BOILER
TEST REPORTS

Babcock & Wilcox
a McDermott company

Power Generation Group
20 S. Van Buren Avenue
P.O. Box 351
Barberton, OH 44203-0351
(216) 753-4511

11/25/86
Meeting

RECEIVED
ENGINEERING

November 21, 1986

Intermountain Power Service Corp.
Brush Wellman Road
P.O. Box 864
Delta, Utah 84624

Attn: Mr. P. Tice

Re: Intermountain Power Project
B&W Ref: 334-0614/0615
Subject: Excess Air Vs Excess O_2

Gentlemen:

Attached please find additional information on the above subject, namely;

- CIS 101.02 with excess O_2 (wet) data added (11/20/86)
- Conversion Curve (air to O_2) based on recent coal analysis
- Analysis of coal sample taken 10-14-86 on which conversion curve was based (2 sheets)
- Calculation of Excess Air (four page B&W informational document)

These submittals are in response to Bill Morgan's request via Gary Cyr, B&W Service. If you have questions, please advise.

Very truly yours,

Paul A. Palmberg

C.A. Palmberg
Contract Manager

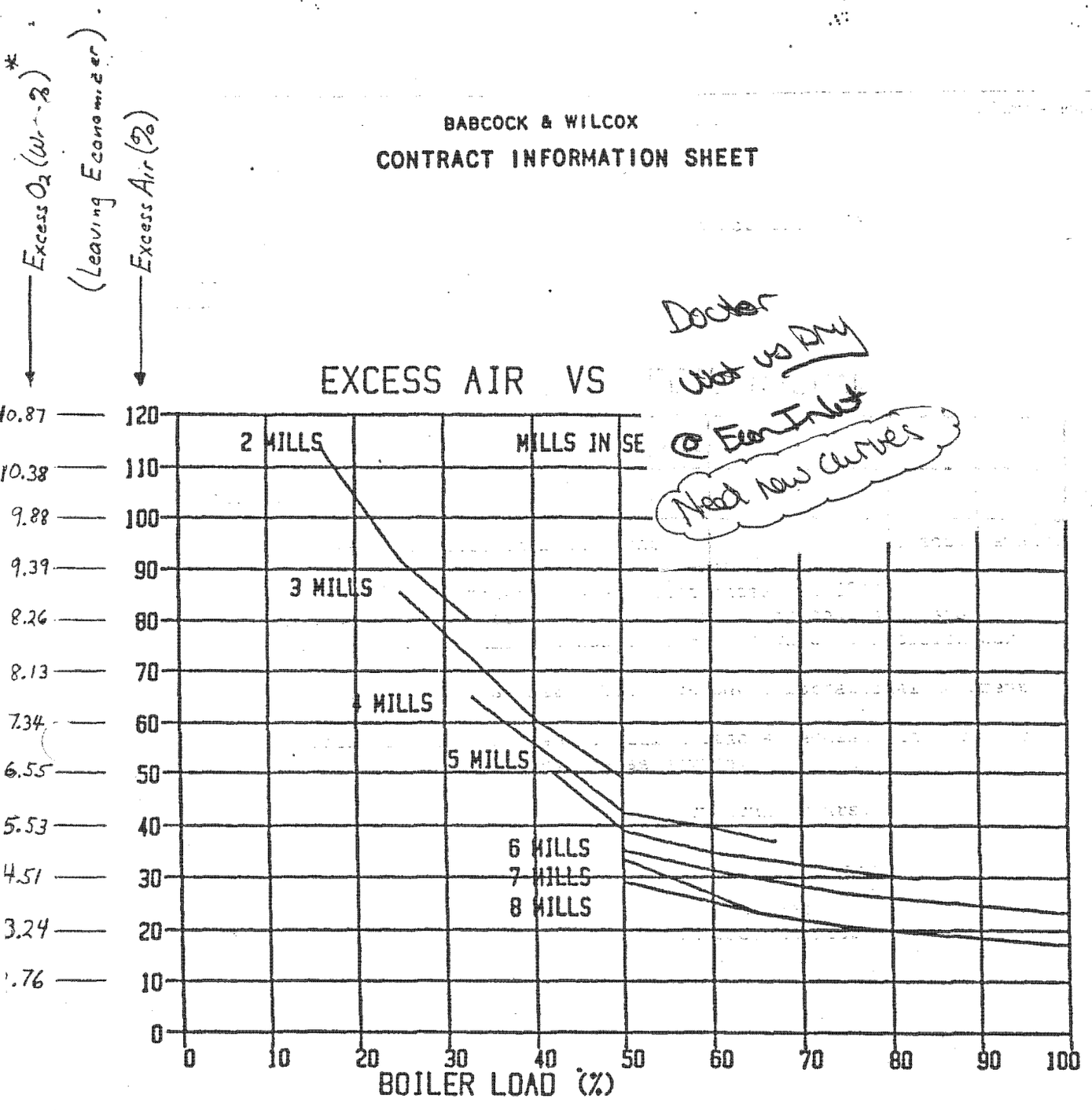
CAP:nk

cc: RW Dutton - w/attach.
JS Laing
JA Shildmyer
DW Fowler
RH DeVoto
RC Miller
RJ Clark
RL Nelson
JT Tyrrell
BA Wolfe
RP Siegfried
RK Krikorian - w/attach.

CAP2808

BABCOCK & WILCOX

CONTRACT INFORMATION SHEET



11/20/86

* Based On IPSC Analysis Of Sample Taken 10-14-86 (Ult. By Wyoming Anal. Labs # 2082)

THESE CURVES ARE SUBMITTED FOR THE PURCHASER'S CONVENIENCE AND THE PERFORMANCE INDICATED THEREON SHALL NOT BE OFFERED BY THE COMPANY OR CONSTRUED BY THE PURCHASER AS A PROPOSAL OR CONTRACT OBLIGATION.

DRAWN BY	DATE	APPROVED BY	DATE	A.O.
JAJ	6-17-86	FMA	6-17-86	

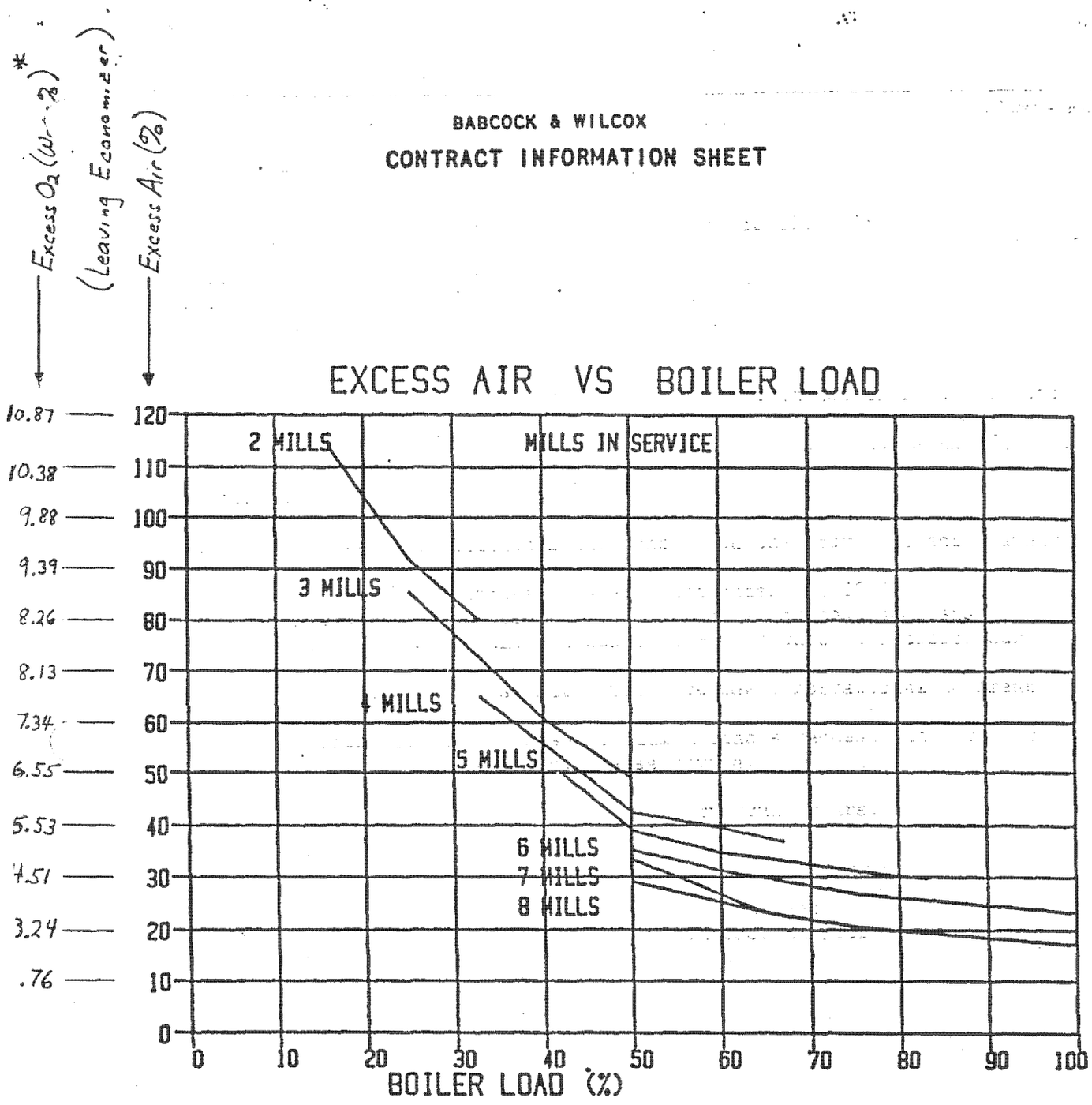
REL. NO. AND DATE	CONTRACT NO.	FILE NO.
	334-0614	RB-614

TITLE — EXCESS AIR VS. BOILER LOAD

CIS— 101.02A

BABCOCK & WILCOX

CONTRACT INFORMATION SHEET



11/20/86

* Based On IPSC Analysis Of Sample Taken 10-14-86 (Ult. By Wyoming Anal. Labs # 2082)

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JAJ	6-17-86	FMA	6-17-86	

REL. NO. AND DATE	CONTRACT NO.	FILE NO.
	334-0614	RB-614

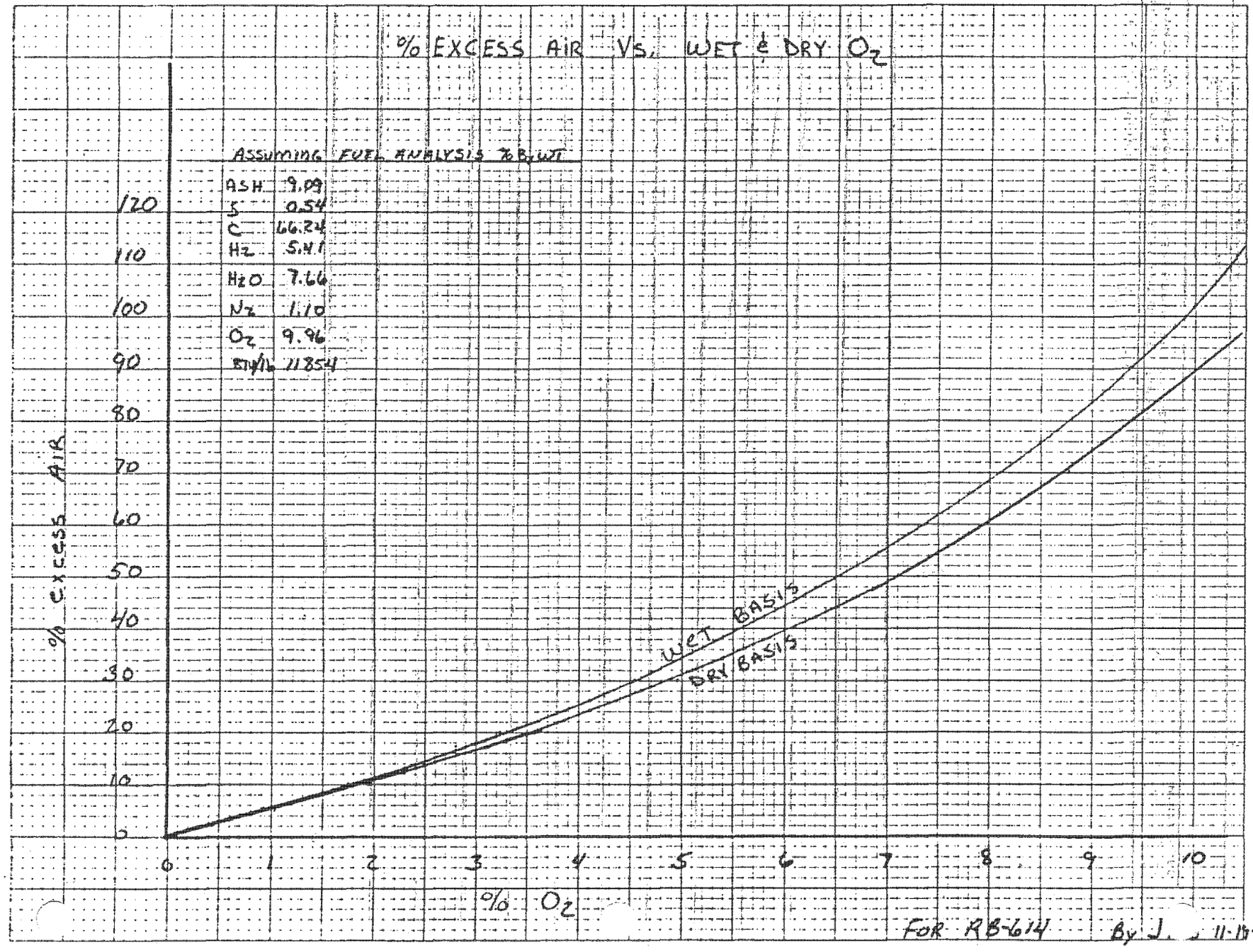
TITLE — EXCESS AIR VS. BOILER LOAD

CIS— 101.02A

IP14_003928

K+E 5 X 5 TO THE CENTIMETER 18 X 24 CM. KEUFFEL & ESSER CO. MADE IN U.S.A.

46 1610



FOR RB-614 By J. 11-19-86

IP14_003929

orig-CAP
cc ~~Tom Heil~~

Tom, New Data On IPP Coal
Carl

C. A. PALMBERG
OCT 27 1986

INTERMOUNTAIN POWER SERVICE CORPORATION

AS FIRED COAL SAMPLER

DATE: 10-16-86

LAB NO: 2082

IDENTIFICATION: as fired sample 10-14-86

DATE SAMPLED: 10-14-86

TIME COLLECTED: 2300

SHORT PROXIMATE ANALYSIS

	AS RECEIVED	DRY BASIS
% TOTAL MOISTURE	7.66	XXXX
% ASH	9.09	9.84
% SULFUR	0.54	0.59
BTU/LB	11854	12837

MOISTURE ASH FREE BTU 14238

% RESIDUAL MOISTURE = 2.37

ANALYST: KS

COMMENTS:	COAL TO SILOS	TONNAGE	COAL SAMPLED
	graves	nothing logged	yes
	days	2634	yes
	afternoon	2300	yes

sent for ultimate 10-16-86

cc: [redacted]
AARON NISSEN
MO ABDEL AAL
[redacted]
CRAIG LUCY
GARTH BLOCK

IP14_003930

Ultimate Analysis

LAB No.: 2082
IDENTIFICATION: as fired sample
DATE SAMPLED: 10-14-86

	As Received	Dry Basis
% Total Moisture	7.66	XXXX
* % Carbon	66.24	71.74
* % Hydrogen	5.41	5.86
* % Nitrogen	1.10	1.19
% Ash	9.09	9.84
% Sulfur	0.54	0.59
Oxygen by diff.	9.96	10.78

* Reported by Wyoming Analytical Labs. Laramie, Wyoming

Note: (as received basis)

Hydrogen and oxygen do not include H and Ox in sample moisture

IP14_003931

CALCULATION OF EXCESS AIR

Excess air is the difference between the actual quantity of air supplied for combustion and the theoretical air required for combustion. Also, air infiltration, such as air heater leakage, is calculated by determining lhe level of excess air between two points (entering and leaving the air heater for example). Excess air may be calculated based on measured percent O2 in the flue gas or percent CO2 in the flue gas. Refering to the Dry Flue Gas Volumetric Combustion Chart (attached), it is observed that for a constant excess air, CO2 varies significantly depending upon the type of fuel. However, O2 varies very little for a constant excess air. Therefore, the preferred method for determining excess air is to measure the excess O2 in the flue gas. B&W Technology considers the O2 hethod for calculating excess air and/or air heater leakage to be the most reliable method.

