeding is granted. Petitioner shall have until June 30, 1992, to file a petition in this matter. Filing shall be complete upon receipt by the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. ~~Patty adams~~ (BClo)
2. Bruce
3. Patty (file)
4.

Remarks:

RECEIVED

JUN 24 1992

Division of Air
Resources Management

From: Doug Beason

Date 6-23

Phone

DONE AND ORDERED on this 22d day of June, 1992, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

DANIEL H. THOMPSON
General Counsel

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400
Telephone: (904) 488-9730

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by U.S. Mail to Segundo Fernandez, Esq., Oertel, Hoffman, Fernandez & Cole, P.A., Post Office Box 6507, Tallahassee, FL 32314-6507, and to Larry Sellers, Esq., Holland & Knight, Post Office Drawer 810, Tallahassee, FL 32302, on this 23rd day of June, 1992.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

W. DOUGLAS BEASON
Assistant General Counsel

2600 Blair Stone Road
Tallahassee, FL 32399-2400
Telephone: (904) 488-9730

RECEIVED
JUN 12 1992
Dept. of Environmental Reg
Office of General Counsel

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

HERNANDO COUNTY, FLORIDA,

Petitioner,

vs.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION and FLORIDA CRUSHED STONE COMPANY,

Respondents.

CASE NO.:
DER File Nos.: AC 27-118674
PSD-FL-091C
PSD-FL-091D

PETITIONER, HERNANDO COUNTY, FLORIDA'S REQUEST FOR EXTENSION OF TIME IN WHICH TO FILE A PETITION FOR FORMAL ADMINISTRATIVE PROCEEDING

Petitioner, HERNANDO COUNTY, FLORIDA, by and through its undersigned counsel, hereby requests an extension of time of an additional 14 days in which to file a Petition for Formal Administrative Proceeding objecting to the Department's Intent to Issue entered June 2, 1992 to Florida Crushed Stone Company. This extension is sought to allow the County time to fully evaluate the proposed activity. Counsel for the Applicant, Mr. Larry Sellers, has no objection to the request. The Intent to Issue was received by Hernando County on June 2, 1992; the original fourteenth day was June 16, 1992. The fourteen (14) day extension is sought until

June 30, 1992. A copy of the Intent to Issue is attached as Exhibit "A."

Respectfully submitted,

OERTEL, HOFFMAN, FERNANDEZ
& COLE, P.A.
Post Office Box 6507
Tallahassee, Florida 32314-6507
(904) 877-0099

SEGUNDO J. FERNANDEZ
Fla. Bar ID#218391

Attorneys for Petitioner

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that the original and one copy of the foregoing has been furnished by Hand Delivery to the AGENCY CLERK, Office of the General Counsel, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-1550 and by United States Mail to LAWRENCE SELLERS, Holland & Knight, The Barnett Bank Building, 315 South Calhoun, Suite 600, Tallahassee, Florida 32302, this 12th day of June, 1992.

Attorney

sjf\1579\1579.met

LAW OFFICES

HOLLAND & KNIGHT

1401 Manatee Avenue West
P.O. Box 241 (Zip 34206)
Bradenton, Florida 34205
(813) 747-5550
Fax (813) 748-6945

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Telex 52-2233 Miami

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Suite 900
Washington, D.C. 20006
(202) 955-5550
Fax (202) 955-5564

Please reply to:

Tallahassee

June 3, 1992

VIA TELECOPY

Mr. Doug Beason
Office of General Counsel
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Florida Crushed Stone Company; Approval for Tire Derived Fuel Tests in Cememt Kiln (AC27-118674 and AO27-183508).

Dear Doug:

This will follow up on our telephone conversation of May 22 regarding Florida Crushed Stone Company's request for approval to conduct certain additional air pollution tests.

The following is a brief summary of the pertinent events.

By Intent to Issue dated August 30, 1991, the Department proposed to approve the Company's request for authorization to utilize whole tires as a source of fuel. The Intent to Issue authorized performance tests and, if the test results were satisfactory, the continuous utilization of whole tires. Notice of the Department's proposed action was published in the Tampa Tribune on September 5, 1991 (Exhibit A). The notice expressly indicated that the Department had proposed to authorize performance tests for pollutant emissions while utilizing whole tires.

Hernando County objected to the Department's proposed action and requested an extension of time for requesting an administrative hearing. Following various discussions, the County indicated that it would have no objection to that portion of the Department's proposed action that simply authorized the performance tests. Accordingly, by letter dated October 25, 1991 (Exhibit B), the Department authorized the Company to conduct the requested performance tests. This letter expressly recognizes that additional time may be required to conduct the necessary tests. See Condition No. 4, Paragraph 3 at p. 3.

The Company believes that the results of these performance tests provide the required reasonable assurances. The County apparently disagrees. The parties have agreed that the Company will continue the performance test in accordance with the protocol to be approved by the Company, the County and the Department. By letter dated May 18, 1992 (Exhibit C), the Company has requested that the Department again extend the subject permits to authorize the continuation of testing. By its Intent to Issue dated June 2, 1992, the Department has proposed to approve the Company's request.

The Intent to Issue required the Company to publish notice of the Department's decision. We do not believe that the Company is required to publish an additional notice for two reasons.

First, we believe that the extended test is clearly within the scope of the initial notice. As noted, that notice specifically indicated that the Department would be authorizing certain performance test<u>s</u>. Only Hernando County responded to the initial notice and, as noted, the additional tests will be conducted with its approval and to satisfy its concerns.

Second, the Department's rule does not expressly require publication of notice of extenions or <u>amendments</u> to construction permits for major air pollution sources. <u>See</u> Rule 17-103.150(2)(a). In this connection, we note that the Department did not require the publication of an additional notice in connection with the approval dated October 25, 1991.

Please review this issue with the appropriate staff persons as soon as possible. We will call you about this later today.

Thank you for your cooperation.

Very truly yours,

HOLLAND & KNIGHT

Larry

Lawrence E. Sellers, Jr.

LES/kfs
Enclosures

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Fax: (904) 224-8832

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Fax: (813) 688-1186

Washington, DC 20006
(202) 955-5550
Fax: (202) 955-5564

FACSIMILE TRANSMISSION COVER SHEET

TO: Bruce Mitchell
CITY: Tallahassee

FROM: LARRY SELLERS
REPLY TO: TALLAHASSEE

USER #: 194
DIRECT TELEPHONE NO.: 904/425-5671

MESSAGE:

Date: 6/3/92	URGENCY: ☐ Super Rush ☑ Rush ☐ Regular	
Recipient's Fax No. (Area Code and Number): 922-6979	Confirmation Required? ☐ Yes ☐ No	
Confirmation Telephone No.: 488-1344	Confirmed By	Time Confirmed
Operator	Number of Pages (Including Cover Sheet): 12	
Client Name: FCS	Client No.: 5963	Matter No.: 304
Transmission Time	Zone	Amount

IF YOU DID NOT RECEIVE ALL OF THE PAGES OR FIND THAT THEY ARE ILLEGIBLE, PLEASE CALL:
KAY SKIPPER -- 904/425-5671

TAL-5514

LAW OFFICES

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Tallahassee

June 3, 1992

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Department of Environmental Regulation
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Mr. Doug Beason
Department of Environmental Regulation
June 3, 1992
Page 2

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Very truly yours,

HOLLAND & KNIGHT

Larry

Lawrence E. Sellers, Jr.

LES/kfs
Enclosures

cc:, Bruce Mitchell
Tom Mountain
Randy Thompson
John Koogler
(w/o enclosures)

TAL-8320

BEST AVAILABLE COPY

THE TAMPA TRIBUNE

Published Daily
Tampa, Hillsborough County, Florida

State of Florida
County of Hillsborough } ss.

Before the undersigned authority personally appeared R. Putney, who on oath says that he is Accounting Manager of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE PASCO EDITIONS

in the matter of

INTENT TO ISSUE

was published in said newspaper in the issues of

september 5, 1991

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa, in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm, or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

R Putney

Notary Public, State of Florida
My Commission Expires ... 1994
Bonded Thru ...

Sworn to and subscribed before me, this 5 *day of* September *A.D. 19* 91

Scott D. Williams

SCOTT D. WILLIAMS NOTARY PUBLIC STATE OF FLORIDA

(SEAL)

EXHIBIT A

BEST AVAILABLE COPY

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

The Department of Environmental Regulation (Department) hereby gives notice of its intent to issue to Florida Crushed Stone Company (FCSC) an amendment to the construction permit, No. AC 27-118674 (PSD-FL-091), authorizing performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, and an amendment to the construction permit, No. AC 27-118674 (PSD-FL-091C), authorizing continuous utilization/firing of whole tires in the source, as detailed in the application package. The Department is issuing this intent to issue for the reasons stated below and in the proposed amendments.

The applicant, FCSC, Post Office Box 490300, Leesburg, Florida 34749-0300, submitted a request on August 6, 1991, to the Department's Bureau of Air Regulation (BAR) for authorization to conduct additional pollutant emissions tests on the facility's cement kiln while utilizing/firing whole tires in the facility's cement kiln and to utilize/fire whole tires in the source on a continuous basis after evaluation of the test results. The performance tests for pollutant emissions will be conducted at baseline conditions and while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total BTU heat input (1.33 tons per hour). The cement kiln was permitted under the construction permit, No. AC 27-118674 (PSD-FL-091), and is not permitted to utilize/fire whole tires in accordance with the referenced permit.

The additional emissions tests are being proposed in order to gather data regarding the pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990) while utilizing/firing shredded tire derived fuel. Screening for actual pollutant emission increases will be in accordance with 40 CFR 60, Appendix C. Screening for a modification and Prevention of Significant Deterioration (PSD) will be in accordance with Chapter 403, Florida Statutes, Florida Administrative Code Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1990 version).

If, after the performance test results are evaluated by the Department's BAR and affected parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.) and it is determined that actual pollutant emissions did not increase pursuant to 40 CFR 60, Appendix C, while utiliz- ... tion authorizing continuous utilization/firing of whole tires in the source. However, if there is an actual emissions increase in pollutant emissions, FCSC will not be permitted to utilize/fire whole tires without further evaluation by the Department's BAR and involved parties.

The proposed project will occur at the applicant's facility located on U.S. Highway 98 NW of Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July, 1990 version). The project is not exempt from permitting procedures. The Department has determined that permit amendments are required for the proposed activity.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the requests/applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department.

Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The requests/applications are available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation, Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

Department of Environmental Regulation, Southwest District Office, 4520 Oak Fair Boulevard, Tampa, Florida 33610-7347

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-240

Lawton Chiles, Governor

Carol M. Browner, Secreta

October 25, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Randy Thompson
Environmental Department
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Thompson:

Re: Amendment to the Construction Permit, No. AC 27-118674 (PSD-FL-091), to Conduct Performance Tests for Pollutant Emissions on the Facility's Cement Kiln While Utilizing/Firing Whole Tires

This agency action supercedes the terms and conditions contained in the Department's Intent to Issue dated August 30, 1991. The Department has reviewed the request that you provided on August 6, 1991. We have also considered the Department's legal authority to allow Florida Crushed Stone Company (FCSC) to conduct the requested performance tests. Paragraph 403.061(15), Florida Statutes (F.S.) authorizes the Department to consult with any person proposing to construct, install, or otherwise acquire a pollution control device or system concerning the efficacy of such device or system, or the pollution problem which may be related to the source, device, or system. Paragraph 403.061(16), F.S., authorizes the Department to encourage voluntary cooperation by persons in order to achieve the purposes of the state environmental control act. Paragraph 403.061(18), F.S., authorizes the Department to encourage and conduct studies, investigations, and research relating to the causes and control of pollution. Florida Administrative Code (F.A.C.) Rule 17-2.250(5) authorizes the Department to consider variation in industrial equipment and make allowances for excess emissions that provide practical regulatory controls consistent with the public interest.

In accordance with the provisions of Paragraphs 403.061(15), (16), and (18), F.S., and F.A.C. Rule 17-2.250(5), you are hereby authorized to conduct performance tests for pollutant emissions on FCSC's cement kiln while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permit, No. AC 27-118674 (PSD-FL-091), and is not permitted to utilize/fire whole tires in accordance with the referenced permit.

EXHIBIT B

Mr. Randy Thompson
Page Two

The additional emissions tests are being proposed in order to gather data regarding pollutant emissions while utilizing/firing whole tires, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990) while utilizing/firing shredded tire derived fuel. Screening for actual pollutant emissions increases for New Source Performance Standards (NSPS) applicability shall be in accordance with 40 CFR 60, Appendix C. Screening for a modification and Prevention of Significant Deterioration (PSD) shall be in accordance with Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1990 version), which will compare the actual pollutant emissions of the baseline tests to the actual pollutant emissions of the performance tests while utilizing whole tires. The performance test results will be evaluated by the Department's BAR and involved parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.).

The performance tests shall be subject to the following conditions:

1. The permittee shall notify, in writing, the Department's Southwest District and Bureau of Air Regulation (BAR) offices at least 15 days prior to commencement of the performance tests. A written report shall be submitted to these offices within 45 days upon completion of the last test run.

2. Prior to or after conducting performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln (Post-tests), performance tests (Pre-tests/baseline) for pollutant emissions shall be conducted while operating under normal operating conditions with the presently permitted kiln fuels and feed material. The pollutant emissions results of the "Pre-tests" shall be compared to the pollutant emissions results of the "Post-tests" to determine if:

   a) actual pollutant emissions increased pursuant to 40 CFR 60, Appendix C (July, 1990 version), for NSPS applicability; and,

      actual pollutant emissions increased (baseline versus whole tires) for PSD (Prevention of Significant Deterioration) applicability, which, if required, includes the submittal of a permit application and the appropriate processing fee, at a minimum; or,

   b) the construction permit, No. AC 27-118674 (PSD-FL-091), can be amended to allow the utilization/firing of whole tires in the facility's cement kiln on a continuous basis.

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Mr. Randy Thompson
Page Three

3. All "Post-test" emissions results shall be compared to "actual emissions" for PSD review purposes (see Region IV, U.S. EPA's letter dated April 4, 1990).

4. The contents of Dr. John B. Koogler's letter received August 6, 1991, are adopted by reference, with the following exceptions (each will be identified with the corresponding numbering in the letter and starting on page 2):

   #3. From the initial date of utilizing/firing whole tires in the facility's cement kiln, which shall be documented in writing to the Department, the permittee shall be limited to a maximum of 14 days, which is to include 7 days of continuous firing of tires to establish steady-state operation and conduct performance tests. If additional time is needed, the permittee shall provide the Department with documentation of the progress accomplished to date and shall identify what is left to be done to complete the performance tests.

   arry — additional testing be conducted satisfy ... justification extension

   #4. A Department Type I audit is required and shall be coordinated with the Department.

   #5. Documentation of the utilization/firing rates of whole tires (i.e., actual utilization/firing rate by weight) shall be required.

   #6. Emissions measurements shall also be required for the following pollutants using the following test methods:

Pollutants/Pollutant Category	Test Method
o Particulate Matter	EPA Method 5
o PCDDs (dioxins) and PCDFs (furans)	EPA Method 23

   Note: Tests for PCDDs and PCDFs will only be required if there is an increase in actual emissions of carbon monoxide or total hydrocarbons, while comparing the tests of the baseline conditions (Pre-Tests) and while utilizing/firing whole tires (Post-Tests).

   #7. The same as #6 above.

   #9. The Department will take the responsibility of providing a cover letter to and mailing the performance test results to the reviewing parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.).

Mr. Randy Thompson
Page Four

5. These authorized performance tests shall not result in the release of objectionable odors pursuant to F.A.C. Rule 17-2.620(2).

6. Performance testing shall immediately cease upon the occurrence of a valid environmental complaint by a citizen or other party, or a nuisance or danger to public health or welfare. Performance testing shall not resume until appropriate measures to correct the problem have been implemented.

7. The performance tests for pollutant emissions shall be conducted under the direct supervision and responsible charge of a professional engineer registered in Florida.

8. This Department action is just to authorize the performance tests for pollutant emissions on the facility's cement kiln while utilizing/firing whole tires. Any utilization/firing of whole tires after the last performance test run is completed will be deemed a violation of the current construction permit, No. AC 27-118674 (PSD-FL-091).

9. Complete documentation (recording) of any utilization/firing of whole tires in the facility's cement kiln shall be required (i.e., testing results; materials utilized, by weight; etc.) and kept on file for a minimum of two years.

10. The Department shall be notified in writing on the date of the last test run completion.

11. Attachments (See Attachment Section) are incorporated.

The Department has relied on the information referenced in the attachments and conversations with representatives of the FCSC, U.S. EPA-Region IV, Department of Interior's National Park Service, and Hernando County in authorizing this permit amendment, No. AC 27-118674 (PSD-FL-091). Any continuous burning of whole tires, if permitted subsequent to this test burn, will be allowed pursuant to the terms set forth in Attachment A (draft letter authorizing continuous utilization of whole tires), incorporated herein. Any such authorization of continuous burning will be subject to third party challenge and provide a clear point of entry for challenge pursuant to Section 120.57, Florida Statutes.

Mr. Randy Thompson
Page Five

Sincerely,

STEVE SMALLWOOD, P.E.
Director
Division of Air Resources
Management

SS/BM/rbm

Attachments

c: B. Thomas, SW District
J. Harper, EPA
C. Shaver, NPS
C. Hetrick, HCBCC
J. Koogler, Ph.D., P.E., K&A
T. Mountain, FCSC
G. Smallridge, Esq., DER
L. Sellars, Esq., H&K
T. Cleveland, Esq., OHF&C

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

KA 307-90-01

May 18, 1992

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl. 32399-2400

Reference: Florida Crushed Stone Company
Hernando County Florida
Approval for Tire Derived Fuel Tests
in Cement Kiln (AC27-118674 and A027-183508)

Dear Mr. Mitchell:

The Florida Crushed Stone Company hereby requests a one-time amendment to the subject air permits to allow the tests described in the protocol transmitted to your office under cover of a copy of a letter to Mr. Thomas Mountain dated May 14, 1992. The testing is designed to conclusively answer any questions regarding the effect of whole tire derived fuel on the operation of the Florida Crushed Stone CPL plant. I have enclosed a check in the amount of $250.00 for the amendment to the permits.

If you have any questions please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:mem

cc: Mr. Thomas Mountain

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 5

To Larry Sellars	From T. Mountain
Co. Holland & Knight	Co. FCS/CPL
Dept.	Phone # 904-799-7581
Fax # 904-224-7000	Fax #

EXHIBIT C

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

FAX TRANSMITTAL COVER

DATE: 6-2-92

TO: Dr. John Koogler
K & A

PHONE: 904-377-5822

FAX: 904-377-7158

NUMBER OF PAGES TRANSMITTED (INCLUDING COVER SHEET) 4

* * * * * *

FROM: Bruce Mitchell
FDER/DARM/BAR

PHONE: SUNCOM 278-1344 OR (904) 488-1344

FAX: (904) 922-6979

PLEASE CONTACT AT ABOVE NUMBER IF TRANSMISSION IS INCOMPLETE OR UNREADABLE.

COMMENTS:

FCSC Public Notice: Whole Tire Testing

Do not publish before June 5, 1992
Friday

Thanks,
BM

P.S. Had to resend page "3 of 3".
BM

Recycled Paper

MESSAGE CONFIRMATION

JUN-02-'92 TUE 12:26

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MESSAGE CONFIRMATION

JUN-02-'92 TUE 12:27

TERM ID: DIV OF AIR RES MGMT P-9999

TEL NO: 904-922-6979

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971	06-02	12:26	00°00'49	904 377 7158		01	00

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

Amendments to: AC 27-118674
PSD-FL-091C
PSD-FL-091D

The Department of Environmental Regulation (Department) hereby gives notice of its intent to issue to Florida Crushed Stone Company (FCSC) an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), authorizing performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, and an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), authorizing continuous utilization/firing of whole tires in the source, as detailed in the application package. The Department is issuing this Intent to Issue for the reasons stated below and in the proposed amendments.

The applicant, FCSC, Post Office Box 490300, Leesburg, Florida 34749-0300, submitted a request on May 19, 1992, to the Department's Bureau of Air Regulation (BAR) for authorization to conduct additional pollutant emissions tests on the facility's cement kiln while utilizing/firing whole tires in the facility's cement kiln and to utilize/fire whole tires in the source on a continuous basis after evaluation of the test results. The performance tests for pollutant emissions will be conducted at baseline conditions and while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather data regarding the pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990: shredded tires; October 14-16, 1991: whole tires). Screening for a modification and Prevention of Signification (PSD) will be in accordance with Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1991 version).

If, after the performance test results are evaluated by the Department's BAR and affected parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.) and it is determined that actual pollutant emissions did not increase while utilizing/firing whole tires, then an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), will be issued with certain Specific Conditions authorizing continuous utilization/firing of whole tires in the source. However, if there is an actual emissions increase in pollutant emissions, FCSC will not be permitted to utilize/fire whole tires without further evaluation by the Department's BAR and involved parties.

The proposed project will occur at the applicant's facility located on U.S. Highway 98 NW of Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July, 1991 version). The project is not exempt from permitting procedures. The Department has determined that permit amendments are required for the proposed activity.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the requests/applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The requests/applications are available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Southwest District Office
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

Hernando County Board of County Commission
20 North Main Street, Room 460
Brooksville, Florida 34601

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

P 710 058 539

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. Randy Thompson, FCS	
Street & No. P. O. Box 490300	
P.O., State & ZIP Code Leesburg, FL 34749-0300	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 6-2-92 Permit: AC 27-118674 PSD-FL-091C	

PS Form 3800, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Randy Thompson
Environmental Department
Florida Curshed Stone Company
P. O. Box 490300
Leesburg, FL 34749-0300

4a. Article Number
P 710 058 539

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
6-05-92

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
Bill Westcott

PS Form 3811, October 1990 ☆U.S. GPO: 1990—273-861 **DOMESTIC RETURN RECEIPT**

File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

May 29, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Randy Thompson
Environmental Department
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Thompson:

Re: Requests for Authorization to Conduct Pollutant Emissions Performance Tests While Utilizing/Firing Whole Tires in Florida Crushed Stones Company's Cement Kiln and to Utilize the Material Continuously After Evaluation of the Test Results

Attached is one copy of the proposed performance test authorization amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), for Florida Crushed Stone Company (FCSC) to conduct additional pollutant emissions tests on the facility's cement kiln. The proposed performance tests for pollutant emissions will be conducted at baseline conditions and while utilizing/firing whole tires at a maximum utilization/feed rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather additional data regarding pollutant emissions while utilizing/firing whole tires, since FCSC has already conducted some pollutant emissions tests (i.e., September 18-24, 1990: shredded tires; October 14-16, 1991: whole tires). Screening for a modification and Prevention of Signification (PSD) will be in accordance with Chapter 403, Florida Statutes, Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1991 version).

Also, attached is one copy of the proposed amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), authorizing FCSC to utilize/fire whole tires on a continuous basis at a maximum utilization/firing rate of 15% of the total Btu heat input (1.33 tons per hour). If, after the performance test results are evaluated by the Department's Bureau of Air Regulation and involved parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.) and it is determined that actual pollutant emissions did not increase while utilizing/ firing whole tires, then the Department will issue the proposed amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), authorizing continuous utilization/ firing of whole tires in the facility's cement kiln. However, if there is an actual emissions increase in pollutant emissions, FCSC will not be permitted to utilize/fire whole tires in the source without further evaluation by the Department's Bureau of Air Regulation and involved parties.

If there are any questions, please call Mr. Bruce Mitchell at (904)488-1344 or submit any written comments you wish to have considered concerning the Department's proposed action to me.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/rbm

Attachments

c: B. Thomas, SW District
J. Koogler, Ph.D., P.E., K&A
C. Shaver, NPS
J. Harper, EPA
C. Hetrick, HCBCC
W. Congdon, Esq., DER
T. Mountain, FCSC
L. Sellers, Esq., H&K
T. Cleveland, Esq., OHF&C
Reading File
Bruce Mitchell
Kathy Liles, HCBCC
6-2-92 RBM

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Amendments by:

Florida Crushed Stone Company
P. O. Box 490300
Leesburg, Florida 34749-0300

DER File Nos. AC 27-118674
PSD-FL-091C
PSD-FL-091D

INTENT TO ISSUE

The Department of Environmental Regulation (Department) hereby gives notice of its intent to issue to Florida Crushed Stone Company (FCSC) an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), authorizing performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, and an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), for continuous utilization/firing of the material in the source, as detailed in the application package specified above. The Department is issuing this Intent to Issue for the reasons stated below and in the attached proposed amendments.

The applicant, FCSC, submitted a request on May 19, 1992, to the Department's Bureau of Air Regulation (BAR) for authorization to conduct additional pollutant emissions tests on the cement kiln while utilizing/firing whole tires in the facility's cement kiln and to utilize/fire the material on a continuous basis after evaluation of the test results. The performance tests for pollutant emissions will be conducted at baseline conditions and while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather additional data regarding the pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, since FCSC has already conducted pollutant emissions tests (i.e., September 18-24, 1990: shredded tires; October 14-16: whole tires). Screening for a modification and Prevention of Signification (PSD) will be in accordance with Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1991 version).

If, after the performance test results are evaluated by the Department's BAR and affected parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.) and it is determined that actual pollutant emissions did not increase while utilizing/firing whole tires, then an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), will be issued with certain Specific Conditions authorizing continuous utilization/firing of whole tires in the source. However, if there is an actual emissions increase in pollutant emissions, FCSC will not be permitted to utilize/fire whole tires without further evaluation by the Department's BAR and involved parties.

The proposed project will occur at the applicant's facility located on U.S. Highway 98 NW of Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and the 40 CFR (July, 1991 version). The project is not exempt from permitting procedures. The Department has determined that a permit amendment is required for the proposed activity.

Pursuant to Section 403.815, F.S., and Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit Amendments. The notice shall be published one time only within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper must be the one with significant circulation in the area that may be affected by the permitting action (i.e., amendment). If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the amendments.

The Department will issue the permit amendments with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit amendment applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the requests/applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

CH Fancy

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation
(904)488-1344

Copies furnished to:

B. Thomas, SW District
J. Koogler, Ph.D., P.E., K&A
J. Harper, EPA
C. Shaver, NPS
C. Hetrick, HCBCC
W. Congdon, Esq., DER
T. Cleveland, Esq., OHF&C
T. Mountain, FCSC
L. Sellers, Esq., H&K

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 6-2-92.

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(9), Florida Statute, with the designated Department Clerk, receipt of which is hereby acknowledged.

Karen Tober 6-2-92
Clerk Date

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

Amendments to: AC 27-118674
PSD-FL-091C
PSD-FL-091D

The Department of Environmental Regulation (Department) hereby gives notice of its intent to issue to Florida Crushed Stone Company (FCSC) an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), authorizing performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, and an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), authorizing continuous utilization/firing of whole tires in the source, as detailed in the application package. The Department is issuing this Intent to Issue for the reasons stated below and in the proposed amendments.

The applicant, FCSC, Post Office Box 490300, Leesburg, Florida 34749-0300, submitted a request on May 19, 1992, to the Department's Bureau of Air Regulation (BAR) for authorization to conduct additional pollutant emissions tests on the facility's cement kiln while utilizing/firing whole tires in the facility's cement kiln and to utilize/fire whole tires in the source on a continuous basis after evaluation of the test results. The performance tests for pollutant emissions will be conducted at baseline conditions and while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather data regarding the pollutant emissions while utilizing/firing whole tires in the facility's cement kiln, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990: shredded tires; October 14-16, 1991: whole tires). Screening for a modification and Prevention of Signification (PSD) will be in accordance with Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1991 version).

If, after the performance test results are evaluated by the Department's BAR and affected parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.) and it is determined that actual pollutant emissions did not increase while utilizing/firing whole tires, then an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), will be issued with certain Specific Conditions authorizing continuous utilization/firing of whole tires in the source. However, if there is an actual emissions increase in pollutant emissions, FCSC will not be permitted to utilize/fire whole tires without further evaluation by the Department's BAR and involved parties.

The proposed project will occur at the applicant's facility located on U.S. Highway 98 NW of Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July, 1991 version). The project is not exempt from permitting procedures. The Department has determined that permit amendments are required for the proposed activity.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the requests/applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The requests/applications are available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Southwest District Office
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

Hernando County Board of County Commission
20 North Main Street, Room 460
Brooksville, Florida 34601

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

June xx, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Randy Thompson
Environmental Department
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Thompson:

Re: Letter Amendment to the Construction Permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), to Conduct Performance Tests for Pollutant Emissions on the Facility's Cement Kiln While Utilizing/Firing Whole Tires

The Department has reviewed the request that you provided on May 15, 1992. We have also considered the Department's legal authority to allow Florida Crushed Stone Company (FCSC) to conduct the requested performance tests. Paragraph 403.061(15), Florida Statutes (F.S.) authorizes the Department to consult with any person proposing to construct, install, or otherwise acquire a pollution control device or system concerning the efficacy of such device or system, or the pollution problem which may be related to the source, device, or system. Paragraph 403.061(16), F.S., authorizes the Department to encourage voluntary cooperation by persons in order to achieve the purposes of the state environmental control act. Paragraph 403.061(18), F.S., authorizes the Department to encourage and conduct studies, investigations, and research relating to the causes and control of pollution. Florida Administrative Code (F.A.C.) Rule 17-2.250(5) authorizes the Department to consider variation in industrial equipment and make allowances for excess emissions that provide practical regulatory controls consistent with the public interest.