When an extractive sampling system is used, such as an orsat analysis, the gas analysis is on a dry basis. When the flue gas sample includes moisture, such as in-situ monitors used by most plants today, the gas analysis is on a wet basis. The O2 on a wet basis will read lower than O2 on a dry basis for the same excess air. The amount of the difference depends on the moisture in the flue gas, which is primarily dependent upon the moisture and hydrogen in the fuel. There are equations below for excess air and flue gas constituents on both a dry and wet basis. It is noted that the ASME efficiency forms require the flue gas constituents to be expressed on a dry basis.

The equation for excess air given on the ASME PTC 4.1 Short Form (shown below) should only be used for approximation:

$$\text{EXCESS AIR} = 100 \left(\frac{O2 - \frac{CO}{2}}{.2682\ N2 - (O2 - \frac{CO}{2})} \right), \% \qquad (1)$$

The expression '.2682 N2' is an approximation of the total mols of O2 in the combustion air per mol of dry flue gas. The N2 term should be corrected for N2 in the fuel. Secondly, the constant 0.2682 is the ratio of mols of O2 in air to the mols of N2 in air and should be 0.2650 (.2095/.7905). The alternate method for calculating excess air in ASME PTC 4.1, Steam Generating Units (efficiency calculations), utilizes CO2. Before using this method, the relationship between measured O2 and CO2 should be confirmed based on stoichiometric combustion calcuations or the expected combustion line on the Dry Flue Gas Volumetric Combustion Chart. Alternate methods of calculating excess air can be obtained from ASME PTC 19.10, Flue and Exhaust Gas Analyses. The ASME approved Code method using O2 and PTC 19.10 is an acceptable method and is described at the end of this section. At the present time, there is no ASME procedure for determining excess air based on O2 measured on a wet basis.

A more rigorous determination of excess air and flue gas constituents when O2 is measured is described below. This method is being proposed for the new Efficiency Test Code and is applicable for O2 measured on either a wet or dry basis. Equations 1 thru 8 are general and fuel related, and therefore need only be calculated once for a given fuel and unburned carbon loss. The excess air and flue gas constituent equations which follow utilize these values essentially as constants.

IP14_003932

GENERAL CALCULATIONS - DEPENDENCE UPON UNBURNED CARBON & FUEL ANALYSIS

$$Cb = C - Cu \quad , \%$$ (2)

$$THAIR = .1151\ Cb + .3429\ H + .04335\ S - .0432\ O \quad ,$$
lbm/lbm fuel "as fired" (3)

$$MATH = THAIR / 28.966 \quad , \text{Mols/lbm fuel}$$ (4)

$$QATH = 10000\ THAIR / HHV \quad , \text{lbm/lbm fuel}$$ (5)

$$MDP = Cb/1201 + S/3206.4 + N/2801.6 \quad , \text{Mols/lbm fuel}$$ (6)

$$O2C = (O2 - CO/2) / (1 - CO/200) \quad , \%$$ (7)

Where: C = Carbon in the fuel, "as fired", %
Cb = Carbon burned, %
Cu = Unburned carbon, %. When the amount of unburned carbon is not known, it may be estimated from the unburned carbon loss shown on the Boiler Summary Sheet as follows:
Cu = UBCL x HHV / 14500 (8)
UBCL = Unburned combusible loss, %
HHV = Higher heating value of the fuel, "as fired", Btu/lbm
THAIR = Theoretical air, lbm/lbm fuel
MATH = Mols of theoretical air, Mols/lbm fuel
QATH = Theoretical air normalized to a Btu basis, lbm/Btu. This is used as a check on the fuel analysis, and should fall within the ranges below.

Bit. & Subbituminous Coal,	7.35 - 7.76
Oil	7.35 - 7.55
Natural Gas	7.15 - 7.35

MDP = Dry products of combustion, Mols/lbm fuel
O2C = O2 corrected for CO, %
H, S, O, N = Constituents in fuel, %. Note that for calculation of excess air and air heater leakage, the fuel analysis is not critical. If a recent fuel analysis is not available use the Boiler Summary Sheet value. For excess air or AH leakage on a wet basis, accuracy can be improved if the ultimate fuel analysis is adjusted for moisture in fuel.

IP14_003933

DRY BASIS - EX. ORSAT, EXTRACTIVE SAMPLING SYSTEM

$$AX = 100 \left(\frac{O2C\ (MDP + .7905\ MATH)}{MATH\ (20.95 - O2C)}\right) \quad , \% \qquad (9)$$

$$MDG = (1 + CO/200)\ (MDP + MATH\ (.7905 + AX/100)) \quad , \text{Mols/lbm fuel} \qquad (10)$$

$$O2 = AX\ MATH\ .2095\ /\ MDG + CO/2 \quad , \% \qquad (11)$$

$$CO2{+}SO2 = \left(\frac{\frac{Cb}{12.01} + \frac{S}{32.064}}{MDG}\right) - CO \quad , \% \qquad (12)$$

Where: AX = Excess air, %
CO2+SO2 = Carbon dioxide plus sulfur dioxide in the flue gas, %. This is the stoichiometrically calculated equivalent of the CO2 measured by an orsat. This calculation can be used to determine the combustion line on the Dry Flue Gas Volumetric Combustion Chart. If an orsat is used, the orsat reading should be within +/- 0.2 % to be considered valid. When AH leakage is being checked and the ASME PTC 4.3 (and 4.1) gas weight calculations are used (these are based upon CO2), the error for the inlet and outlet should be no more than 0.2 % different from each other calculated stoichiometrically.

WET BASIS - EX. IN-SITU MONITORS

$$AX = 100 \left(\frac{O2C\ (MWP + MATH\ (.7905 + MMA))}{MATH\ (20.95 - O2C\ (1+MMA))}\right) \quad ,\% \qquad (13)$$

$$MWP = MDP + H/201.6 + H2O/1801.6 + WAM/1801.6 \quad , \text{Mols/lbm fuel} \qquad (14)$$

$$MMA = 1.608\ WMA \quad , \text{Mols/Mol dry air} \qquad (15)$$

$$MWG = (1 + CO/200)\ (MWP + MATH\ (.7905 + MMA + AX\ (1+MMA)/100)) \qquad (16)$$

$$O2 = AX\ MATH\ .2095\ /\ MWG + CO/2 \qquad (17)$$

$$CO2{+}SO2 = \left(\frac{\frac{Cb}{12.01} + \frac{S}{32.064}}{MWG}\right) - CO \quad , \% \qquad (18)$$

Where: AX = Excess air, %.
MWP = Wet products of combustion, Mols/lbm fuel
H = Hydrogen in fuel, as fired, %
H2O = Water in fuel, as fired, %
WAM = Additional moisture introduced into the flue gas, such as atomizing steam, lbm/lbm fuel
MMA = Moisture in air, Mols/Mol of dry air
WMA = Moisture in air, lbm H2O/lbm dry air. If not measured, use Summary Sheet value or 0.013 as average.

IP14_003934

As noted above, the above equations do not have an ASME reference at this time, but are preferred by B&W Technology. Determining excess air and air heater leakage based on measured O2 is the preferred B&W method on the basis it is considered to be the most accurate. Should an ASME reference be required, the following equations are excerpted from PTC 19.10, Flue and Exhaust Gas Analyses. No corrections are made for CO (usually insignificant), and are on a dry basis only.

$$AX = \frac{O2\ (.3132\ Cb + .11528\ S + .13443\ N + 10.331\ THAIR)}{THAIR\ (2.73 - .13068\ O2)}\ ,\ \% \qquad (19)$$

$$O2 = \frac{2.73\ THAIR\ AX}{.3132\ Cb + .11528\ S + .13443\ N + THAIR\ (10.331 + .13068\ AX)}\ ,\% \qquad (20)$$

$$CO2+SO2 = \frac{31.32\ Cb + 11.528\ S}{.3132\ Cb + .11528\ S + .13443\ N + THAIR(10.331 + .13068\ AX)}\ ,\% \qquad (21)$$

Black & Veatch

MEMORANDUM

RECEIVED
JAN 12 1987
BLACK & V
Intermountain P

Intermountain Power Project
Intermountain Generating Station
Coordinated Control System
O_2 Set Point Control

B&V Project 9255
B&V File 64.0202.02
January 9, 1987

To: B. E. Rohrbaugh

From: P. L. Spainhour PLS

This is written in response to the IPP Startup Work Request No. 397, regarding oxygen set point control in the Coordinated Control System.

Attached is one copy each of the Foxboro logic drawings FD 0001, Sheet 3, and FD 0005, Sheet 2 with recommended additions to the forced draft control loop for oxygen set point control. The added f(x) function shown on the forced draft logic diagram will be programmed from the ΔO_2 values listed in the Load Sheet Tabulation, copy attached. A copy of Excess Air versus Boiler Load, extrapolated from the B&W curve dated June 17, 1986 is also included for your reference.

We are presently reviewing the impact of the revised B&W curve for Excess Air versus Boiler Load in regards to the Information Computer System, specifically the Class I calculations and associated graphic display, Class II calculations, and HRIP calculations.

Please transmit this information to IPP personnel for their review. We will generate an Engineering Change Package to cover the Coordinated Control System and Information Computer modifications when directed to do so.

If you have any questions, please contact Joe Callison at (913)339-2508 or Charles S. Reece IV at (913)339-2499.

rdb
Attachments

cc: P. F. Bannister, w/attachments
J. G. Callison, w/attachments
C. S. Reece IV, w/attachments

INTERMOUNTAIN POWER PROJECT
FILE: 9255 64.0202.02
ACTION PARTY

RCM	TWH	CWD
RAZ	BCM	[illegible]
JOT		BCI
BER		SU

IP14_003936

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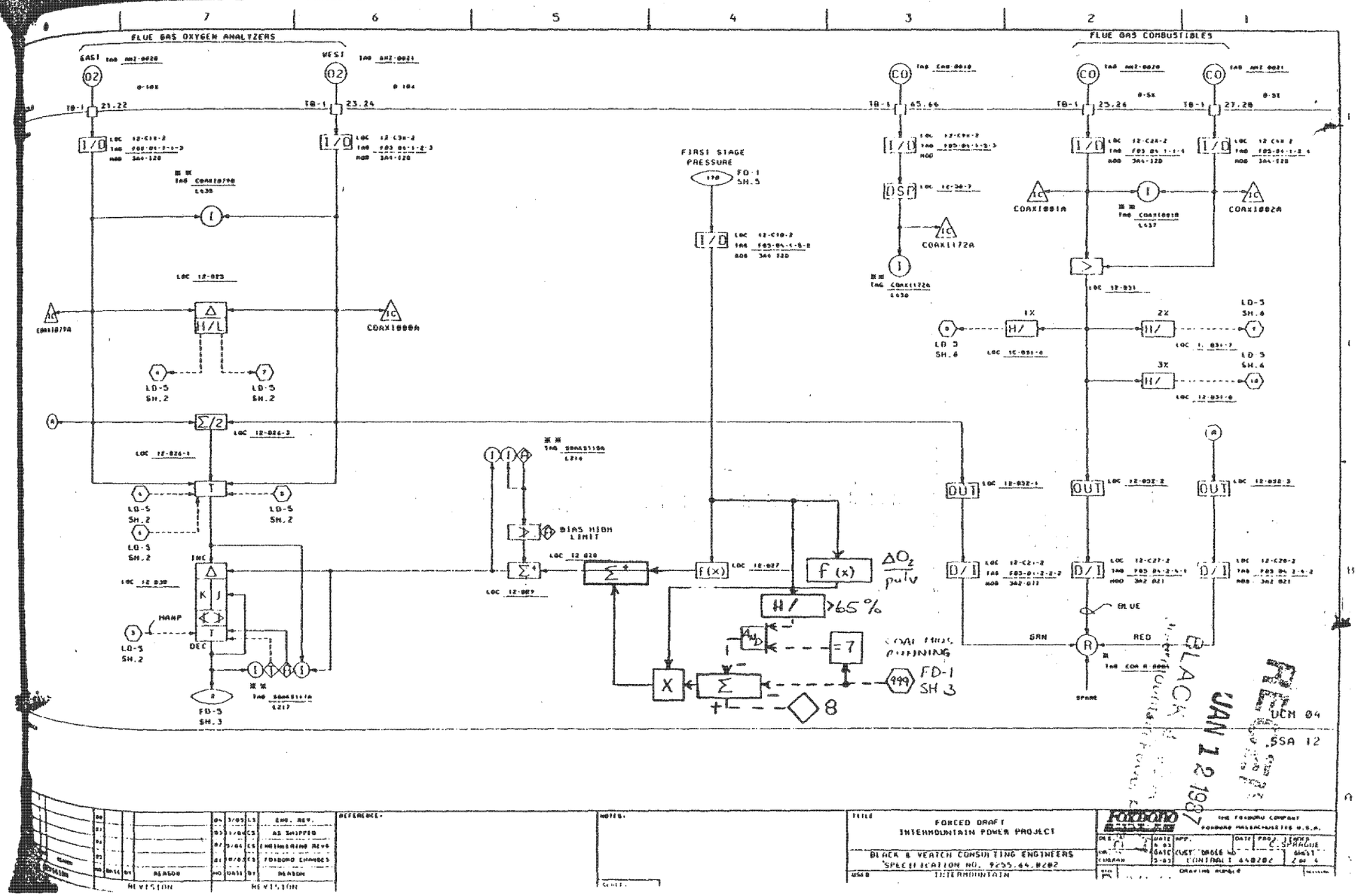
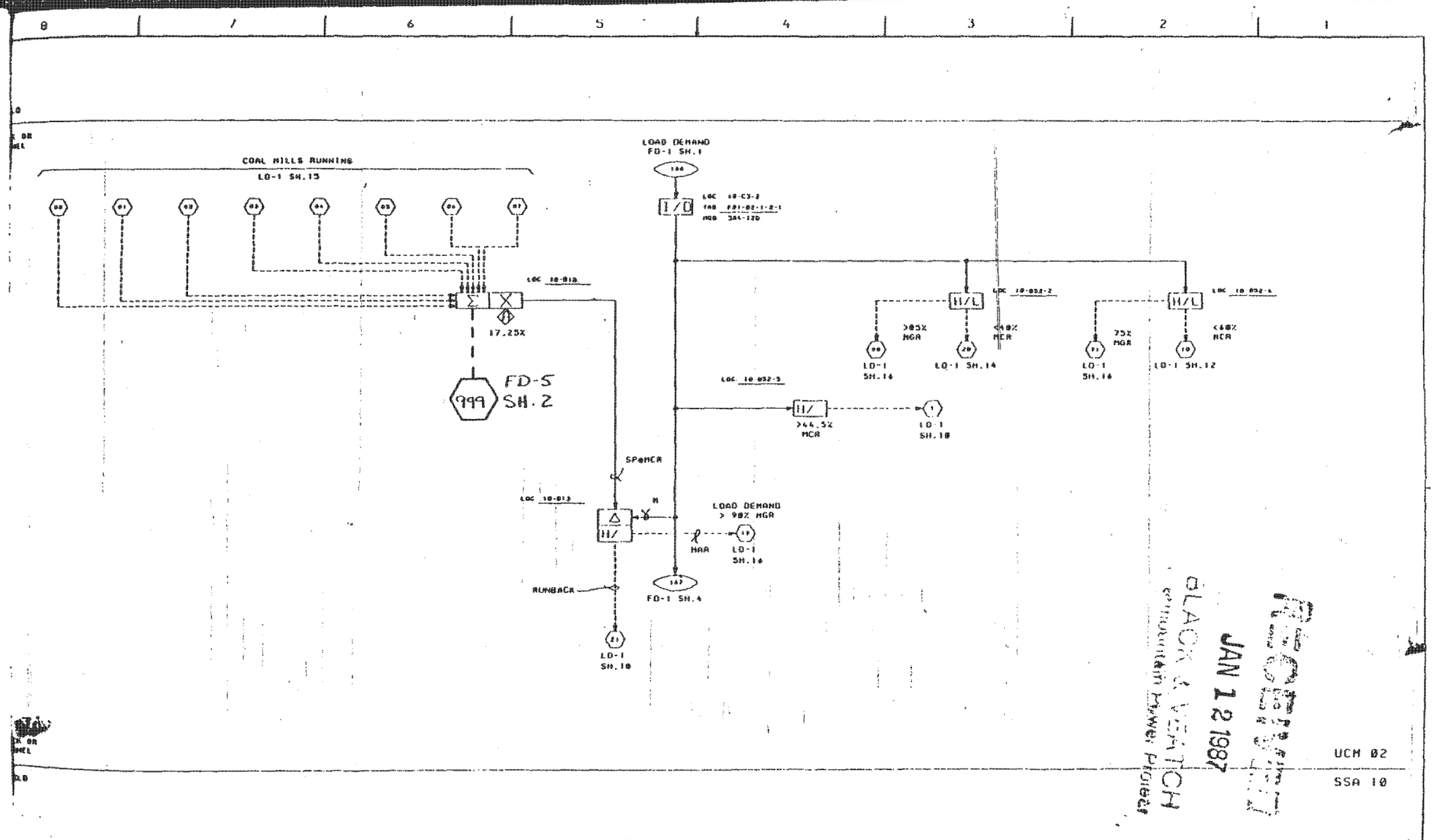
INTERMOUNTAIN POWER PROJECT
INTERMOUNTAIN GENERATING STATION
PROJECT 9255

LOAD SHEET TABULATION: O_2 CONCENTRATION SET POINT
FOR EIGHT PULVERIZER OPERATION AND INCREMENTED O_2 VALUES
FOR SEVEN OR LESS PULVERIZER OPERATION VERSUS LOAD

Load (Percent)	LDC 12-B27 O2 Wet, (Percent) (8 Mills)	Δ O2 Wet (Percent)/Mill
110	2.63	0.628
105	2.74	0.628
100	2.84	0.628
95	2.95	0.628
90	3.07	0.628
85	3.18	0.628
80	3.28	0.628
75	3.41	0.628
70	3.54	0.628
65	3.73	0.688
60	3.92	0.688
55	4.17	0.688
50	4.42	0.719
45	5.13	0.749
40	5.84	0.749
35	6.45	0.868
30	7.06	0.883
25	7.70	0.883
20	8.58	0.883
15	9.30	0.883


FLUE GAS OXYGEN ANALYZERS
EAST
WEST
FLUE GAS COMBUSTIBLES
FIRST STAGE PRESSURE
BIAS HIGH LIMIT
COAX1000A
COAX1172A
COAX1001A
COAX1002A
LD-5 SH.2
LD-5 SH.6
FD-5 SH.3
FD-1 SH 3
>65%
BLUE
GRN
RED
SPARE
UCM 04
SSA 12
FORCED DRAFT
INTERMOUNTAIN POWER PROJECT
BLACK & VEATCH CONSULTING ENGINEERS
SPECIFICATION NO. 9255.64.0202
INTERMOUNTAIN
THE FOXBORO COMPANY
FOXBORO MASSACHUSETTS U.S.A.
C. SPRAGUE
CONTRACT 440202
REVISION
REFERENCE:
NOTES:

IP14_003938



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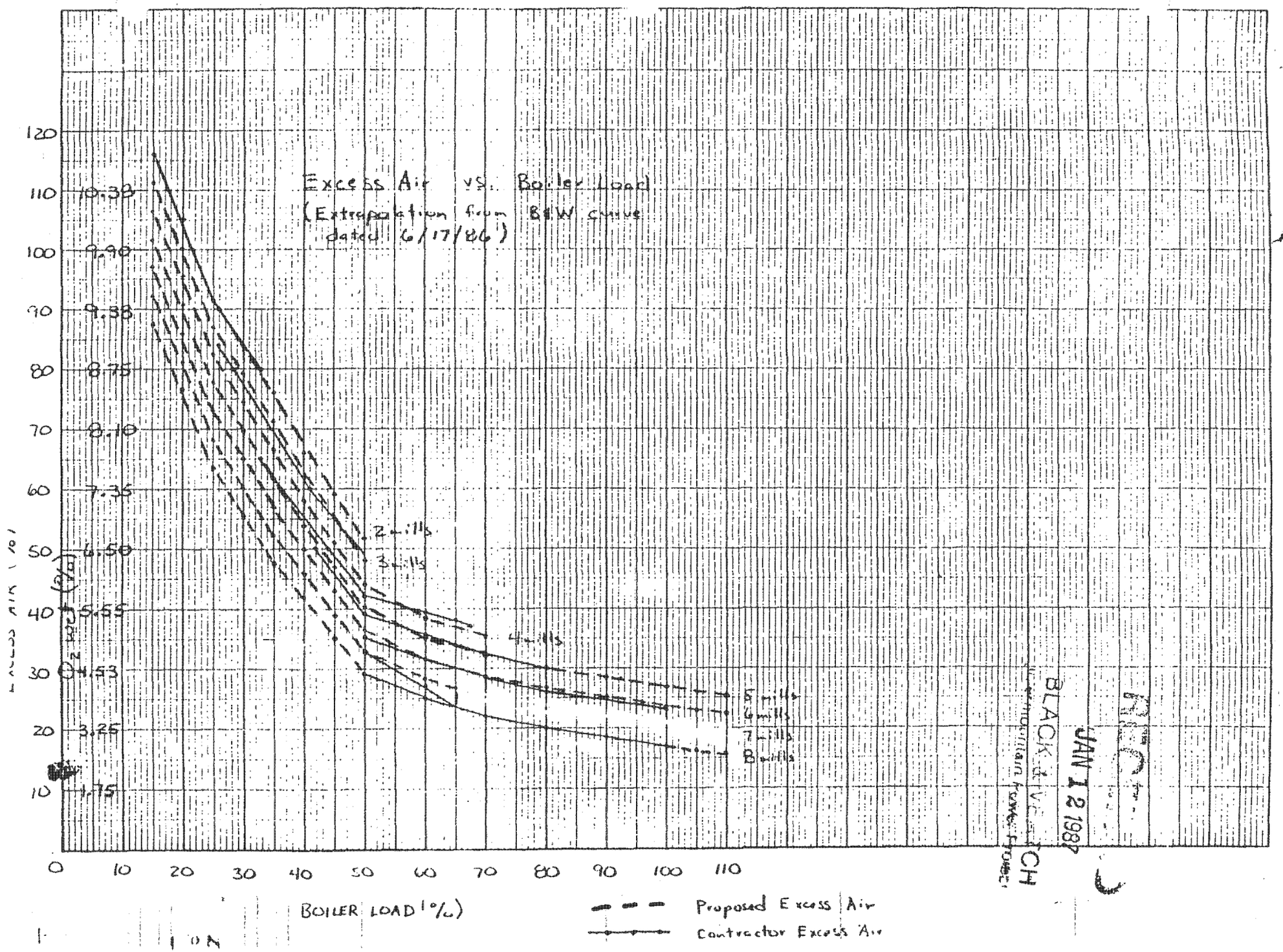
Intermountain Power Project

IP14_003939



RECEIVED
JAN 12 1987
BLACK & VEATCH
Commonwealth Power Project

IP14_003940

Boiler Performance Test Report

Prepared for

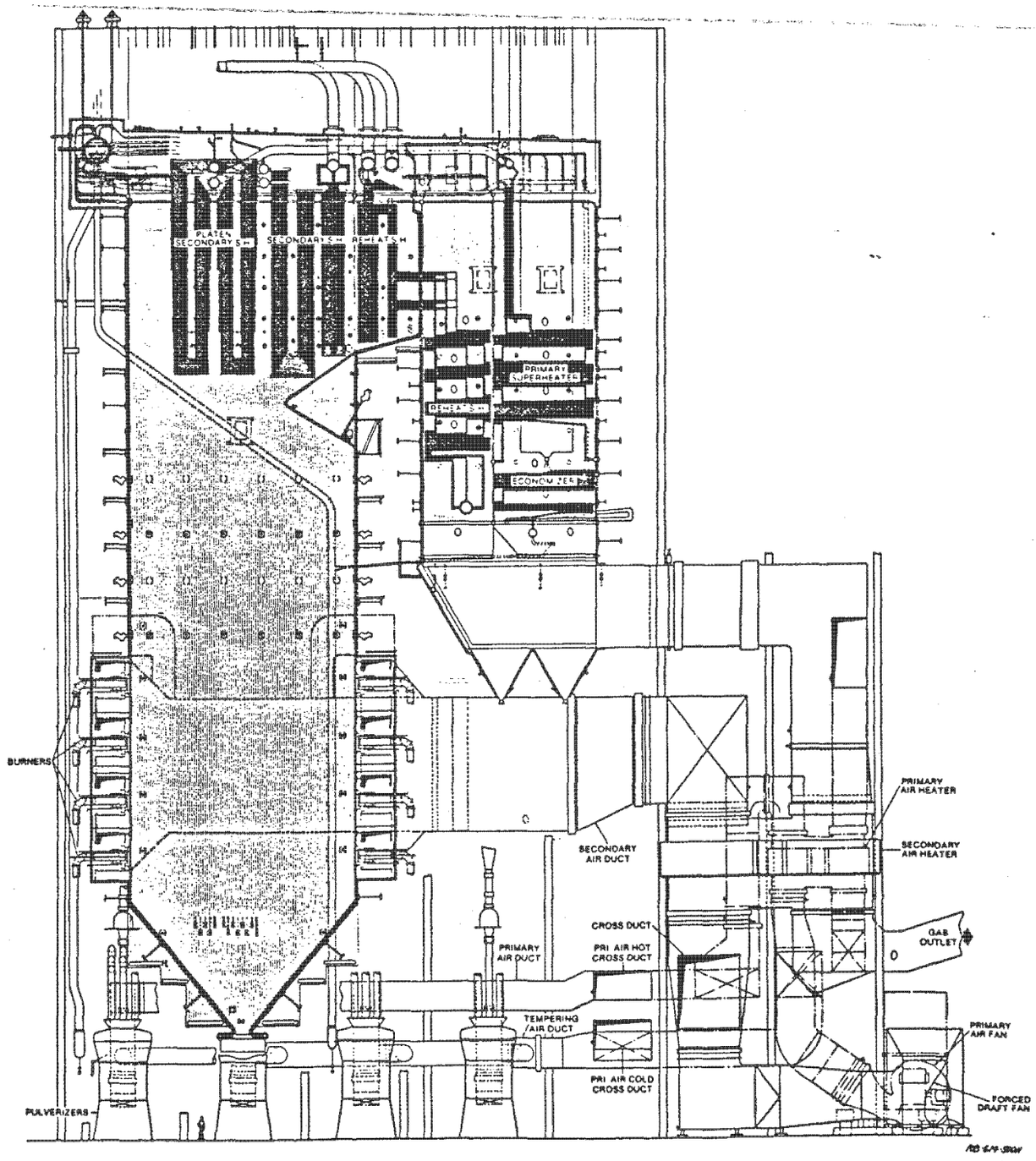
Intermountain Power Project
Unit 1
RB-614

Test Conducted by

Babcock & Wilcox
Fossil Field Engineering & Services
January 27 through February 12, 1987

Report issued 4/23/87

Compare to B&W's Report (5/08/87)



INTERMOUNTAIN POWER PROJECT
UNIT NO. 1
LYNNDYL, UTAH

CAPACITY, LB STEAM PER HOUR 6,480,000
SUPERHEATER OUTLET PRESS., PSI.....2975
SUPERHEATER OUTLET TEMPERATURE, F.....1005
REHEATER OUTLET TEMPERATURE, F.....1005

BLACK & VEATCH ENGINEERS

BABCOCK & WILCOX RADIANT REHEAT BOILER

B&W would like to acknowlege the following for their support during the test, and their contribution toward this report:

Thomas C. Heil Advisory Engineer Barberton Technology	Boiler performance analysis; Final data analysis; Editor, test report
Daryl W. Smith Computer Applications Engineer Denver Service	Data acquisition and preliminary analysis; Editor, final test report
John P. DeFusco Lead Service Engineer Denver Service	Advisor, Unit 1 operations; Test schedule coordinator; Manual data acquisition
John Mihalich, Jr Lead Test Engineer Denver Service	Manpower and equipment coordinator; Equipment installation and maintenance;
Steven Nuspl Advisory Engineer Barberton Results Engineering	Pyrosonics 2000™ development and application

Air heater outlet Orsat crew:

Greg Biehl Field Service Engineer Kansas City Service	Gary Cyr Field Service Engineer Denver Service
Robert Wewer Field Service Engineer Denver Service	Chris Long Akron University

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Test Data Averages

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Appendix

B&W Data Acquisition System Point Summary

IPP Plant Computer Data Point Summary

IP14_003944

Section 1: Performance Test Report

Intermountain Power Project
Unit 1, RB-614

Overview

The Unit 1 boiler performance tests were conducted from January 26 through February 12, 1987. The purpose of the tests was to verify various boiler performance guarantees, including efficiency, air heater leakage, and fluid-side pressure drops. In addition, boiler-component absorptions and heat transfer coefficients were calculated. The data collected and calculated may also serve as base-line performance data for future reference.

This is a technical report that primarily addresses an evaluation of the functional performance of the unit, including an analysis of the efficiency test results. An overall summary of the guarantees is given below:

EFFICIENCY		%
Measured	• Top Level Mill Out Bad averages	~~88.77~~ 87.77
	• 3rd Level Mill Out	88.20
	• 2nd Level Mill Out	88.49
	• Low Level Mill Out	88.30
	Note: Corrected for ↑ excess air levels	
Guarantee		88.57
Contributing Factors	• Air Heater Performance[1]	(.36)
	• Economizer Exit Temp	(.18)
	• Low Slagging Coal[2] /Low FEGT High Excess Air (Upper Mills Out)	(.35)
Potential Solutions	• Improve Air Heater Performance (complete punch list & review performance data with APCo)	
	• Reduce Excess Air with Upper Mills Out (see Steam Temp below)	
	• Add Economizer Sootblowers	

1 Prior to the test, Air Preheater Company had advised that their equipment was not ready for testing. ?

2 Unit designed to accomodate a range of specified coals (low to high slagging)

IP14_003946

STEAM TEMPERATURE		% XS Air Req'd for 1005/1005°F
Measured	• Top Level Mill Out	33
	• 3rd Level Mill Out	25
	• 2nd Level Mill Out	17
	• Low Level Mill Out	17
Guarantee		995 - 1005°F
Potential Solutions	• Improve Operating Techniques with Upper Mill Out • Reduce Cooling Air to Idle Mill	

SUPERHEATER SPRAY	%
Measured	0.0
Guarantee	5.5
Benefit (Efficiency/Heat Rate)	0.15

IP14_003947

Test Description

A summary of test conditions and results can be found in Table II, Performance Test Conditions, and Table III, Performance Test Summary, respectively. Each test was conducted for a four hour period, except for minor tests which were conducted for one to two hours after the major test period. The IR wall blower operating record is tabulated in Table IV. In general, as can be observed by the test results, the furnace walls were exceptionally clean during the test period. This is attributed to the coal being fired and unit trips, as well as operation of the wall blowers. Prior to each major test, the boiler operator initiated the 1K, 2K, 3K, and 4H sootblower sequences, which were completed approximately two hours before the start of the test. This procedure provided normal (clean) boiler conditions for each test.

Instrumentation

Test data was collected from three sources: the B&W data acquisition system (318 temporary and semi-permanent data points), IPP's Foxboro mainframe computer (144 points), and data collected manually by B&W engineers during the tests.

The B&W data acquisition system consisted of an HP-9816 computer which controlled and monitored two HP-3497/3498 digital voltmeter sets.

The B&W instrumentation consisted of the following:

Sheath thermocouple arrays were placed in the gas path at three locations:

- reheater/primary superheater biasing dampers
- economizer outlet
- air heater outlets

These arrays provided accurate average gas temperatures which are essential in determining efficiency, air heater leakage, and boiler-component heat transfer coefficients.