In accordance with the provisions of Paragraphs 403.061(15), (16), and (18), F.S., and F.A.C. Rule 17-2.250(5), you are hereby authorized to conduct performance tests for pollutant emissions on FCSC's cement kiln while utilizing/firing whole tires at a maximum utilization/firing rate of 15.0% of the total Btu heat input (1.33 tons per hour). The cement kiln was permitted under the construction permits, Nos. AC 27-118674 and PSD-FL-091, and is not permitted to utilize/fire whole tires in accordance with the referenced permits.

The additional emissions tests are being proposed in order to gather data regarding pollutant emissions while utilizing/firing whole tires, since FCSC has already conducted pollutant emissions tests (September 18-24, 1990: shredded tires; October 14-16, 1991: whole tires). Screening for a modification and Prevention of Significant Deterioration (PSD) shall be in accordance with Chapter 403, F.S., F.A.C. Chapters 17-2 and 17-4, and Title 40 Code of Federal Regulations (CFR; July, 1991 version), which will compare the actual pollutant emissions of the baseline tests to the actual pollutant emissions of the performance tests while utilizing whole tires. The performance test results will be evaluated by the Department's BAR and involved parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.).

The performance tests shall be subject to the following conditions:

1. The permittee shall notify, in writing, the Department's Southwest District and Bureau of Air Regulation (BAR) offices at least 15 days prior to commencement of the performance tests. A written report shall be submitted to these offices within 45 days upon completion of the last test run.

2. Prior to or after conducting performance tests for pollutant emissions while utilizing/firing whole tires in the facility's cement kiln (Post-tests), performance tests (Pre-tests/baseline) for pollutant emissions shall be conducted while operating under normal operating conditions with the presently permitted kiln fuels and feed material. The pollutant emissions results of the "Pre-tests" shall be compared to the pollutant emissions results of the "Post-tests" to determine if:

    a) PSD or non-PSD emissions review is required where actual emissions increased (baseline versus whole tire firing), which includes the construction permit application and the appropriate processing fee; or,

    b) the construction permits, Nos. AC 27-118674 and PSD-FL-091, can be amended to allow the utilization/firing of whole tires in the facility's cement kiln on a continuous basis.

3. All "Post-test" emissions results shall be compared to "actual emissions" for PSD review purposes (see Region IV, U.S. EPA's letter dated April 4, 1990).

4. The contents of Dr. John B. Koogler's letter received May 15, 1992, are adopted by reference, with the following exceptions:
   - o From the initial date of utilizing/firing whole tires in the facility's cement kiln, which shall be documented in writing to the Department, the permittee shall be limited to a maximum of 56 days to establish steady-state operation and conduct the performance tests.

   - o If additional time is needed, the permittee shall provide the Department with documentation of the progress accomplished to date and shall identify what is left to be done to complete the performance tests.

   - o A Type I audit is required and shall be coordinated with the Department's Southwest District office.

   - o Documentation of the utilization/firing rates of whole tires (i.e., actual utilization/firing rate by weight) shall be required.

   - o The Department will take the responsibility of providing a cover letter to and mailing the performance test results to the reviewing parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.).

5. These authorized performance tests shall not result in the release of objectionable odors pursuant to F.A.C. Rule 17-2.620(2).

6. Performance testing shall immediately cease upon the occurrence of a valid environmental complaint by a citizen or other party, or a nuisance or danger to public health or welfare. Performance testing shall not resume until appropriate measures to correct the problem have been implemented.

7. The performance tests for pollutant emissions shall be conducted under the direct supervision and responsible charge of a professional engineer registered in Florida.

8. This Department action is just to authorize the performance tests for pollutant emissions on the facility's cement kiln while utilizing/firing whole tires. Any utilization/firing of whole tires after the last performance test run is completed will be deemed a violation of the current construction permits, Nos. AC 27-118674 and PSD-FL-091.

9. Complete documentation (recording) of any utilization/firing of whole tires in the facility's cement kiln shall be required (i.e., testing results; materials utilized, by weight; etc.) and kept on file for a minimum of two years.

10. The Department shall be notified in writing on the date of the last test run completion.

11. The performance tests shall be conducted while the cement plant, the power plant, and the lime plant are all in operation (i.e., 90-100% capacity).

12. Attachments (See Attachment Section) are incorporated.

The Department has relied on the information referenced in the attachments and conversations with representatives of the FCSC, U.S. EPA-Region IV, Department of Interior's National Park Service, and Hernando County in authorizing this permit amendment to construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091C). Any continuous burning of whole tires, if permitted subsequent to this test burn, will be allowed pursuant to the terms set forth in Attachment A (draft letter authorizing continuous utilization of whole tires), incorporated herein. Any such authorization of continuous burning will be subject to third party challenge and provide a clear point of entry for challenge pursuant to Section 120.57, Florida Statutes.

This letter amendment and its Attachments must be attached to the air construction permits, No. AC 27-118674 and PSD-FL-091 (PSD-FL-091C), and shall become a part of the permits.

Sincerely,

Carol M. Browner
Secretary

CB/rbm

Attachments

c: B. Thomas, SWD
J. Harper, EPA
C. Shaver, NPS
C. Hetrick, HCBCC
J. Koogler, Ph.D., P.E., K&A
T. Mountain, FCSC
W. Congdon, Esq., DER
L. Sellers, Esq., H&K
T. Cleveland, Esq., OHF&C

Attachment Section

1. Dr. John B. Koogler's letter with enclosures received May 15, 1992.
2. Dr. John B. Koogler's letter and processing fee received May 19, 1992.
3. 40 CFR (July, 1991 version).
4. Ms. Jewell A. Harper's letter dated April 4, 1990.
5. Ms. Jewell A. Harper's letter dated August 20, 1990.
6. Intent to Issue package dated May 29, 1992.

ATTACHMENT 1

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

KA 307-90-01

May 14, 1992

RECEIVED
MAY 15 1992
Division of Air
Resources Management

Mr. Thomas Mountain
Florida Crushed Stone Company
P.O. Box 1508
Brooksville, FL 34605-1508

Subject: Test Protocol for Evaluating CPL Plant Operations under Baseline (Coal) and TDF/Coal Firing Scenarios

Dear Mr. Mountain:

Attached is a protocol for emission measurements and the monitoring of plant operating conditions to be conducted at the Florida Crushed Stone cement/power/lime (CPL) plant to demonstrate that the use of whole tire derived fuel (WTDF) to provide up to 15 percent of the heat input to the cement kiln will have no affect on air pollutant emissions from the CPL plant. This test program will be the third test program undertaken by Florida Crushed Stone to demonstrate the use of TDF does not affect emissions of air pollutants from the plant. The regulated emission limits for air pollutants applicable to the CPL plant are summarized in Table 1 of the test protocol.

During the period September 18-21, 1990, emission measurements were conducted at the CPL plant when coal was used to provide 100 percent of the heat input to all three plants. Immediately following the baseline test, on September 21-24, 1990, emission measurements were made at the CPL plant while shredded TDF was used to provide approximately 15 percent of the heat input to the cement kiln. On October 14-16, 1991, additional emission measurements were made for nitrogen oxides while operating the cement plant under baseline conditions and with shredded TDF providing approximately 15 percent of the heat input to the cement kiln. These tests were an extension of the September 18-24, 1990, tests and were designed to provide information on the affect of shredded TDF on nitrogen oxides emissions. On November 13-21, 1991, emission measurements were conducted with WTDF providing approximately 15 percent of heat input to the cement kiln and under baseline conditions (with coal providing 100 percent of the heat input to the cement kiln). All test data have been reported to the Florida Department of Environmental Regulation.

Our conclusion, based on the results of the testing conducted thus far, is that the use of neither shredded TDF nor WTDF has any affect on emissions from the CPL plant when these fuels have been used to provide up to 15 percent of the heat input to the cement kiln.

The testing described in the attached protocol is designed to demonstrate normal fluctuations in CPL plant operating conditions and to provide a long-term comparison of plant operating conditions under baseline and WTDF firing scenarios. The emission measurements described in the protocol cover parameters that could be affected by WTDF firing. Previous tests conducted at the Florida Crushed Stone CPL plant while firing shredded TDF demonstrated that semi-volatile organic compounds, dioxins and furans were not affected by the use of TDF. Previous testing also identified metals that might be a concern during TDF firing.

Benzene is the only volatile organic compound that will be specifically measured in the CPL plant stack gas. This particular compound is federally regulated and was addressed by EPA in comments to FDER. Data presented at a conference recently held in Orlando (New RCRA Regulations for Industrial Boilers, Furnaces and Incinerators, Air & Waste Management Association, March 17, 1992) demonstrated that benzene and benzene related compounds are formed in the pre-heater section of dry process cement plants as a result of organics on the raw feed. The data demonstrated that benzene and benzene compounds were not a function of fuel fired to dry process cement plants.

The test program described in the attached protocol will provide both emission data and long-term records of CPL plant operating conditions while firing 100 percent coal and coal with WTDF providing up to 15 percent of the heat input to the cement kiln. A comparison of the data generated under each of the two fuel firing scenarios will demonstrate the affect, if any, of the use of WTDF on air pollutant emissions from the CPL plant.

If there are any questions or comments regarding the test protocol present herein, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa
Enc.

c: Mr. Lawrence Jennings, Hernando County
Mr. Charles B. Hetrick, Hernando County
Mr. Bruce Mitchell, FDER, Tallahassee
Mr. Carl Lunderstadt, FCS, Leesburg
Mr. Joe Piermatteo, FCS, Brooksville
Mr. Larry Sellers, Holland & Knight, Tallahassee
Mr. Sergundo Fernandez, Oertel, Hoffman et al
Mr. David Buff, KBN, Gainesville

KOOGLER & ASSOCIATES

TEST PROTOCOL FOR EVALUATING CPL PLANT
OPERATIONS UNDER BASELINE AND
TDF/COAL FIRING CONDITIONS

1.0 INTRODUCTION

The Florida Crushed Stone Company (FCS) operates a cement, power and lime plant (CPL plant) in Hernando County, Florida. Under normal operating conditions, the cement plant operates at a clinker production rate of 75 tons per hour, the power plant operates at a electric power production rate of 125 megawatts and the lime plant operates at a lime production rate not greater than 22 tons per hour. Under these conditions, coal is used to provide the heat input to all three plants and the gas streams from the three plants are exhausted through a common baghouse for particulate matter control and through a common stack to the atmosphere. The permitted emissions from the CPL plant are summarized in Table 1.

Florida Crushed Stone has requested approval from the Florida Department of Environmental Regulation to use whole tire derived fuel (WTDF) to provide up to 15 percent of the heat input to the kiln of the cement plant with the remainder of the heat input being provided by coal. The permits issued by FDER for the cement plant (AC27-118674 and AO27-183508) specify that the kiln is to be fired with coal only at a maximum rate not to exceed 10.3 tons per hour or a maximum heat input rate of 248.0 million BTU per hour. The permit amendment requested by Florida Crushed Stone will allow the use of WTDF to provide up to 15 percent of the heat input to the cement kiln or up to 37.2 million BTU per hour. Coal will supply the remainder of the heat input to the kiln or up to 210.8 million BTU per hour.

This protocol sets forth the emission measurements and CPL plant monitoring that will demonstrate the affects of WTDF burning in the cement kiln on air pollutant emissions from the CPL plant and defines the procedure for evaluating the test data.

2.0 BASELINE PERIOD

Beginning on or about May 12, 1992, and continuing up until the date the WTDF burn period (on or about May 26, 1992), the CPL plant will operate plant under normal conditions; with coal providing 100 percent of the heat input to the cement plant, power plant and lime plant. During this period, the CPL plant operating parameters specified in Section 3.0 will be continuously monitored and documented. During this period, there may be outages of the lime plant or the power plant and lime plant; either scheduled or unscheduled. These outages will not affect the cement plant operations nor the final test results. The plant operating data from this baseline period (with coal providing 100 percent of the heat input to the entire CPL plant) will be used to demonstrate normal fluctuations in CPL plant operating conditions.

3.0 WTDF/COAL BURN PERIOD

WTDF will be used to provide up to 15 percent of the heat input to the cement kiln of the CPL plant with coal providing the balance of the heat input for a period of approximately eight weeks (approximately 56 days) beginning on or about May 26, 1992. This test period will include approximately 56 days of cement plant operations (56 operating days) and will not include periods of time when the cement plant is not operating due to scheduled or unscheduled downtime. The approximate 56 operating day test period may require more than 56 calendar days because of the scheduled or unscheduled outages of the cement plant. The calendar day period will be automatically extended under the conditions of this protocol by the number of days of cement plant downtime.

During the approximate 56 operating day period of the cement plant, the lime plant or the lime plant and power plant may experience scheduled or unscheduled outages. Outages of the lime plant or lime plant and power plant will not interrupt the approximate 56 operating day period for the cement plant as the cement plant is designed to operate either with or without the power plant and lime plant, nor will these outages affect the validity of the data collected during the approximate 56 operating day period.

Beginning on Day 1 and continuing through the end of the approximate 56 operating day period, the following plant operating parameters, which are continuously monitored by FCS instrumentation will be documented:

Lime Plant

Coal Feed Rate	(tph)
Limestone Feed Rate	(tph)

Power Plant

Coal Feed Rate	(tph)
Power Generating Rate	(mw)

Cement Plant

Coal Feed Rate	(tph)
WTDF Feed Rate	(tph)
Raw Meal Feed Rate	(tph)
Clinker Production Rate	(tph)
Clinker Quality	Chemistry and Free CaO

Main Baghouse

Inlet Temperature	(^{o}F)
Fan Speed	(%)
Fan Current	(amps)

Cement Plant Fan

Inlet Temperature	(^{o}F)
Fan Current	(amps)
Damper Setting	(%)
Oxygen	(%)
Carbon Monoxide	(ppm)

Pre-heater

Exit Gas Temperature	(°F)
Internal Gas Temperature	(°F)
Raw Meal Temperature	(°F)

Kiln Inlet (base of pre-heater)

Gas Temperature	(°F)
Draft	(inches H_2O)
Oxygen	(%)
Combustibles (CO)	(%)

Stack

Oxygen	(%)
NOx	(ppm)
Opacity	(%)
Velocity Head	(inches H_2O)

The purpose of the approximate 56 operating day period and the associated testing described herein is to conclusively and unambiguously establish that using WTDF for 15 percent of the heat input to the cement plant does not negatively affect regulated air pollutant emissions or clinker quality and that the air permit amendments proposed by FCS are acceptable to Hernando County.

Beginning on or about the 52nd operating day and with the entire CPL plant operating, emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Multi-metals Train
Visible Emissions	EPA Method 9
Metals: Arsenic Chromium (Total) Lead Mercury Zinc	EPA Multi-metals Train

NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 2 and 4 (in conjunction with EPA Method 5)
Benzene	VOST - SW846-0030

Each test will consists of three replicate test runs with each test run being two hours in duration. It is planned that all emission measurements will be conducted on or about the 52nd and 53rd operating days of the approximate 56 operating day schedule. Due to unforeseen circumstances, it is possible that the emission measurements may require additional time (but still within the 56 operating day schedule). If additional test time is required, the additional time will not affect the validity of the emission measurements nor the approximate 56 operating day WTDF burn period.

During the time period when emission measurements are conducted (two or more days), fuel samples (both coal and WTDF) will be collected by Koogler & Associates personnel and an ultimate fuel analysis will be conducted on each fuel. Also, during the period of time when the emission measurements are conducted, all plant operating parameters previously specified will continue to be monitored. As previously specified, the monitoring of plant parameters will continue through the end of the WTDF test burn period.

The WTDF test period will terminate within 12 hours of the completion of the planned emission measurements, associated testing and monitoring even though this testing may be completed prior to the 56th operating day of the cement plant. The termination of the WTDF test period at the completion of all testing, but prior to the 56th operating day, shall not affect the validity of the WTDF tests nor the data describing CPL plant operations.

4.0 BASELINE EMISSION MEASUREMENTS

Following the termination of the WTDF firing period (within 12 hours of the completion of all testing described in the preceding section), the entire CPL plant will continue to operate, but with coal providing 100 percent of the heat input to all plants. A period of at least 24-hours will be allowed for all WTDF residue to be purged from the cement kiln and for cement plant operating conditions to stabilize.

Following the approximate 24-hour purge and stabilization period, and with the cement, power and lime plants operating at rates similar to those at which the plants operated during the WTDF emission measurements, but with coal providing 100 percent of the heat input, emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Multi-metals Train

Visible Emissions	EPA Method 9
Metals: Arsenic Chromium (Total) Lead Mercury Zinc	EPA Multi-metals Train
NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 2 and 4 (in conjunction with EPA Method 5)
Benzene	VOST - SW846-0030

Each test will consists of three replicate test runs with each test run being two hours in duration. It is planned that all baseline emission measurements will be conducted during a two day period. Due to unforeseen circumstances, it is possible that the baseline emission measurements may require additional time. If additional test time is required, the additional time will not affect the validity of the baseline emission measurements.

During the time period when baseline emission measurements are conducted (two or more days), coal samples will be collected by Koogler & Associates personnel and an ultimate fuel analysis will be conducted on the fuel. Also, during the entire period of time when the baseline emission measurements are conducted, all CPL plant operating parameters previously specified in Section 3.0 will continue to be monitored. The baseline test period will terminate when all baseline emission measurements and associated testing and monitoring are completed.

5.0 COMPARISON OF TEST RESULTS

Plant operating data from the baseline and WTDF periods will be used to demonstrate normal fluctuations in plant operating conditions and to provide a long-term comparison of plant operating conditions under the two fuel firing scenarios.

Some differences in the temperature profile across the pre-heater are expected under the two fuel firing scenarios. During the baseline period (with coal providing 100 percent heat input to the cement plant), there will be a single fuel burning zone at the discharge end of the kiln. During time WTDF is used to provide up to 15 percent of the heat input to the kiln, there will be a coal burning zone at the discharge end of the kiln and a WTDF burning zone at the kiln inlet. Differences in the temperature profile across the pre-heater under the two fuel firing scenarios will not, by themselves, indicate differences in cement plant operating conditions.

Also, spikes in the concentrations of gases (CO, NOx, and/or total hydrocarbons) that will be continuously monitored in the CPL plant stack during the two emission measurement periods will not, by themselves, indicate differences in plant operating conditions or emission rates. E.R. Hansen in a paper entitled, *The Carbon Monoxide and Other Gases for Process Control* (IEEE Conference, 1985), discusses the factors affecting carbon monoxide levels in the gases exhausted from a dry process Portland cement plant and also discusses the relationship between carbon monoxide and nitrogen oxides concentrations. Hansen states that when a cement kiln is operating under optimum conditions the oxygen concentration in the gas stream discharged from the kiln is in the range of 1.5-2.0 percent, and that at this operating condition, significant changes in the carbon monoxide in the kiln off-gas can be expected. This is referred to as operating on a "ragged edge" due to the ragged (spiked) appearance of the carbon monoxide concentration trace on a strip chart.

The average emission rates of constituents measured during each test run, including spiked concentrations in the averages, will be used as points of comparisons. Also, clinker quality, which will be monitored during both the baseline and the WTDF test periods, will be used to demonstrate the similarity of cement plant operating conditions. Data from the continuous emission monitors located in the CPL plant stacks and oxygen and carbon monoxide monitors located in the cement plant will provide a continuous record of emission related parameters which can also be compared to demonstrate similarity of plant operating conditions during the two test periods.

The average emission rates of the air pollutants measured during the WTDF emission measurement period will be compared with average emission rates measured during the baseline period to determine if the use of WTDF to provide up to 15 percent of the heat input to the cement kiln affects emission rates from the plant. The comparison of emission rates will be made in accordance with the methods set forth in 40CFR60, Appendix C.

A conclusive report comparing the emission rates of designated air pollutants and plant operating conditions measured during the WTDF and baseline test periods described herein will be submitted to Hernando County, its consultants and its legal counsel within 10 days of the completion of the baseline test period. This report will also include data documenting CPL plant operating conditions during the approximate 56 day WTDF test period and data documenting CPL plant operating data during baseline operating periods.

The County's consultant will have 10 days to review the test data and file a conclusive report with Hernando County. If the report prepared by the Hernando County consultant concludes there were no significant increases in the emission rates of any of the designated air pollutants in accordance with 40CFR60, Appendix C, and that a comparable quality clinker was produced both during the WTDF and baseline test periods, the County shall inform the Florida Department of Environmental Regulation, Bureau of Air Regulation, Tallahassee, Florida (FDER) of its finding and advise FDER that the County has no objection to amendments to all permits necessary to allow FCS to use whole and shredded TDF to provide up to 15 percent of the heat input to the CPL plant cement kiln. If the testing described herein demonstrates there is an increase in the emission rate of one or more of the constituents measured as described herein (as defined by 40CFR60, Appendix C), FCS shall have the right to pursue with FDER, modifications to all necessary air permits to allow this increase, without undue objection of Hernando County, if the increase is permittable under FDER rules.

TABLE 1

SUMMARY OF CPL PLANT EMISSION LIMING STANDARDS

FLORIDA CRUSHED STONE CPL
HERNANDO COUNTY, FLORIDA

Plant Operating Scenario(1)	Permitted Emission Limit (2) Particulate Matter (lb/hr)	Visible Emissions (%)	Sulfur Dioxide (lb/hr)	Nitrogen Oxides (lb/hr)
1. Cement	49.5 (3)	10	50 (4)	359 (5)
2. Power	74.0 (6)	20 (7)	770 (8)	846 (9)
3. Power/Lime	74.0 (6)	20 (7)	770 (8)	846 (9)
4. Cement/Power	123.5 (10)	10	781 (11)	1205 (10)
5. Cement/Power/Lime	123.5 (10)	10	781 (11)	1205 (10)

(1) Lime Plant cannot operate unless Power Plant is operating.

(2) Cement (kiln and cooler)/Power and Lime Plants all exhaust through a common baghouse and stack.

(3) 0.3 lb/ton of kiln feed from kiln and 0.1 lb/ton of kiln feed from cooler; not to exceed 49.5 lb/hr.

(4) 0.6 lb/ton of kiln feed; not to exceed 50 lb/hr.

(5) 2.9 lb/ton of kiln feed; not to exceed 359 lb/hr.

(6) 0.03 lb/MMBTU; not to exceed 74 lb/hr.

(7) Opacity of 27% allowed for 6 minutes in any one hour.

(8) 1.2 lb/MMBTU; not to exceed 770 lb/hr.

(9) 0.7 lb/MMBTU; not to exceed 846 lb/hr.

(10) Sum of Operating Conditions 1 and 2.

(11) Sum of Operating Conditions 1 and 2; not to exceed 781 lb/hr.

ATTACHMENT 2

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

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KA 307-90-01

May 18, 1992

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Reference: Florida Crushed Stone Company
Hernando County Florida
Approval for Tire Derived Fuel Tests
in Cement Kiln (AC27-118674 and A027-183508)

Dear Mr. Mitchell:

The Florida Crushed Stone Company hereby requests a one-time amendment to the subject air permits to allow the tests described in the protocol transmitted to your office under cover of a copy of a letter to Mr. Thomas Mountain dated May 14, 1992. The testing is designed to conclusively answer any questions regarding the effect of whole tire derived fuel on the operation of the Florida Crushed Stone CPL plant. I have enclosed a check in the amount of $250.00 for the amendment to the permits.

If you have any questions please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:mem

cc: Mr. Thomas Mountain

001031

Attachments 3 - 5

Available Upon Request

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

DRAFT

August xx, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Randy Thompson
Environmental Department
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Thompson:

Re: Letter Amendment to the Construction Permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), Authorizing Continuous Utilization/Firing of Whole Tires in the Facility's Cement Kiln

The Department has reviewed the request for an amendment to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), that you provided in a letter received on May 19, 1992. The request was for authorization to continuously utilize/fire whole tires in the facility's cement kiln only after the pollutant emissions results of the performance tests have been reviewed by the Department's Bureau of Air Regulation and involved parties (i.e., Department's Southwest District, U.S. EPA, National Park Service, Hernando County, etc.). Based on the test results and pursuant to Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and the 40 CFR (July, 1991 version), there was not an actual emissions increase of any pollutant. Therefore, the request to utilize/fire whole tires in the facility's cement kiln is acceptable and the following Specific Conditions and Attachments are changed and/or added:

Specific Conditions:

- The cement kiln's maximum utilization/firing rate of whole tires shall not exceed 15.0% of the total Btu heat input (1.33 tons per hour).

- The utilization/firing rate of whole tires shall be quantified (weighed) and recorded and the records shall be kept on file for a minimum of two years.

- The quantity of all deliveries of whole tires shall be documented and kept on record/file for a minimum of two years.

- o Objectionable odors shall not be allowed off the facility's property in accordance with F.A.C. Rule 17-2.620(2).

- o All references to the Title 40 Code of Federal Regulations shall be of the July, 1991 version.

<u>Attachments to be Incorporated</u>:

1. Dr. John B. Koogler's letter with enclosures received May 15, 1992.
2. Dr. John B. Koogler's letter and processing fee received May 19, 1992.
3. 40 CFR (July, 1991 version).
4. Ms. Jewell A. Harper's letter dated April 4, 1990.
5. Ms. Jewell A. Harper's letter dated August 20, 1990.
6. Intent to Issue package dated May 29, 1992.
7. Public Notice of the Intent to Issue received June xx, 1992.
8. Mrs. Carol M. Browner's letter amendment dated June xx, 1992.
9. Dr. John B. Koogler's letter with enclosures (performance test results of pollutant emissions) received (to be dated).
10. Mr. C. H. Fancy's letter transmitting the performance test results of the pollutant emissions to the involved parties dated (to be dated).
11. The Department's Final Determination and Letter Amendment dated (to be dated).

This letter constitutes proposed agency action. A person whose substantial interests are affected by the Department's proposed permitting decision to permit continuous utilization/firing of whole tires at the source may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the applicant of the permit amendment and the parties listed below must be filed within 14 days of receipt of this letter. The appropriateness of screening the test burn data for actual emission increases in accordance with Chapter 403, F.S., F.A.C. Rules 17-2 and 17-4 and the 40 CFR (July, 1991 version), as opposed to any other methodology, may be raised in any petition for administrative proceedings filed challenging the Department's determination to authorize continuous utilization/firing of whole tires at the source. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department.

This letter amendment must be attached to the construction permits, Nos. AC 27-118674 and PSD-FL-091 (PSD-FL-091D), and shall become a part of the permits.

Sincerely,

Carol M. Browner
Secretary

CB/rbm

Attachments

cc: B. Thomas, SW District
T. Mountain, FCSC
L. Sellars, Esq., H&K
T. Cleveland, Esq., OHF&C
W. Congdon, Esq., DER
C. Hetrick, HCBCC
J. Harper, EPA
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Florida Department of
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Reference: Florida Crushed Stone Company
Hernando County Florida
Approval for Tire Derived Fuel Tests
in Cement Kiln (AC27-118674 and AO27-183508)

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If you have any questions please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:mem

cc: Mr. Thomas Mountain

001031

FEDERAL EXPRESS

[redacted]

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER 2229318

2069M 2229318825

RECIPIENT'S COPY

1 [redacted] Date 5/15/92

From (Your Name) Please Print: John B. Koogler	Your Phone Number (Very Important): 904-377-5822
Company: KOOGLER & ASSOC	Department/Floor No.
Street Address: 4014 NW 13TH ST	
City: GAINSVILLE State: FL	ZIP Required: 32609

2 To (Recipient's Name) Please Print: Mr. Bruce Mitchell	Recipient's Phone Number (Very Important): ( )
Company: FDER Air Mine's Office	Department/Floor No.
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2600 Blair Stone Rd	
City: Tallahassee State: FL	ZIP Required: 32399

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 307-90-01

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

3 PAYMENT 1 [x] Bill Sender 2 [ ] Bill Recipient's FedEx Acct No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card
5 [ ] Cash/Check [redacted]

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)	Standard Overnight (Delivery by next business afternoon†)
11 [ ] YOUR PACKAGING	51 [ ] YOUR PACKAGING
16 [x] FEDEX LETTER *	56 [ ] FEDEX LETTER *
12 [ ] FEDEX PAK *	52 [ ] FEDEX PAK *
13 [ ] FEDEX BOX	53 [ ] FEDEX BOX
14 [ ] FEDEX TUBE	54 [ ] FEDEX TUBE
Economy Two-Day (Delivery by second business day†)	**Government Overnight** (Restricted for authorized users only)
30 [ ] ECONOMY	46 [ ] GOVT LETTER
	41 [ ] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required)
80 [ ] TWO-DAY FREIGHT **
† Delivery commitment may be later in some areas.
*Declared Value Limit $100.
**Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [x] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE ______ Lbs.
7 [ ] OTHER SPECIAL SERVICE ______
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
11 [ ] DESCRIPTION
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
Total	Total	Total

DIM SHIPMENT (Chargeable Weight)
[ ] ______ lbs.
L x W x H =

Received At
1 [ ] Regular Stop 3 [ ] Drop Box
2 [ ] On-Call Stop 4 [ ] B.S.C. 5 [ ] Station

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By:
X
Date/Time Received FedEx Employee Number

7 Release Signature:
FedEx Emp. No. Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 2/92
FORMAT #099
099

KOOGLER & ASSOCIATES
PH 377-5822
4014 NW 13TH STREET
GAINESVILLE, FL 32609

5726

[redacted]
BRANCH 320

May 18, 19 92

PAY TO THE ORDER OF Florida Department of Environmental Regulation $ 250.00

Two Hundred Fifty-- 00/100 DOLLARS

FIRST UNION
First Union National Bank of Florida
Gainesville, Florida 32601
Service. We Guarantee It.℠

FOR Processing Fee-Permit Amendment A027-183508 AC27-118674

Marion A. Boyer

[redacted]

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Reference: Florida Crushed Stone Company
Hernando County Florida
Approval for Tire Derived Fuel Tests
in Cement Kiln (AC27-118674 and A027-183508)

Dear Mr. Mitchell:

The Florida Crushed Stone Company hereby requests a one-time amendment to the subject air permits to allow the tests described in the protocol transmitted to your office under cover of a copy of a letter to Mr. Thomas Mountain dated May 14, 1992. The testing is designed to conclusively answer any questions regarding the effect of whole tire derived fuel on the operation of the Florida Crushed Stone CPL plant. I have enclosed a check in the amount of $250.00 for the amendment to the permits.