IP14_003948

GUARANTY SUMMARY

CATEGORY	UNITS	GUAR	ACT	ACT RANGE	REMARKS
Efficiency	%	88.57	88.19	87.54 - 88.49	
SH Steam Temp	F	1005 +/-10	1005	960 - 1015	
RH Steam Temp	F	1005 +/-10	1005	950 - 1015	
SH Press Drop	PSIG	160	-		Not Available
RH Press Drop	PSIG	25	-		Not Available
Econ Prs Drop	PSIG	25	-		Not Available
Steam Solids	ppm	0.08	-		Not Tested
Air Resistance	inWC	5.2	3.81	3.18 - 5.37	
Draft Loss	inWC	7.9	7.48	6.90 - 8.62	
SH Spray	Klb/hr	335	0.0		
RH Spray	Klb/hr	0	0.0		
MCR Capacity	Klb/hr	6600	6600		
SH/RH Control Range	Klb/hr	3965	4089 3076		31 % XS Air 59 % XS Air
Excess Air Lvg AH's	%	27	25.5	25.5 - 48	Guaranty AH Lkg Assumed
Pri AH Lkg	Klb/hr	163	178	130 - 244	AH Not Ready Test
Sec AH Lkg	Klb/hr	314	488	331 - 599	AH Not Ready Test Guar IPP/APCO
NOX	lb/MKB	.55	.23	.21 - .47	
Pulv Capacity	Klb/hr	130.3	-		Assumed Met
Pulv Fineness	% 200 % 50	70 99	62 99+		43 Hg Coal vs 48 Hg Spec
Power (Major Access.)	KW	5955			Verbally OK ?
Dust Loading	gr/SCF	6.44	-		Not Tested
Noise/Oil Consumption	-	-	-		Not Tested

TCH-041087

TABLE I

Table II: Performance Test Conditions

Test ID	Date	Conditions / Notes
1A	1/26/87	100% load; D-mill out; test cancelled before start due to Converter Station trip
2A	1/27/87	65% load; AD&G-mills out; 5% O2 making main steam and reheat temperatures
3A	1/27/87	2A short test
4A	1/28/87	MCR (105% load); C-mill out; 4.4% O2, making steam temperatures
5A	1/29/87	100% load; E-mill out; 5.3% O2, making steam temperatures
6A	1/29/87	5A short test; dropped O2 to 4.7% to observe steam temperatures
7A	1/30/87	100% load; F-mill out; 3.2% O2, making steam temperatures
8A	1/30/87	100% load, short test; F-mill out (vibration); lowered PA duct pressure
9A	2/02/87	50% load (night test); 00:30-02:30; 6.4% O2
10A	2/02/87	50% load (night test); 03:30-05:10; 7.9% O2, making steam temperatures
11A	2/04/87	100% load; D-mill out; 4.75% O2 , making steam temperatures
12A	2/05/87	100% load; H-mill out; 4.41% O2, making steam temperatures; O2 control problems throughout test
---	2/06/87	Test cancelled due to Converter Station trip
13A	2/07/87	100% load; D-mill out; 4.2% O2, making steam temperatures
14A	2/08/87	100% load; E-mill out; 4.3% O2, low steam temperatures
15A	2/09/87	100% load; F-mill out; 3.5% O2, making steam temperatures
16A	2/10/87	100% load; E-mill out; 5.8% O2, making steam temperatures
17A	2/11/87	100% load; B-mill out; 3.1% O2, walls were blown during test to control high steam temperatures
18A	2/12/87	100% load; B-mill out; 3.3% O2, making steam temperatures; walls blown prior to test

Note: Prior to each test period, the 1R, 2K, 3K, and 4H sootblower sequences were initiated and completed two hours before the start of the test.

Table III: Performance Test Summary

Test ID	Date	Time	Mills Out	Econ % O2	Load MW	Absorptions (MKB/hr) Boiler	Superheater	Reheater	TOTAL ABSORPTION	Boiler Efficiency
2A	1/27/87	11:45-14:35	ADG	5.04	606 75	2436.5	1523.4	795.4	4755.4	?
3A	1/27/87	14:30-16:40	ADG	5.04	607 75	2428.4	1523.6	798.0	4750.0	
* 4A	1/28/87	13:00-17:00	C	4.36	902 MCR	3321.8	2647.0	1153.9	7122.8	
* 5A	1/29/87	12:30-16:30	E	5.33	901 MCR	3282.6	2421.9	1055.2	6759.7	
→ 6A	1/29/87	17:45-19:05	E	4.70	862 100	3383.5	2404.5	1101.1	6889.1	
* 7A	1/30/87	11:40-15:40	F	3.16	851	3180.2	2397.5	1012.0	6589.7	
* 8A	1/30/87	16:15-18:15	F	3.25	844	3160.6	2372.1	1000.3	6533.0	
* 9A	2/2/87	00:30-02:30	EFH	6.36	467 50	2006.0	1107.2	610.5	3723.7	
* 10A	2/2/87	03:30-05:10	EFH	7.87	467 50	1944.8	1119.5	620.5	3684.8	
* 11A	2/4/87	09:00-13:25	D	4.75	850 100	3230.7	2385.4	1049.8	6665.8	87.99
* 12A	2/5/87	14:25-18:20	H	4.42	850	3233.4	2370.6	1051.0	6655.0	88.20
→ 13A	2/7/87	13:30-17:30	D	4.22	830	3320.4	2244.5	1055.0	6619.9	88.41
→ 14A	2/8/87	13:00-17:00	E	4.32	825	3314.4	2200.2	1052.4	6566.9	88.40
* 15A	2/9/87	13:00-17:00	F	3.51	847	3249.8	2364.3	1037.8	6651.9	88.49
* 16A	2/10/87	15:00-19:00	E	5.81	846	3213.9	2364.8	1048.9	6627.7	87.54
* 17A	2/11/87	15:30-19:25	B	3.06	846	3181.5	2374.2	1038.3	6594.1	88.34
* 18A	2/12/87	12:30-16:30	B	3.29	842	3126.1	2364.6	1022.7	6513.4	88.26

Need calcs

Where are they

Boiler efficiency is corrected to contract conditions per ASME PTC 4.3, ¶ 7.08

* tested @ design temps (high excess air)

→ test @ design excess air (low temps Mstm /HRH - balanced)

IP14_003951

IR (WALL BLOWER) OPERATION SUMMARY

DATE	LOAD %	MILLS OUT	COMMENTS
1/24/87	-	-	Blew all IR's
1/25/87	-	E	Selective Blowing of West IR's
1/26/87	100	-	Black Trip
1/27/87	65	-	No IR Blowing
1/28/87	105	C	No IR Blowing
1/29/87	100	E	---
	100	E	Blew IR 121 & 122 (arch)
	100	E	Blew 1 & 5 (W. Sidewall)
1/30/87	100	F	No IR Blowing
1/31/87	-	-	---
2/1/87	-	-	---
2/2/87	50	-	Blew every 3rd IR (Seq. 8)
2/3/87	100	B	Blew all Arch Blowers
	-	A	---
2/4/87	100	D	No IR Blowing
	100	A	Blew IR 121 & 122 (Arch)
	100	A	blew IR 67 (W Rear Wall)
2/5/87	100	H	No IR Blowing
	100	H	Blew Bottom Row IR's later in day
2/6/87	-	-	Boiler Trip
2/7/87	100	D	No IR Blowing
2/8/87	100	E	No IR Blowing
2/9/87	100	F	No IR Blowing
2/10/87	100	E	No IR Blowing
2/11/87	100	A	No IR Blowing
	100	B	Blew every 3rd IR (Seq. 6)
	100	B	Blew IR-32, 122-126, 35, 32, 36, 61, 63, 65
2/12/87	100	B	Blew all IR's

TABLE IV

TCH-041087

Gas analysis equipment at the economizer and air heater outlets utilized the same grid arrangement as the thermocouples at the same locations to provide an accurate average (dry) gas sample. The economizer oulet was monitored by continuous gas analyzers for O_2, CO and NOx. These analyzers were calibrated before and after each test. The air heater outlets' gas samples were analyzed by Orsat for O_2 and CO_2.

Air and gas pressures were measured with water manometers and read manually.

Fluid-pressure transmitters were installed for the test period at the economizer inlet, drum, secondary superheater outlet, and reheater outlet to verify plant instrumentation. These transmitters were also used to calculate fluid pressure drops. These transmitters were calibrated both before installation and after removal to allow for the correction of test data due to any calibration drift which might have occurred during the test period.

A Babcock and Wilcox PYROSONIC 2000™ was installed for the test period to measure the furnace exit gas temperature (FEGT) and to verify the boiler performance program's calculation of this temperature.

The remaining data necessary to determine air heater performance, boiler output, and efficiency per PTC 4.1 heat-loss method was obtained from the plant computer. Data was collected at five minute intervals.

The pertinent plant data relating to air heater performance is as follows:

- Air Heater air inlet temperature
- Air Heater air outlet temperature
- Pulverizer inlet air temperature
- Air flow entering pulverizers

A complete listing of B&W and Plant Instrumentation which were used as data sources is provided in the Appendix.

IP14_003953

Calculation Methodology

Efficiency was calculated in accordance with PTC 4.1 heat loss method. Output was calculated based on fluid flows, temperatures and pressures entering and leaving the boiler. Reheat flow was calculated from high pressure steam flow less extraction flow to the top two high pressure feedwater heaters, and less the sum of the expected turbine shaft leakages and minor extraction flows. The high pressure heater extraction flows were calculated by heat balance across the feedwater heaters. Fuel input was calculated based on output and efficiency. Total air and gas flows were calculated in accordance with PTC 4.1 and PTC 4.3 Excess air and CO_2+SO_2 were calculated based on O_2 per PTC 19.10, paragraph 6.04. Setting infiltration was estimated at two (2) percent. Thus, total air flow is based on two (2) percent less excess air than measured at the economizer outlet. Air flow to the pulverizers was measured by the permanent pitot tubes located at the pulverizer inlet; the plant's indication of the pitot tube delta-P was erroneous, and actually represented pulverizer delta-P. Air flowing through the primary air heater was calculated by heat balance based on measured primary air flow, average air temperature entering the pulverizers, and air temperature entering and leaving the air heaters. Air flow to the secondary air heaters is the total air flow to the unit less the air flow to the primary air heaters. Gas flow to the primary air heaters was calculated by heat balance across the primary air heaters. Gas flow to the secondary air heaters is the total gas flow leaving the economizer less the calculated gas flow to the primary air heaters.

Discussion of Test Results

For most of the following plots and tabulations, tests are arranged in order of load (highest to lowest), and burner elevations out of service (top out, first), as opposed to chronological test sequence. The abbreviation 'FEGT' refers to the gas temperature entering the secondary superheater inlet bank, i.e. the 24 in. side-spaced bank above the furnace arch. The measurement of surface effectiveness is referred to as a 'Kf' factor. This is the ratio of the measured overall heat transfer coefficient to the expected heat transfer coefficient for the operating conditions.

IP14_003954

Figure 1 graphically shows steam temperature versus excess air and burners out of service. There was no (or negligible) superheat and reheat spray during any of the tests. The difference between calculated FEGT and expected FEGT is also shown. It can be observed that the FEGT is approximately 100°F less than expected when the top burner elevations are out of service. With either of the two lower burner elevations out of service, FEGT is very close to expected. The expected difference in FEGT between a top versus bottom mill out of service is approximately 30°F. In general, B&W has historically observed a larger decrease in FEGT with a top mill out of service than we would calculate (on the order of 20°F), but not the order of magnitude measured at IPP. The most unique operating feature of this unit versus the B&W data base is the high cooling air required for the idle burner compartments. Since this is the only unit we have observed with this characteristic, the high cooling air flow has to be suspected as a contributing factor to the FEGT differential.

Figure 2 is a plot of the design required reheat absorption versus load. The circles show the actual test results. Reheat inlet temperature was corrected to a superheat outlet temperature of 1005°F. It is concluded that the turbine is performing as expected with regard to reheat requirements, and, therefore, is not contributing to lower-than-expected SH/RH temperature.

At the top of Figure 3, the actual versus expected superheat and reheat absorptions are shown. The Kf results are shown on the remainder of the figure. The platen and primary superheater Kf's are slightly less than design, which is contributing to the low steam temperatures. The gas mass flow in the PSH pass was very low for the last three tests, and is presumably the reason for the low PSH Kf's for these loads. The low economizer Kf's are typical for a unit without economizer sootblowers. Economizer Kf's in excess of 1.0 would be expected with a full complement of economizer sootblowers. In order to evaluate the benefits of adding sootblowers in the SH platen and primary superheater sections (with regard to thermal performance), additional tests would have to be conducted to determine the effectiveness of existing sootblowers, as well as the effectiveness decay rate. The lower than expected superheat absorption for tests 7A, 8A, 15A, 17A, and 18A reflects the lower platen and primary superheater Kf's. FEGT and reheat absorption is as expected for these tests. The Actual versus Expected superheat and reheat absorption for tests 5A, 16A, 6A, 14A, 11A, 13A, and 12A reflect lower than expected FEGT, as well as deviations in expected surface effectiveness. Table 5 summarizes the efficiency results. The efficiencies shown are

IP14_003955

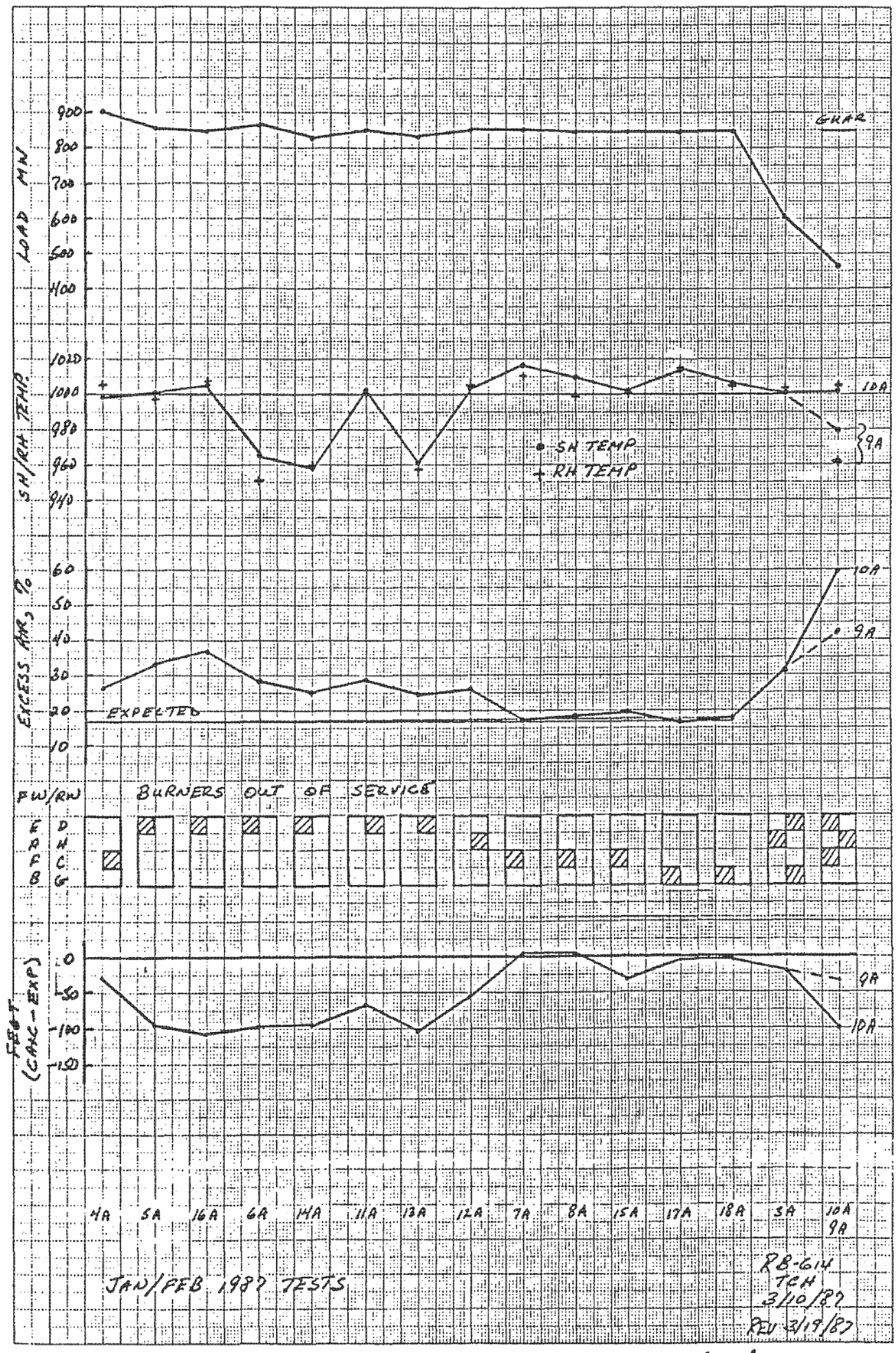

LOAD MW
900
800
700
600
500
400
GRAR
SH/RH TEMP.
1020
1000
980
960
940
10A
9A
• SH TEMP
+ RH TEMP
EXCESS AIR, %
60
50
40
30
20
10
10A
9A
EXPECTED
FW/RW
BURNERS OUT OF SERVICE
E D
A H
F C
B G
FEBT (CALC-EXP)
0
-50
-100
-150
9A
10A
4A
5A
16A
6A
14A
11A
13A
12A
7A
8A
15A
17A
18A
3A
10A 9A
JAN/FEB 1987 TESTS
RB-614
TCH
3/10/87
REV 3/19/87

FIG 1

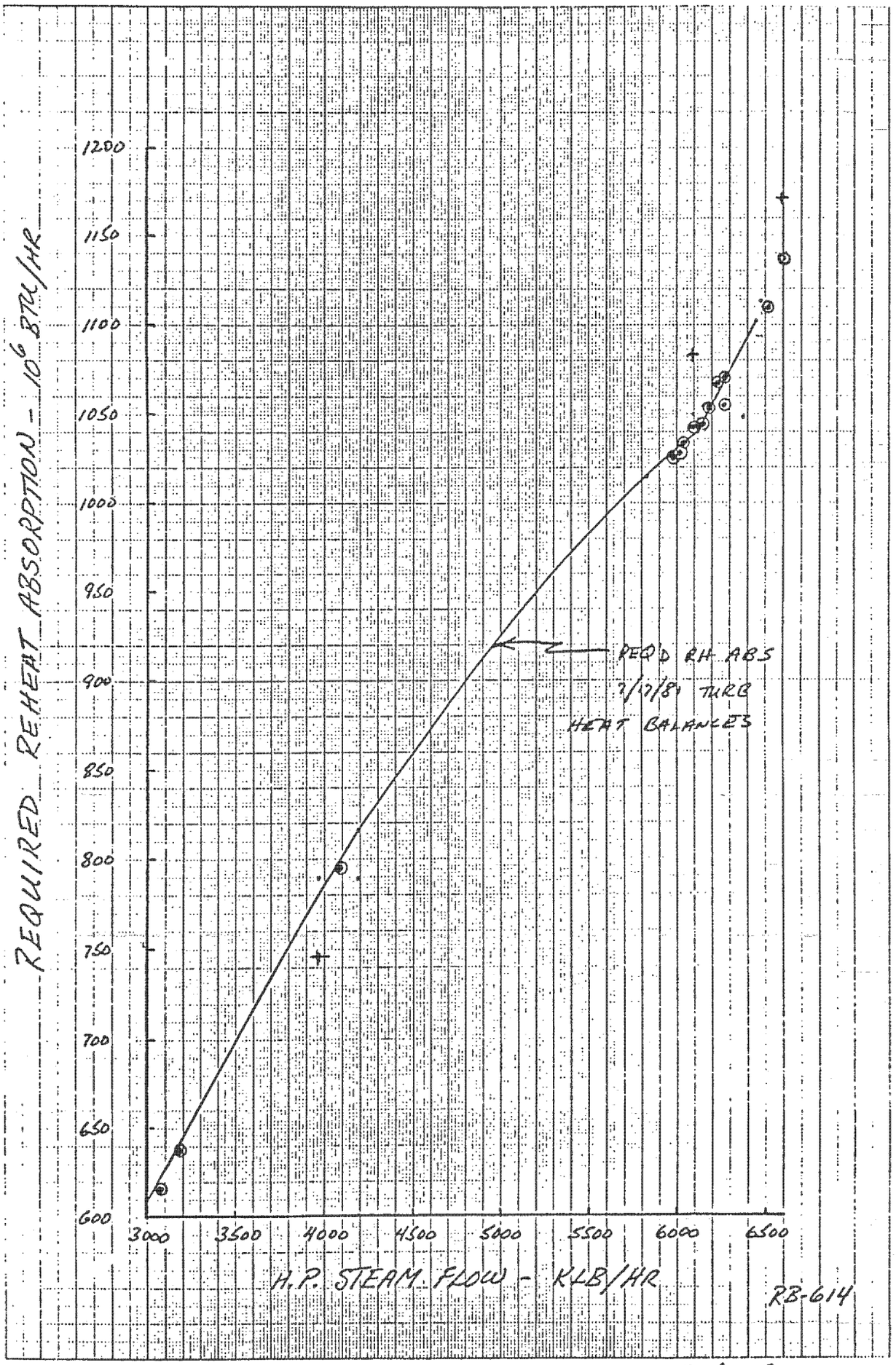

REQUIRED REHEAT ABSORPTION - 10^6 BTU/HR
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
3000
3500
4000
4500
5000
5500
6000
6500
H.P. STEAM FLOW - KLB/HR
REQ'D RH ABS
7/17/81 TURB
HEAT BALANCES
RB-614

FIG. 2

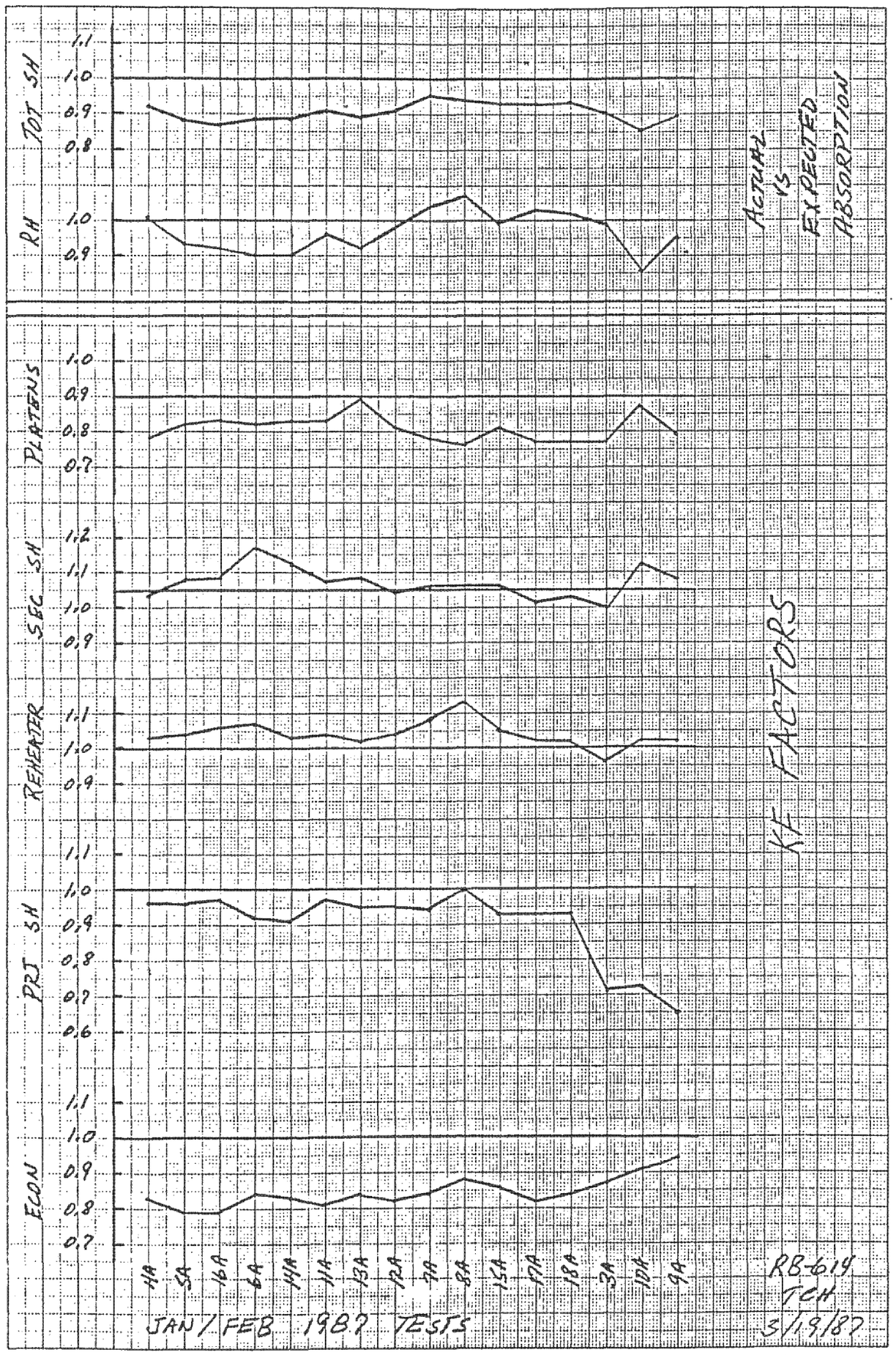

TOT SH
RH
PLATENS
SBC SH
REHEATER
PRT SH
ECON
1.1
1.0
0.9
0.8
0.7
0.6
1.2
4A
5A
16A
6A
14A
11A
13A
12A
7A
8A
15A
17A
18A
3A
10A
9A
JAN / FEB 1987 TESTS
ACTUAL
VS
EXPECTED
ABSORPTION
KF FACTORS
RB-614
TCH
3/19/87

FIG 3

Table V: Efficiency Summary

Test ID	(1) Eff %	Mill Out	Steam Temp	Excess Air	(2) AH Gas Out Temp w/lkg	w/o lkg	Econ Gas Out Temp	(3) Econ Gas Out Temp
Guar	88.57	One	1005	17.0	---	295	736	---
11A	87.99	D	1005	28.6	298	317	759	740
12A	88.20	H	1005	25.9	299	316	762	740
13A	88.41	D	959	24.4	293	309	742	721
14A	88.40	E	959	25.1	291	306	740	722
15A	88.49	F	1005	17.0	297	316	753	734
16A	87.54	E	1005	37.3	300	319	767	744
17A	88.34	B	1005	17.0	302	325	759	740
18A	88.26	B	1005	17.0	304	327	752	738

Note
(1) Efficiency is corrected to contract conditions
(2) AH gas outlet temperatures corrected to contract air entering temperature
(3) Expected economizer exit gas temperature with sootblowers

corrected to contract conditions, including 17% excess air for those tests where design steam temperatures were obtained with actual excess air less than 20%. The gas temperatures shown for the guarantee condition reflect those expected for the final design. The high air heater exit temperature is due to higher-than-expected economizer gas outlet temperature (7°F) and poor air heater performance (14°F). Inaccuracy in the measurement of air heater leakage is suspected as the reason for the step change in air heater exit gas temperature for tests 17A and 18A.

Boiler-model computer runs based on test conditions were run with a design economizer effectiveness (Kf) of 1.0, which could be achieved with the addition of sootblowers. It can be observed that this would correct the higher than expected economizer gas outlet temperature, and would improve efficiency on the order of 0.18%

Tables VI and VII summarize the primary and secondary air heater performance. A B&W first-principle model which predicts air heater performance based on a design set of conditions was used to calculate expected performance for the test conditions. The secondary air heater gas outlet temperature averages about 12°F higher than expected; the primary air heater is 25 to 60°F higher than expected. Approximately 10% of the total gas flow goes through the primary air heaters. It should be noted that the air flow leaving the air flow leaving the primary air heater is calculated by heat balance. Since the primary air heater air outlet temperature was obtained from plant instrumentation, there is a potential for error in this measurement. It is probable that there is more air by-passing the primary air heater (mill tempering air) than calculated. It also must be reiterated that the APCo air heater erection/correction punch list was not completed.

The B&W Pyrosonic 2000™ system installed was located in the observation door on approximately the middle elevation of the secondary superheater inlet bank. Table VIII is a tabulation of the average Pyrosonic reading for each test and the calculated FEGT. It should be noted that the Pyrosonic reading is an average across one elevation, whereas the calculated gas temperature is an average across the entire exit plane.

Figure 4 is a graph of the calculated gas temperature entering the secondary superheater outlet bank. The operating temperature is less than the design specified maximum value of 1900°F (HVT) at Maximum Continuous Rating (MCR).

IP14_003960

Table VI : Primary Air Heater Performance

Test ID		Expected	11A West	11A East	12A West	12A East	13A West	13A East	14A West	14A East
Gas Temp Ent	°F	736	755.2	762.8	763.6	759.8	742	741.7	740.1	739.3
Air Temp Ent	°F	77	106.1	105.2	104.6	104.2	102	101.5	103.6	103
Gas Flow Ent	Klb/hr	924	795		811		802		775	
Air Flow Lvg	Klb/hr	837	814		812		824		821	
Moisture Gas Ent	%	6	4.5		4.9		5		4.95	
AH Lkg	Klb/hr	169	226	207	181	130	185	181	164	181
Gas Temp Lvg (Act)	°F w/lkg	---	300.8	324.4	301.4	325.1	301	324.7	300.6	325.3
Gas Temp Lvg (Exp)	°F w/lkg	279	261	265	259	266	264	264	266	263
Gas Temp Lvg (Act)	°F w/o lkg	---	353	363	346	361	344	371	339	372
Gas Temp Lvg (Exp)	°F w/o lkg	313	303	304	294	292	299	299	297	297
Air Temp Lvg (Act)	°F	---	535.1	499.8	534	500	526.7	494.4	524.8	492.3
Air Temp Lvg (Exp)	°F	582	583	588	579	576	572	572	570	569
AH By-pass Flow	Klb/hr	498	664	671	670	667	651	651	651	651

Test ID		15A West	15A East	16A West	16A East	17A West	17A East	18A West	18A East
Gas Temp Ent	°F	752.9	753	767.4	766.7	759.2	758.9	752.5	752
Air Temp Ent	°F	97.8	97.8	93.3	93.6	93.8	92.8	92.2	91.5
Gas Flow Ent	Klb/hr	775		768		773		856	
Air Flow Lvg	Klb/hr	803		803		821		731	
Moisture Gas Ent	%	5.2		4.66		5.35		5.23	
AH Lkg	Klb/hr	173	129	244	94	215	179	230	181
Gas Temp Lvg (Act)	°F w/lkg	302.1	324.8	301.5	324.5	302.6	325.5	302.8	325.8
Gas Temp Lvg (Exp)	°F w/lkg	260	267	246	271	247	252	288	296
Gas Temp Lvg (Act)	°F w/o lkg	345	360	364	351	358	376	356	372
Gas Temp Lvg (Exp)	°F w/o lkg	294	294	292	292	288	287	338	337
Air Temp Lvg (Act)	°F	533.3	500.8	541.6	506	539.2	504.1	539.2	507.4
Air Temp Lvg (Exp)	°F	576	576	585	584	574	573	617	616
AH By-pass Flow	Klb/hr	506		533		478		697	

IP14_003961

Table VII a: Secondary Air Heater Performance

Test ID		Expected	11A West	11A East	12A West	12A East	13A West	13A East	14A West	14A East
Gas Temp Ent	°F	736	755.2	762.8	763.6	759.8	742	741.7	740.1	739.3
Air Temp Ent	°F	64	82	81.2	80.8	81.3	78.7	79	79.8	80.3
O2 Ent	%	---	4.85	4.65	4.22	4.61	4.37	4.06	4.35	4.28
CO2 Ent (1)	%	---	14.19	14.37	14.47	14.12	14.33	14.6	14.49	14.55
O2 Lvg (Orsat)	%	---	5.87	5.89	5.3	5.7	5.2	5.3	5.1	5.4
CO2 Lvg (Orsat)	%	---	13.3	13.3	13.9	13.5	14	13.9	14	13.8
CO2 Lvg (1)	%	---	13.29	13.28	13.53	13.18	13.6	13.52	13.84	13.57
Moisture in Gas Ent	%	---	4.41	4.46	4.66	4.56	5.15	5.22	4.64	4.65
Moist Air	lb/lb DA	---	0.0033		.0029		.0032		.0032	
AH Lkg (2)	%	---	6.16	7.49	6.31	6.49	4.78	7.17	4.3	6.54
AH Lkg (3)	Klb/hr	315	431	524	454	467	331	497	294	446
Gas Flow Ent (4)	Klb/hr	6286	7002		7197		6928		6826	
Air Flow Lvg (4)	Klb/hr	5184	5777		5937		5745		5642	
Gas Temp Lvg (Act)	°F w/lkg	---	308.8	311.6	308.2	312.7	300	303.2	300	303
Gas Temp Lvg (Exp)	°F w/lkg	282	299	299	302	301	294	290	295	291
Gas Temp Lvg (Act)	°F w/o lkg	---	322	328	322	327	310	318	309	317
Gas Temp Lvg (Exp)	°F w/o lkg	292	312	314	315	314	304	304	295	304
Air Temp Lvg (Act)	°F	---	650	626	652	628	634	611	631	609
Air Temp Lvg (Exp)	°F	647	664	671	670	667	651	651	651	651