If you have any questions please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:mem

cc: Mr. Thomas Mountain

001031

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

FAX TRANSMITTAL FORM

TO: Bruce Mitchell

FROM: John Koogler

PROJECT: 307-90-01

SENT BY: Wendy

DATE: 5/18/92

FAX PHONE: 904-377-7158

The text being transmitted consists of 13 pages PLUS this one.

REMARKS:

5-18-92

Spoke w/ Wendy; Pradeep;
FCSB request not in.
Spoke w/ Megan - we have
it in house - no fax?

[illegible]

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

KA 307-90-01

May 14, 1992

Mr. Thomas Mountain
Florida Crushed Stone Company
P.O. Box 1508
Brooksville, FL 34605-1508

Subject: Test Pr ol for Evaluating
CPL Pla, perations under Baseline
(Coal) and TDF/Coal Firing Scenarios

Dear Mr. Mountain:

Attached is a protocol for emission measurements and the monitoring of plant operating conditions to be conducted at the Florida Crushed Stone cement/power/lime (CPL) plant to demonstrate that the use of whole tire derived fuel (WTDF) to provide up to 15 percent of the heat input to the cement kiln will have no affect on air pollutant emissions from the CPL plant. This test program will be the third test program undertaken by Florida Crushed Stone to demonstrate the use of TDF does not affect emissions of air pollutants from the plant. The regulated emission limits for air pollutants applicable to the CPL plant are summarized in Table 1 of the test protocol.

During the period September 18-21, 1990, emission measurements were conducted at the CPL plant when coal was used to provide 100 percent of the heat input to all three plants. Immediately following the baseline test, on September 21-24, 1990, emission measurements were made at the CPL plant while shredded TDF was used to provide approximately 15 percent of the heat input to the cement kiln. On October 14-16, 1991, additional emission measurements were made for nitrogen oxides while operating the cement plant under baseline conditions and with shredded TDF providing approximately 15 percent of the heat input to the cement kiln. These tests were an extension of the September 18-24, 1990, tests and were designed to provide information on the affect of shredded TDF on nitrogen oxides emissions. On November 13-21, 1991, emission measurements were conducted with WTDF providing approximately 15 percent of heat input to the cement kiln and under baseline conditions (with coal providing 100 percent of the heat input to the cement kiln). All test data have been reported to the Florida Department of Environmental Regulation.

Our conclusion, based on the results of the testing conducted thus far, is that the use of neither shredded TDF nor WTDF has any affect on emissions from the CPL plant when these fuels have been used to provide up to 15 percent of the heat input to the cement kiln.

The testing described in the attached protocol is designed to demonstrate normal fluctuations in CPL plant operating conditions and to provide a long-term comparison of plant operating conditions under baseline and WTDF firing scenarios. The emission measurements described in the protocol cover parameters that could be affected by WTDF firing. Previous tests conducted at the Florida Crushed Stone CPL plant while firing shredded TDF demonstrated that semi-volatile organic compounds, dioxins and furans were not affected by the use of TDF. Previous testing also identified metals that might be a concern during TDF firing.

Benzene is the only volatile organic compound that will be specifically measured in the CPL plant stack gas. This particular compound is federally regulated and was addressed by EPA in comments to FDER. Data presented at a conference recently held in Orlando (New RCRA Regulations for Industrial Boilers, Furnaces and Incinerators, Air & Waste Management Association, March 17, 1992) demonstrated that benzene and benzene related compounds are formed in the pre-heater section of dry process cement plants as a result of organics on the raw feed. The data demonstrated that benzene and benzene compounds were not a function of fuel fired to dry process cement plants.

The test program described in the attached protocol will provide both emission data and long-term records of CPL plant operating conditions while firing 100 percent coal and coal with WTDF providing up to 15 percent of the heat input to the cement kiln. A comparison of the data generated under each of the two fuel firing scenarios will demonstrate the affect, if any, of the use of WTDF on air pollutant emissions from the CPL plant.

If there are any questions or comments regarding the test protocol present herein, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa
Enc.

c: Mr. Lawrence Jennings, Hernando County
Mr. Charles B. Hetrick, Hernando County
Mr. Bruce Mitchell, FDER, Tallahassee
Mr. Carl Lunderstadt, FCS, Leesburg
Mr. Joe Piermatteo, FCS, Brooksville
Mr. Larry Sellers, Holland & Knight, Tallahassee
Mr. Sergundo Fernandez, Oertel, Hoffman et al
Mr. David Buff, KBN, Gainesville

TEST PROTOCOL FOR EVALUATING CPL PLANT OPERATIONS UNDER BASELINE AND TDF/COAL FIRING CONDITIONS

1.0 INTRODUCTION

The Florida Crushed Stone Company (FCS) operates a cement, power and lime plant (CPL plant) in Hernando County, Florida. Under normal operating conditions, the cement plant operates at a clinker production rate of 75 tons per hour, the power plant operates at a electric power production rate of 125 megawatts and the lime plant operates at a lime production rate not greater than 22 tons per hour. Under these conditions, coal is used to provide the heat input to all three plants and the gas streams from the three plants are exhausted through a common baghouse for particulate matter control and through a common stack to the atmosphere. The permitted emissions from the CPL plant are summarized in Table 1.

Florida Crushed Stone has requested approval from the Florida Department of Environmental Regulation to use whole tire derived fuel (WTDF) to provide up to 15 percent of the heat input to the kiln of the cement plant with the remainder of the heat input being provided by coal. The permits issued by FDER for the cement plant (AC27-118674 and A027-183508) specify that the kiln is to be fired with coal only at a maximum rate not to exceed 10.3 tons per hour or a maximum heat input rate of 248.0 million BTU per hour. The permit amendment requested by Florida Crushed Stone will allow the use of WTDF to provide up to 15 percent of the heat input to the cement kiln or up to 37.2 million BTU per hour. Coal will supply the remainder of the heat input to the kiln or up to 210.8 million BTU per hour.

This protocol sets forth the emission measurements and CPL plant monitoring that will demonstrate the affects of WTDF burning in the cement kiln on air pollutant emissions from the CPL plant and defines the procedure for evaluating the test data.

2.0 BASELINE PERIOD

Beginning on or about May 12, 1992, and continuing up until the date the WTDF burn period (on or about May 26, 1992), the CPL plant will operate plant under normal conditions; with coal providing 100 percent of the heat input to the cement plant, power plant and lime plant. During this period, the CPL plant operating parameters specified in Section 3.0 will be continuously monitored and documented. During this period, there may be outages of the lime plant or the power plant and lime plant; either scheduled or unscheduled. These outages will not affect the cement plant operations nor the final test results. The plant operating data from this baseline period (with coal providing 100 percent of the heat input to the entire CPL plant) will be used to demonstrate normal fluctuations in CPL plant operating conditions.

3.0 WTDF/COAL BURN PERIOD

WTDF will be used to provide up to 15 percent of the heat input to the cement kiln of the CPL plant with coal providing the balance of the heat input for a period of approximately eight weeks (approximately 56 days) beginning on or about May 26, 1992. This test period will include approximately 56 days of cement plant operations (56 operating days) and will not include periods of time when the cement plant is not operating due to scheduled or unscheduled downtime. The approximate 56 operating day test period may require more than 56 calendar days because of the scheduled or unscheduled outages of the cement plant. The calendar day period will be automatically extended under the conditions of this protocol by the number of days of cement plant downtime.

During the approximate 56 operating day period of the cement plant, the lime plant or the lime plant and power plant may experience scheduled or unscheduled outages. Outages of the lime plant or lime plant and power plant will not interrupt the approximate 56 operating day period for the cement plant as the cement plant is designed to operate either with or without the power plant and lime plant, nor will these outages affect the validity of the data collected during the approximate 56 operating day period.

Beginning on Day 1 and continuing through the end of the approximate 56 operating day period, the following plant operating parameters, which are continuously monitored by FCS instrumentation will be documented:

Lime Plant	
Coal Feed Rate	(tph)
Limestone Feed Rate	(tph)
Power Plant	
Coal Feed Rate	(tph)
Power Generating Rate	(mw)
Cement Plant	
Coal Feed Rate	(tph)
WTDF Feed Rate	(tph)
Raw Meal Feed Rate	(tph)
Clinker Production Rate	(tph)
Clinker Quality	Chemistry and Free CaO
Main Baghouse	
Inlet Temperature	(^{o}F)
Fan Speed	(%)
Fan Current	(amps)
Cement Plant Fan	
Inlet Temperature	(^{o}F)
Fan Current	(amps)
Damper Setting	(%)
Oxygen	(%)
Carbon Monoxide	(ppm)

Pre-heater

Exit Gas Temperature	(^{o}F)
Internal Gas Temperature	(^{o}F)
Raw Meal Temperature	(^{o}F)

Kiln Inlet (base of pre-heater)

Gas Temperature	(^{o}F)
Draft	(inches H_2O)
Oxygen	(%)
Combustibles (CO)	(%)

Stack

Oxygen	(%)
NOx	(ppm)
Opacity	(%)
Velocity Head	(inches H_2O)

The purpose of the approximate 56 operating day period and the associated testing described herein is to conclusively and unambiguously establish that using WTDF for 15 percent of the heat input to the cement plant does not negatively affect regulated air pollutant emissions or clinker quality and that the air permit amendments proposed by FCS are acceptable to Hernando County.

Beginning on or about the 52nd operating day and with the entire CPL plant operating, emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Multi-metals Train
Visible Emissions	EPA Method 9
Metals: Arsenic Chromium (Total) Lead Mercury Zinc	EPA Multi-metals Train

NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 2 and 4 (in conjunction with EPA Method 5)
Benzene	VOST - SW846-0030

Each test will consists of three replicate test runs with each test run being two hours in duration. It is planned that all emission measurements will be conducted on or about the 52nd and 53rd operating days of the approximate 56 operating day schedule. Due to unforeseen circumstances, it is possible that the emission measurements may require additional time (but still within the 56 operating day schedule). If additional test time is required, the additional time will not affect the validity of the emission measurements nor the approximate 56 operating day WTDF burn period.

During the time period when emission measurements are conducted (two or more days), fuel samples (both coal and WTDF) will be collected by Koogler & Associates personnel and an ultimate fuel analysis will be conducted on each fuel. Also, during the period of time when the emission measurements are conducted, all plant operating parameters previously specified will continue to be monitored. As previously specified, the monitoring of plant parameters will continue through the end of the WTDF test burn period.

The WTDF test period will terminate within 12 hours of the completion of the planned emission measurements, associated testing and monitoring even though this testing may be completed prior to the 56th operating day of the cement plant. The termination of the WTDF test period at the completion of all testing, but prior to the 56th operating day, shall not affect the validity of the WTDF tests nor the data describing CPL plant operations.

4.0 BASELINE EMISSION MEASUREMENTS

Following the termination of the WTDF firing period (within 12 hours of the completion of all testing described in the preceding section), the entire CPL plant will continue to operate, but with coal providing 100 percent of the heat input to all plants. A period of at least 24-hours will be allowed for all WTDF residue to be purged from the cement kiln and for cement plant operating conditions to stabilize.

Following the approximate 24-hour purge and stabilization period, and with the cement, power and lime plants operating at rates similar to those at which the plants operated during the WTDF emission measurements, but with coal providing 100 percent of the heat input, emission measurements will be conducted by Koogler & Associates personnel at the main CPL plant stack for the following parameters:

Particulate Matter	From Front Half of EPA Multi-metals Train

Visible Emissions	EPA Method 9
Metals: Arsenic Chromium (Total) Lead Mercury Zinc	EPA Multi-metals Train
NOx	EPA Method 7E
Carbon Monoxide	EPA Method 10
Volatile Organic Compounds	EPA Method 25A
CO_2/O_2	EPA Methods 3/3A
Stack Gas Flow/Moisture/Temp.	EPA Methods 2 and 4 (in conjunction with EPA Method 5)
Benzene	VOST - SW846-0030

Each test will consists of three replicate test runs with each test run being two hours in duration. It is planned that all baseline emission measurements will be conducted during a two day period. Due to unforeseen circumstances, it is possible that the baseline emission measurements may require additional time. If additional test time is required, the additional time will not affect the validity of the baseline emission measurements.

During the time period when baseline emission measurements are conducted (two or more days), coal samples will be collected by Koogler & Associates personnel and an ultimate fuel analysis will be conducted on the fuel. Also, during the entire period of time when the baseline emission measurements are conducted, all CPL plant operating parameters previously specified in Section 3.0 will continue to be monitored. The baseline test period will terminate when all baseline emission measurements and associated testing and monitoring are completed.

5.0 COMPARISON OF TEST RESULTS

Plant operating data from the baseline and WTDF periods will be used to demonstrate normal fluctuations in plant operating conditions and to provide a long-term comparison of plant operating conditions under the two fuel firing scenarios.

Some differences in the temperature profile across the pre-heater are expected under the two fuel firing scenarios. During the baseline period (with coal providing 100 percent heat input to the cement plant), there will be a single fuel burning zone at the discharge end of the kiln. During time WTDF is used to provide up to 15 percent of the heat input to the kiln, there will be a coal burning zone at the discharge end of the kiln and a WTDF burning zone at the kiln inlet. Differences in the temperature profile across the pre-heater under the two fuel firing scenarios will not, by themselves, indicate differences in cement plant operating conditions.

Also, spikes in the concentrations of gases (CO, NOx, and/or total hydrocarbons) that will be continuously monitored in the CPL plant stack during the two emission measurement periods will not, by themselves, indicate differences in plant operating conditions or emission rates. E.R. Hansen in a paper entitled, *The Carbon Monoxide and Other Gases for Process Control* (IEEE Conference, 1985), discusses the factors affecting carbon monoxide levels in the gases exhausted from a dry process Portland cement plant and also discusses the relationship between carbon monoxide and nitrogen oxides concentrations. Hansen states that when a cement kiln is operating under optimum conditions the oxygen concentration in the gas stream discharged from the kiln is in the range of 1.5-2.0 percent, and that at this operating condition, significant changes in the carbon monoxide in the kiln off-gas can be expected. This is referred to as operating on a "ragged edge" due to the ragged (spiked) appearance of the carbon monoxide concentration trace on a strip chart.

The average emission rates of constituents measured during each test run, including spiked concentrations in the averages, will be used as points of comparisons. Also, clinker quality, which will be monitored during both the baseline and the WTDF test periods, will be used to demonstrate the similarity of cement plant operating conditions. Data from the continuous emission monitors located in the CPL plant stacks and oxygen and carbon monoxide monitors located in the cement plant will provide a continuous record of emission related parameters which can also be compared to demonstrate similarity of plant operating conditions during the two test periods.

The average emission rates of the air pollutants measured during the WTDF emission measurement period will be compared with average emission rates measured during the baseline period to determine if the use of WTDF to provide up to 15 percent of the heat input to the cement kiln affects emission rates from the plant. The comparison of emission rates will be made in accordance with the methods set forth in 40CFR60, Appendix C.

A conclusive report comparing the emission rates of designated air pollutants and plant operating conditions measured during the WTDF and baseline test periods described herein will be submitted to Hernando County, its consultants and its legal counsel within 10 days of the completion of the baseline test period. This report will also include data documenting CPL plant operating conditions during the approximate 56 day WTDF test period and data documenting CPL plant operating data during baseline operating periods.

The County's consultant will have 10 days to review the test data and file a conclusive report with Hernando County. If the report prepared by the Hernando County consultant concludes there were no significant increases in the emission rates of any of the designated air pollutants in accordance with 40CFR60, Appendix C, and that a comparable quality clinker was produced both during the WTDF and baseline test periods, the County shall inform the Florida Department of Environmental Regulation, Bureau of Air Regulation, Tallahassee, Florida (FDER) of its finding and advise FDER that the County has no objection to amendments to all permits necessary to allow FCS to use whole and shredded TDF to provide up to 15 percent of the heat input to the CPL plant cement kiln. If the testing described herein demonstrates there is an increase in the emission rate of one or more of the constituents measured as described herein (as defined by 40CFR60, Appendix C), FCS shall have the right to pursue with FDER, modifications to all necessary air permits to allow this increase, without undue objection of Hernando County, if the increase is permittable under FDER rules.

TABLE 1

SUMMARY OF CPL PLANT EMISSION LIMING STANDARDS

FLORIDA CRUSHED STONE CPL
HERNANDO COUNTY, FLORIDA

Plant Operating Scenario(1)	Permitted Emission Limit (2) Particulate Matter (lb/hr)	Visible Emissions (%)	Sulfur Dioxide (lb/hr)	Nitrogen Oxides (lb/hr)
1. Cement	49.5 (3)	10	50 (4)	359 (5)
2. Power	74.0 (6)	20 (7)	770 (8)	846 (9)
3. Power/Lime	74.0 (6)	20 (7)	770 (8)	846 (9)
4. Cement/Power	123.5 (10)	10	781 (11)	1205 (10)
5. Cement/Power/Lime	123.5 (10)	10	781 (11)	1205 (10)

(1) Lime Plant cannot operate unless Power Plant is operating.

(2) Cement (kiln and cooler)/Power and Lime Plants all exhaust through a common baghouse and stack.

(3) 0.3 lb/ton of kiln feed from kiln and 0.1 lb/ton of kiln feed from cooler; not to exceed 49.5 lb/hr.

(4) 0.6 lb/ton of kiln feed; not to exceed 50 lb/hr.

(5) 2.9 lb/ton of kiln feed; not to exceed 359 lb/hr.

(6) 0.03 lb/MMBTU; not to exceed 74 lb/hr.

(7) Opacity of 27% allowed for 6 minutes in any one hour.

(8) 1.2 lb/MMBTU; not to exceed 770 lb/hr.

(9) 0.7 lb/MMBTU; not to exceed 846 lb/hr.

(10) Sum of Operating Conditions 1 and 2.

(11) Sum of Operating Conditions 1 and 2; not to exceed 781 lb/hr.

MEDIA HOT SHEET

Date: 4-20-92

Reporter: Lara Bradburn

At (Newspaper, T.V., Radio, etc.): Hernando Today
904-799-4665

From: Bruce Mitchell
Division: of Air Resources Management
Bureau/Sect.: of Air Regulation
Phone: 488-1344

Topic of Call: Florida Crushed Stone Company: Tire Test Results/stat...

Questions asked:
1. Was I in total agreement with J.P. Subramani's assessment of the last test?
2. What is the Department's posture on the results?
3. Was I aware that an article was published stating that it was likely that FCSC was going to be allowed to fire tires continuously, based on the recent test results?

Deadline:

Summary of Conversation (use remainder of sheet, and back, if necessary):

① I am in total agreement with the assessment that the entire facility was not operating when the whole tire test was run, even though it was when the baseline tests were conducted. However, this does not mean that the quality of the test results are bad, biased, etc.

② As I was told by Dr. John Kegler, consultant for FCSC, there ~~has been~~ was an agreement made between the County and FCSC to conduct another test while the entire plant is running. Since this was the case, I did not feel it necessary to take a posture other than to allow the additional test because we (Dept.) do make every effort to recognize all levels of governments and their positions and I did not want to alter their established direction (i.e., to conduct another test). However, we (BAR) have not yet received the request.

DER Employee Interviewed R Bruce Mitchell

③ Yes, I was aware of it and had a copy. It is important to note that if the county had OK'd the last test results, I told her that the Dept. would still have required the additional test so that we are sure that we are comparing "apples to apples" (i.e. whole plant operating vs. whole plant operating). I told her that this was also told to Mr. Tom Mountain, FCSC representative.

SWFWMD
Joanne Macrina
578-2209
(813)985-7481

To Bruce Mitchell
Date 4/20 Time 1:24

WHILE YOU WERE OUT

M Lara
of Hernando Today
Phone 904-799-4465

X Telephoned
X Please Call
___ Want To See You
___ Will Call Again
___ Returned Your Call
___ Urgent

Message Re: Fl Crushed Stone

MS

OERTEL, HOFFMAN, FERNANDEZ & COLE, P. A.
ATTORNEYS AT LAW

SUZANNE BROWNLESS
M. CHRISTOPHER BRYANT
R. L. CALEEN, JR.
C. ANTHONY CLEVELAND
TERRY COLE
ROBERT C. DOWNIE, II
MARTHA J. EDENFIELD
SEGUNDO J. FERNANDEZ
KENNETH F. HOFFMAN
KENNETH G. OERTEL
HAROLD F. X. PURNELL
PATRICIA A. RENOVITCH
SCOTT SHIRLEY
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TALLAHASSEE, FLORIDA 32314-6507

TELEPHONE (904) 877-0099
FACSIMILE (904) 877-0981

JOHN H. MILLICAN
ENVIRONMENTAL CONSULTANT
(NOT A MEMBER OF THE FLORIDA BAR)

J. P. SUBRAMANI, PH. D., P. E.
ENVIRONMENTAL CONSULTANT
(NOT A MEMBER OF THE FLORIDA BAR)

March 27, 1992

HAND DELIVERY

Mr. R. Bruce Mitchell
Engineer IV
Department of Environmental Regulation
Room 408
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED
MAR 30 1992
Division of Air
Resources Management

Dear Bruce:

Enclosed please find a copy of our memorandum to Hernando County regarding the Florida Crushed Stone whole tire burn conducted last year. It is my understanding that Dr. J. P. Subramani in our office indicated that a copy of this memorandum would be provided to you. J.P. has been visiting family in India and only returned to the office this week. Upon becoming aware of your desire to review this memorandum, I wanted to take the opportunity to provide it to you as soon as possible.

Please give me a telephone call if you have any questions regarding it.

Sincerely,

C. Anthony Cleveland

CAC:nhg

Enclosure

cc: Dr. J. P. Subramani (w/enclosure)

cac\1579\rb-mitch.ltr

RECEIVED

MAR 30 1992

Division of Air
Resources Management

M E M O R A N D U M

TO: Charles Hetrick

FROM: Oertel, Hoffman, Fernandez & Cole, P.A.

DATE: February 20, 1992

RE: Evaluation of the Whole Tire Test Burn at the Florida Crushed Stone Facility

---

We have reviewed the test report prepared by Koogler & Associates on the baseline and whole tire test burn conducted during November 13-21, 1991, at the Florida Crushed Stone Company cement plant in Brooksville. Additionally, Dr. J. P. Subramani met with Mr. Charles Allen and Dr. John Koogler in Brooksville and reviewed the cement plant operation logs maintained during the November 13-21 testing period, which included the preheater and kiln inlet parameters as well as kiln exit oxygen and carbon monoxide concentrations recorded approximately on an hourly basis.

Discussion:

Florida Crushed Stone operates an integrated cement/lime/power plant. Exhaust gases from these three plants exit through a common stack. The facility is designed and operated in this integral mode except during shutdown of individual plants. During the November 13-21 test period, only the cement plant was in operation. During our initial review of the test report, it became evident that the exhaust gases emitted from the stack constituted a significant amount of excess air and carbon dioxide. The heat loss through the stack was also significantly higher (as much as 35% of heat input) compared to heat loss during periods when all three plants were running. Following Dr. Subramani's trip to the Florida Crushed Stone facility on February 10, 1992, and inspecting the system, we are satisfied that leakage from the power/lime duct configuration along with the damper in the cement plant being kept in open position would account for some amount of excess air when the cement plant alone was operating. Dr. Koogler verified that the carbon dioxide information contained in the test report was from an earlier report (August 20, 1990) and that no carbon dioxide measurements were made during this test period. Dr. Koogler also provided information on two previous stack tests which showed heat loss in the range of 29-42 percent of heat input when the cement plant alone was in operation. The following analysis concerns the nitrogen oxide and carbon monoxide emissions during the November 13-21 period.

Nitrogen Oxides:

Nitrogen oxides in the cement kiln are formed from two sources of nitrogen: nitrogen contained in the coal, forming what is known as "fuel No_x", and nitrogen from the combustion air, forming "thermal NO_x". The formation of fuel NO_x is a function of furnace (kiln) design and operating conditions. The formation of thermal NO_x is dependent on two major facts: oxygen concentration present in the combustion zone and the flame temperature. The rate of NO_x formation is linearly dependent on excess oxygen when the temperature is constant whereas it significantly increases with increasing temperatures above approximately 2000°F and increased residence time. The temperature in the cement kiln ranges above 2000°F to as much as 2500 or 2600°F. With excess air, the quantity of thermal NO_x formed would be significantly greater than fuel NO_x.

Substitution of tire derived fuel for coal would reduce the amount of "fuel NO_x" formed. Depending upon kiln operating conditions at any given time, the increase in the thermal NO_x can be significantly higher. If the plant operating conditions, excess air and the temperature in kiln are maintained in a very narrow range at all times, that substitution of tire derived fuel could result in reduced NO_x emissions. By varying the excess air and temperatures in kiln, the thermal NO_x can be significantly decreased or increased thus offsetting the reduced fuel NO_x.

The amount of heat going up the stack during the November 13-21 test period, which occurred when the cement kiln was operating by itself, represents an unusually high heat loss which is much greater than the heat loss recorded in the past when all three FCS units were operating simultaneously. This heat loss suggests that the available heat to produce clinker was reduced and that, accordingly, the temperature profile in the kiln is lower than during periods in the past when all three units were operating. Under these conditions, it can be anticipated that higher temperatures during standard operating conditions would result in increased NO_x emissions. This potential for higher NO_x emission levels during standard operating conditions is fully consistent with the NO_x formation process previously discussed.

Carbon Monoxide:

During the baseline test, the carbon monoxide continuous monitor was set at a scale of 0-2000ppm. The recorded graphical chart was typically "flat" during the baseline. The data averaged 29.6, 28.6 and 28.2 ppm respectively for the three test runs during the baseline. A review of the plant operating record on November 13, 1991 showed carbon monoxide levels exiting the kiln/rawfeed system ranged from 74.9 to 187.1 ppm range during this period. (The reduced concentration measured at the stack appears to be the result of excess air contributed from the power/lime duct system.)

During the whole tire stack test, the carbon monoxide continuous monitor was set at a scale of 0-100 ppm. There were wide fluctuations in the readings which went off scale a number of times. The plant operational record during the same period showed carbon monoxide levels exiting the kiln/rawfeed system ranged from a low of 86.95 ppm to a high of 714.3 ppm. (Again, the corresponding stack concentrations would be lower because of dilution air.) A further review of the plant operating record during the November 14-21 period showed the following carbon monoxide levels (ppm) exiting the kiln/rawfeed system, which were measured approximately on an hourly basis:

(Nov. 14, 1991 - 8:30 a.m.: Whole tire burning began)

11/14/91 -	8:59 to 15:52 hours	17.61	- 123.3	
	16:44 to 23:01	68.3	- 301.6	
11/15/91 -	00:02 to 11:45	72.7	- 167.3	
	12:51 to 22:56	4.4	- 33.0	
11/16/91 -	00:03 to 11:41	46.23	- 865.3	*
	12:55 to 22:53	18.71	- 186.0	
11/17/91	00:02 to 11:43	60.55	- 495.4	*
	12:56 to 23:49	37.42	- 763.8	*
11/18/91	01:05 to 11:58	71.6	-1673.0	*
	13:02 to 23:46	77.0	- 199.2	
11/19/91	00:59 to 12:05	134.3	- 180.5	
	13:12 to 23:43	88.5	- 265.3	
11/20/91	00:46 to 11:54	118.8	- 320.3	
	13:02 to 23:54	50.64	- 135.4	
11/21/91	00:59 to 11:59	99.09	- 267.4	
	12:58 to 16:45	86.95	- 714.3	*

* high-end fluctuations

There is evidence in the literature indicating that carbon monoxide levels do fluctuate to some extent in cement kilns as was noticed during the baseline testing period. The ppm ranges identified by an asterisk indicate fluctuations which are beyond anticipated normal fluctuations. Moreover, the fact that these abnormal fluctuations occurred over the entire test period indicates that it is a recurring problem.