(1) Calculated per PTC 19.10, ¶6.04
(2) Used calculated CO2
(3) Total for two air heaters based on gas flow entering
(4) Calculated

IP14_003962

Table VII b: Secondary Air Heater Performance

Test ID		15A West	15A East	16A West	16A East	17A West	17A East	18A West	18A East
Gas Temp Ent	°F	752.9	753	767.4	766.7	759.2	758.9	752.5	752
Air Temp Ent	°F	75.9	76.3	72.8	73.9	72.5	73.4	71.1	71.8
O2 Ent	%	3.42	3.59	5.79	5.82	3.21	2.91	3.23	3.35
CO2 Ent (1)	%	15.17	15.02	13.24	13.22	15.54	15.8	15.56	15.45
O2 Lvg (Orsat)	%	5	4.8	7	6.9	4.8	4.6	4.7	4.9
CO2 Lvg (Orsat)	%	14.2	14.2	12.4	12.4	14.4	14.5	14.4	14.2
CO2 Lvg (1)	%	13.8	13.97	12.18	12.27	14.15	14.32	14.26	14.44
Moisture in Gas Ent	%	4.74	4.7	4.4	4.39	4.99	5.06	4.82	4.78
Moist Air	lb/lb DA	.0036		.0036		.0038		.0032	
AH Lkg (2)	%	8.94	6.77	7.94	7.04	8.88	9.3	8.16	8.72
AH Lkg (3)	Klb/hr	597	452	599	531	558	584	507	541
Gas Flow Ent (4)	Klb/hr	6680		7542		6280		6209	
Air Flow Lvg (4)	Klb/hr	5460		6285		5074		4888	
Gas Temp Lvg (Act)	°F w/lkg	303	305.7	304.7	308.2	304.8	308.6	306.7	311.9
Gas Temp Lvg (Exp)	°F w/lkg	291	295	294	296	292	292	297	296
Gas Temp Lvg (Act)	°F w/o lkg	322	320	322	324	324	329	325	332
Gas Temp Lvg (Exp)	°F w/o lkg	308	309	310	310	310	311	314	314
Air Temp Lvg (Act)	°F	645	623	653	626	652	632	650	632
Air Temp Lvg (Exp)	°F	666	666	669	668	675	675	675	674

(1) Calculated per PTC 19.10, ¶6.04
(2) Used calculated CO2
(3) Total for two air heaters based on gas flow entering
(4) Calculated

IP14_003963

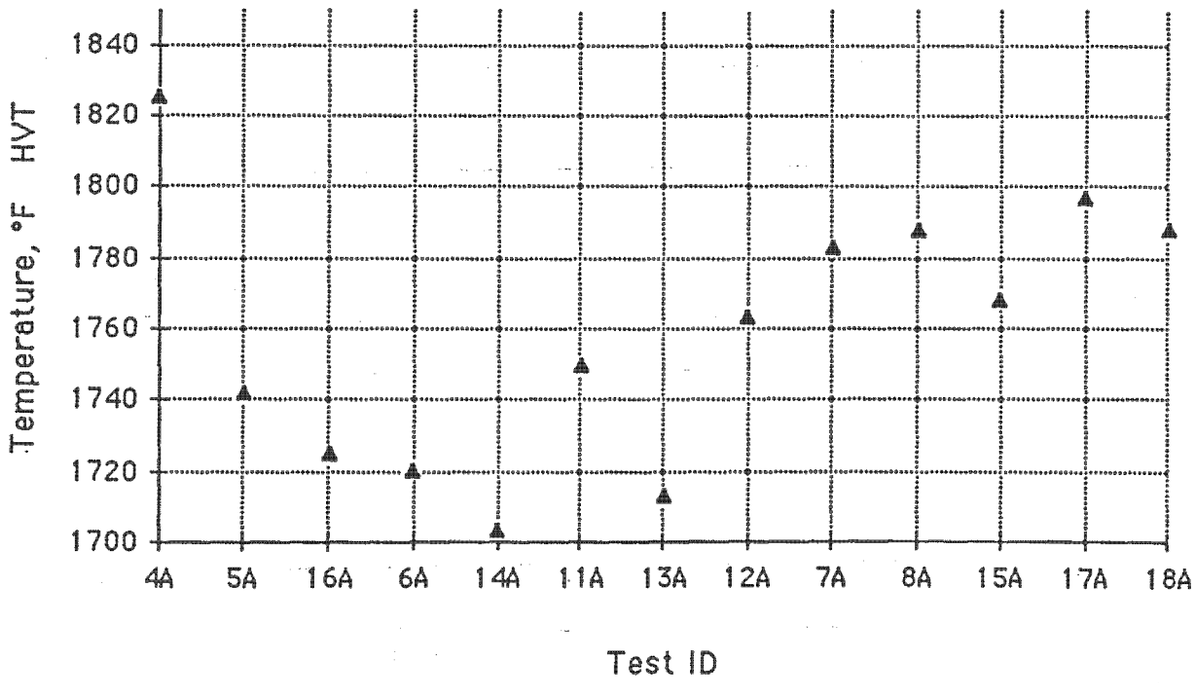
Table VIII: Pyrosonic vs Calculated FEGT

Test ID	Mill Out	% XS Air	Calculated FEGT (°F)	Pyrosonics FEGT (°F)	Meas'd-Calc'd ΔT (°F)
4A	C	25.6	2174	2227	53
5A	E	33.1	2060	2130	70
16A	E	37.3	2030	2091	61
6A	E	28.1	2068	2117	49
14A	E	25.1	2046	2076	30
11A	D	28.5	2083	2161	78
13A	D	24.5	2044	2147	103
12A	H	25.8	2101	2176	75
7A	F	17.1	2165	2188	23
8A	F	17.8	2157	2171	14
15A	F	19.5	2132	2168	36
17A	B	16.6	2172	2189	17
18A	B	18.1	2163	2176	13
3A	ADG	30.8	1948	1999	51
10A	EFH	58.5	1721	1807	86
9A	EFH	42.3	1769	1807	38

IP14_0039964

Figure 4: Gas Temperature Entering SSH Outlet Bank

Actual Location
Pyrometers



Surface Studies

Space was provided in the design of this unit to add additional primary superheater and reheater surface at the inlets to each component. The improvement (or lack of improvement) in excess air for the arrangements studied is tabulated on Table IX. Percent superheater spray is shown in parentheses, when applicable. The addition of both primary superheater and reheater surface would only reduce the required excess air about 4% for the tests with the top front mill out of service. It is apparent that given current operating conditions (low slagging fuel/ clean furnace walls) there is insufficient heat in the gas to make full reheat and superheat with top burners out of service. The last two columns show the required excess air if the FEGT could be improved 50°F. The conclusion is that additional SH/RH surface is ineffective with regard to increasing steam temperature. However, increasing FEGT is very effective.

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Table IX: Surface Studies

Test ID	Test XS Air	Add RH 26,600 sq ft	Add PSH 26,500 sq ft	Add PSH 41,400 sq ft	PSH + RH 68,000 sq ft	FEGT +50°F
4A	25.6	24	23	22	21	17
5A	33.1	34	33	31	30	24
16A	37.3	36	36	33	32	28
6A	28.1	33	33	31	30	25
14A	25.1	32	30	28	28	23
11A	28.5	28	27	26	25	19
13A	24.5	31	29	28	27	22
12A	25.8	25	24	23	22	17
7A	17.1	<0.9>	<1.2>	<1.5>	<1.9>	
8A	17.8	<0.8>	<1.1>	<1.5>	<1.7>	
15A	19.5	18	18	17	<0.3>	
17A	16.6	<0.6>	<0.8>	<1.4>	<1.6>	
18A	18.1	<1.1>	<1.3>	<1.5>	<2.6>	

Note: Numbers in <brackets> are percent SH spray.
When SH spray is required, excess air is 17%

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Summary and Conclusions

1. Efficiency

   Efficiency is low for three basic reasons:

   - Air heater performance
   - Higher than expected economizer gas outlet temperature
   - Excess air required for steam temperature control with upper mills out of service

   Potential corrective actions are as follows:

   1A. Air Heater Performance/Leakage

   The APCo punch list must be completed. Spacial measurement errors due to flue gas O2 and temperature stratification could be a source of measurement error in the original test. The air heaters should be re-tested. A test procedure must be negotiated between IPP, B&W, and APCo. Additional measures may be required to improve air heater thermal performance.

   1B. Gas Temperature Entering Air Heater

   Potential of reducing gas temperature by adding sootblowers.

2. Steam Temperature

   - Steam temperatures are met when lower mills are in service
   - Steam temperatures are low when upper mills are out of service
   - Steam temperature inter-relates with efficiency when excess air is required for steam temperature control

   2A. The high cooling air flow to the idle burner compartments is suspected as a contributing factor. A short test should be conducted to determine if steam temperature can be improved by reducing excess air to an idle upper burner compartment.

   2B. Operational Burners - The low steam temperature problem is limited to upper burner elevations out of service. Operational techniques such as taking an additional mill

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from a lower burner elevation out of service and/or bias firing will improve performance.

2C. Operational Wall Cleanliness - The test results show that the gas leaving the furnace is on the low side, particularly when the upper mills are out of service. Unit trips, low slagging coal, and wall blowing during the test period are contributing factors to a cleaner furnace than would be expected. Operation of wall blowers should be suspended when FEGTs are low.

2D. An IPP punch list item is a "firm" B&W sootblowing schedule. This is not realistic. The current state-of-the-art is to operate sootblowers based on need, as indicated by a real-time performance monitor such as the B&W System-140. B&W/DPSC can only offer suggested sootblower operating sequences, which has been done.

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Section 2: Calculations

Intermountain Power Project
Unit 1, RB-614

DATE			01/28/87	01/29/87	02/10/87	01/29/87	02/08/87	02/04/87	02/07/87	02/05/87
TIME			1300 1700	1240 1630	1500 1900	1745 1905	1300 1700	0900 1325	1330 1730	1425 1820
LOAD IDENT		FUL	4A	5A	16A	6A	14A	11A	13A	12A
RUN NO.		1	2	3	4	5	6	7	8	9
	UNITS		MCR							
LOAD	MW	6100	902 MW	854 MW	846 MW	862 MW	825 MW	850 MW	830 MW	850 MW
FUEL		PC	PC	PC	PC	PC	PC	PC	PC	PC
BURNERS OUT OF SERVICE			C 2nd	E 4th	E 4th	E 4th	E 4th	D 4th	D 4th	H 3rd
		EXPECTED	0	0	0	0	0	0	0	0
		SUM SHT	0	0	0	0	0	0	0	0
STEAM AND WATER FLOWS										
H.P. STEAM FLOW	MLB/HR	6100.00	6605.76	6238.45	6099.90	6515.92	6187.73	6161.37	6274.92	6136.38
1ST STAGE SPRAY		35.57	0.02	0.01	0.01	0.02	0.02	0.01	0.02	0.01
2ND STAGE SPRAY		20.59	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
RH-1 TURBINE LEAKAGE		0.00	59.45	56.15	54.90	58.64	55.69	55.45	56.47	55.23
NO. 1 HTR. EXTR.		0.00	644.81	603.44	585.72	645.77	602.62	593.19	611.35	590.56
NO. 2 HTR. EXTR.		0.00	598.66	563.10	538.89	595.15	559.54	558.49	567.36	547.36
LEAVING REHEAT-1		4925.00	5302.83	5015.77	4920.39	5216.36	4969.87	4954.23	5039.73	4943.23
RH-1 SPRAY		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AIR AND GAS FLOWS										
XS AIR LVG ECO	PERCENT	17.0	25.6	33.2	37.3	28.1	25.2	28.5	24.5	25.9
XS AIR TO BURNERS		15.0	23.6	31.2	35.3	26.1	23.2	26.5	22.5	23.9
GAS LVG FURNACE	MLB/HR	7174.0	8219.6	8265.6	8364.0	8059.3	7527.9	7858.9	7555.8	7685.2
GAS ENT AIR HTRS		7230.7	8280.5	8323.6	8421.1	8118.0	7583.9	7916.0	7612.3	7742.0
AIR LVG AIR HTRS		6528.1	7536.1	7615.0	7724.1	7401.4	6900.1	7219.2	6922.4	7047.6
AIR TREATED AS RECIRC		0.0	524.4	940.3	1158.9	651.5	453.7	656.3	418.2	506.2
FLUID TEMPERATURES	DEG F									
SEC SH OUTLET		1005.	998.	1001.	1005.	965.	958.	1002.	961.	1003.
REHEAT-1 OUT		1005.	1005.	997.	1007.	951.	959.	1000.	957.	1005.
RH-1 IN		624.	620.	623.	626.	594.	587.	622.	589.	626.
RH-1 ATTEMP IN		624.	620.	623.	626.	594.	587.	622.	589.	626.
PRI-1 SH OUT		720.	726.	726.	728.	714.	708.	722.	710.	---
ATTEMP-1 OUT		717.	726.	726.	728.	714.	708.	722.		
PRI-2 (PLATEN) OUT		780.	783.	786.	789.	762.	759			
ATTEMP-2 OUT		777.	783.	786.	789.	76[illegible]				
ECO WATER IN		545.	552.	548.	551.	54[illegible]				
ECO WATER OUT		575.	574.	570.	573.	568				
SH SPRAY WATER		342.	322.	327.	279.	311				
RH-1 SPRAY WATER		342.	275.	282.	265.	236				

Front	Rear	
E	D	4th
A	H	3rd
F	C	2nd
B	G	1st

Need overall expected values (or average of all tests) (or best test conditions) for comparisons

IP14_003971

DATE			01/28/87	01/29/87	02/10/87	01/29/87	02/08/87	02/04/87	02/07/87	02/05/87
TIME			1300 1700	1240 1630	1500 1900	1745 1905	1300 1700	0900 1325	1330 1730	1425 1820
LOAD IDENT		FUL	4A	5A	16A	6A	14A	11A	13A	12A
RUN NO.		1	2	3	4	5	6	7	8	9
	UNITS		MCR							
LOAD	MW	6100	902 MW	854 MW	846 MW	862 MW	825 MW	850 MW	830 MW	850 MW
FUEL		PC	PC	PC	PC	PC	PC	PC	PC	PC
BURNERS OUT OF SERVICE			C 2nd	E 4th	E 4th	E 4th	E 4th	D 4th	D 4th	H 3rd
		EXPECTED	0	0	0	0	0	0	0	0
		SUM SHT	0	0	0	0	0	0	0	0
STEAM AND WATER FLOWS										
H.P. STEAM FLOW	MLB/HR	6100.00	6605.76	6238.45	6099.90	6515.92	6187.73	6161.37	6274.92	6136.38
1ST STAGE SPRAY		35.57	0.02	0.01	0.01	0.02	0.02	0.01	0.02	0.01
2ND STAGE SPRAY		20.59	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
RH-1 TURBINE LEAKAGE		0.00	59.45	56.15	54.90	58.64	55.69	55.45	56.47	55.23
NO. 1 HTR. EXTR.		0.00	644.81	603.44	585.72	645.77	602.62	593.19	611.35	590.56
NO. 2 HTR. EXTR.		0.00	598.66	563.10	538.89	595.15	559.54	558.49	567.36	547.36
LEAVING REHEAT-1		4925.00	5302.83	5015.77	4920.39	5216.36	4969.87	4954.23	5039.73	4943.23
RH-1 SPRAY		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AIR AND GAS FLOWS										
XS AIR LVG ECO	PERCENT	17.0	25.6	33.2	37.3	28.1	25.2	28.5	24.5	25.9
XS AIR TO BURNERS		15.0	23.6	31.2	35.3	26.1	23.2	26.5	22.5	23.9
GAS LVG FURNACE	MLB/HR	7174.0	8219.6	8265.6	8364.0	8059.3	7527.9	7858.9	7555.8	7685.2
GAS ENT AIR HTRS		7230.7	8280.5	8323.6	8421.1	8118.0	7583.9	7916.0	7612.3	7742.0
AIR LVG AIR HTRS		6528.1	7536.1	7615.0	7724.1	7401.4	6900.1	7219.2	6922.4	7047.6
AIR TREATED AS RECIRC		0.0	524.4	940.3	1158.9	651.5	453.7	656.3	418.2	506.2
FLUID TEMPERATURES	DEG F									
SEC SH OUTLET		1005.	998.	1001.	1005.	965.	958.	1002.	961.	1003.
REHEAT-1 OUT		1005.	1005.	997.	1007.	951.	959.	1000.	957.	1005.
RH-1 IN		624.	620.	623.	626.	594.	587.	622.	589.	626.
RH-1 ATTEMP IN		624.	620.	623.	626.	594.	587.	622.	589.	626.
PRI-1 SH OUT		720.	726.	726.	728.	714.	708.	722.	710.	721.
ATTEMP-1 OUT		717.	726.	726.	728.	714.	708.	722.	710.	721.
PRI-2 (PLATEN) OUT		780.	783.	786.	789.	762.	759.	785.	766.	784.
ATTEMP-2 OUT		777.	783.	786.	789.	762.	759.	785.	766.	784.
ECO WATER IN		545.	552.	548.	551.	548.	544.	551.	549.	551.
ECO WATER OUT		575.	574.	570.	573.	568.	561.	571.	566.	571.
SH SPRAY WATER		342.	322.	327.	279.	311.	308.	312.	300.	318.
RH-1 SPRAY WATER		342.	275.	282.	265.	236.	242.	294.	261.	253.

Front: E A F B
Rear: D H C G
4th 3rd 2nd 1st

IP14_003972

DATE			01/28/87	01/29/87	02/10/87	01/29/87	02/08/87	02/04/87	02/07/87	02/05/87
TIME			1300 1700	1240 1630	1500 1900	1745 1905	1300 1700	0900 1325	1330 1730	1425 1820
LOAD IDENT		FUL	4A	5A	16A	6A	14A	11A	13A	12A
RUN NO.		1	2	3	4	5	6	7	8	9
	UNITS									
LOAD	MW	6100	902 MW	854 MW	846 MW	862 MW	825 MW	850 MW	830 MW	850 MW
NO. 1 HTR WATER IN		0.	483.	480.	478.	480.	477.	478.	477.	478.
NO. 1 HTR DRAIN		0.	493.	491.	489.	491.	488.	489.	489.	490.
NO. 2 HTR WATER IN		0.	396.	393.	393.	394.	392.	391.	392.	392.
NO. 2 HTR DRAIN		0.	400.	399.	401.	402.	400.	400.	401.	400.
NO. 1 HTR APPROACH		0.	10.	11.	11.	11.	11.	11.	12.	12.
NO. 1 HTR TERM T.D.		0.	-1.	-4.	-4.	-1.	-3.	-3.	-2.	-3.
NO. 2 HTR APPROACH		0.	4.	6.	8.	8.	8.	9.	9.	8.
NO. 2 HTR TERM T.D.		0.	-2.	-4.	-4.	-2.	-3.	-4.	-2.	-3.
DRUM SAT. TEMP		679.	686.	679.	678.	682.	678.	679.	678.	677.
PSH IN TEMP		679.	686.	679.	678.	682.	678.	679.	678.	677.
SAT. CONN. TUBE		685.	685.	0.	678.	0.	677.	679.	677.	677.
PRESSURES	PSIG									
DRUM		2670.	2811.	2681.	2649.	2733.	2649.	2668.	2652.	2647.
SEC SH OUT		2510.	2594.	2468.	2456.	2518.	2455.	2471.	2453.	2450.
REHEAT-1 IN		546.	587.	559.	544.	571.	543.	545.	547.	547.
REHEAT-1 OUT		521.	552.	525.	513.	536.	513.	515.	517.	517.
AIR AND GAS TEMPS	DEG F									
GAS LVG ECO		736.	770.	768.	767.	752.	740.	759.	742.	762.
GAS LVG AIR HTRS		293.	320.	332.	327.	329.	323.	330.	323.	331.
AVG AIR ENT AH'S		66.	74.	87.	77.	85.	85.	86.	83.	86.
AVG AIR LVG AH'S		598.	605.	598.	591.	583.	577.	591.	578.	595.
MEAS. GAS LVG PATH 1		765.	744.	744.	746.	714.	732.	749.	731.	749.
MEAS. GAS LVG PATH 2		733. 1	774. 1	769. 1	768. 1	753. 1	733. 1	758. 1	737. 1	755. 1
PYROSONIC FEGT	DEG F	0.0	2227.2	2130.1	2090.8	2117.2	2076.2	2161.0	2146.5	2176.1
GAS TEMP LVG RH PASS	DEG F	0.0	744.0	744.0	746.0	714.0	732.0	749.0	731.0	749.0
GAS TEMP LVG PSH PASS	DEG F	0.0	774.0	769.0	768.0	753.0	733.0	758.0	737.0	755.0

IP14_003973

	UNITS								
DATE		01/30/87	01/30/87	02/09/87	02/11/87	02/12/87	01/27/87	02/02/87	02/02/87
TIME		1140 1540	1615 1815	1300 1700	1530 1925	1230 1630	1430 1640	0330 0510	0030 0230
LOAD IDENT		7A	8A	15A	17A	18A	3A	10A	9A
RUN NO.		10	11	12	13	14	15	16	17
							75%	50%	50%
LOAD	MW	851 MW	844 MW	847 MW	846 MW	842 MW	607 MW	467 MW	467 MW
FUEL		PC	PC	PC	PC	PC	PC	PC	PC
BURNERS OUT OF SERVICE		F 2nd	F 2nd	F 2nd	B 1st	B 1st	ADG	EFH	EFH
		0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0
STEAM AND WATER FLOWS									
H.P. STEAM FLOW	MLB/HR	6017.55	5989.46	6121.99	6037.79	5977.05	4089.20	3075.76	3178.42
1ST STAGE SPRAY		0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
2ND STAGE SPRAY		12.37	31.51	0.01	0.01	60.62	0.01	0.00	0.00
RH-1 TURBINE LEAKAGE		54.16	53.91	55.10	54.34	53.79	38.85	31.07	32.10
NO. 1 HTR. EXTR.		571.83	561.47	590.11	576.49	558.49	334.32	229.59	240.93
NO. 2 HTR. EXTR.		533.24	532.31	542.22	531.50	522.91	330.28	228.15	241.98
LEAVING REHEAT-1		4858.32	4841.77	4934.55	4875.45	4841.85	3385.75	2586.95	2663.41
RH-1 SPRAY		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AIR AND GAS FLOWS									
XS AIR LVG ECO	PERCENT	17.2	17.9	19.5	16.7	18.1	30.9	58.5	42.4
XS AIR TO BURNERS		15.2	15.9	17.5	14.7	16.1	28.1	54.9	38.8
GAS LVG FURNACE	MLB/HR	7092.5	7076.9	7302.3	7073.5	7089.0	5658.2	5297.8	4790.0
GAS ENT AIR HTRS		7148.7	7132.6	7359.0	7129.7	7144.7	5714.9	5355.0	4847.2
AIR LVG AIR HTRS		6463.6	6452.9	6666.4	6443.8	6464.9	5188.0	4916.7	4408.6
AIR TREATED AS RECIRC		11.2	50.1	141.8	0.0	55.7	372.6	1003.0	492.3
FLUID TEMPERATURES	DEG F								
SEC SH OUTLET		1016.	1009.	1002.	1013.	1006.	1001.	1002.	979.
REHEAT-1 OUT		1010.	999.	1001.	1015.	1005.	1004.	1005.	962.
RH-1 IN		636.	630.	625.	633.	626.	570.	555.	534.
RH-1 ATTEMP IN		636.	630.	625.	633.	626.	570.	555.	534.
PRI-1 SH OUT		717.	719.	715.	717.	718.	704.	702.	694.
ATTEMP-1 OUT		717.	719.	715.	717.	718.	704.	702.	694.
PRI-2 (PLATEN) OUT		783.	783.	778.	783.	786.	771.	771.	757.
ATTEMP-2 OUT		781.	778.	778.	783.	776.	771.	771.	757.
ECO WATER IN		547.	546.	547.	551.	550.	506.	482.	483.
ECO WATER OUT		566.	566.	566.	569.	569.	526.	506.	504.
SH SPRAY WATER		336.	336.	324.	327.	338.	299.	299.	307.
RH-1 SPRAY WATER		289.	308.	247.	282.	285.	251.	255.	286.

IP14_003974

DATA SUMMARY B+W CONTR. NO. RB614 P08475 12.00 TIME 1105 DATE 04/10/87

DATE			01/30/87	01/30/87	02/09/87	02/11/87	02/12/87	01/27/87	02/02/87	02/02/87
TIME			1140 1540	1615 1815	1300 1700	1530 1925	1230 1630	1430 1640	0330 0510	0030 0230
LOAD IDENT			7A	8A	15A	17A	18A	3A	10A	9A
RUN NO.			10	11	12	13	14	15	16	17
		UNITS						75%	50%	50%
LOAD		MW	851 MW	844 MW	847 MW	846 MW	842 MW	607 MW	467 MW	467 MW
NO. 1 HTR	WATER IN		478.	478.	479.	478.	477.	444.	420.	421.
NO. 1 HTR	DRAIN		489.	488.	490.	489.	488.	449.	425.	425.
NO. 2 HTR	WATER IN		392.	392.	394.	393.	392.	365.	346.	346.
NO. 2 HTR	DRAIN		400.	400.	402.	401.	400.	368.	350.	350.
NO. 1 HTR	APPROACH		11.	10.	11.	11.	11.	5.	5.	4.
NO. 1 HTR	TERM T.D.		-4.	-4.	-3.	-4.	-3.	-7.	-9.	-8.
NO. 2 HTR	APPROACH		8.	8.	8.	8.	8.	3.	4.	4.
NO. 2 HTR	TERM T.D.		-4.	-5.	-4.	-4.	-4.	-6.	-7.	-7.
DRUM SAT.	TEMP		678.	678.	678.	678.	677.	671.	665.	665.
PSH IN	TEMP		678.	678.	678.	678.	677.	671.	665.	665.
SAT. CONN. TUBE			677.	677.	678.	678.	677.	670.	663.	663.
PRESSURES		PSIG								
DRUM			2663.	2661.	2652.	2650.	2639.	2536.	2427.	2427.
SEC SH OUT			2462.	2462.	2454.	2460.	2450.	2428.	2351.	2349.
REHEAT-1 IN			547.	545.	550.	541.	538.	380.	292.	297.
REHEAT-1 OUT			513.	512.	519.	511.	508.	355.	272.	277.
AIR AND GAS TEMPS		DEG F								
GAS LVG ECO			757.	753.	753.	759.	752.	723.	703.	677.
GAS LVG AIR HTRS			330.	330.	325.	327.	330.	300.	288.	294.
AVG AIR ENT AH'S			86.	84.	80.	77.	76.	76.	74.	89.
AVG AIR LVG AH'S			594.	587.	588.	592.	579.	575.	555.	538.
MEAS. GAS LVG PATH 1			745.	723.	750.	760.	749.	738.	724.	688.
MEAS. GAS LVG PATH 2			742. 1	734. 1	741. 1	745. 1	741. 1	683. 1	656. 1	642. 1
PYROSONIC FEGT		DEG F	2188.1	2171.3	2167.7	2188.9	2175.5	1999.1	1807.0	1806.5
GAS TEMP LVG RH PASS		DEG F	745.0	723.0	750.0	760.0	749.0	738.0	724.0	688.0
GAS TEMP LVG PSH PASS		DEG F	742.0	734.0	741.0	745.0	741.0	683.0	656.0	642.0

IP14_003975

			CONTRACT SUMMARY SHEET	TEST 11A CORRECTED FOR CONTR. CONDITIONS	TEST 11A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	106/ 82
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	517/ 638
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1332/5921	1332/5777
AH Air By-Pass Flow		MLB/HR	497.8	517.7	517.7
Mill Inlet Temp		F	397.2	0.0	359.8
Ave Air Temp Ent AH		F	66.7	66.4	86.1
Gas Temp Lvg Econ		F	736.0	759.0	759.0
Gas Temp Ent AH	PRI/SEC	F	736/ 736	759/ 759	759/ 759
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	313/ 310
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	349/ 314	366/ 325
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	795/7162	795/7002
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	317.2	329.2
Excess Air Lvg Econ		%	17.0	28.6	28.6
Excess Air Ent Pri AH		%	---	28.6	28.6
Excess Air Ent Sec AH		%	---	28.6	28.6
Excess Air Lvg Sec AH		%	---	---	38.0
Excess Air Lvg Pri AH		%	---	---	66.4
Excess Air to Burners		%	15.0	26.6	26.4
Sec AH Leakage		MLB/HR	315	---	478
Pri AH Leakage		MLB/HR	169	---	217
Moisture In Air		LB/LB DA	.0067	.0067	.0033
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.958	11.866
Dry Air Wt to Burners		LB/LB Fuel	---	10.430	11.284
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	11.519	12.416
Losses		%			
Dry Gas			4.84	5.99	5.77
H2O in Fuel			(2) 5.15	.88	.73
H2 in Fuel			---	4.33	4.21
Moisture in Air			.07	.07	.03
Unburned Combustible			.20	.07	.07
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	12.01	11.47
Efficiency		%	88.57	87.99	88.53
Unit Output		MKB	6691.5	6691.5	6665.8
Fuel Input		MKB	7555.0	7604.8	7529.4
Fuel Rate		MLB/HR	686.2	690.7	627.9

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 11A: 02/04/87 09:00-13:25, 850 MW, D MILL OUT TCH-031887

			CONTRACT SUMMARY SHEET	TEST 12A CORRECTED FOR CONTR. CONDITIONS	TEST 12A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	104/ 81
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	517/ 640
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1318/5766	1318/5937
AH Air By-Pass Flow		MLB/HR	497.8	505.8	505.8
Mill Inlet Temp		F	397.2	0.0	360.9
Ave Air Temp Ent AH		F	66.7	66.4	85.3
Gas Temp Lvg Econ		F	736.0	761.7	761.7
Gas Temp Ent AH	PRI/SEC	F	736/ 736	762/ 762	762/ 762
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	313/ 310
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	336/ 313	353/ 324
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	760/7026	763/7197
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	315.6	327.1
Excess Air Lvg Econ		%	17.0	25.9	25.9
Excess Air Ent Pri AH		%	---	25.9	25.9
Excess Air Ent Sec AH		%	---	25.9	25.9
Excess Air Lvg Sec AH		%	---	---	34.6
Excess Air Lvg Pri AH		%	---	---	53.6
Excess Air to Burners		%	15.0	23.9	23.8
Sec AH Leakage		MLB/HR	315	---	460
Pri AH Leakage		MLB/HR	169	---	155
Moisture In Air		LB/LB DA	.0067	.0067	.0029
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.739	11.935
Dry Air Wt to Burners		LB/LB Fuel	---	10.211	11.396
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	11.299	12.540
Losses		%			
Dry Gas			4.84	5.83	5.81
H2O in Fuel			(2) 5.15	.88	.85
H2 in Fuel			---	4.32	4.68
Moisture in Air			.07	.07	.03
Unburned Combustible			.20	.03	.03
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	11.80	12.06
Efficiency		%	88.57	88.20	87.94
Unit Output		MKB	6691.5	6691.5	6655.0
Fuel Input		MKB	7555.0	7586.7	7567.7
Fuel Rate		MLB/HR	686.2	689.1	634.7

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 12A: 2/5/87 14:25-18:20, 850 MW, H MILL OUT

TCH-031887

			CONTRACT SUMMARY SHEET	TEST 13A CORRECTED FOR CONTR. CONDITIONS	TEST 13A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	102/ 79
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	511/ 622
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1303/5673	1303/5745
AH Air By-Pass Flow		MLB/HR	497.8	479.2	479.2
Mill Inlet Temp		F	397.2	0.0	362.5
Ave Air Temp Ent AH		F	66.7	66.4	83.1
Gas Temp Lvg Econ		F	736.0	741.9	741.9
Gas Temp Ent AH	PRI/SEC	F	736/ 736	742/ 742	742/ 742
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	313/ 302
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	343/ 305	358/ 314
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	811/6875	811/6928
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	308.6	318.6
Excess Air Lvg Econ		%	17.0	24.5	24.5
Excess Air Ent Pri AH		%	---	24.5	24.5
Excess Air Ent Sec AH		%	---	24.5	24.5
Excess Air Lvg Sec AH		%	---	---	32.5
Excess Air Lvg Pri AH		%	---	---	54.7
Excess Air to Burners		%	15.0	22.3	22.3
Sec AH Leakage		MLB/HR	315	---	412
Pri AH Leakage		MLB/HR	169	---	183
Moisture In Air		LB/LB DA	.0067	.0067	.0032
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.621	11.975
Dry Air Wt to Burners		LB/LB Fuel	---	10.080	11.427
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	11.180	12.589
Losses		%			
Dry Gas			4.84	5.61	5.55
H2O in Fuel			(2) 5.15	.88	.79
H2 in Fuel			---	4.31	4.66
Moisture in Air			.07	.07	.03
Unburned Combustible			.20	.05	.05
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	11.59	11.74
Efficiency		%	88.57	88.41	88.26
Unit Output		MKB	6691.5	6691.5	6619.9
Fuel Input		MKB	7555.0	7568.7	7500.5
Fuel Rate		MLB/HR	686.2	687.4	614.7