Following Dr. Subramani's meeting on February 10, 1992, with Dr. Koogler, an explanation and a revised strip chart depicting the general profile of carbon monoxide concentration measured during the first stack test was provided to us. The average concentration as determined from this profile is 60 ppm or higher, which together with results from the remaining two stack tests would yield a carbon monoxide emission rate of 84 lbs per hour or an increase of 25.4 lbs per hour. In our opinion, this would constitute a significant net increase in emissions, which would bring the emissions close to the regulation threshold of 180 pounds per hour. Given the fact that normal operation conditions were not present during the test, we cannot consider the 84 pound per hour level determinative of the reasonable assessment required.

CONCLUSION

Based upon the above analysis, we do not believe that Florida Crushed Stone has demonstrated that its shredded tire test burns adequately represent standard operating conditions at its facility as it does not appear that it has been demonstrated that the cement kiln can comply with the permitted emission rate for nitrogen oxide under such standard operating conditions. Further, carbon monoxide emissions increased during the whole tire test burn period and this increase could constitute a significant increase in emissions and exceed the significant emission rate threshold of 100 tons per year.

RECOMMENDATION

The three possible courses of action for Hernando County at the present time are as follows:

1. Sign off on Florida Crushed Stone's request for the continuous burning of shredded tire derived fuel and allow the proposed permit to become effective. Oertel, Hoffman, Fernandez & Cole cannot recommend this option since it has not been demonstrated that either the test burns represented standard operating conditions with respect to nitrogen oxide or that the use of shredded tire derived fuel would not result in a significant increase in carbon monoxide emissions.

2. File a request for an administrative hearing by February 28, 1992.

3. Allow Florida Crushed Stone to address the concerns herein expressed, either with existing data,new data, or a combination thereof, with the County refraining from filing a petition for hearing at this time. This, however, would only be possible if FCS agreed to an extension of time for the County to be able to request an administrative hearing, after consideration of whatever data FCS chooses to present to address the concerns herein expressed.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Syed Arif, Tallahassee

THRU: C.S. Lee, SW District

FROM: Jason Gorrie, SW District

DATE: February 28, 1992

SUBJ: Type I Audit of baseline emissions testing at Florida Crushed Stone on November 13, 1991

During the week of November 13, 1991, Department engineers audited Koogler & Associates of Gainesville while they performed emissions testing on the cement kiln at Florida Crushed Stone in Brooksville. The first phase of the audit was conducted by Mr. Shannon Baruch of the NE District satellite office in Gainesville. Mr. Baruch assisted the SW District compliance staff because of his proximity to Koogler's lab in Gainesville. He witnessed the preparation of the Method 5 sampling train, including the drying, desiccating, weighing, etc. of the filters.

The actual testing was witnessed by SW District compliance engineers on November 13. Because the SW District lacks the safety equipment required to climb the stack (harness and monorail buckle), we could not directly witness the Method 5 particulate and VOST train sampling. Instead, we accompanied Koogler's test team to the photocopy machine and obtained copies of the raw data sheets so that we could compare them to those submitted with the final report.

All other test procedures were done instrumentally and were witnessed in the testing van. We used procedures similar to those of a CEM audit to determine the validity of the methods.

The weighing of the filters and probe washes were witnessed by Mr. Baruch in Gainesville.

cc: W.C. Thomas

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. Syed Arif
2. DARM
3. Talla
4.

Remarks:

RECEIVED

MAR 04 1992

Division of Air Resources Management

From C S Lee

Date 3-2-92

Phone

INSPECTION REPORT FORM
AIR POLLUTANT EMISSION SOURCES

FACILITY	DISTRICT	COUNTY
Florida Crushed Stone	Southwest	Hernando

ADDRESS	CONTACT
off SR 50, Brooksville	Tom Mountain

APIS #	PERMIT #	EXPIRATION DATE
0021		

SOURCE DESCRIPTION

cement plant

INSPECTION DATE	AUDIT TYPE	COMPLIANCE STATUS
11/13/91	baseline emission test audit for propsed tire burning	not applicable

INSPECTION COMMENTS/RECOMMENDATIONS

Witnessed all three stack test runs fo NOx, CO, VOCs, and PM.

Instrumental analysis techniques OK. Method 5 procedures for PM OK.

Plant data during testing:

	coal	plant CEM's		
time	feed rate (TPH)	opacity (%)	NOx (ppm)	O2 (%)
9:30	10.6	8.9	97	14.45
10:15	8.5	10	146.6	14.45
11:15	8.6	8.8	117.3	14.45
12:30	8.8	8.8	107.5	14.45
1:45	8.73	8.8	126.9	14.3

See attached data sheet for PM run #1.

Requested Koogler & Assoc. to send a copy of the coal analysis when they get it.

INSPECTOR(S) NAME(S)

Jason Gorrie and C.S. Lee

SIGNATURE(S)	DATE
Jason Gorrie [signature]	11/14/91

Plant: Fla Crushed Stone

Sample Loc.: CPL-Stack

Control Type: Baghouse

Sample Type: Part

Date: 11-13-91 Run No.: 1

Time Start: 0942 Time End: 1100

Sample Time: 4 min/port 64 total min.

Dry Bulb: °F Wet Bulb: °F VP @ DP:

Bar. Pressure "Hg Stack Press.: "Hg Ps: "H2O

Moisture: 7 % FDA: Gas Density Factor:

Temperature: 65 °F Wind Dir.: E Wind Speed: 3-8

Weather: Clear Thermocouple Readout: KA-1

Sample Box #: KA-1 Meter Box No.: KA-1

Meter Y: 1.001 @ Delta H: 1.67 Pitot Corr.: 0.84

Nozzle Diameter: 0.2563 in. Probe Length: 10 ft

Probe Heater Setting: 4 Nomograph Cf: 3.1

Stack Dimentions: in

Stack Area: ft²

Effective Stack Area: ft²

Stack Height: ft

Stack Dimentions

Umbilical: 100'

Thermocouple Probe No.: KA-108

Pitot Tube: KA-5I

Material Processing Rate:

Final Gas Meter Reading: 499.642 ft³

Initial Gas Meter Reading: 462.101 ft³

Total Metered Gas Volume: 37.541 ft³

Condensate Gain in Impingers: 28 mL

Weight Gain in Silica Gel: g

Total Moisture Gain: mL

Silica Gel Container No.: 21

Filter Number:

Leak Check – Meter Box

Initial: 0.016 cfm @ 15 in. H2O

Final: 0.007 cfm @ 15 in. H2O

Leak Check – Pitot Tubes

Impact 3 "H2O for 15 sec: Stable, Leak

Static 3 "H2O for 15 sec: Stable, Leak

KOOGLER & ASSOCIATES

Test Conducted By: R Paul S Bell

Stack Test Observers: Juan Ozon DEP

Port and Traverse Point No.	Distance from Inside Stack Wall (in.)	Clock Time	Gas Meter Reading (ft³)	Stack Velocity Head ("H2O)	Meter Orifice Pressure Difference ("H2O) Calculated	Actual	Stack Gas Temperature (°F)	Sample Box Temperature (°F)	Last Impinger Temperature (°F)	Meter Temperature (°F)	Vacuum on Sample Train ("Hg)	Oxygen Meter Reading (% O2)
Average:												
1-1			62.1	0.4	1.24	1.24	213	232	63	61	4	18.0
2			64.6	0.4	1.24	1.24	216	236	48	61	4	18.0
3			67.1	0.36	1.12	1.12	217	242	45	62	4	18.0
4			69.4	0.31	.96	.96	218	249	44	62	3	18.0
2-1			71.6	0.37	1.15	1.15	209	233	48	63	4	18.1
2			74.0	0.37	1.15	1.15	220	245	43	63	4	18.0
3			76.5	0.33	1.02	1.02	218	243	45	63	4	18.0
4			78.8	0.35	1.09	1.09	217	251	44	63	4	18.1

Port and Traverse Point No.	Distance from Inside Stack Wall (in.)	Clock Time	Gas Meter Reading (ft^3)	Stack Velocity Head ("H2O)	Meter Orifice Pressure Difference ("H2O) Calculated	Meter Orifice Pressure Difference ("H2O) Actual	Stack Gas Temperature (°F)	Sample Box Temperature (°F)	Last Impinger Temperature (°F)	Meter Temperature (°F)	Vacuum on Sample Train ("Hg)	Oxygen Meter Reading (% O2)
3-1			81.1	0.35	1.09	1.09	214	255	50	64	4	18.4
2			83.4	0.37	1.15	1.15	218	257	43	64	4	18.4
3			85.8	0.34	1.05	1.05	220	252	44	64	4	18.4
4			88.1	0.30	0.93	0.93	222	249	44	64	4	18.4
4-1			90.2	0.38	1.18	1.18	220	258	50	64	4	18.4
2			92.7	0.35	1.09	1.09	231	262	44	64	4	18.1
3			95.0	0.37	1.15	1.15	235	258	45	64	4	18.2
4			97.5	0.30	.93	.93	236	248	44	64	4	18.1

BEST AVAILABLE COPY

FULL AUDIT OF MAJOR SOURCE STACK TEST

DATE: 11/13/91

COMPANY: FCS UNIT #:
LOCATION: Brooksville
COUNTY: Hernando
TYPE OF SOURCE: Cement Kiln
TYPE OF CONTROL: Baghouse
STACK SAMPLED BY:
NAME OF SAMPLER'S: Koogler & Associates
POLLUTANT TESTED: VOC, NOx, CO, PM
SAMPLE METHOD: instrumental & method 5
SAMPLE METHOD MODIFICATIONS:
LOCATION OF SAMPLING PORTS:
DISTANCE UPSTREAM FROM TOP OF STACK: ✓
DISTANCE DOWNSTREAM FROM DISTURBANCES: ✓
INSIDE DIAMETER OF STACK:
APPROXIMATE STACK TEMPERATURE: 233 °F APPROXIMATE DGM TEMP.
STACK TEMPERATURE INDICATOR:
STACK PRESSURE: BAROMETRIC PRESSURE:
CYCLONIC FLOW: no IF YES, WHAT WAS DONE:
NUMBER OF POINTS REQUIRED:
NUMBER OF POINTS TESTED: 16
NUMBER OF PORTS: 4 POINTS/PORT: 4 TIME/POINT: 5
MINIMUM TOTAL SAMPLE TIME: 1
TOTAL SAMPLE TIME, RUN #1 RUN #2 RUN #3
MINIMUM SAMPLE VOLUME:
ACTUAL SAMPLE VOLUME, RUN #1 RUN #2 RUN #3
PITOT TUBE LEAK CHECK:
SAMPLE TRAIN LEAK CHECK, PRE POST
ORSAT USED: LEAK CHECKED:
FYRITE USED:
$\%O_2$ $\%CO_2$ %CO
GRAB: INTEGRATED:
NOZZLE DIAMETER: 0.255 in CONDITION: ✓
PROPER TRAIN USED: ✓ FILTER LOCATION: ✓
PROBE LENGTH: 10' LINER: SS
PROBE/PITOT/THERMOCOUPLE MOUNTED SATISFACTORY:
FILTER INSTALLED PROPERLY: ✓ FILTER LABELED: ✓
GLASSWARE CLEAN: ✓
IMPINGERS HOOKED UP PROPERLY: ✓ LAST IMPINGER TEMPERATURE: <65
WATER COLLECTED FIRST THREE IMPINGERS, RUN #1 RUN #2 RUN #3
SILICA GEL SATURATED: no SILICA GEL LABELED:
FILTER RECOVERY AT PLANT: no OK:
ENTIRE FRONT HALF WASHED OUT: ✓ LABELED: ✓
ACETONE WASH: ✓ WATER WASH: no LEVEL MARKED: ✓
VISIBLE EMISSIONS TEST PERFORMED, DER: no OTHER: no
MANOMETER LEVEL: ✓ ZEROED:
CALIBRATION DATES
DRY GAS METER: PITOT TUBE: NOZZLE: THERMOCOUPLE:
MAGNEHELIC: HOT BOX THERMOMETER: IMPINGER THERMOMETER:
PLANT DATA:
PERMITTED RATE:
OPERATING RATE:
FUEL TYPE: FUEL RATE:
GROSS GENERATION MW:
OTHER DATA:

FAX TRANSMITTAL MEMO

TO: MASON JOYE	NO. OF PAGES 1
DEPT: KOOGLER	FAX #: (404) 377-7158
FROM: T. MOUNTAIN	PHONE: (404) 795-7881
CO: FCS	FAX #:

Post-it brand fax transmittal memo 7671

ELECTRIC FUELS CORPORATION

CENTRAL LABORATORY
4420 PENDOLA POINT ROAD, TAMPA, FLORIDA 33619, (813) 247-2805

REPORT OF ANALYSIS
Corrected Copy

Florida Crushed Stone
Attn: Butch Wheeler
P.O. Box 1508
Brooksville, Florida 33512

November 05, 1991

Sample Identification: Submitted coal sample #1091
October 1991

Our Laboratory Number: 18082

Basis

	As Received	Dry	DAF
Moisture	5.20%	xxxxx	
Ash	9.89%	10.43%	
Volatile Matter	33.08%	34.89%	38.95%
Fixed Carbon	51.83%	54.68%	
Sulfur	0.71%	0.75%	
Btu/lb	12550	13239	14780

Carbon		75.47%
Hyrogen		4.78%
Nitrogen		1.59%
Oxygen .		6.18

Submitted by,

Thomas M. Gaston

Thomas M. Gaston

FLORIDA CRUSHED STONE

AVG. COAL FEED RATE DURING BASELINE TESTING : 9.0 TPH

HEAT CONTENT = 12,550 BTU/# (per attached fuel analysis)

$$\frac{9.0\ \text{TON}}{\text{HR}} \times \frac{2000\ \#}{\text{TON}} \times \frac{12,550\ \text{BTU}}{\#} = \boxed{2.259 \times 10^{8}\ \frac{\text{BTU}}{\text{HR}}}$$ ← HEAT INPUT FIRING ON COAL ONLY

TDF BTU INPUT ALLOWED = 15% OF TOTAL BTU INPUT OR 1.3 TPH, WHICHEVER IS GREATER

$$2.259 \times 10^{8} \cdot 0.15 = \boxed{0.337 \times 10^{8}\ \frac{\text{BTU}}{\text{HR}}}$$ ← HEAT INPUT FROM TDF

BTU CONTENT OF TIRES = 25,330 kJ/kg (Perry's Handbook, pg 26-53)

$$25,330\ \text{kJ/kg} = 11,460\ \text{BTU/\#}$$

$$\frac{0.339 \times 10^{8}\ \text{BTU}}{\text{HR}} \times \frac{\#}{11,460\ \text{BTU}} = 2958\ \frac{\#\ \text{TIRES}}{\text{HR}} = \boxed{1.4\ \frac{\text{TON}}{\text{HR}}}$$ TOTAL TIRE INPUT

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

PARTICULATE LAB DATA SHEET

TEST DATE 11-21-91

PLANT NAME CPL

SOURCE ____________

	Run 1	Run 2	Run 3	Blank
Container No.	KA 43	II	KA22	KA42
Total Volume (ml)				
Aliquot Evaporated (ml)				
Final Weight (g)				
Tare Weight (g)	- 98.2466	- 99.6838	- 99.8492	- 98.5676
Gross Weight Gained (g)				
Average Blank (g)	-	-	-	-
Net Weight (g)				
Aliquot Factor	x	x		
Total Net Weight (mg)				
Container No.				
Filter No.				
Final Weight (g)				
Tare Weight (g)	-	-		
Gross Weight Gained (g)				
Average Blank (g)	-	-		
Total Net Weight (mg)				

LEE,
THE FILTERS WERE PREWEIGHED AND THE WEIGHTS RECORDED. AT THE FINAL WEIGHING, THE PREWEIGHT WILL BE TAKEN FROM THE RECORD AT KOOGLER'S OFFICE

Tare Balance Check

0.0	✓	10.0	✓
1.0	✓	50.0	✓
5.0	✓	100.0	✓ +0.8 mg.

T/H ✓

By AMJ

Date 11-18-91

Final Balance Check

0.0		10.0	
1.0		50.0	
5.0		100.0	

T/H ____________

By ____________

Date ____________

LAB DATA

LAB TECHNICIAN(S): N. MASON JOYE, JR / KOOGLER & ASSOCIATES
DATE OF ANALYSIS: 11-15-91
DATE OF BALANCE CALIBRATION: 10/91 (WEIGHT BALANCE CHECK)
IS WEIGHING ROOM'S HUMIDITY CONTROLLED (Rh <50%)? YES
STANDARD WEIGHT CALIBRATIONS USED? YES

FILTERS
FILTERS DESSICATED FOR 2 HOURS? YES
FILTERS OVEN DRIED AT 220 F FOR 2 HOURS, COOLED IN DESSICATOR? YES
FILTER WEIGHED TO A CONSTANT WEIGHT? YES
RESULTS REPORTED TO THE NEAREST 0.1 mg? YES

RUN # 1

FILTER #	1	2	3
POSTWEIGHT	0.4326		
PREWEIGHT	0.4290		
DIFFERENCE	0.0036		

RUN # 2

FILTER #	1	2	3
POSTWEIGHT	0.4275		
PREWEIGHT	0.4260		
DIFFERENCE	0.0015		

RUN # 3

FILTER #	1	2	3
POSTWEIGHT	0.4280		
PREWEIGHT	0.4259		
DIFFERENCE	0.0021		

PROBE WASH
WAS LIQUID LOST IN TRANSPORT? NO (LIQUID HEIGHT MARKED AND RE-CHECKE
WAS LIQUID MEASURED TO NEAREST +- 1 ml OR +- 0.5 mg? YES (DILUTED TO 250ML
WAS LIQUID DRIED AT AMBIENT TEMPERATURE AND PRESS? NO EVAPORA
IF NOT WHAT TEMPERATURE? 220°F
WAS RESIDUE DESSICATED FOR 2 HOURS AND WEIGHED TO A CONSTANT WEIGHT? YES
RESULTS REPORTED TO THE NEAREST 0.1 mg? YES

SILICA GEL
WAS SILICA GEL WEIGHED TO THE NEAREST 0.5 g? YES
WAS ACETONE BLANK MEASURED TO THE NEAREST 0.1 mg? YES

RUN # 1

IMPINGER #	1	2	3	4
POSTWEIGHT	100.4060			
PREWEIGHT	100.3962			
DIFFERENCE	0.0098			

RUN # 2

IMPINGER #	1	2	3	4
POSTWEIGHT	100.3172			
PREWEIGHT	100.3132			
DIFFERENCE	0.0040			

RUN # 3

IMPINGER #	1	2	3	4
POSTWEIGHT	102.1514			
PREWEIGHT	102.1473			
DIFFERENCE	0.0041			

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

PARTICULATE LAB DATA SHEET

TEST DATE 11-13-91

PLANT NAME CPL

SOURCE ______

	Run 1	Run 2	Run 3	Blank
Container No.	KA99	KA31	KA3	KA21
Total Volume (ml)	250	250	250	250
Aliquot Evaporated (ml)	250	250	250	250
Final Weight (g)	100.4060	100.3172	102.1514	101.2360
Tare Weight (g)	- 100.3962	- 100.3132	- 102.1473	- 101.2346
Gross Weight Gained (g)				
Average Blank (g)	-	-	-	-
Net Weight (g)				
Aliquot Factor	x	x	x	x
Total Net Weight (mg)				

Container No.	1B	2B	3B	4F
Filter No.	384	382	383	442
Final Weight (g)	0.4326	0.4275	0.4280	0.4179
Tare Weight (g)	- 0.4290	- 0.4260	- 0.4259	- 0.4182
Gross Weight Gained (g)				-0.0003
Average Blank (g)	- —	- —	- —	-
Total Net Weight (mg)				

Tare Balance Check

0.0	✓	10.0	✓
1.0	✓	50.0	✓
5.0	✓	100.0	✓

T/H ✓

By AMJ

Date 11-11-91

Final Balance Check

0.0	✓	10.0	✓
1.0	✓	50.0	✓
5.0	✓	100.0	✓

T/H ✓

By AMJ

Date 11-15-91

Plant:	Fla Crushed Stone
Sample Loc.:	CPL-Stack
Control Type:	Baghouse
Sample Type:	Part
Date:	11-13-91
Run No.:	1
Time Start:	0942
Time End:	1100
Sample Time:	4 min/port 64 total min.
Dry Bulb:	°F
Wet Bulb:	°F
VP @ DP:	
Bar. Pressure	"Hg
Stack Press.:	"Hg
Ps:	"H2O
Moisture:	7 %
FDA:	
Gas Density Factor:	
Temperature:	65 °F
Wind Dir.:	E
Wind Speed:	3-8
Weather:	Clear
Thermocouple Readout:	KA-1
Sample Box #:	KA-1
Meter Box No.:	KA-1
Meter Y:	1.001
@ Delta H:	1.67
Pitot Corr.:	0.84
Nozzle Diameter:	0.2563 in.
Probe Length:	10 ft
Probe Heater Setting	4
Nomograph Cf:	3.1
Stack Dimentions:	in
Stack Area:	ft²
Effective Stack Area:	ft²
Stack Height:	ft

Stack Dimentions

Umbilical: 100'

Thermocouple Probe No.: KA-108

Pitot Tube: KA-5I

Material Processing Rate:	
Final Gas Meter Reading:	499.642 ft³
Initial Gas Meter Reading:	462.101 ft³
Total Metered Gas Volume:	37.541 ft³
Condensate Gain in Impingers:	28 mL
Weight Gain in Silica Gel:	6.6 g
Total Moisture Gain:	34.6 mL
Silica Gel Container No.:	21
Filter Number:	384

Leak Check – Meter Box

Initial: 0.016 cfm @ 15 in. H2O

Final: 0.007 cfm @ 15 in. H2O

Leak Check – Pitot Tubes

Impact 3 "H2O for 15 sec: Stable Leak

Static 3 "H2O for 15 sec: Stable Leak

KOOGLER & ASSOCIATES

Test Conducted By: R Paul S Bell

Stack Test Observers: Jorn Som DEP

Port and Traverse Point No.	Distance from Inside Stack Wall (in.)	Clock Time	Gas Meter Reading (ft³)	Stack Velocity Head ("H2O)	Meter Orifice Pressure Difference ("H2O) Calculated	Meter Orifice Pressure Difference ("H2O) Actual	Stack Gas Temperature (°F)	Sample Box Temperature (°F)	Last Impinger Temperature (°F)	Meter Temperature (°F)	Vacuum on Sample Train ("Hg)	Oxygen Meter Reading (% O2)
Average:												
1-1			62.1	0.4	1.24	1.24	213	232	63	61	4	18.0
2			64.6	0.4	1.24	1.24	216	236	48	61	4	18.0
3			67.1	0.36	1.12	1.12	217	242	45	62	4	18.0
4			69.4	0.31	.96	.96	218	249	44	62	3	18.0
2-1			71.6	0.37	1.15	1.15	209	233	48	63	4	18.1
2			74.0	0.37	1.15	1.15	220	245	43	63	4	18.0
3			76.5	0.33	1.02	1.02	218	243	45	63	4	18.0
4			78.8	0.35	1.09	1.09	217	251	44	63	4	18.1

Plant: Fla Crushed Stone
Sample Loc.: CPL-Stack
Control Type: Baghouse
Sample Type: Part.
Date: 11-13-91 Run No.: 2
Time Start: 1127 Time End: 1235
Sample Time: min/port total min.
Dry Bulb: °F Wet Bulb: °F VP @ DP:
Bar. Pressure 30.12 "Hg Stack Press.: "Hg Ps: "H2O
Moisture: 4.5 % FDA: Gas Density Factor:
Temperature: 66 °F Wind Dir.: E Wind Speed: 3-8
Weather: Clear Thermocouple Readout: KA-1
Sample Box #: KA-1 Meter Box No.: KA-1
Meter Y: 1.001 @ Delta H: 1.67 Pitot Corr.: 0.84
Nozzle Diameter: 0.2563 in. Probe Length: 10 ft
Probe Heater Setting: 4 Nomograph Cf: 3.2
Stack Dimentions: in
Stack Area: ft²
Effective Stack Area: ft²
Stack Height: ft

Stack Dimentions
Umbilical: 100'
Thermocouple
Probe No.: KA108
Pitot Tube: KA-SI

Material Processing Rate:
Final Gas Meter Reading: 536.930 ft³
Initial Gas Meter Reading: 500.000 ft³
Total Metered Gas Volume: 36.930 ft³
Condensate Gain in Impingers: 25 mL
Weight Gain in Silica Gel: 16.8 g
Total Moisture Gain: 41.8 mL
Silica Gel Container No.: 22
Filter Number: 382

Leak Check – Meter Box
Initial: 0.003 cfm @ 15 in. H2O
Final: 0.00 cfm @ 5 in. H2O

Leak Check – Pitot Tubes
Impact 3 "H2O for 15 sec: Stable Leak
Static 3 "H2O for 15 sec: Stable Leak

KOOGLER & ASSOCIATES

Test Conducted By: R Paul - S Bell
Stack Test Observers:

Port and Traverse Point No.	Distance from Inside Stack Wall (in.)	Clock Time	Gas Meter Reading (ft³)	Stack Velocity Head ("H2O)	Meter Orifice Pressure Difference ("H2O) Calculated	Meter Orifice Pressure Difference ("H2O) Actual	Stack Gas Temperature (°F)	Sample Box Temperature (°F)	Last Impinger Temperature (°F)	Meter Temperature (°F)	Vacuum on Sample Train ("Hg)	Oxygen Meter Reading (% O2)
Average:												
1-1			500.0	0.32	1.02	1.02	222	247	61	65	4	18.5
2			2.3	0.34	1.09	1.09	238	249	51	65	5	18.4
3			4.5	0.35	1.12	1.12	238	247	49	65	5	18.4
4			6.9	0.31	.99	.99	236	248	49	66	5	18.4
2-1			9.0	0.38	1.22	1.22	236	262	49	65	5	18.4
2			11.3	0.35	1.12	1.12	235	257	49	65	5	18.4
3			13.7	0.35	1.12	1.12	233	252	49	65	5	18.3
4			16.1	0.28	.90	.90	231	249	49	65	4	18.2

Plant:	Fla Crushed Stone
Sample Loc.:	CPL Stack
Control Type:	Baghouse
Sample Type:	Part
Date:	11-13-91
Run No.:	3
Time Start:	1300
Time End:	
Sample Time:	4 min/port, 64 total min.
Dry Bulb:	°F
Wet Bulb:	°F
VP @ DP:	
Bar. Pressure	30.12 "Hg
Stack Press.:	"Hg
Ps:	-0.62 "H2O
Moisture:	4.5 %
FDA:	
Gas Density Factor:	
Temperature:	66 °F
Wind Dir.:	Vari
Wind Speed:	3-10
Weather:	Clear
Thermocouple Readout:	KA-1
Sample Box #:	KA-1
Meter Box No.:	KA-1
Meter Y:	1.001
@ Delta H:	1.67
Pitot Corr.:	0.84
Nozzle Diameter:	0.2563 in.
Probe Length:	10 ft
Probe Heater Setting	4
Nomograph Cf:	3.2
Stack Dimentions:	in
Stack Area:	ft²
Effective Stack Area:	ft²
Stack Height:	ft

Stack Dimentions

Umbilical: 100'

Thermocouple Probe No.: KA-108

Pitot Tube: KA-5I

Material Processing Rate:	
Final Gas Meter Reading:	575.610 ft³
Initial Gas Meter Reading:	537.200 ft³
Total Metered Gas Volume:	38.410 ft³
Condensate Gain in Impingers:	30 mL
Weight Gain in Silica Gel:	6.4 g
Total Moisture Gain:	36.4 mL
Silica Gel Container No.:	23
Filter Number:	383

Leak Check – Meter Box

Initial: 0.011 cfm @ 15 in. H2O

Final: 0.00 cfm @ 5 in. H2O

Leak Check – Pitot Tubes

Impact 3 "H2O for 15 sec: Stable, Leak

Static 3 "H2O for 15 sec: Stable, Leak

KOOGLER & ASSOCIATES

Test Conducted By: R Paul - S Bell

Stack Test Observers:

Port and Traverse Point No.	Distance from Inside Stack Wall (in.)	Clock Time	Gas Meter Reading (ft³)	Stack Velocity Head ("H2O)	Meter Orifice Pressure Difference ("H2O) Calculated	Meter Orifice Pressure Difference ("H2O) Actual	Stack Gas Temperature (°F)	Sample Box Temperature (°F)	Last Impinger Temperature (°F)	Meter Temperature (°F)	Vacuum on Sample Train ("Hg)	Oxygen Meter Reading (% O2)
Average:												
1-1			37.2	0.32	1.02	1.02	232	247	59	67	2	18.6
2			39.6	0.35	1.12	1.12	232	242	52	67	2	18.1
3			42.0	0.35	1.12	1.12	231	236	52	67	2	18.4
4			44.4	0.30	.96	.96	229	233	53	67	2	18.6
2-1			46.6	0.35	1.12	1.12	227	235	55	68	2	18.5
2			49.1	0.35	1.12	1.12	225	232	55	68	2	18.5
3			51.4	0.35	1.12	1.12	223	230	55	68	2	18.4
4			53.7	0.34	1.08	1.08	223	249	56	68	2	18.5

CHAIN OF CUSTODY RECORD

Project Number 307-90-0

Project Name Fla Crushed Stone

Sample Location Brooksville, Fla

CPL - Stack

Sample Identification	Remarks
1-FCA-P	Probe Wash Run 1
2-FCA-P	" " " 2
3-FCA-P	" " " 3
3	Filter Holder Run 1
5	" " " 2
6	" " " 3
21	Silica Gel Run 1
22	" " " 2
23	" " " 3

Sampled By: (Signature) RCPaul Date: 11-13-91 Time: See data

Relinquished By: (Sign)________ Date:______ Time:______

Received By: (Sign)________ Date:______ Time:______

Relinquished By: (Sign)________ Date:______ Time:______

Received By: (Sign)________ Date:______ Time:______

Relinquished By: (Sign)________ Date:______ Time:______

Received By Lab: (Sign)________ Date:______ Time:______

Sample Shipped VIA: ____ UPS ____ Fed Express ____ Bus

Shipping Bill Number: ____________

KOOGLER & ASSOCIATES

VOST SAMPLES

CHAIN OF CUSTODY RECORD

Project Number 307-90-01

Project Name Fla Crushed Stone

Sample Location CPL-Stack

Brooksville

Sample Identification	Remarks
Run 1	analyze for Benzene
Run 2	
Run 3	

Sampled By: (Signature) Rodney C Paul Date: 11-13-91 Time: See data

Relinquished By: (Sign)____ Date:____ Time:____

Received By: (Sign) ____ Date:____ Time:____

Relinquished By: (Sign)____ Date:____ Time:____

Received By: (Sign) ____ Date:____ Time:____

Relinquished By: (Sign) Rodney C Paul Date: 11-14-91 Time: 1348

Received By Lab: (Sign)____ Date:____ Time:____

Sample Shipped VIA: ____ UPS ✓ Fed Express ____ Bus

Shipping Bill Number: ____

KOOGLER & ASSOCIATES

STATE OF FLORIDA FLORIDA DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES

DOYLE CONNER, COMMISSIONER * 3125 CONNER BLVD. TALLAHASSEE 32301

BUREAU OF WEIGHTS AND MEASURES
STANDARDS LABORATORY
CALIBRATION PROCEDURE

Prior arrangements shall be made on all work submitted, either by letter or telephone.

There is no charge for the calibration service although the sender is responsible for shipping cost both ways.

All items submitted shall be ready for calibration, cleaned and in good general condition.

Items when shipped to Laboratory should contain a pack list, or Purchase Order which contains

1. the serial number of the items or set
2. the return address and shipping instructions
3. name of person who will receive the test report.

All sets must be in an acceptable kit type box or case with an assigned serial number. Loose weights will be calibrated only as replacements for a set and only if the set number is known.

NOTE:

Weights used for testing commercial weighing devices will be accepted at any time regardless of last test date but as a condition of certification must be submitted at least biennially (2 years) for examination or re-test.

General use <u>laboratory grade weights</u> Class Q and P will be accepted yearly.

Weight sets of Class "S" and S-1 may be re-calibrated every three (3) to five (5) years. More frequent re-test is not necessary due to the stability of the materials as required by the class specifications, provided reasonable care is exercised by the user. Special justification will be required for a more frequent than three (3) year cycle.

Edward T. Koeppen
Senior Metrologist
Bureau of Weights and Measures
DIVISION OF STANDARDS
904/488-9295

ETK/ksa

8/27/86

STATE OF FLORIDA

FLORIDA DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES

DOYLE CONNER, COMMISSIONER * 3125 CONNER BLVD. TALLAHASSEE 32399-1650

November 16, 1987

Report of Test

for

Weight Set No: TS-892

Test No: FL-7085
Make: Christian Becker

Submitted by: Koogler and Associates
Attn: Mr. Rodney C. Paul
2603 N.E. 17th Terrace
Gainesville, Florida 32609

The standards comprising the above set have been compared with the standards of the State of Florida and were found to have the following mass values:

ITEM	APPARENT MASS grams	TRUE MASS grams	UNCERTAINTY grams
1 g	1.000143	1.000143	.000008
5	5.000202	5.000202	.000014
10	10.000114	10.000114	.000025
50	50.000444	50.000444	.000062
100	100.000697	100.000697	.000152

Apparent mass is defined as comparison to mass standard of 8.0 g/cm^3 density, in normal air of 1.2 mg/cm^3 density.

True mass is defined as comparison to mass standards in a vacuum.

The uncertainty figure is an expression of the overall uncertainty using three standard deviations as a limit to the effect of random errors of measurement plus systematic errors from known sources.

Assumed Density of this weight set is: 1 g thru 100 g 8.0 g/cm^3.

Charles S. Schwenk, Jr., Director
DIVISION OF STANDARDS

Edward T. Koeppen

Edward T. Koeppen
Senior Metrologist
Bureau of Weights and Measures
904/488-9295

Tested: November 6, 1987

Shipped: Postmasters

ETK/ksa

Note: The Florida Standards are traceable to National Bureau of Standards by Test No: 737/234564.

813 248 1537
NOV-05-1991 11:52 FROM ELECTRIC FUELS - LAB TO 19047966281 P.03

ELECTRIC FUELS CORPORATION

FAX TRANSMITTAL MEMO

TO: MASON JOYE
DEPT: KOPPERS FAX #: (404) 377-7158
FROM: T. MOUNTAIN PHONE: (404) 799-7881
CO: FCS FAX #:
NO. OF PAGES 1
Post-it™ brand fax transmittal memo 7671

CENTRAL LABORATORY
4420 PENDOLA POINT ROAD, TAMPA, FLORIDA 33619, (813) 247-2805

REPORT OF ANALYSIS

Corrected Copy

Florida Crushed Stone
Attn: Butch Wheeler
P.O. Box 1508
Brooksville, Florida 33512

November 05, 1991

Sample Identification: Submitted coal sample #1091
October 1991

Our Laboratory Number: 18082

	Basis		
	As Received	Dry	DAF
Moisture	5.20%	xxxxx	
Ash	9.89%	10.43%	
Volatile Matter	33.08%	34.89%	38.95%
Fixed Carbon	51.83%	54.68%	
Sulfur	0.71%	0.75%	
Btu/lb	12550	13239	14780

	Dry
Carbon	75.47%
Hyrogen	4.78%
Nitrogen	1.59%
oxygen.	6.98

Submitted by,

Thomas M. Gaston

Thomas M. Gaston

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

February 14, 1992

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308

Dear Ms. Harper:

RE: Air Pollutant Emission Measurements
Florida Crushed Stone Company
Hernando County, PSD-FL-091

Enclosed for your review is information supplementing the above referenced report. If you have any comments, please submit to the Bureau of Air Regulation by February 24, 1992. The Bureau's FAX number is (904)922-6979.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia G. Adams

for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/pa

Enclosure

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

February 14, 1992

Mr. Charles B. Hetrick
County Administrator
Hernando County Government Center
Administration Building
20 N. Main Street, Room 461
Brooksville, FL 34601

Dear Mr. Hetrick:

RE: Air Pollutant Emission Measurements
Florida Crushed Stone Company
Hernando County, PSD-FL-091

Enclosed for your review is information supplementing the above referenced report. If you have any comments, please submit to the Bureau of Air Regulation by February 24, 1992. The Bureau's FAX number is (904)922-6979.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia G. Adams

for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/pa

Enclosure

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

February 14, 1992

Mrs. Chris Shaver, Chief
Permit Review and Technical Support Branch
National Park Service-Air Quality Division
12795 West Alameda Parkway, Room 215
Denver, CO 80228

Dear Mrs. Shaver:

RE: Air Pollutant Emission Measurements
Florida Crushed Stone Company
Hernando County, PSD-FL-091

Enclosed for your review is information supplementing the above referenced report. If you have any comments, please submit to the Bureau of Air Regulation by February 24, 1992. The Bureau's FAX number is (904)922-6979.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia G. Adams

for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/pa

Enclosure

Recycled Paper

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Bill Thomas

FROM: for Clair Fancy Patty Adams

DATE: February 14, 1992

SUBJ: Air Pollutant Emission Measurements
Florida Crushed Stone Company
Hernando County, PSD-FL-091

Enclosed for your review is information supplementing the above referenced report. If you have any comments, please submit to the Bureau of Air Regulation by February 24, 1992. The Bureau's FAX number is (904)922-6979.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

LAW OFFICES
OERTEL, HOFFMAN, FERNANDEZ & COLE
A PROFESSIONAL ASSOCIATION
POST OFFICE BOX 6507
TALLAHASSEE, FLORIDA 32314-6507

Mr. Clair Fancy, P.E.
Chief, Bureau of Air Regulation
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

File Copy

cc: J. Harper, EPA
C. Shaver, NPS
B. Thomas, SWD
C. Holtsclaw, HC
B. Mitchell, BAC
2-14-92 [illegible]

MEMORANDUM

RECEIVED
FEB 13 1992
Division of Air Resources Management

TO: Mr. J. P. Subramani
Oertel, Hoffman, Fernandez & Cole

FROM: Dr. John B. Koogler JBK

DATE: February 13, 1992

SUBJECT: Matters Related to Emission Measurements Conducted at the Florida Crushed Stone CPL Plant

1. Heat Loss Through Stack Gas Discharge from the Florida Crushed Stone Cement Kiln and Cooler.

RESPONSE: The Florida Crushed Stone Company operates a modern dry process Portland cement plant with a nominal kiln feed rate of 124 tons per hour and a nominal clinker production rate of 75 tons per hour. To fully use all available thermal resources at the cement plant and the associated power plant and lime calciner, the ducting is such that the emissions from the clinker cooler and cement kiln both discharge through a common baghouse and a common stack.

Concern was expressed that the loss of heat from the cement plant as a result of the heat content of the stack gas was 30-35 percent of the total heat input to the cement kiln during the baseline test (November 13, 1991) and the whole-tire TDF test (November 21, 1991). During our meeting at the FCS CPL plant on February 10, 1992, I provided you with copies of reports of emission measurements conducted when the cement plant only was operating on August 20, 1990 and March 2, 1991. During the meeting, we calculated the heat loss from the cement plant as the result of stack gas discharge for both of these test periods and found the heat losses to be in the range of 29-42 percent of the heat input to the kiln.

The heat losses through stack gas discharge during the two tests conducted in November 1991 were in the same range as the heat losses experienced during the earlier tests. This demonstrates a consistency in the operation of the FCS cement plant.

Regarding the magnitude of the heat loss through stack gas discharge, I would only comment that the FCS cement plant is a modern plant designed to recover as much thermal energy as possible. I would further comment that the heat loss as a result of stack gas discharge has no relevance in the evaluation of air pollutant emission rates during the baseline and tire derived fuel test periods.

2. Carbon Dioxide Balance.

RESPONSE: During the meeting in your office on January 31, 1992, and the meeting at FCS on February 10, 1992, a concern was expressed regarding the failure of carbon dioxide input and discharge from the cement kiln to balance. The carbon dioxide input to the kiln system was estimated based on the feed rate of raw material to the kiln and the estimated carbonate content of these materials and upon the theoretical carbon dioxide generation rate of the fuel (coal or tires plus coal). The carbon dioxide emission rate from the kiln was calculated based on the measured stack gas flow rate and the reported carbon dioxide concentration of the stack gas.

After reviewing our field notes and discussing test procedures with Mr. Mason Joye of our staff (the responsible person during the two November 1991 tests), I discovered that the carbon dioxide concentrations in the stack gas report for the two November 1991 tests was estimated based on measurements made at the FCS cement plant on August 20, 1990, when the cement plant only was operating. This estimated carbon dioxide concentration was used in our calculations for determining the dry and wet molecular weight of the stack gas. These molecular weights, in turn, were used to calculate the stack gas flow rate.

I have made some calculations and determined that a one percent change in the carbon dioxide concentration of the stack gas would result in the stack gas flow rate being changed by less than one percent. If the actual carbon dioxide concentration of the stack gas was greater than the estimated 4.5 percent, the stack gas flow rate would be reduced. On the other hand, if the carbon dioxide concentration was less than the estimated 4.5 percent, the stack gas flow rate would be increased. Preliminary, and as yet unreported, measurements made during a compliance test conducted at the FCS cement plant on February 11, 1992, with the cement plant only operating indicated a measured carbon dioxide concentration of approximately six percent. If this carbon dioxide concentration is more representative of actual stack gas conditions, the stack gas flow rates reported in our November 13-21, 1991, report would be high by approximately one percent and the reported emission rates would also be high by the same approximate one percent.

3. Stack Gas Flow Rate.

RESPONSE: A concern was expressed during the meeting in your office on January 31, 1992, about the difference in the stack gas flow rate measured during the baseline test on November 13, 1991, and the stack gas flow measured during the TDF test on November 21, 1991; both tests conducted when only the cement plant was operating. During the baseline test, a stack gas flow of 465,039 dscfm at 226°F was measured while during the TDF test, a flow of 327,920 dscfm at 274°F was measured. During the meeting, Mr. Charles Allen, the FCS cement plant manager, and Mr. Larry Roberts, the FCS lime plant manager, explained the probable reasons for this difference.

Mr. Allen stated that for useable clinker to be produced in a Portland cement plant, the kiln must operate within a narrow range of operating conditions. These conditions include the fuel firing rate, the combustion air flow feed rate, and the excess air flow rate. Because of these conditions, Mr. Allen stated that the gas flow rate at the exit of the kiln would not have varied significantly between the baseline and TDF test periods.

Mr. Roberts explained that there was considerable maintenance being performed on the lime plant and power plant. The gas flow from both of these plants is ducted through the same baghouse used to control emissions from the cement plant and clinker cooler and all gases are discharged through the same stack. The purpose of this ducting arrangement is to allow FCS to take full advantage of all thermal resources of the plant when the cement, power and lime plants are all operating. Because of this ducting arrangement and the maintenance being performed on the power plant and lime plant, Mr. Roberts explained that a considerable amount of air was drafted through these plants, through the baghouse and discharged through the stack along with the gases from the cement plant.

Mr. Allen explained both during the meeting in your office and the meeting at FCS on February 10, 1992, that air also leaks or is introduced into the cement plant after the gases are discharged from the kiln. Mr. Allen estimated that enough air leaks through the seal between the feed end of the cement kiln and the pre-heater to increase the oxygen content of the gases in the base of the pre-heater by one to two percent. He also explained that there were other possible leaks in the pre-heater as the entire pre-heater operates under negative pressure. Additionally, air is introduced between the pre-heater and cement plant exhaust fan to cool the gases to the 700-720°F range in order to protect the fan.

During the meeting at FCS on February 10, 1992, Mr. Allen produced kiln operating records for the period November 13-21, 1991. The records consisted of computer printouts of kiln operating conditions made at approximately one-hour intervals during this period. The recorded printouts began approximately two hours before the baseline emission test began (November 13, 1991) and ended shortly after the TDF emission test was concluded on November 21, 1991. A hand written summary of pertinent operating data was made from these records by you, Kathy Liles and me. A copy of our hand written summary is attached (Attachment 1).

In Table 1, I summarized selected average kiln operating parameters for the baseline and TDF fuel test periods. This summary demonstrates that the temperatures through the pre-heater were very similar during both periods and demonstrates the kiln feed rates were nearly identical for the two periods. I have also included in this summary the coal feed rates during both periods and the tire derived fuel feed rate during the TDF test period.

In addition to the kiln feed rate and fuel firing rate, the parameters that most clearly indicate the kiln operating conditions during the two periods of time were those measured at the kiln inlet. The kiln inlet is defined as the end of the kiln where feed material enters the kiln. This is also the end of the kiln where the gases exit the kiln to enter the pre-heater. During both test periods, the temperature of the gases exiting the kiln, the kiln draft and oxygen concentration of the discharge gases were in the same ranges. As mentioned previously, the oxygen concentration measured at this point includes approximately one to two percent oxygen that leaks into the kiln system through the seal between the kiln and the pre-heater. The oxygen content of the gas stream as discharged from the kiln therefore would be in the one to two percent range. I think it is quite interesting to note that the carbon monoxide (measured with a combustibles analyzer) was almost nondetectable when whole tires were being fed to the kiln system at the base of the pre-heater; or in the same area where the "kiln inlet" parameters were measured, while 0.13 percent carbon monoxide was present when only coal was fired.

The data summarized in Table 1 and reported in its entirety in Attachment 1 demonstrate that the kiln was operating under similar conditions during both the baseline and TDF test periods. These data confirm that the differences in the measured stack gas flow rates during the two periods resulted from air leaking into the system downstream of the point where the leaking air would have any affect on the combustion of the TDF fed to the kiln.

4. Carbon Monoxide Fluctuations During the TDF Test Period.

RESPONSE: The attached paper (Attachment 2) by E. R. Hansen entitled, *The Carbon Monoxide and Other Gasses for Process Control*, was provided to you during our meeting of February 10, 1992, at the FCS plant. This paper discusses the factors affecting carbon monoxide levels in the gases exhausted from a dry process Portland cement plant and also discusses the relationship between carbon monoxide and nitrogen oxides concentrations in the discharged gases. Hansen states that when a cement kiln is operating under optimum conditions the oxygen concentration in the gas stream discharged from the kiln is in the range of 1.5 - 2.0 percent. By Figure 3 (in Attachment 2), Hansen demonstrates that at this operating condition significant changes in the carbon monoxide in the kiln off-gas can be expected (demonstrated by the steep slope of the carbon monoxide curve). The copy of the strip chart presented by Hansen as Figure 5 (Attachment 2) demonstrates a significant fluctuation in the carbon monoxide concentration in the gas stream discharged from the kiln. This is discussed on page 10 of Attachment 2 and is referred to as operation on a "ragged edge" due to the ragged appearance of the carbon monoxide trace on the strip chart.

The fluctuations in the carbon monoxide levels measured during the TDF test period at FCS were undoubtedly due to operating the kiln at optimum conditions. The more steady carbon monoxide trace obtained during the baseline test indicates that the kiln was operating with higher than optimal excess oxygen at the kiln exhaust.

If TDF fuel did cause an increase in the emission rate of any pollutant, it would certainly have been more evident when comparing the results of the baseline and TDF tests as the baseline test was conducted with more than optimal excess oxygen while the TDF test was conducted with the kiln operating on the "ragged edge."

Hansen's paper, and in particular Figure 3, also describes the relationship between carbon monoxide and nitrogen oxides concentrations in the gas stream discharged from the dry process cement kiln. This figure shows that as carbon monoxide levels decrease (and excess oxygen increases) the nitrogen oxides increase. This is consistent with the results obtained during the baseline and TDF test periods at FCS. In the baseline tests, the nitrogen oxides emission rate was 353 pounds per hour and the carbon monoxide emission rate was 58.6 tons per hour. During the TDF tests, the nitrogen oxides emission rate decreased to 199 pounds per hour and the carbon monoxide emission rate increased to 79.9 pounds per hour. This is the relationship that would be expected based upon the information provided in Attachment 2. It also confirms (along with VOC measurements) that the increase in carbon monoxide during the TDF period was not due to a reduced combustion efficiency.

5. Measurement Range of Carbon Monoxide Monitored During the TDF Test.

RESPONSE: During the TDF test period, the carbon monoxide concentration in the stack gas was measured with a continuous emission monitor in accordance with EPA Method 10. The note on the strip chart included in our test report states that at the beginning of the test period the instrument was set on the 0-100 part per million carbon monoxide range. In the field notes, a comment is made at 1230 hours that "CO off scale-CEM error signal, range changed to 0-500 ppm, 33.7 cal gas reads 35 ppm." I discussed this note with Mr. Mason Joye who recorded the note. Mr. Joye assured me that the instrument was switched back to the 0-100 ppm range shortly after the note was made. The trace on the strip chart (Attachment 3) shows the instrument continued off scale (the 0-100 ppm scale) during the approximate period 1230-1240 hours. At approximately 1240 hours, the carbon monoxide concentration dropped down to the 35 part per million range which is in a range consistent with the trend that was being followed prior to 1230 hours (see heavy line sketched on Attachment 3).

With Mr. Mason Joye, I reviewed the entire carbon monoxide monitor strip chart for the TDF test period and confirmed that the carbon monoxide concentrations and mass emission rates reported in our report are correct.

6. **NOx Data for November 13, 1991, Test; Field Notes.**

RESPONSE: On the field notes for the continuous NOx monitor during the baseline test of November 13, 1991, I personally wrote a note (after the fact) "use data from strip chart. Data logger times are off." This note should have read "... data logger scaling factor is off."

As I explained to you during the meeting in your office on January 31, 1992, we employed both a data logger and a strip chart to record the continuous nitrogen oxides, carbon monoxide, VOC and stack gas concentration data during the baseline test period. Before the test began, it was necessary to estimate a scaling factor for each of the three pollutants and program, into the data logger, a scaling factor that would be consistent between the data logger and strip chart. The scaling factor estimated for nitrogen oxides was out of an appropriate rate. Hence, the data collected by the data logger was determined to be less accurate than the data recorded on the strip chart. This determination was made after reviewing the results of the instrument calibrations made with certified calibration gases.

As a result of the error in estimating a scaling factor that was appropriate for the data logger, the nitrogen oxides data reported on the strip chart (include in our test report) was used for calculating the average nitrogen oxides concentration in the stack gas stream during each of the three test runs.

7. **The Presence of "Exotic" Volatile Organic Compounds in Samples Collected During the Baseline and TDF Test Periods.**

RESPONSE: During the baseline and TDF test periods in November 1991, samples were collected using the VOST method and analyzed using Method SW8240 for volatile organic compounds. Similar analyses were conducted on samples collected in the Fall of 1990 when emission measurements were conducted under baseline, tire derived firing conditions, and with an inorganic wastewater sediment used as a kiln feed supplement. When the samples from the three tests of 1990 were analyzed, the laboratory (Research Triangle Laboratories, Durham, North Carolina) was directed to analyze the samples for the SW8240 target compounds. These are the 34 compounds listed in all of the reference test reports.

During the baseline and TDF tests conducted in November 1991, samples were again collected using the VOST method and analyzed in accordance with SW8240 by Research Triangle Laboratories. When analyzing these samples, we directed the laboratory to identify not only the 34 target compounds, but any other volatile organic compounds that might be present in the samples. This direction was given to the laboratory as we were concerned that questions may be raised regarding combustion efficiency because of the higher carbon monoxide emissions during the TDF test period. We were of the opinion that any information we could derive from the VOST samples might be helpful in addressing matters related to combustion efficiency. As a result of the direction given to Research Triangle Laboratories, their reports for the November 1991 baseline and TDF samples included analyses both for the 34 target compounds and "tentatively identified compounds." The "tentatively identified compounds" are those that we jointly referred to as "exotic" compounds.

The fact that these so called "exotic" volatile organic compounds appeared in both the baseline and TDF samples and the fact that they are present in small amounts in both sets of samples indicates no significant change in combustion conditions. I would also comment that in my rather cursory review of the "exotic" compounds I noted no compound that was listed on the FDER air toxics working list.

The fact that there was no significant difference in the presence of specific volatile organic compounds in the baseline and TDF samples and the fact that measurements of total volatile organic compounds by EPA Method 25A showed lower emissions during the TDF period than during the baseline period demonstrates that the firing of whole-tire TDF has no effect on VOC emissions from the FCS cement plant and no effect on combustion efficiency.

8. Nitrogen Oxides Emissions During Shredded TDF Firing.

RESPONSE: During the period October 14-16, 1991, Koogler & Associates conducted two 24-hour measurements of nitrogen oxides in the stack gases discharged during the combined operations of the FCS cement plant, power plant and lime plant. During one of the 24-hour periods, the cement plant was fired entirely with coal and during the second 24-hour period, the cement plant was fired with a mixture of coal and shredded TDF. The results of the tests were described in our report dated October 14-16, 1991.

As a result of comments regarding the production rate of the lime plant during the TDF portion of the tests, I prepared a letter dated December 4, 1991, addressed to Mr. Tom Mountain in which I reviewed the effects of lime plant operations on nitrogen oxides emissions. In the analysis of the data, I demonstrated that during the latter 10 hours of the baseline period and the initial 11 hours of the TDF test period, the lime plant operated under steady state conditions (measured by limestone fed and coal firing rate). I also demonstrated that during these periods of time there was no change in the nitrogen oxides emissions from the combined cement/power/lime plant.

This information along with the other data submitted in our October 14-16, 1991, report demonstrates that the firing of shredded TDF has no effect on nitrogen oxides emissions. I would appreciate your comment on this matter as this is the only unresolved question related to the effect of shredded TDF on air pollutant emission rates.

TABLE 1

SUMMARIES OF KILN OPERATING CONDITIONS

FLORIDA CRUSHED STONE COMPANY
CEMENT PLANT

Average Parameter	11/13/91 Baseline	11/21/91 TDF
Pre-heater		
Off-Gas Temperature (°F)(1)	798	804
Interior Gas Temperature (°F)	1516	1514
Kiln Feed Temperature (°F)	1274	1258
Kiln Inlet(2)		
Gas Temperature (°F)	1592	1609
Draft (in. H_2O)	1.02	0.90
Oxygen (%)(3)	3.00	3.30
CO (%)	0.13	<0.01
Kiln Feed Rate (tph)	129.7	129.5
Coal Feed Rate (tph)	9.00	8.24
TDF Feed Rate (tph)	0	1.22

(1) Measured at pre-heater gas exit.
(2) Measured in base of pre-heater where gases exit the kiln.
(3) Includes estimated 1-2% oxygen from leakage through kiln/pre-heater seal.

Date Time	Fan Temp (°F) / Damper (%)	Fan Amps	Baghouse ΔP ("H_2O)	Baghouse In Temp (°F)	Preheater Off Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Feed Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H_2O)	Kiln Inlet O_2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Damper O_2 (%)	Gas Down Stm Damper CO (ppm)	Prehut Feed (tph)	Coal Feed (tph)	Tire Feed (tph)
11/13/91 - Wed - Baseline Test 0942 - 1412																
7:00	721/32	120.8	3.2	227.3	801	1517	1276	1598	0.89	2.92	0.14	5.81	188.3	128.1	10.2	0
7:58	719/32	119.8	3.5	220.2	797	1516	1276	1591	1.18	3.23	0.15	5.84	202.6	130.3	10.7	0
9:09	721/35	119.8	3.3	229.7	808	1520	1288	1598	0.96	2.81	0.15	5.67	193.7	130.6	10.6	0
9:59	712/35	119.0	4.0	214.8	798	1520	1278	1595	1.10	2.52	0.14	5.41	187.1	129.4	9.7	0
10:58	709/35	118.7	3.2	248.3	799	1516	1274	1590	1.09	3.40	0.14	8.12	125.5	130.6	8.6	0
11:59	716/35	118.1	2.8	233.3	808	1521	1288	1601	1.12	2.42	0.13	7.18	99.1	129.3	9.3	0
12:59	710/35	117.1	3.3	236.4	801	1515	1271	1594	0.89	2.80	0.12	7.74	82.6	130.8	9.2	0
14:03	701/35	119.3	3.0	216.5	786	1506	1257	1582	0.88	3.87	0.13	8.72	74.9	128.6	8.2	0
15:00	720/32	115.2	3.8	213.5	800	1509	1272	1582	0.83	3.41	0.12	7.62	106.8	130.5	8.7	0
15:58	716/32	116.3	3.0	235.1	793	1512	1268	1587	1.15	3.99	0.12	8.62	108.9	130.7	8.5	0
16:59	718/32	114.3	2.9	214.0	795	1515	1273	1599	0.92	2.28	0.13	6.65	99.1	129.5	9.6	0

Baseline Test Period (0942-1412

Kiln Operating Records
Florida Crushed Stone Co.
Cement Plant

11/13 - 21/1991

Attachment 1

Date Time	Fan Temp (°F) /Damper(%)	Fan Amps	Baghouse ΔP ("H2O)	Baghouse In Temp (°F)	Preheater Off-Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H2O)	Kiln Inlet O2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Dryer O2 (%)	Gas Down Stm Dryer CO (ppm)	Preheat Feed (tph)	Coal Feed (tph)	Tire Feed (Cum!!)
11/14/91 - Thursday - TDF Firing																
07:02	730/32	122.9	3.8	250.5	804	1506	1262	1624	0.82	1.74	0.22	6.43	4243	130.2	9.5	0.00
08:04	709/34	114.3	3.1	221.7	797	1514	1275	1610	0.90	1.71	0.17	6.38	100.1	122.9	9.5	0.00
08:30	Start tires															
08:59	726/34	117.1	3.1	291.5	810	1522	1280	1654	1.01	1.54	0.18	6.05	123.3	129.9	9.2	931
10:00	716/34	115.8	3.2	320.1	799	1515	1260	1601	1.02	3.21	0.17	8.21	94.7	130.2	7.4	3020
11:00	720/34	114.8	3.0	330.4	802	1517	1276	1611	0.98	3.18	0.17	8.24	78.2	130.6	7.4	5425
12:00	720/34	115.0	3.3	257.1	801	1517	1280	1625	0.88	2.33	0.15	6.97	50.6	130.2	8.4	6978
13:00	721/34	114.5	3.1	250.4	804	1517	1275	1612	0.91	2.55	0.13	7.09	17.61	128.7	7.9	9034
14:57	717/34	115.1	2.8	256.8	801	1512	1271	1597	0.78	3.28	0.13	7.63	96.9	129.3	7.5	12869
15:52	719/34	115.6	3.0	283.5	800	1513	1284	1618	0.74	3.91	0.13	8.50	68.3	131.1	7.8	14633
16:44	721/34	114.4	2.7	232.0	803	1512	1279	1606	0.66	3.68	0.13	8.10	68.3	130.8	7.8	16321
17:56	719/34	116.8	3.0	230.4	800	1513	1269	1600	0.83	2.80	0.13	7.43	85.9	130.0	7.8	18253
18:52	719/34	116.9	2.8	230.1	802	1514	1266	1610	0.95	3.29	0.15	7.98	79.3	128.8	7.8	20652
19:57	711/34	116.6	2.8	221.4	797	1512	1273	1602	0.95	3.76	0.15	8.50	90.3	130.2	7.8	22815
20:53	712/34	116.0	2.6	219.9	798	1511	1279	1600	1.03	3.89	0.16	8.55	96.9	129.6	7.8	24502
22:32	708/34	116.6	2.7	216.1	792	1514	1268	1611	1.05	3.45	0.12	8.20	107.9	126.7	8.1	27585
23:01	701/34	118.6	3.4	229.9	791	1487	1236	1573	0.58	2.29	0.12	7.40	301.6	132.2	8.6	29028

Best Available Copy

11/15/91 — Friday

Time	Fan Temp (°F) / Damper (%)	Fan Amps	Baghouse ΔP ("H2O)	Baghouse In Temp (°F)	Preheater Off-Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Feed Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H2O)	Kiln Inlet O2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Damper O2 (%)	Gas Down Stm Damper CO (ppm)	Preheat Feed (tph)	Coal Feed (tph)	Tire Feed (tph)
00:02	712/34	113.9	3.5	213.9	795	1518	1275	1630	0.94	2.78	0.17	7.31	167.3	130.3	8.8	29253
01:03	715/34	115.6	3.5	215.2	802	1518	1263	1629	0.87	2.58	0.17	7.30	146.4	131.4	8.6	32922
02:01	716/34	116.0	3.4	213.7	804	1518	1273	1639	1.07	3.39	0.18	8.28	115.6	131.0	8.3	32922
02:59	716/34	115.2	3.3	212.7	801	1517	1279	1629	1.04	3.25	0.18	8.21	115.6	129.5	8.4	36758
03:56	716/34	115.0	3.5	214.3	802	1517	1273	1636	0.90	3.00	0.18	8.20	110.8	129.8	8.0	38585
05:00	711/34	115.2	3.4	221.2	795	1515	1272	1628	0.94	3.58	0.17	8.49	108.9	131.2	8.0	40691
05:55	711/34	117.4	3.8	214.4	796	1517	1268	1635	0.93	3.15	0.19	8.17	114.5	131.0	8.0	40897
06:59	692/34	118.4	3.1	213.7	778	1507	1255	1604	0.89	4.42	0.20	9.64	123.3	131.5	7.8	44222
07:49	717/34	117.0	3.0	198.6	806	1515	1271	1624	0.24	3.88	0.02	7.32	99.1	128.3	8.0	45890
08:48	717/34	115.7	3.1	213.1	806	1519	1262	1639	0.37	3.64	0.01	6.90	85.9	128.3	8.0	45965
09:46	720/34	115.8	2.7	221.2	805	1515	1271	1636	0.36	4.06	0.01	7.08	72.7	130.4	7.7	48040
10:47	717/34	113.3	3.0	225.1	800	1515	1266	1629	0.25	4.76	0.00	7.43	74.9	130.2	7.8	49923
11:45	715/34	114.4	3.2	221.9	796	1515	1265	1629	0.67	4.90	0.00	7.01	55.0	131.3	7.9	53756
12:51	716/34	114.6	2.8	228.9	800	1516	1258	1639	0.52	4.41	0.00	7.05	33.0	130.5	7.8	55941
14:15	721/34	114.7	2.8	241.1	804	1513	1259	1629	0.36	4.27	0.01	7.52	20.9	129.3	7.8	58701
14:59	721/34	113.2	3.0	240.8	804	1514	1256	1625	1.00	4.47	0.00	7.35	4.4	130.8	7.7	60192
15:46	718/34	114.2	2.8	237.2	799	1513	1255	1628	0.77	4.22	0.01	7.26	7.7	131.3	7.7	61684
16:53	714/34	113.5	3.0	232.9	794	1512	1261	1620	0.51	4.30	0.01	7.53	13.2	130.3	8.0	63882
17:51	714/34	115.8	2.6	240.0	795	1518	1257	1626	0.66	3.87	0.01	6.91	23.1	129.5	8.0	65804
18:56	713/34	114.9	3.3	232.8	793	1516	1254	1623	0.43	4.69	0.02	7.54	16.5	130.9	8.0	67908
20:00	715/34	113.9	2.7	236.0	792	1516	1265	1634	0.60	5.56	0.03	8.44	20.9	129.9	8.6	69958
21:04	742/40	112.0	2.9	244.5	855	1521	1307	1737	0.58	3.29	0.05	6.73	4.4	109.5	9.2	71430
21:55	728/35	114.2	2.6	233.0	816	1517	1275	1666	0.36	4.54	0.03	7.99	28.6	121.5	8.1	73136
22:56	721/33	113.3	3.0	248.4	802	1514	1268	1628	0.43	4.58	0.03	7.55	23.1	127.7	7.8	75196

Date Time	Damp	Fan Temp (°F)	Fan Amps	Baghouse ΔP ("H_2O)	Baghouse In Temp (°F)	Preheater OffGas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H_2O)	Kiln Inlet O_2 (%)	Kiln Inlet Comb (%)	Gas Down Stn Damper O_2 (%)	Gas Down Stn Damper CO (ppm)	Prehut Feed (tph)	Coal Feed (tph)	Tire Feed (tph)
11/16/91																	
0003	33	721	113.9	3.2	226.2	801	1517	1278	1636	1.04	5.51	0.04	8.04	20.91	128.5	8.10	77580
0105	33	728	113.6	2.9	225.5	816	1518	1269	1622	1.04	3.74	0.04	6.83	59.45	130.3	8.12	79444
0204	33	725	114.0	3.8	219.4	809	1522	1267	1626	1.04	4.08	0.04	6.31	355.6	128.4	8.95	81452
0304	33	725	115.3	3.4	233.3	807	1524	1269	1645	1.01	4.38	0.04	6.82	46.23	130.4	8.70	83348
0403	33	722	114.6	3.4	212.8	803	1521	1268	1644	0.89	3.68	0.06	6.35	56.15	129.2	9.03	85272
0456	33	720	114.4	3.7	228.5	802	1521	1258	1640	0.92	4.43	0.06	7.33	59.45	131.0	8.50	87146
0556	33	722	113.5	3.3	224.5	805	1521	1261	1629	0.84	3.30	0.06	6.20	59.45	131.2	8.40	—
0710	33	722	113.9	3.1	231.3	805	1521	1269	1633	0.83	3.03	0.09	6.17	88.08	130.2	8.49	91520
0753	33	723	113.2	3.4	233.0	806	1524	1269	1649	0.87	2.60	0.08	6.15	94.68	129.6	8.52	91636
0852	33	721	114.9	3.2	213.4	802	1521	1270	1637	1.06	2.44	0.11	5.70	865.3	130.3	8.53	94882
0950	33	723	114.2	3.8	217.1	805	1523	1268	1665	0.92	2.37	0.10	5.93	79.27	132.2	8.52	94976
1043	33	722	114.4	3.0	226.0	801	1518	1258	1645	0.94	3.30	0.05	6.93	56.15	127.9	7.91	98526
1141	33	703	116.6	3.0	229.1	774	1515	1250	1610	1.11	3.53	0.04	7.28	55.03	129.0	7.85	100434
1255	28	741	114.0	3.2	236.1	802	1520	1261	1638	0.99	3.28	0.05	5.90	49.53	124.8	8.49	102894
1345	28	737	115.4	3.4	232.8	822	1516	1259	1616	1.01	3.77	0.04	6.37	28.62	124.5	8.46	104538
1443	30	744	114.7	3.0	244.7	811	1520	1266	1638	0.85	3.37	0.05	6.55	19.81	124.9	8.67	106498
1603	30	733	115.6	3.8	257.3	796	1522	1256	1633	0.80	2.56	0.06	5.82	39.63	129.7	8.6	—
1643	30	732	115.0	3.7	256.4	795	1522	1255	1628	0.81	2.74	0.04	6.09	18.71	131.0	8.63	110518
1741	30	726	116.3	3.6	245.3	791	1519	1254	1621	0.96	3.28	0.05	6.34	27.52	127.5	8.59	112376
1911	30	733	115.1	3.1	230.1	801	1520	1259	1619	0.99	2.92	0.06	6.08	37.43	124.0	8.65	115326
1951	30	727	115.9	3.8	231.7	790	1520	1255	1629	1.02	3.08	0.07	6.24	23.12	127.0	8.40	116678
2049	30	720	115.5	3.3	235.7	782	1520	1243	1618	0.90	3.32	0.07	6.87	33.02	128.3	8.43	118610
2253	30	721	115.6	3.5	224.8	786	1519	1252	1617	0.85	2.85	0.07	5.94	186.0	126.1	8.49	122650
11/17/91																	
0002	30	727	114.2	3.3	226.3	794	1521	1253	1618	0.81	2.89	0.07	5.95	184.9	129.7	8.50	124996
0057	30	725	116.1	3.0	235.7	790	1524	1262	1651	0.79	2.39	0.08	5.65	147.5	128.8	8.47	126836
0157	30	723	116.4	3.0	241.1	789	1524	1250	1647	0.80	2.16	0.09	5.58	181.6	127.2	8.50	128690
0253	30	722	114.6	2.8	244.9	788	1523	1245	1644	0.76	2.32	0.09	5.64	60.55	127.4	8.52	130664
0348	30	720	113.3	2.9	251.4	786	1523	1242	1651	0.77	2.24	0.08	5.64	155.2	125.2	8.51	132484
0448	30	722	115.1	2.8	236.4	791	1524	1258	1645	0.83	2.56	0.08	5.60	427.2	125.7	8.56	134424
0549	30	729	117.6	3.0	238.4	796	1526	1264	1654	0.84	2.51	0.10	5.72	112.3	128.1	8.57	136452

Date Time	Fan Temp (°F)	Damper (%)	Fan Amps	Baghouse ΔP ("H2O)	Baghouse In Temp (°F)	Preheater Off Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H2O)	Kiln Inlet O_2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Damper O_2 (%)	Gas Down Stm Damper CO (ppm)	Precalc Feed (tph)	Coal Feed (tph)	Tire Feed (tph) (pounc
11-17-91																	
7:54:50	735	30	119.9	3.0	254.5	806	1527	1272	1723	0.71	2.02	0.13	5.14	103.4	128.3	8.60	138380
8:53:57	735	30	117.8	3.1	228.8	801	1527	1261	1711	0.75	1.99	0.14	5.21	495.4	129.9	8.6	NONE RECORDE
9:51:19	733	30	118.2	3.0	219.9	799	1527	1243	1755	0.72	1.73	0.12	5.12	162.9	131.1	8.57	144456
10:43:35	725	30	118.5	3.1	204.3	790	1527	1254	1753	0.86	2.05	0.10	5.40	393.0	130.7	8.26	146184
11:43:38	725	30	117.6	3.0	210.1	789	1523	1231	1684	0.86	2.58	0.10	6.09	60.55	130.6	8.22	148164
12:56:02	728	30	117.7	2.9	211.3	793	1523	1243	1662	0.79	2.79	0.08	6.01	80.35	129.7	8.22	148164
13:41:43	723	30	117.2	3.1	208.5	786	1524	1235	1665	0.82	2.83	0.09	6.25	37.42	129.1	8.15	152140
14:47:53	730	30	117.0	3.3	205.8	796	1527	1252	1672	0.82	2.36	0.09	5.55	72.65	130.6	8.09	154356
15:42:24	734	30	117.0	3.1	208.6	799	1526	1257	1721	0.95	2.27	0.11	5.35	478.80	132.3	8.07	156056
16:52:49	728	32	116.6	3.0	210.1	795	1529	1266	1757	0.79	1.92	0.15	5.20	447.9	129.0	8.04	158360
17:59:24	728	32	117.6	3.0	225.9	798	1532	1284	1793	0.80	1.68	0.17	5.25	763.8	129.6	8.03	160624
18:52:13	725	32	118.8	2.7	225.4	795	1531	1265	1811	0.92	1.53	0.12	5.74	84.75	131.4	8.06	162352
19:59:17	724	32	118.4	3.2	223.4	796	1532	1273	1791	0.88	1.69	0.15	5.62	191.5	129.7	8.08	164580
20:53:14	721	32	119.9	2.8	220.5	793	1530	1244	1706	1.02	1.96	0.15	5.88	89.18	129.3	8.12	166628
21:48:26	716	32	118.2	3.0	222.3	788	1529	1233	1678	0.86	2.23	0.14	6.18	88.08	128.9	8.12	168108
22:48:14	723	32	115.9	3.0	220.4	798	1529	1241	1689	0.78	2.35	0.14	5.87	331.4	129.4	8.15	170076
23:49:24	718	32	117.3	3.1	220.7	792	1528	1230	1659	0.86	2.60	0.15	6.44	104.5	131.3	8.15	172076
11-18-91																	
1:05:47	717	32	117.8	3.2	218.1	789	1528	1254	1663	0.96	2.75	0.15	6.83	325.9	131.8	8.18	174576
1:49:41	718	32	118.0	3.4	221.4	792	1528	1244	1661	0.93	2.34	0.15	6.45	204.7	130.4	8.20	176216
2:52:10	717	32	117.9	3.0	219.1	793	1527	1244	1648	1.66	2.64	0.14	6.46	154.1	127.7	8.21	178204
3:50:59	708	32	118.9	3.5	223.0	777	1526	1229	1638	0.88	2.94	0.14	6.81	103.4	128.9	8.23	180248
4:53:49	711	34	117.0	3.4	228.6	789	1527	1245	1642	1.00	2.59	0.14	7.18	112.3	130.2	8.23	182188
5:50:27	710	34	119.1	3.6	207.5	789	1526	1247	1658	1.23	2.36	0.17	6.60	269.7	131.1	8.26	184192
6:55:26	712	34	119.3	3.5	204.9	793	1529	1258	1757	0.99	1.83	0.21	6.39	1673.	131.2	8.02	186304

Date / Time	Fan Temp (°F)	Fan Amps	Baghouse ΔP ("H₂O)	Baghouse In Temp (°F)	Preheater Off-Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H₂O)	Kiln Inlet O₂ (%)	Kiln Inlet Comb (%)	Gas Down Stm Damper O₂ (%)	Gas Down Stm Damper CO (ppm)	Preheat Feed (tph)	Coal Feed (tph)	Tire Feed (tps)
11/18/91 – Monday																
07:59	714/34	119.7	2.4	265.2	797	1529	1277	1751	1.12	2.03	0.15	7.30	111.2	129.7	7.6	188376
09:02	712/34	119.6	2.9	214.6	793	1527	1257	1689	1.04	2.71	0.14	7.56	105.7	130.1	7.6	190412
10:05	717/34	121.5	3.0	246.2	798	1528	1247	1664	0.83	2.42	0.13	7.78	98.0	129.9	7.9	192444
11:05	713/34	121.1	3.5	237.7	791	1520	1242	1625	1.08	3.21	0.12	8.13	85.9	129.8	7.6	194264
11:58	711/34	119.8	2.8	208.0	789	1524	1252	1637	1.02	2.52	0.13	10.25	71.6	129.5	8.1	196056
13:02	709/34	118.8	3.2	220.8	784	1522	1250	1631	0.95	1.91	0.13	6.97	94.7	128.8	7.8	198168
13:59	708/34	120.0	3.0	214.7	784	1517	1227	1609	0.92	1.91	0.13	7.44	90.3	128.8	7.6	200128
14:59	710/34	120.9	3.1	213.9	784	1520	1237	1614	0.95	2.00	0.13	7.28	73.7	130.8	8.0	202068
16:02	709/32	119.2	3.2	209.6	779	1516	1235	1602	0.93	2.54	0.13	7.81	77.0	130.1	7.7	204212
16:57	712/32	119.8	3.0	215.9	783	1515	1235	1610	0.87	1.99	0.12	7.17	83.6	128.9	8.0	205940
18:00	709/32	120.4	3.0	199.2	778	1514	1235	1603	1.03	2.61	0.12	7.65	89.2	129.8	7.7	208040
19:00	711/32	121.9	3.3	198.6	783	1520	1244	1609	0.91	2.49	0.11	7.48	102.3	129.7	8.0	210072
19:46	715/32	119.9	3.4	200.6	788	1517	1243	1603	1.08	2.30	0.11	7.20	100.1	131.5	8.0	211580
20:46	712/32	121.1	3.0	197.6	783	1517	1239	1601	1.00	2.47	0.10	7.69	113.4	128.5	8.0	213076
22:00	728/32	119.7	3.3	193.5	806	1521	1256	1610	0.99	2.12	0.09	6.62	199.2	124.5	8.7	216084
22:53	726/32	120.3	3.6	191.9	801	1523	1250	1630	0.83	1.15	0.08	6.28	167.3	123.9	8.4	217776
23:46	715/32	118.7	3.0	204.5	787	1521	1250	1617	0.98	1.90	0.09	6.70	148.6	126.8	8.2	219608
11/19/91 – Tuesday																
00:59	712/32	121.1	3.0	210.5	783	1520	1242	1618	1.05	1.67	0.09	6.23	144.2	128.2	8.2	222012
01:51	715/32	120.6	3.6	209.6	789	1519	1246	1609	0.97	1.91	0.09	7.00	134.3	127.1	8.2	223652
02:51	713/32	121.5	3.5	222.0	788	1514	1248	1612	0.86	1.95	0.09	6.79	156.3	130.9	8.2	225592
03:46	711/32	122.5	3.3	211.1	784	1512	1246	1600	0.86	1.93	0.08	6.63	168.4	130.5	8.2	227532
04:51	712/32	119.6	3.7	212.7	786	1517	1237	1612	0.84	1.98	0.09	6.73	149.7	130.8	8.2	229648
05:51	716/32	122.0	3.3	205.8	789	1519	1240	1618	0.97	1.63	0.08	6.53	139.8	130.4	8.2	231616
07:03	712/32	121.6	3.6	205.2	785	1516	1240	1618	1.09	1.44	0.08	6.50	167.3	129.8	8.2	233972

Date Time	Fan Temp (°F)	Fan DAMPER %	Fan Amps	Baghouse ΔP ("H2O)	Baghouse In Temp (°F)	Preheater OffGas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H2O)	Kiln Inlet O2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Dryer O2 (%)	Gas Down Stm Dryer CO (ppm)	Preheat Feed (tph)	Coal Feed (tph)	Tire Feed (tph) (pounds)
11-19-91																	
8:01:57	714	32	122.3	3.5	223.4	788	1518	1240	1610	1.08	1.78	-0.08	6.75	145.3	129.7	7.97	235880
9:09:49	712	32	126.0	3.3	212.6	784	1514	1240	1609	0.98	2.19	-0.08	7.01	138.7	129.7	7.97	238000
10:11:03	712	32	121.0	3.5	220.1	783	1513	1235	1604	1.16	3.56	-0.06	6.97	135.4	129.0	7.93	239892
10:59:19	718	32	122.0	3.5	205.5	796	1510	1243	1605	1.09	3.50	-0.06	6.80	180.5	128.1	8.35	241800
12:05:00	710	32	121.6	3.3	203.6	778	1507	1243	1602	0.98	3.51	-0.06	6.53	179.4	131.6	8.29	243920
13:12:06	717	32	121.5	3.0	220.2	789	1512	1257	1606	0.99	3.87	-0.06	7.01	104.5	131.1	8.02	246008
14:27:41	718	32	121.1	3.2	207.8	791	1510	1256	1605	0.95	3.19	-0.06	6.51	141.9	130.0	8.39	248464
15:01:24	716	32	121.4	3.2	202.6	786	1513	1258	1598	1.04	4.24	-0.06	7.54	88.05	129.0	8.10	249816
16:10:57	719	32	120.6	3.2	218.0	789	1514	1251	1605	1.03	4.98	-0.07	6.79	85.85	131.9	8.07	252144
18:05:08	713	32	121.7	3.6	219.6	781	1513	1251	1593	0.93	6.37	-0.08	7.65	101.2	130.4	7.93	256044
18:43:07	710	32	121.5	3.3	203.2	779	1512	1254	1599	1.11	6.16	-0.08	7.26	108.9	130.3	8.18	257100
19:38:41	712	32	121.2	3.9	329.2	781	1513	1249	1605	0.91	5.55	-0.08	6.73	142.0	131.2	8.20	259072
20:44:54	715	30	120.0	3.4	307.6	779	1512	1254	1604	1.43	5.44	-0.07	6.49	176.1	131.1	8.21	261184
21:44:11	712	30	120.8	3.7	307.4	771	1510	1244	1602	1.02	5.39	-0.07	6.44	181.6	129.5	8.26	263128
22:44:43	723	30	119.5	3.2	258.2	791	1514	1259	1604	1.09	4.84	-0.07	6.33	265.3	129.4	8.55	265120
23:43:40	722	30	117.4	3.8	267.3	790	1514	1257	1608	0.89	4.65	-0.06	5.91	260.9	127.9	8.57	267088
11-20-91																	
00:46:35	726	30	120.0	3.0	254.7	794	1516	1264	1608	1.22	4.68	-0.05	6.40	121.1	129.6	8.31	269120
01:42:11	722	30	119.7	3.0	263.9	790	1514	1255	1607	1.17	4.78	-0.05	6.54	131.0	128.9	8.08	271016
02:44:39	719	30	119.1	3.2	262.7	784	1509	1251	1595	1.08	5.35	-0.06	7.15	134.3	129.2	8.08	273112
03:43:39	722	30	119.4	3.0	285.1	789	1511	1254	1598	1.01	5.08	-0.05	6.71	125.5	128.7	8.09	275008
04:47:25	727	30	119.2	2.9	295.7	802	1513	1258	1609	1.14	4.91	-0.05	6.03	320.3	128.4	8.65	277096
05:44:42	720	32	120.9	2.8	255.2	793	1513	1260	1608	1.13	4.34	-0.05	6.07	198.1	127.8	8.63	279184
07:02:16	728	30	119.5	2.5	277.1	799	1515	1259	1607	0.89	4.47	-0.05	6.28	159.6	129.5	8.40	281672

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Date Time	Damper	Fan Temp (°F)	Fan Amps	Baghouse ΔP ("H2O)	Baghouse In Temp (°F)	Preheater Off Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H2O)	Kiln Inlet O2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Damper O2 (%)	Gas Down Stm Damper CO (ppm)	Preheat Feed (tph)	Coal Feed (tph)	Tire Feed (tps)
11/20																	
8:00	30	726	120.8	2.9	204.1	795	1514	1243	1617	1.13	4.10	-0.03	5.77	221.3	130.1	8.16	283488
9:00	30	727	122.9	2.7	212.6	792	1514	1257	1605	1.02	4.40	-0.05	6.54	134.3	129.0	8.08	285432
9:58	30	722	121.3	2.6	210.7	788	1512	1249	1606	1.10	4.00	-0.03	6.30	149.7	130.2	7.90	287360
11:11	32	725	121.4	2.8	212.6	794	1517	1259	1622	0.92	3.89	-0.03	6.41	132.0	131.3	7.48	290200
11:54	32	725	153.1	2.8	192.2	793	1517	1257	1622	1.07	3.82	-0.03	6.42	118.8	130.8	7.22	292400
13:02	32	719	121.2	2.5	196.7	825	1514	1257	1611	1.16	4.19	-0.03	7.21	88.05	129.5	7.49	295392
14:07	32	723	120.1	3.0	194.6	797	1514	1262	1609	0.97	4.03	-0.05	6.96	90.26	132.6	7.50	298224
15:08	32	718	122.2	2.8	197.1	785	1514	1256	1609	0.95	3.95	-0.04	6.87	94.66	130.9	7.49	300704
16:09	20	756	117.9	2.3	249.2	803	1515	1261	1612	1.29	4.09	-0.05	5.59	118.8	129.4	7.47	303192
17:06	20	757	116.0	2.2	294.9	794	1515	1261	1617	0.88	3.71	-0.04	5.60	105.6	129.6	7.31	306000
18:05	19	763	115.0	2.2	289.1	800	1513	1253	1610	0.96	3.66	-0.05	5.46	101.2	128.7	7.17	308480
18:54	21	750	114.8	2.5	331.9	841	1511	1258	1604	0.96	4.23	-0.05	6.11	91.36	130.3	6.89	310688
19:42	21	762	117.7	2.8	324.0	802	1513	1272	1612	1.05	3.92	-0.04	5.79	111.1	129.5	7.19	312824
21:01	23	764	116.5	2.4	316.2	805	1513	1268	1607	1.01	3.73	-0.04	6.10	113.3	130.5	7.45	316368
21:59	23	763	116.2	2.1	290.4	804	1516	1247	1609	0.93	3.60	-0.03	5.66	135.4	131.5	7.75	318800
22:42	23	763	115.4	2.0	316.3	806	1518	1257	1622	1.13	3.38	-0.02	5.43	93.58	130.1	7.74	320648
23:54	35	737	111.8	2.6	260.0	821	1513	1265	1663	0.93	2.82	-0.01	7.49	50.64	109.7	7.73	323472
0059	27	751	115.1	2.0	287.6	811	1520	1265	1703	0.91	2.79	-0.03	5.99	56.13	128.3	8.02	326240
0156	27	744	117.0	2.2	340.6	803	1520	1249	1677	0.89	2.98	-0.03	5.87	81.45	129.7	7.78	328712
[illegible]	[illegible]	740	118.7	2.1	266.8	799	1517	1249	1621	0.97	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Date Time	Damp	Fan Temp (°F)	Fan Amps	Baghouse ΔP ("H_2O)	Baghouse In Temp (°F)	Preheater Off Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H_2O)	Kiln Inlet O_2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Dryer O_2 (%)	Gas Down Stm Dryer CO (ppm)	Preheat Feed (tph)	Coal Feed (tph)	Tire Feed (tph)
11/21																	
0340	27	739	117.4	2.7	338.9	798	1518	1253	1639	0.90	2.22	-0.00	5.56	116.7	131.9	7.79	333224
0444	25	742	119.4	2.3	332.0	792	1517	1247	1642	0.98	2.79	-0.01	5.73	103.4	130.3	7.77	335984
0551	25	742	117.6	2.4	349.5	792	1518	1251	1631	0.88	3.18	-0.02	6.05	99.09	128.5	7.70	339272
0659	20	733	114.8	2.3	355.5	771	1513	1244	1617	0.91	4.34	-0.01	6.70	103.04	130.4	7.24	341840

Date / Time 11-21-91	Fan Temp (°F)	Damper	Fan Amps	Baghouse ΔP ("H2O)	Baghouse In Temp (°F)	Preheater Off Gas Temp (°F)	Preheater Gas Temp (°F)	Preheater Meal Temp (°F)	Kiln Inlet Temp (°F)	Kiln Inlet Draft ("H2O)	Kiln Inlet O_2 (%)	Kiln Inlet Comb (%)	Gas Down Stm Damper O_2 (%)	Gas Down Stm Damper CO (ppm)	Preheat Feed (tph)	Coal Feed (tph)	Tire Feed (tph) (pounds)
7:56:10	752	20	113.5	2.1	310.5	795	1515	1261	1620	0.89	3.19	-0.01	5.82	116.7	127.5	8.1	344096
9:31:03	752	20	113.4	2.3	366.9	793	1513	1251	1611	0.96	2.89	-0.01	4.95	283.9	127.8	8.03	348232
10:12:21	761	20	113.6	2.3	333.2	803	1512	1250	1614	0.94	3.47	-0.01	5.56	122.1	126.2	8.02	350064
11:06:12	748	20	114.8	2.5	312.8	782	1514	1243	1624	0.94	3.55	-0.01	5.87	102.3	129.4	7.66	352464
11:30 Start test																	
11:59:14	755	20	114.0	2.3	340.2	793	1514	1248	1618	0.94	2.97	-0.00	4.80	267.4	131.6	8.23	354766
12:53:51	758	20	115.7	2.6	255.9	796	1513	1256	1606	0.77	2.78	-0.01	4.81	714.3	129.5	8.23	357240
14:01:23	763	23	116.2	2.3	327.2	806	1513	1264	1604	0.85	3.45	0.00	5.13	250.9	131.5	8.18	360032
15:00:27	756	28	115.9	2.5	300.5	813	1512	1263	1606	1.09	3.32	0.01	6.30	86.95	127.3	8.15	362576
16:02:52	757	28	115.6	2.2	290.8	814	1516	1258	1611	0.84	3.96	0.02	5.95	211.3	127.8	8.42	364624
16:33 End test																	
16:45:05	753	28	116.1	2.5	281.6	809	1519	1258	1641	0.81	2.96	0.01	5.00	675.8	127.0	8.42	366256

Whole-tire TDF emission test (1130-1633)

Attachment 2

THE USE OF CARBON MONOXIDE AND OTHER GASSES FOR PROCESS CONTROL

by Eric R. Hansen

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THE USE OF CARBON MONOXIDE AND OTHER GASSES FOR PROCESS CONTROL

This paper describes the application of the analysis of trace gas emissions downstream of the process dust filters in a precalciner kiln as the means of controlling the air to fuel ratio. This application eliminated the need for a high temperature probe in the kiln as the kiln excess air requirement is determined and controlled based on carbon monoxide, nitrogen oxide, and sulfur dioxide concentrations downstream of the bypass dust filter. Control of the excess air in the precalciner is also based on the carbon monoxide concentration downstream of the preheater dust collector. Control by carbon monoxide has shown considerable advantages over the traditional technique of control based on oxygen analysis. These advantages include:

1. Simplification of sampling.
2. Increased kiln productivity and efficiency.
3. Better operator response to analyzer information.
4. Precise combustion control showning promise for reducing nitrogen oxide emissions.
5. Control of clinker quality.

THE USE OF CARBON MONOXIDE AND OTHER GASSES FOR PROCESS CONTROL

Introduction

During the startup of Ash Grove's new precalciner kiln system, many problems were encountered in obtaining reliable oxygen analysis to use for control of excess air in the combustion processes. In particular, measurement of the kiln exit gasses presented a special challenge. The failure in extracting a reliable sample from the high temperature, dust and volatile laden environment at the kiln exit resulted in excessive buildup formation and often unsatisfactory quality of clinker due to reducing conditions. In order to solve the sampling problem, the traditional measurement of oxygen was abandoned and a new approach was tried. Since this precalciner kiln system was equipped with a bypass, it was thought that the proper air to fuel mixtures in the kiln could be interpreted from the concentrations of carbon monoxide (CO), nitrogen oxide (NO), and sulfur dioxide (SO_2) in the bypass gasses downstream of the conditioning tower and dust filter. The technique was found to be particularly successful and this approach for evaluating the fuel to air ratio in the kiln has been the exclusive control technique for excess air in the kiln for the past eighteen months. The result has been precise control of combustion conditions as evaluated based on management of buildup, clinker quality and productivity. Only for the purposes of this paper was a sample probe inserted into the traditional location at the back of the kiln in order to compare the established control points with oxygen measurements at the traditional sampling points.

The same technique was also applied for the control of excess air in the precalciner and preheater. The control is based on the CO concentration in the exhaust gasses on the clean side of the precipitator without regard to oxygen content. Long term application of this technique has shown increased productivity and efficiency due to operation with less excess air, yet avoidance of reducing conditions which could cause operating problems due to buildup and cyclone plugging from aftercombustion in the upper cyclones of the preheater.

A particular advantage of controlling by CO, aside from the ability to precisely determine the proper air to fuel ratio, was the operator response to the information. Due to the very large change of CO concentrations near the ideal excess air level, the operators effectively control the process much closer to the ideal ratios than possible by monitoring oxygen.

Historical

Traditionally, when one talks about CO in a cement kiln, one visualizes the typical CO or combustible analyzer installed primarily for precipitator protection with a 0 to 5% or 0 to 10% range. CO levels are considered high when detected by such an instrument and often corrective action is not taken until concentrations up to 1% are measured. However, to control combustion by CO content, an instrument with 50 to 100 times the sensitivity is used (0 to 1000 ppm or 0 to 0.1%.) With such an instrument the definition of high CO and low CO is completely different from a traditional combustible analyzer. Full scale on the new instrumentation would be hidden in baseline drift and noise with a traditional instrument. This 50 to 100 fold sensitivity difference must be kept in mind when evaluating the new technique since the entire range of CO concentrations used in the control philosophy would be considered negligible by traditional measurement techniques.

In addition to residual CO, advantage is taken of the NO and SO_2 concentrations to evaluate the combustion process. Several papers have been published about the behavior of CO, SO_2, and NO in cement kiln systems and the potential for process control.[1] The experience in the Ash Grove system is consistent with the published data. However, the Ash Grove system is the first to have long term experience monitoring CO, NO, and SO_2 with the primary motivation being process control. The development of CO as the primary control variable and monitoring the gasses downstream of the dust filters to determine the proper air to fuel ratios and abandoning oxygen analysis is unique to the Ash Grove system.

Measurements in the Kiln and Bypass

The precalciner kiln system to which the technique was applied normally operates with 30% of the kiln gasses bypassing the preheater and going directly to a dust filter. Prior to reaching the sampling point, the bypass gasses are cooled from approximately 2200°F to 540° with about three pounds of ambient air per pound of kiln gas and water sprays. They are then passed through an electrostatic precipitator before reaching the sampling point. This location results in a great simplification in delivering a reliable gas sample to the analyzers. Maintenance of the probe at the clean side of the precipitator at 540° involves cleaning the sintered filter in the duct every three months as a preventative measure. In comparison, sampling the gasses exiting the kiln at 2200°F and up, and containing varying amounts of dust and volitilized salts, is a tremendous problem. It is even difficult to get a thermocouple to survive in this environment let alone keep a water cooled probe unplugged. Constant attention was required on the kiln probe and even then reliable sampling was not achieved. This is particularly a problem during a kiln commissioning when sufficient personnel to continuously man an oxygen probe are not available. The new sampling point completely avoided the problem of sampling at high temperature and has resulted in a reliable sample extraction.

The primary objectives of the control of combustion in the kiln was to minimize buildup and maintain a sufficiently high temperature in the sintering zone to assure at least 35% of the input alkali was removed through the bypass. Based on these objectives, instead of controlling at an arbitrary oxygen level, control points for CO, NO, and SO_2 were to be established. It was expected that the SO_2 concentrations would be an indicator of the excess air requirement since the sampling point was downstream of the air quenching of the kiln exit gasses, which might be expected to allow oxidation of any remaining combustibles. It was found that as excess air was reduced, the SO_2 concentration increased before measurable quantities of CO were detected. The SO_2 concentration also correlated with the rate of buildup formation in the inlet chamber. The initial kiln control philosophy was to control the kiln draft to keep the SO_2 concentration under 100 ppm*. Concentrations less than 50 ppm indicated too much excess air and a concentration over 100 ppm indicates a tendency for excessive buildup.

Satisfactory alkali elimination through the bypass was not initially achieved, therefore, burner modifications were made to obtain the high temperatures required for alkali evaporation. The NO concentrations served as a guideline for burner changes. It was observed that the NO concentrations in the Lepol kiln operating alongside the P.C. kiln were consistently higher and a greater alkali reduction was obtained in the clinker. Simply increasing the fuel rates in the P.C. kiln did not yield higher NO or reduced alkali. Burner primary air

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*All gas concentrations are reported corrected to a 3% oxygen concentration. Oxygen content is measured at the sampling point and the instrument calculates the corrected concentration.

velocity, quantity, and turbulance were adjusted based on their effect on NO concentration. Higher NO generation implied higher temperatures which did correlate with alkali reduction in both kiln systems (Fig. 1 and Fig. 2).

With the new flame conditions required to achieve alkali reduction, the relationship of SO_2 and CO and excess air changed. In the present configuration, as excess air is reduced, the concentration of CO increases significantly before SO_2 becomes measurable. Along with the observed changes in the gasseous emissions, the clinker lost the yellow centers and the SO_3 content of the bypass dust changed from a 2 to 1 ratio with alkali down to a 1 to 1 ratio. With the experience to date, the conclusion is reached that the SO_2 which is detected in the bypass and causes the buildup problems originates due to localized reducing conditions in the very high temperature zone of the kiln. Reducing conditions in the lower temperature zones does not appear to generate SO_2. Detectable concentrations of SO_2 at the normal CO hold point is used as an indicator of flame impingement in the sintering zone. Burner pipe adjustments are made based on this criteria to eliminate impingement which can come about due to coating changes or burner movement.

Behavior of CO in Kiln Inlet and Bypass Gasses

The relationship of the CO concentrations at the kiln exit and bypass exit versus the oxygen in the kiln gasses is shown in Fig. 3. During the eighteen months' experience without the benefit of a kiln probe, the hold point for control of the kiln draft was established as not less than 20 ppm CO and not greater than 100 ppm CO (all gas concentrations are reported corrected to 3% oxygen, the oxygen concentration typically at the bypass sampling point is 16%.) The normal control range led the operator to control the kiln between

1.5 to 2.0% oxygen as determined by the temporary kiln probe. At the normal control point of 50 ppm CO in the bypass gasses, considerable CO was measured with the kiln probe. The data indicates a considerable portion of the CO may burn out in the bypass when the quench air is added to cool the gasses. However, based on the operating results, the excess air level maintained by the established control level of 50 ppm at the bypass precipitator is sufficient. There is a possibility that the CO difference is a result of stratification but this was not tested when the temporary kiln probe was available. However, it was found that the results were sensitive to probe positioning. Some carbon is in the feed entering the kiln and the feed is still decarbonating which results in measurements on the load side indicating higher CO and lower oxygen levels. Because of this sensitivity to probe positioning, the sample obtained from the bypass which extracts 30% of the kiln gasses is more representative of the kiln combustion than a sample taken at any given location. Therefore, the trended data in Fig. 3 for the relationship of CO at the kiln exit and bypass is influenced by probe position. The NO data was less influenced by probe position, indicating the stratification occurs uphill of the very high temperature zone. The NO is a good indicator of excess air at the flame as it sees through the CO and oxygen reduction from the combustion of carbon in the feed.

Behavior of NO

A very good correlation between NO and clinker quality existed when sufficiently high levels of excess air are maintained. However, as flame configuration was changed and flame impingement eliminated, less excess air was required to stay out of buildup problems. The lower excess air requirement was taken advantage of by increasing firing rate motivated by increased capacity.

However, as excess air was reduced and capacity increased, the NO to clinker alkali correlation was lost. With less excess air, less NO is generated even at the same sintering temperature. Since the current CO hold point was established by experience of best results of alkali reduction and buildup potential, it is believed that the sintering temperature is higher at the lower excess air level even though the NO is suppressed. The long term results with this kiln system suggest that a considerable amount of NO emission control can be achieved by precise excess air control in the kiln <u>with no loss of sintering temperature and clinker quality and that this level of control can be practically achieved</u>. To obtain this reduction, due consideration must be made to flame shaping and the sulfur cycle to permit reduction of excess air without promoting buildup.

<u>Measurements in the Preheater</u>

The same technique of controlling excess air based on the CO content at the downstream of the dust filter was applied to the calciner-preheater. In this precalciner system, the gasses exit the preheater at approximately 700°F, then pass through the I.D. fan. The gasses are conditioned to 350°F with watersprays before the precipitator and precipitator draft fan. The gas is sampled at the exit of the precipitator fan.

This technique for control of combustion has a particular advantage in that the interpretation of the data is not influenced by infiltrated air. In a precalciner system, due to the high negative pressures, significant infiltration can occur in the preheater due to small leaks in the many doors, poke holes and expansion joints. Therefore, it is difficult to select an oxygen level at which to operate and assure complete combustion since the amount of infiltration is uncertain and variable. Operation with insufficient excess air results in coatings in the cyclones and cyclone plugging due to overheating from aftercombustion in the upper cyclones. Typically, a safety margin of additional excess air is maintained to assure avoidance of problems. The CO concentration emitted from the preheater system is a more direct measurement of the combustion process. If insufficient oxygen is present at the high temperature zones of the preheater, significant CO emission results. Since the CO is a direct measurement of the combustion process, the maintenance of a safety margin of additional excess air is not required. The relationship of oxygen content at the main I.D. fan outlet to the CO content (corrected to 3% O_2) is shown in Fig. 4 along with the effect on productivity at a given fan speed.

The experience in the past eighteen months has resulted in a normal setpoin for CO of 600 ppm ±100. The results show that the average oxygen level regularl achieved at this setpoint is 1.6% which is considerably lower than typical for a calciner-preheater system. There is a significant benefit in eliminating the safety margin of excess air required by oxygen control, particularly in an I.D. fan limited system. Careful measurements at a fixed I.D. fan speed and the same quality level of clinker were made to determine the benefit of operation with less excess air. At a 3.0% oxygen level, the clinker production was 69 tph. At the normal control point of 600 ppm CO, the oxygen at the I.D. fan fell to 1.6% and clinker production increased to 73.5 tph for a 7% increase. The fuel consumption for the additional tonnage was 2.2 million BTU per ton. This additional production has a significant impact in overall cost and is only possible because of the control by CO content. If oxygen control were used, trimming oxygen content to this level would expose the operation to the risks of reducing conditions since the oxygen level can change from day to day due to a change in leakage rates at the many doors and poke holes or even a change in coal fineness or quality. The oxygen content at the I.D. fan required to obtain the setpoint CO is used to evaluate leakage in the preheater. Motivation is provided to keep leakage under control since the efforts can be readily evaluated.

Behavior of NO Emissions

The minimizing of excess air in the preheater also has an influence on NO emissions. A plot of NO content versus preheater exit oxygen is shown in Fig. 5 for conditions when the kiln is being operated at 1850 ±100 ppm NO. The data shows a reduction in NO content as excess air is reduced in the preheater. At 2.0% oxygen the NO concentration measured 535 ppm (corrected to 3% oxygen), at 1.6% oxygen the NO content was measured at 460 ppm for a 15% reduction in concentration in addition to increased throughput for the same amount of exit gas. The long term control at these minimum excess air levels has been demonstrated. The motivation for operating at the low excess air levels is the increased productivity. The potential for minimizing NO emissions through precise atmosphere control is indicated, particularly in a precalciner system where the atmosphere in the kiln and precalciner are both controllable. With both the kiln and preheater being operated with minimum excess air, significant reduction in NO content in the preheater off gas may be obtainable. Control at these low excess air levels is possible because of the exponential rise in CO concentrations when conditions are approached which will cause operating problems. Therefore, minimum excess air is maintained with avoidance of reducing conditions which cause operating problems.

Operator Interface

The application of process control based on CO content has been particularly effective because the kiln operators respond to the large change in CO content which occur over a narrow range of actual oxygen levels. For example, control of the kiln draft is based on detecting zero CO (too much draft), detecting trace to 100 ppm (ideal draft), and detecting over 100 ppm (too little draft.) Based on oxygen measurements in the kiln exit (Fig. 3) these decision points represent, greater than 2.0% O_2, 2.0% to 1.5%, and less than 1.5% O_2.

For control of the preheater, the operator guidelines are: over 700 ppm CO (less than 1.5% oxygen) too much feed and fuel; 700 ppm to 500 ppm (ideal, 1.5 to 2.0% oxygen); and less than 500 ppm CO (more than 2.0% O_2) add feed and fuel. Fig. 6 shows a typical chart recording of CO with the analyzer alternating between the preheater and bypass on a 2.5 minute cycle. The bypass CO readings are near zero but the noisy baseline indicates detection of some CO. The preheater CO is maintained above 50% on the chart paper (500 ppm) but less than full scale (1000 ppm, 0.1%). Operation with this control philosophy is known by the kiln operator as operation on the "ragged edge" due to the appearance of the chart paper. The CO level is reactive to small changes and frequent small adjustments are required by the operator to keep the CO within the boundaries. With such a CO pattern, there is no question that the process is operating at full capacity without room for even a 1/2% increase in production. If there is a 1% reduction of production, the CO chart looses its ragged appearance and it is obvious that the system has available capacity. Just as important as the maintenance of minimum excess air is the operator actions when he pegs the CO analyzer (goes to full scale at 0.1% CO.) Particularly for operators brought up on the old 0 to 5% combustible analyzer, reactions to high CO are immediate since the seriousness of high CO is recognized. Except now, our definition of high CO means CO concentrations of at least 10 times lower than in the past. Due to the highly sensitive CO measurement, strict avoidance of reducing conditions is achieved. Therefore, by using CO, the operator is boxed in with a offscale reading at about 1% oxygen and a bottom scale reading at 2% oxygen. The operators tend to control with the CO on the high side, over 500 ppm but less than 1000 ppm, resulting in a typical daily O_2 average at the I.D. fan of 1.6% O_2.

Precise control is motivated by the nature of CO response and the appearance of the chart resulting in kiln productivity and efficiency beyond that obtainable with oxygen control.

Automation Opportunity

Currently, the operator closes the control loop based on interpretation of the trend recording, then taking the proper action with fuel, feed and draft. In addition, the KVB monitor provides the data averaged for the sample period, typically, 2.5 to 5 minutes, and corrects it to 3% oxygen and prints out the data, Fig. 7. Thus, if the operator has any question as to being within the hold points, he can look at the printer and determine this precisely.

At the present automation level, the operators are programmed to make digital decision. Once the determination is made that he is outside the guideline, the standard response is to adjust feed and fuel by 0.5 tph and 0.05 tph respectively, then wait a period to reevaluate. However, each operator still expresses his own individuality in attention to the limits and his response. The control philosophy needs automation to close the loop. The analyzer microprocessor does have the capability for the decision process and now that the benefits of application of the control philosophy have been measured, economic justification can be made for the expense and effort for completing automation of the combustion process.

Conclusion

The use of analysis of the trace emissions downstream of the dust filter was initially motivated to solve the problem of sampling the kiln gasses in a precalciner kiln system in order to control the air to fuel ratio. In the eighteen months this technique has been exclusively applied many other benefits have been realized:

1. Sampling problems have been eliminated.
2. Control of the air to fuel ratio based on CO content of the exhaust gasses has been proved superior to monitoring O_2 for obtaining optimum efficiency and productivity.
3. The technique is particularly successful because the reactive nature of CO over a narrow O_2 range results in effective responses from the operator. The operator interface with CO concentration is much better than with oxygen. For the same reason, CO will lend itself to further automation more effectively than oxygen.
4. Even though control by CO results in lower excess air, strict avoidance of reducing conditions which can cause operating problems is achieved. The behavior of NO and SO_2 also played a large role in optimizing the burning process for minimum buildup and significant alkali reduction in clinker and resulting quality.

Therefore, monitoring the concentrations of CO, NO, and SO_2 downstream of the dust filters has proven to be an effective technique for process control. Additionally, the precise control of the kiln atmosphere made possible by CO monitoring shows promise for significantly reducing NO emissions without any detrimental effect to the process or clinker quality. This is particularly significant where very high sintering temperatures must be maintained for production of reduced alkali clinker.

References:

Brian W. Doyle, (KVB, Inc.) and Frederick W. Fenk (Meduse Cement), "Applications of Flue Gas Analysis to Cement Kiln Operation", KVB TM No. 81-187, November 1982. (Summarized in ROCK PRODUCTS, April, 1982 and available from authors.)

Brian W. Doyle, (KVB, Inc.), "Control of Kiln Firing Rate and Combustion Systems", prepared for PIT AND QUARRY publication, September, 1983.

Brian W. Doyle, (KVB, Inc.), "The Use of NO_x as a Kiln Temperature Indicator", submitted for 19th International Rock Products Seminar, November, 1983.

F. A. Miller and A. H. Egelov, "Relationship Between Cement Kiln Operation and Content of NO_x in Kiln Exit Gases." Published in Zement-Kalk-Gips (ZKG International), 6/80 pp 310-313.

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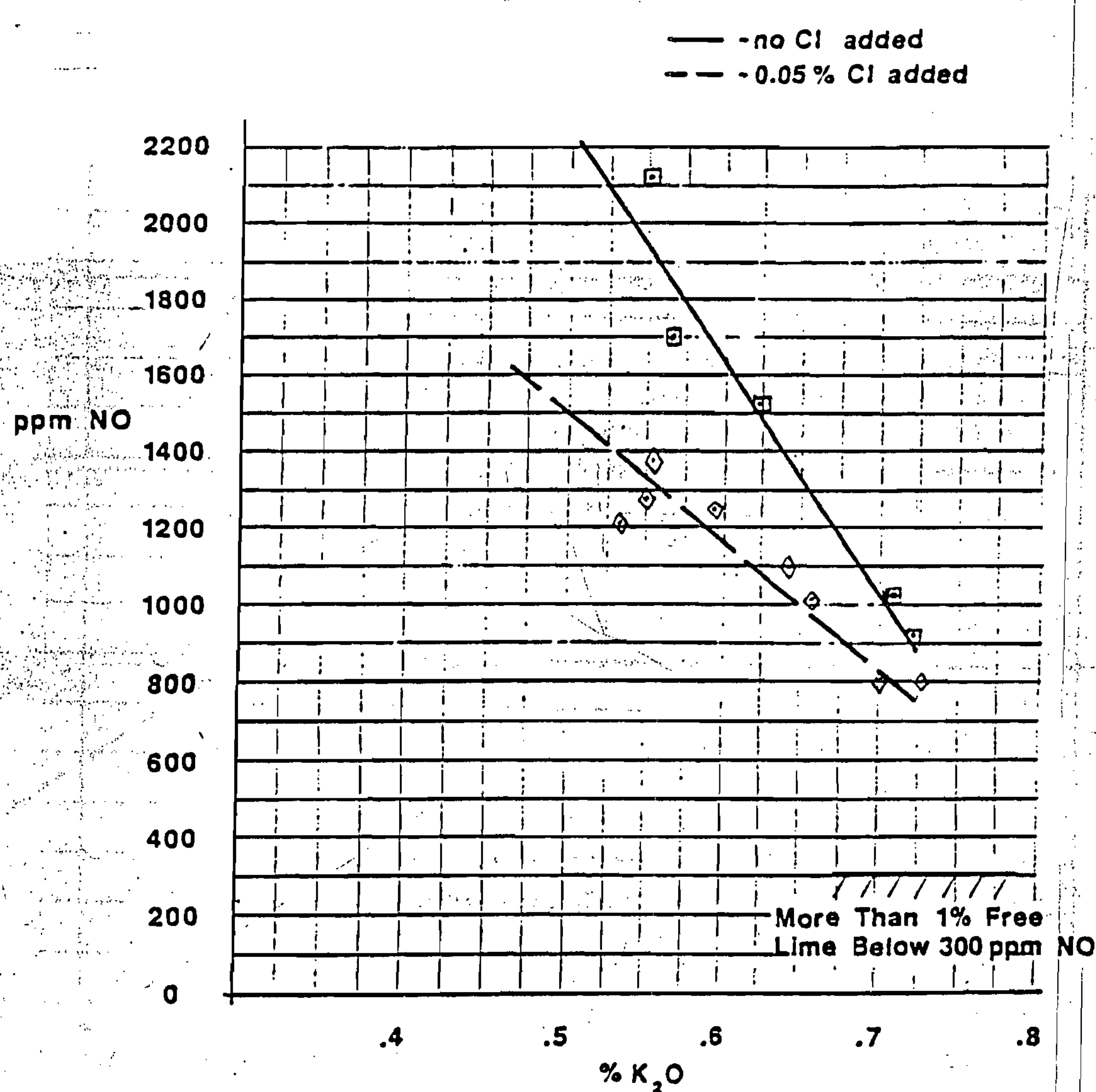
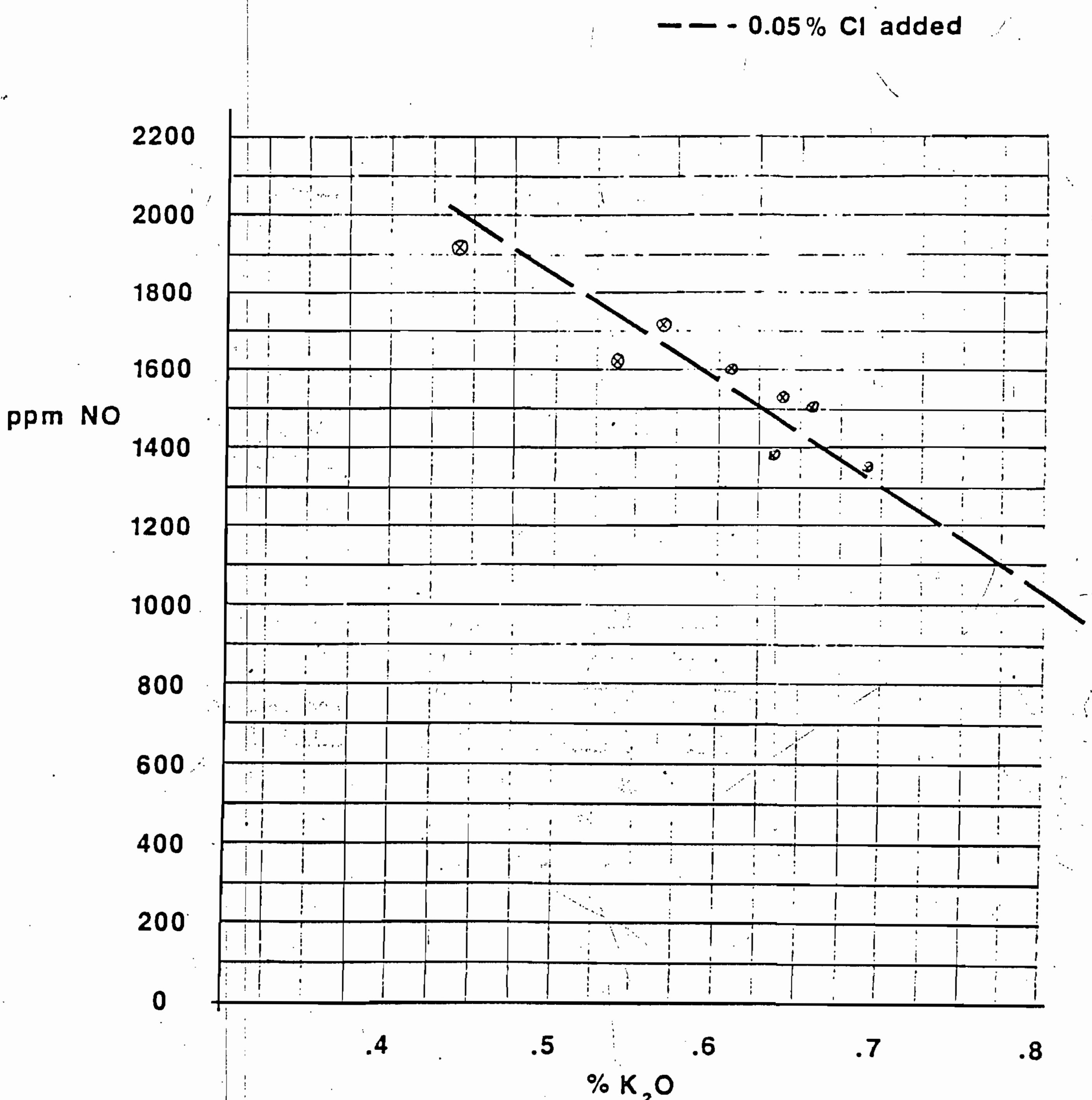
Fig. 1. Nitrogen Oxide vs Clinker K_2O Content, H-W Kiln



NO Measured In Bypass Gasses, Corrected To 3% Oxygen

Date	Time	%K_2O	NO ppm	% Kiln Firing	Cl Added
10-18	0000 to 0800	0.59	1250	44%	0.05%
10-18	1800 to 2400	0.64	1100	44%	0.05%
10-19	0000 to 0800	0.66	1020	44%	0.05%
10-20	1600 to 2400	0.73	800	52%	0.05%
10-21	0000 to 1100	0.53	1200	52%	0.05%
10-21	1300 to 2400	0.70	810	46%	0.05%
10-25	0000 to 0600	0.55	1280	47%	0.05%
10-26	2100 to 0500	0.56	1370	47%	0.05%
11-4	0000 to 0600	0.71	1040	68%	--
11-3	1400 to 2000	0.56	1700	72%	--
11-3	0000 to 0800	0.62	1510	70%	--
11-1	1200 to 2400	0.55	2130	57%	--
11-1	0000 to 1100	0.72	915	48%	--

Fig. 2. Nitrogen Oxide vs Clinker K_2O Content, AC Lepol Kiln



NO Measured At Precipitator Inlet, Corrected To 3% Oxygen

Fig. 3 CO and NO vs Oxygen in Kiln

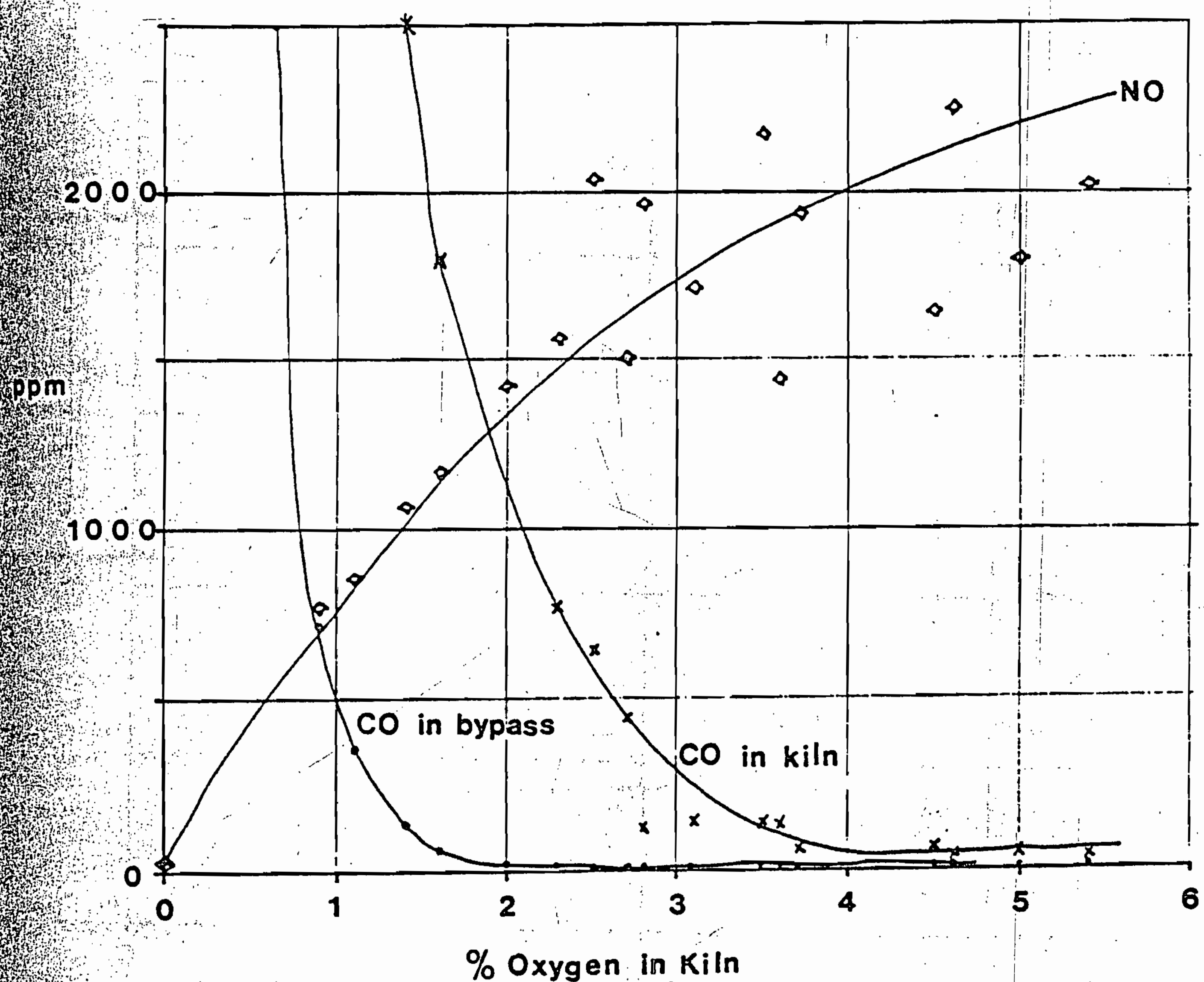
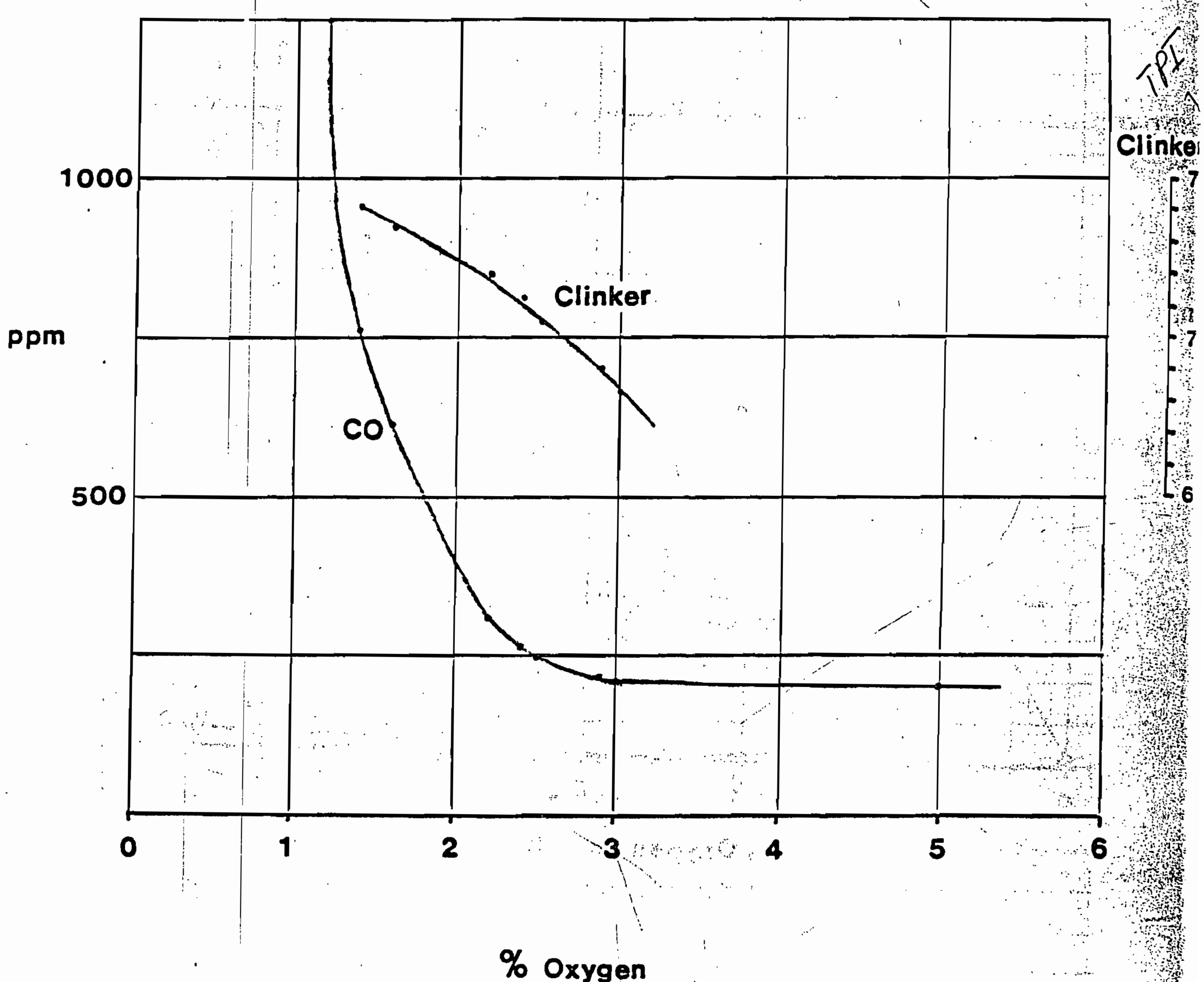


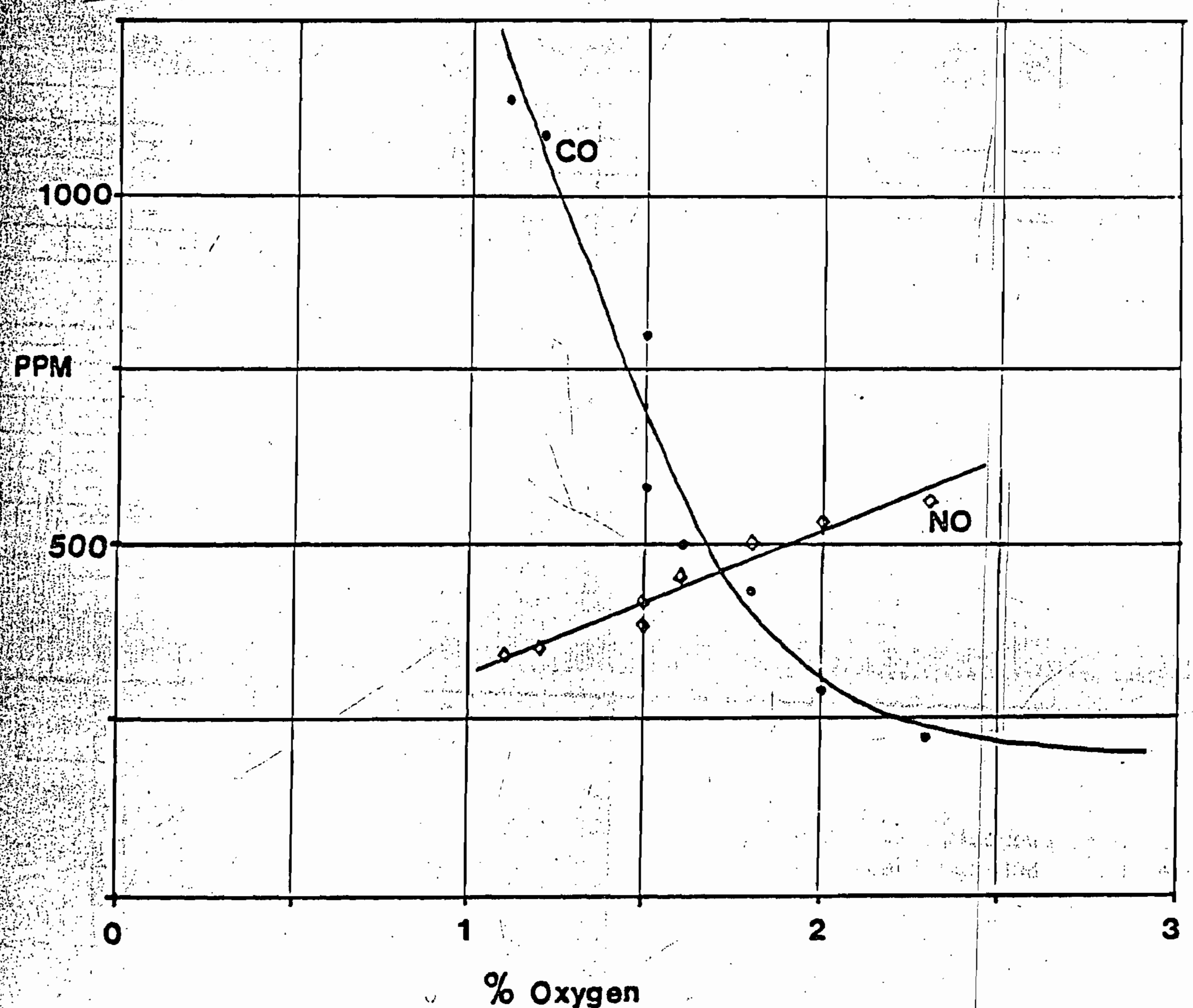
Fig. 4 CO and production vs % Oxygen at ID Fan



Feed STPH	O_2 %	CO ppm	NO ppm	SO_2 ppm	Clinker TPH
111	3.0	214	516	332	68.2
112	2.9	223	498	344	69
115	2.5	248	557	413	70.5
117	2.2	313	501	440	72
120	1.6	610	403	462	73.5
121	1.4	761	370	459	74.2

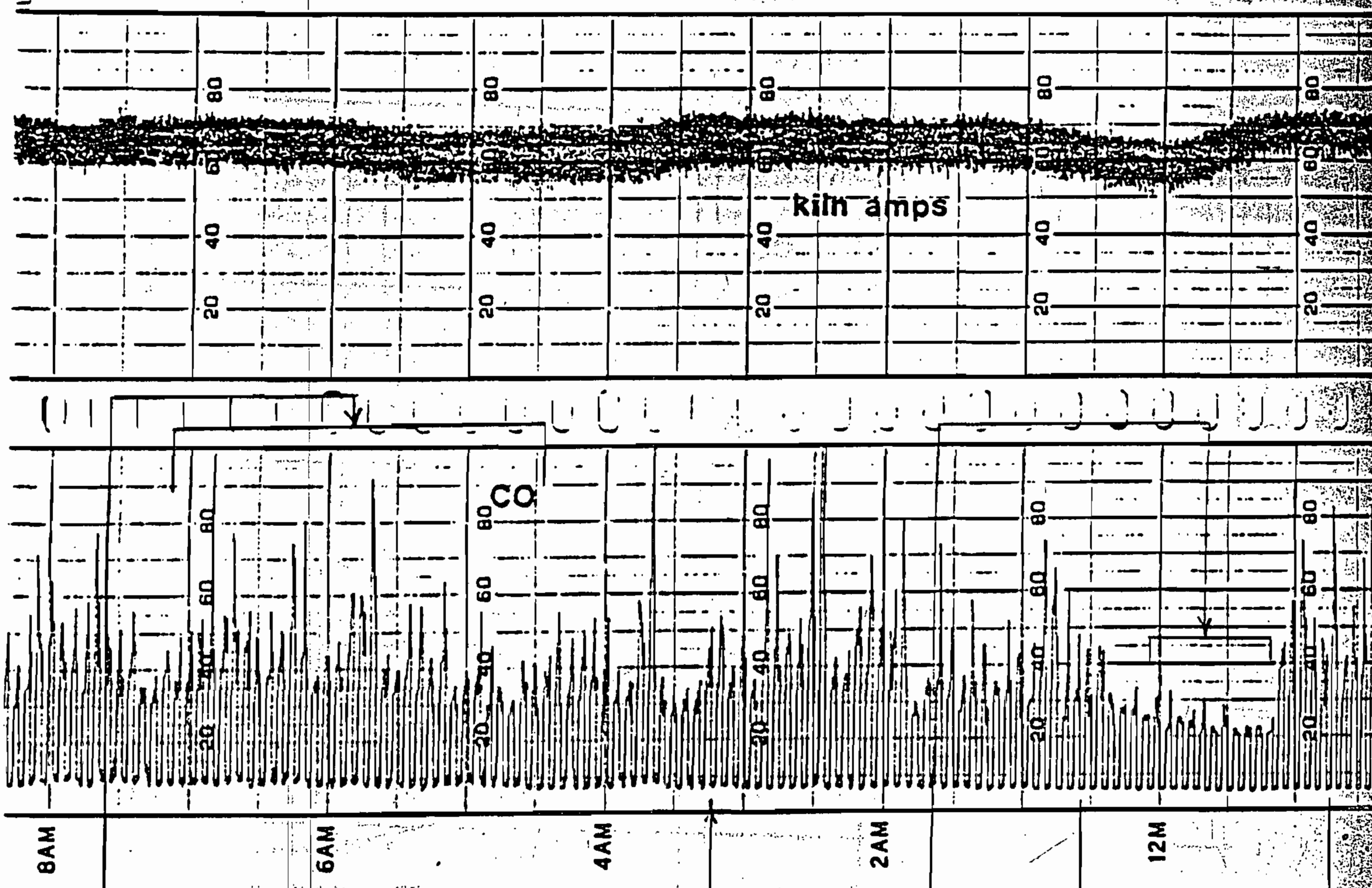
Gas concentrations corrected to 3% O_2

Fig. 5. CO and NO vs Oxygen in Preheater



Gas Concentrations at I.D. Fan			Kiln
O_2 (%)	CO (ppm)	NO (ppm)	NO (ppm)
2.3	229	557	1980
2.0	292	535	1910
1.8	440	500	1900
1.6	500	460	1820
1.5	580	386	1850
1.5	800	420	1800
1.2	1083	350	1920
1.1	1140	345	1720

Fig. 6 Trend of CO vs Time Analyzer alternating between preheater fan and bypass fan. 1000 ppm full scale



CO at preheater I.D. fan
400 to 800 ppm Ideal
Operating Condition (1.6% O_2).

Trace to 100 ppm CO at
bypass fan (1.5 to 2.0% O_2
in kiln). Noisy baseline.

High excess air in preheater,
CO 200 to 300 ppm (preheater
oxygen greater than 2%).

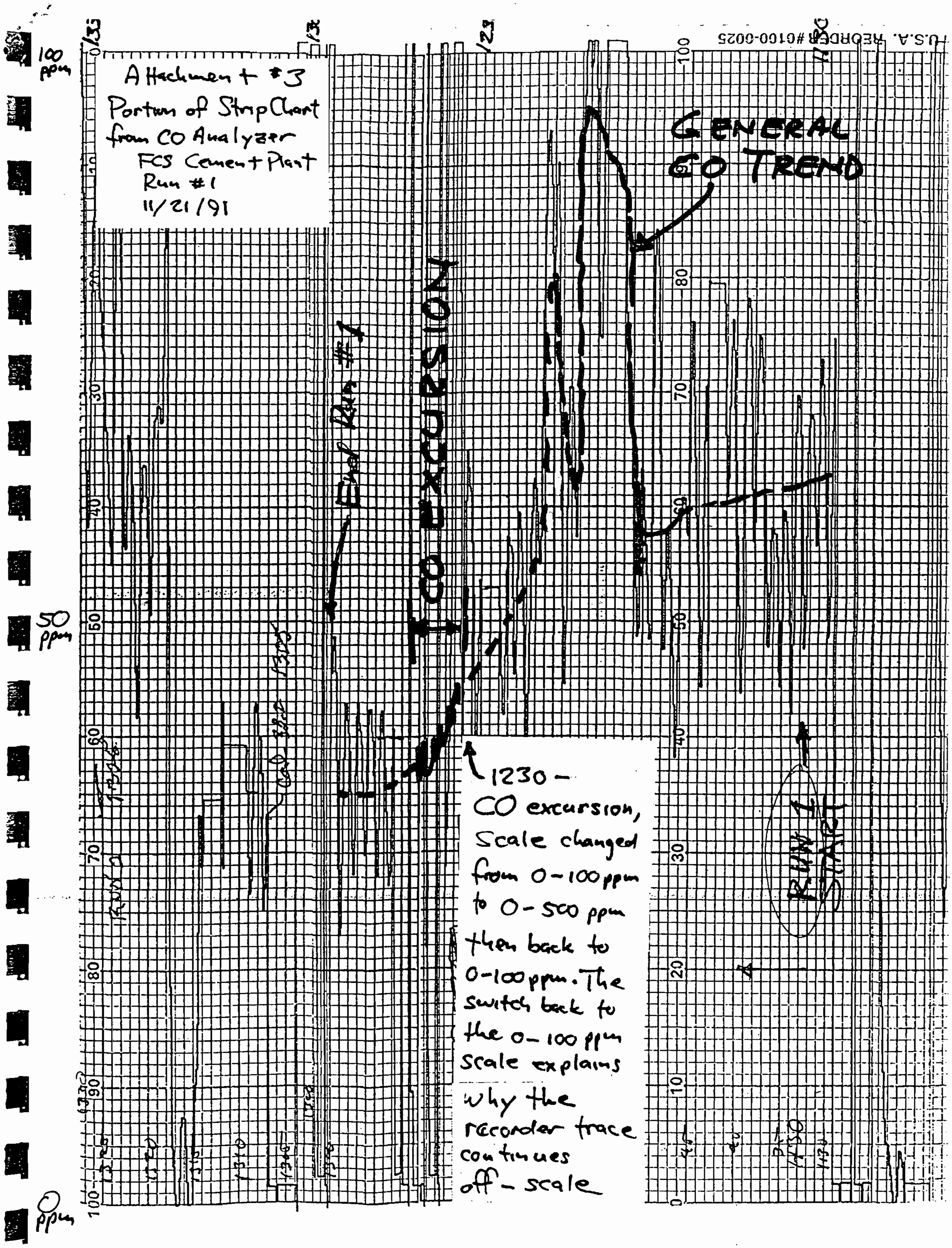
High excess air in kiln.
No detectable CO in bypass
gas.

ASHGROVE CEMENT COMPANY

Fig. 7

Time	HW											HW										
	Prehtr*							Bypass*				Prehtr							Bypass			
	O_2 %	CO ppm	NO_x ppm	SO_2 ppm	Kiln Amps	Kiln Temp.	MBtu Hr.	O_2 %	CO ppm	NO_x ppm	SO_2 ppm	O_2 %	CO ppm	NO_x ppm	SO_2 ppm	Kiln Amps	Kiln Temp.	MBtu Hr.	O_2 %	CO ppm	NO_x ppm	SO_2 ppm
9:12:00																0	0	0	17.3	30	920	15
9:15:00	4.1	1048	363	274	0	0	0															
9:17:30					0	0	0	17.4	28	1000	27											
9:20:00												4.4	610	402	264	0	0	0				
9:22:30																0	0	0	17.3	31	959	26
9:25:00	4.4	859	398	263	0	0	0															
9:27:30					0	0	0	17.6	24	1051	41											
9:30:00												4.6	318	422	257	0	0	0				
9:32:30																0	0	0	17.4	30	982	27
9:35:00	4.5	550	400	270	0	0	0															
9:37:30					0	0	0	17.5	33	1016	12											
9:40:00												4.2	574	368	298	0	0	0				
9:42:30																0	0	0	17.5	28	1031	16
9:45:00	4.6	268	430	283	0	0	0															
9:47:30					0	0	0	17.4	25	1049	19											
9:50:00												4.2	700	384	281	0	0	0				
9:52:30																0	0	0	17.4	28	1050	23
9:55:00	4.9	277	451	269	0	0	0															
9:57:30					0	0	0	17.3	26	950	37											
10:00:00												4.5	398	400	284	0	0	0				
10:02:30																0	0	0	17.3	34	911	45
10:05:00	4.3	615	354	276	0	0	0															
10:07:30					0	0	0	17.4	43	913	27											
10:10:00												4.5	432	389	291	0	0	0				
10:12:30																0	0	0	17.3	43	994	31
10:15:00	4.5	399	409	282	0	0	0															
10:17:30					0	0	0	17.4	32	985	35											
10:20:00												4.4	324	395	260	0	0	0				
10:22:30																0	0	0	17.1	55	921	55
10:25:00	4.7	437	424	268	0	0	0															
10:27:30					0	0	0	17.5	38	1039	67											
10:30:00												4.6	366	396	297	0	0	0				
10:32:30																0	0	0	17.4	27	1006	62
10:35:00	4.3	516	384	291	0	0	0															
10:37:30					0	0	0	17.4	15	1067	57											
10:40:00												4.3	442	399	327	0	0	0				
10:42:30																0	0	0	17.3	105	982	41

* Gas sampled at exit of precipitator, ppm concentrations corrected to 3% oxygen.


Attachment #3
Portion of Strip Chart
from CO Analyzer
FCS Cement Plant
Run #1
11/21/91
100 ppm
50 ppm
0 ppm
GENERAL CO TREND
CO EXCURSION
End Run #1
1230 – CO excursion, Scale changed from 0-100 ppm to 0-500 ppm then back to 0-100 ppm. The switch back to the 0-100 ppm scale explains why the recorder trace continues off-scale
RUN 1 START
U.S.A. RECORDER #0100-0025

Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347

Lawton Chiles, Governor 813-620-6100 Carol M. Browner, Secretary

FACSIMILE TRANSMISSION SHEET

3-17-92
Date

TO: Mr. Bruce Mitchell

Dept. : DARM-BAR

Phone : 904 922-6979

FROM: Geo Richardson

Dept.: DER, Southwest District
Phone: (813) 620-6100 SunCom 542-6100 EXT. 420

OPERATOR: Tama EXT. ____

SUBJECT: Permit amendment

Total Number of Pages, Including Cover Page: 4

Air Program FAX Number is (813) 620-6092
SunCom 542-6092

- George Richardson -

- NSPS -

- Subpart F
continuous

AC27-118674 -
replaced AC27-61016

FL Crushed Stone

3-17-92
10:20 - :25

To be sending
FAX of correspondence
RP

FCS

FLORIDA CRUSHED STONE COMPANY

CEMENT / POWER / LIME PLANT

February 4, 1992

Mr. Scott Sheplak
Florida Department of Environmental Regulation
Southwest District Office
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

RE: Opacity Monitoring-FCS Cement Plant

Dear Scott:

As advised by our consultant Dr. John Koogler of Koogler and Associates, Inc., the FCS Cement Plant is required under New Source Performance Standards (NSPS) Subpart F. Paragraph §60.63 (b) and (d) to submit a semiannual report of excess opacity emissions. (See attached letter)

Opacity emissions from the 3rd and 4th Quarter of 1991 under the operation of the Cement Plant alone were not reported on. Whereas I know that CEM downtime was at a minimum under Cement Plant operations alone, I am sure that the total exceedance of opacity emission limits, if any, was less than 1%.

The FCS Cement Plant has maintained continous emission monitoring on opacity since the start of operations and will continue to do so. This monitor was certifide in November of 1991 and reports were submitted to your office. The FCS Cement Plant will begin reporting the continuous opacity monitoring data for the Cement Plant alone starting with the 1st Quarter of 1992.

In order to clarify the requirement of continuous opacity emission monitoring for Cement Plant operations, including the reporting of such data, I recommend that the FDER include this requirement as a specific condition under the Cement Plant Permit (A027-183508).

If you have any questions, please contact me at your convenience.

Sincerely,

Tom Mountain

Tom Mountain
Environmental Manager

TM/nc

CC: A027-183508
A027-118674

P.O BOX 1508 / 10311 CEMENT PLANT ROAD / BROOKSVILLE, FL 34605-1508 / PHONE (904) 799-7881 / FAX (904) 796-6281

AC27-118674

KOOGLER & ASSOCIATES

ENVIRONMENTAL SERVICES

4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

KA 307-91-07

January 23, 1992

Mr. Thomas Mountain
Florida Crushed Stone Company
P.O. Box 1508
Brooksville, FL 32605-1508

Subject: Continuous Emission Monitoring Requirements
CPL Plant
Brooksville, Florida

Dear Tom:

Per your telephone conversation of January 20, 1992, with Jose Garcia of our staff, the following summarizes Continuous Emission Monitors (CEMs) requirements for the CPL complex:

1. The power plant has the requirements for the continuous monitoring of O_2, SO_2 and opacity as described in the Power Plant Site Certification, Appendix I, Part B.1 (Permit PA82-17) (see attached).

2. While the cement plant permit (AC27-118674) does not specify the need for CEM monitoring, the cement plant does fall under the New Source Performance Standards (NSPS) Subpart F. Paragraph §60.63(b); *Monitoring of Operations* (see attached) of the NSPS requires "... the owner or operator of a kiln or clinker cooler ... shall install, calibrate, maintain and operate ... a continuous opacity monitoring system to measure opacity of emissions discharged into the atmosphere from any kiln or clinker cooler."

   Furthermore, according to Paragraph §60.65(a), "Each owner or operator required to install a continuous opacity monitoring system under §60.63(b) shall submit report of excess emissions as defined in §60.63(d) ... such reports shall be submitted semiannually.

In summary, when the power plant comes back on line, FCS will be required to submit quarterly CEM reports on O_2, SO_2 and opacity. At the present time, with only the cement and lime plants operating, FCS is required to monitor and report opacity.

In order to complete the Fourth Quarter report, we need the opacity data (downtime, average opacity and notice of any exceedances to the 10 percent opacity limit).

If you have any further questions, please do not hesitate to contact Jose Garcia or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:wa
Enc.

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Don A. Stone
Fla. Crushed Stone Co.
P.O. BOX 490300
Leesburg, Fl 34749-0300

4a. Article Number
P 617 884 165

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
4/16/92

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
Bill Westcott

PS Form **3811**, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

P 617 884 165

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Don A. Stone	
Street & No. Fla Crushed Stone	
P.O., State & ZIP Code Leesburg, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 4-14-92 AC 27-118674	

PS Form **3800**, June 1990

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

April 3, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Don A. Stone
Corporate Environmental & Safety Manager
Florida Crushed Stone Company
Post Office Box 490300
Leesburg, Florida 34749-0300

Dear Mr. Stone:

Re: Amendment to Construction Permit: FL Crushed Stone Company
AC 27-118674: Cement Kiln, Clinker Cooler and Raw Mill System
NSPS Requirement Clarification

The Department has reviewed the information contained in Mr. George Richardson's package received March 17, 1992, via FAX, which contained a letter from Dr. John B. Koogler dated January 23, 1992, and a letter from Mr. Tom Mountain dated February 4, 1992. Both letters referred to the requirements of the regulations contained in 40 CFR 60.63(b) and (d), which imposes the requirement to install, calibrate, maintain, and operate a continuous opacity monitoring system and to report excess emissions under 40 CFR 60.65, respectively. Even though the permit's General Condition No. 13 specified that a New Source Performance Standard (NSPS) applied, it did not specifically state which one; also, there was no permit Specific Condition stating that the source was subject to all provisions of the NSPS, 40 CFR 60, Subpart F, nor was there a siting of the specific regulations, which are referenced above and are the points of contention. Since the conditions of the subpart are applicable, the Southwest District requested that the construction permit be amended to reflect the NSPS applicability prior to incorporating the amendment into the operation permit. Therefore, the following will be changed and added:

A. Specific Condition

- The sources are subject to all of the applicable provisions of 40 CFR 60, Subpart F, which includes the provisions of 40 CFR 60.63(b) and (d), Monitoring of Operations.

B. Attachments to be Incorporated

- Dr. John B. Koogler's letter dated January 23, 1992.
- Mr. Tom Mountain's letter dated February 4, 1992.
- Mr. George Richardson's FAX received March 17, 1992.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the amendment applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit Amendment File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This letter must be attached to the construction permit, No. AC 27-118674, and shall become a part of the permit.

Sincerely,

Steve Smallwood, P.E.
Director
Division of Air Resources
Management

SS/BM/rbm

Attachments

cc: B. Thomas, SWD
C. Hetrick, HCBCC
J. Harper, EPA
J. Koogler, Ph.D., P.E., K&A
T. Mountain, FCSC
G. Smallridge, Esq., DER

For Routing To Other Then The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy CHF

DATE: March 31, 1992

SUBJ: Amendment to Construction Permit: FL Crushed Stone Company
AC 27-118674: Cement Kiln, Clinker Cooler & Raw Mill System
NSPS Requirement Clarification

Attached for your approval and signature is a letter amending the above referenced construction permit clarifying the requirements of the applicable NSPS provisions. There is no controversy associated with this action.

I recommend approval and signature of this amendment.

SS/CHF/rbm

Attachment

OK