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 13A: 2/7/87 13:30-17:30, 830 MW, D MILL OUT TCH-031887

			CONTRACT SUMMARY SHEET	TEST 14A CORRECTED FOR CONTR. CONDITIONS	TEST 14A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	103/ 80
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	509/ 620
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1303/5714	1303/5642
AH Air By-Pass Flow		MLB/HR	497.8	482.2	482.2
Mill Inlet Temp		F	397.2	0.0	360.9
Ave Air Temp Ent AH		F	66.7	66.4	84.4
Gas Temp Lvg Econ		F	736.0	739.7	739.7
Gas Temp Ent AH	PRI/SEC	F	736/ 736	740/ 740	740/ 740
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	313/ 301
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	340/ 302	355/ 313
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	802/6926	802/6826
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	306.3	317.3
Excess Air Lvg Econ		%	17.0	25.3	25.3
Excess Air Ent Pri AH		%	---	25.3	25.3
Excess Air Ent Sec AH		%	---	25.3	25.3
Excess Air Lvg Sec AH		%	---	---	32.5
Excess Air Lvg Pri AH		%	---	---	54.3
Excess Air to Burners		%	15.0	23.1	23.1
Sec AH Leakage		MLB/HR	315	---	367
Pri AH Leakage		MLB/HR	169	---	172
Moisture In Air		LB/LB DA	.0067	.0067	.0032
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.681	11.885
Dry Air Wt to Burners		LB/LB Fuel	---	10.140	11.312
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	11.241	12.463
Losses		%			
Dry Gas			4.84	5.58	5.48
H2O in Fuel			(2) 5.15	.88	.73
H2 in Fuel			---	4.31	4.43
Moisture in Air			.07	.07	.03
Unburned Combustible			.20	.09	.09
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	11.60	11.42
Efficiency		%	88.57	88.40	88.58
Unit Output		MKB	6691.5	6691.5	6566.9
Fuel Input		MKB	7555.0	7569.6	7413.5
Fuel Rate		MLB/HR	686.2	687.5	612.0

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 14A: 2/8/87 13:00-17:00, 825 MW, E MILL OUT TCH-032087

			CONTRACT SUMMARY SHEET	TEST 15A CORRECTED FOR CONTR. CONDITIONS	TEST 15A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	98/ 76
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	517/ 634
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1309/5239	1309/5460
AH Air By-Pass Flow		MLB/HR	497.8	505.9	505.9
Mill Inlet Temp		F	397.2	0.0	357.4
Ave Air Temp Ent AH		F	66.7	66.6	80.3
Gas Temp Lvg Econ		F	736.0	753.0	753.0
Gas Temp Ent AH	PRI/SEC	F	736/ 736	753/ 753	753/ 753
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	313/ 304
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	340/ 313	353/ 321
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	775/6472	775/6680
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	316.3	324.5
Excess Air Lvg Econ		%	17.0	17.0	19.5
Excess Air Ent Pri AH		%	---	17.0	19.5
Excess Air Ent Sec AH		%	---	17.0	19.5
Excess Air Lvg Sec AH		%	---	---	29.6
Excess Air Lvg Pri AH		%	---	---	44.7
Excess Air to Burners		%	15.0	15.0	17.4
Sec AH Leakage		MLB/HR	315	---	523
Pri AH Leakage		MLB/HR	169	---	151
Moisture In Air		LB/LB DA	.0067	.0067	.0036
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	9.997	11.598
Dry Air Wt to Burners		LB/LB Fuel	---	9.469	11.044
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.552	12.208
Losses		%			
Dry Gas			4.84	5.44	5.51
H2O in Fuel			(2) 5.15	.88	.72
H2 in Fuel			---	4.33	4.63
Moisture in Air			.07	.07	.04
Unburned Combustible			.20	.12	.12
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	11.51	11.68
Efficiency		%	88.57	88.49	88.32
Unit Output		MKB	6691.5	6691.5	6651.9
Fuel Input		MKB	7555.0	7561.9	7531.6
Fuel Rate		MLB/HR	686.2	686.8	610.7

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 15A: 2/9/87 13:00-17:00, 847 MW, F MILL OUT TCH-031887

			CONTRACT SUMMARY SHEET	TEST 16A CORRECTED FOR CONTR. CONDITIONS	TEST 16A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	93/ 73
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	524/ 639
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1336/6450	1336/6285
AH Air By-Pass Flow		MLB/HR	497.8	533.1	533.1
Mill Inlet Temp		F	397.2	0.0	354.7
Ave Air Temp Ent AH		F	66.7	66.2	76.9
Gas Temp Lvg Econ		F	736.0	767.1	767.1
Gas Temp Ent AH	PRI/SEC	F	736/ 736	767/ 767	767/ 767
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	307/ 306
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	339/ 317	349/ 323
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	768/7735	768/7542
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	318.9	325.3
Excess Air Lvg Econ		%	17.0	37.3	37.3
Excess Air Ent Pri AH		%	---	37.3	37.3
Excess Air Ent Sec AH		%	---	37.3	37.3
Excess Air Lvg Sec AH		%	---	---	48.3
Excess Air Lvg Pri AH		%	---	---	68.5
Excess Air to Burners		%	15.0	35.2	35.2
Sec AH Leakage		MLB/HR	315	---	562
Pri AH Leakage		MLB/HR	169	---	162
Moisture In Air		LB/LB DA	.0067	.0067	.0036
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	11.680	12.802
Dry Air Wt to Burners		LB/LB Fuel	---	11.139	12.238
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	12.246	13.391
Losses		%			
Dry Gas			4.84	6.43	6.27
H2O in Fuel			(2) 5.15	.88	.73
H2 in Fuel			---	4.33	4.46
Moisture in Air			.07	.08	.04
Unburned Combustible			.20	.07	.07
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	12.46	12.23
Efficiency		%	88.57	87.54	87.77
Unit Output		MKB	6691.5	6691.5	6627.8
Fuel Input		MKB	7555.0	7643.9	7551.3
Fuel Rate		MLB/HR	686.2	694.3	620.5

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 16A: 2/10/87 15:00-19:00, 846 MW, E MILL OUT TCH-031887

			CONTRACT SUMMARY SHEET	TEST 17A CORRECTED FOR CONTR. CONDITIONS	TEST 17A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	93/ 73
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	522/ 642
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1299/5264	1299/5074
AH Air By-Pass Flow		MLB/HR	497.8	477.8	477.8
Mill Inlet Temp		F	397.2	0.0	366.6
Ave Air Temp Ent AH		F	66.7	66.6	77.1
Gas Temp Lvg Econ		F	736.0	759.1	759.1
Gas Temp Ent AH	PRI/SEC	F	736/ 736	759/ 759	759/ 759
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	314/ 307
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	357/ 321	367/ 327
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	773/6491	773/6280
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	325.1	331.2
Excess Air Lvg Econ		%	17.0	17.0	16.6
Excess Air Ent Pri AH		%	---	17.0	16.6
Excess Air Ent Sec AH		%	---	17.0	16.6
Excess Air Lvg Sec AH		%	---	---	28.1
Excess Air Lvg Pri AH		%	---	---	48.9
Excess Air to Burners		%	15.0	15.0	14.5
Sec AH Leakage		MLB/HR	315	---	576
Pri AH Leakage		MLB/HR	169	---	197
Moisture In Air		LB/LB DA	.0067	.0067	.0038
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.003	10.973
Dry Air Wt to Burners		LB/LB Fuel	---	9.475	10.400
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.558	11.554
Losses		%			
Dry Gas			4.84	5.64	5.49
H2O in Fuel			(2) 5.15	.88	.72
H2 in Fuel			---	4.34	4.44
Moisture in Air			.07	.07	.04
Unburned Combustible			.20	.06	.06
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	11.66	11.41
Efficiency		%	88.57	88.34	88.59
Unit Output		MKB	6691.5	6691.5	6594.1
Fuel Input		MKB	7555.0	7574.7	7443.4
Fuel Rate		MLB/HR	686.2	688.0	610.4

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 17A: 2/11/87 15:30-19:25, 846 MW, B MILL OUT TCH-031887

			CONTRACT SUMMARY SHEET	TEST 18A CORRECTED FOR CONTR. CONDITIONS	TEST 18A WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	92/ 71
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	523/ 641
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1428/5137	1428/4888
AH Air By-Pass Flow		MLB/HR	497.8	696.5	696.5
Mill Inlet Temp		F	397.2	0.0	315.6
Ave Air Temp Ent AH		F	66.7	66.8	76.1
Gas Temp Lvg Econ		F	736.0	752.3	752.3
Gas Temp Ent AH	PRI/SEC	F	736/ 736	752/ 752	752/ 752
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/ -	314/ 309
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 292	356/ 324	365/ 328
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	769/6497	769/6209
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	327.0	332.3
Excess Air Lvg Econ		%	17.0	17.0	18.1
Excess Air Ent Pri AH		%	---	17.0	18.1
Excess Air Ent Sec AH		%	---	17.0	18.1
Excess Air Lvg Sec AH		%	---	---	28.9
Excess Air Lvg Pri AH		%	---	---	48.9
Excess Air to Burners		%	15.0	15.0	15.9
Sec AH Leakage		MLB/HR	315	---	524
Pri AH Leakage		MLB/HR	169	---	185
Moisture In Air		LB/LB DA	.0067	.0067	.0032
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	9.999	11.242
Dry Air Wt to Burners		LB/LB Fuel	---	9.471	10.653
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.554	11.809
Losses		%			
Dry Gas			4.84	5.67	5.56
H2O in Fuel			(2) 5.15	.88	.64
H2 in Fuel			---	4.34	4.36
Moisture in Air			.07	.07	.03
Unburned Combustible			.20	.10	.10
Radiation			.17	.17	.16
Unaccounted			(3) 1.00	.50	.50
Summation of Losses			11.43	11.73	11.35
Efficiency		%	88.57	88.27	88.65
Unit Output		MKB	6691.5	6691.5	6513.4
Fuel Input		MKB	7555.0	7580.7	7347.3
Fuel Rate		MLB/HR	686.2	688.5	591.0

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 18A: 2/12/87 12:30-16:30, 842 MW, B MILL OUT TCH-032387

RB-614 18 Mar 1987 13:31:10

TEST NO 2A DATE 01/27/87 TIME START 1145 TIME END 1435

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

606MW

DRUM, SAT FLUID	P = 2536.7 PSIG	T = 671.1 F	H = 738.3 BTU/LB
DRUM, SAT VAPOR	P = 2536.7 PSIG	T = 671.1 F	H = 1087.6 BTU/LB
DRUM, BLOWDOWN	P = 2536.7 PSIG	T = 671.1 F	H = 738.3 BTU/LB
SH SPRAY	P = 2686.7 PSIG	T = 306.7 F	H = 281.5 BTU/LB
ENT SEC.	P = 2478.1 PSIG	T = 770.7 F	H = 1274.6 BTU/LB
LVG PRI-2	P = 2478.1 PSIG	T = 770.7 F	H = 1274.6 BTU/LB
ENT PRI-2	P = 2503.3 PSIG	T = 703.9 F	H = 1181.2 BTU/LB
LVG PRI-1	P = 2503.3 PSIG	T = 703.9 F	H = 1181.2 BTU/LB
CORR LVG PRI-2	P = 2478.1 PSIG	T = 770.7 F	H = 1274.6 BTU/LB
CORR ENT SEC	P = 2478.1 PSIG	T = 770.7 F	H = 1274.6 BTU/LB
CORR LVG PRI-1	P = 2503.3 PSIG	T = 703.9 F	H = 1181.2 BTU/LB
CORR ENT PRI-2	P = 2503.3 PSIG	T = 703.9 F	H = 1181.2 BTU/LB
ENT ECON	P = 2570.1 PSIG	T = 505.8 F	H = 494.1 BTU/LB
LVG SEC SH	P = 2427.6 PSIG	T = 998.8 F	H = 1458.7 BTU/LB
ENT RH-1 ATTEMP	P = 380.8 PSIG	T = 568.6 F	H = 1289.2 BTU/LB
ENT RH-1	P = 380.8 PSIG	T = 567.8 F	H = 1288.8 BTU/LB
LVG RH-1	P = 355.0 PSIG	T = 998.7 F	H = 1523.4 BTU/LB
NO. 1 HTR FW ENT	P = 2570.1 PSIG	T = 443.8 F	H = 424.9 BTU/LB
NO. 1 HTR FW LVG	P = 2570.1 PSIG	T = 512.3 F	H = 501.7 BTU/LB
NO. 1 HTR DRAIN	P = 713.6 PSIG	T = 449.0 F	H = 429.2 BTU/LB
NO. 1 HTR EXTR	P = 713.6 PSIG	T = 727.0 F	H = 1360.2 BTU/LB
NO. 2 HTR FW ENT	P = 2570.1 PSIG	T = 364.6 F	H = 340.8 BTU/LB
NO. 2 HTR FW LVG	P = 2570.1 PSIG	T = 443.8 F	H = 424.9 BTU/LB
NO. 2 HTR DRAIN	P = 372.1 PSIG	T = 367.5 F	H = 340.6 BTU/LB
NO. 2 HTR EXTR	P = 372.1 PSIG	T = 567.6 F	H = 1289.4 BTU/LB
RH-1 SPRAY	P = 580.8 PSIG	T = 278.2 F	H = 248.4 BTU/LB

1st STAGE SPRAY	MEASURED	9.3	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	1.5	USED M

FLOWS MLB/HR

STEAM LVG SEC SH	= 4105.4
STEAM LVG PRI-2 SH	= 4105.4
STEAM LVG PRI-1 SH	= 4105.4
FEEDWATER TO ECON	= 4105.4
BLOWDOWN	= 0.0
SH EXTRACTION	= 0.0
STEAM LVG RH-1	= 3395.8
STEAM ENT RH-1 ATTEMP	= 3395.8
NO. 1 HTR. EXTR. FLOW	= 338.8
NO. 2 HTR. EXTR. FLOW	= 331.9
TURB LKG	= 38.9

HEAT ABSORPTION MKB/HR

BOILER	= 2436.5
BLOWDOWN HEAT	= 0.0
EXTRACTION HEAT	= 0.0
SUPERHEATER	= 1523.4
REHEATER 1	= 795.4
REHEATER 2	= 0.0
TOTAL OUTPUT	= 4755.4

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TEST NO 3A DATE 01/27/87 TIME START 1430 TIME END 1640

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2535.9 PSIG	T = 671.1 F	H = 738.2 BTU/LB
DRUM, SAT VAPOR	P = 2535.9 PSIG	T = 671.1 F	H = 1087.7 BTU/LB
DRUM, BLOWDOWN	P = 2535.9 PSIG	T = 671.1 F	H = 738.2 BTU/LB
SH SPRAY	P = 2685.9 PSIG	T = 299.2 F	H = 273.8 BTU/LB
ENT SEC.	P = 2478.0 PSIG	T = 771.4 F	H = 1275.3 BTU/LB
LVG PRI-2	P = 2478.0 PSIG	T = 771.4 F	H = 1275.3 BTU/LB
ENT PRI-2	P = 2502.9 PSIG	T = 703.5 F	H = 1180.6 BTU/LB
LVG PRI-1	P = 2502.9 PSIG	T = 703.5 F	H = 1180.6 BTU/LB
CORR LVG PRI-2	P = 2478.0 PSIG	T = 771.4 F	H = 1275.3 BTU/LB
CORR ENT SEC	P = 2478.0 PSIG	T = 771.4 F	H = 1275.3 BTU/LB
CORR LVG PRI-1	P = 2502.9 PSIG	T = 703.5 F	H = 1180.6 BTU/LB
CORR ENT PRI-2	P = 2502.9 PSIG	T = 703.5 F	H = 1180.6 BTU/LB
ENT ECON	P = 2569.3 PSIG	T = 505.5 F	H = 493.8 BTU/LB
LVG SEC SH	P = 2428.1 PSIG	T = 1001.2 F	H = 1460.3 BTU/LB
ENT RH-1 ATTEMP	P = 380.0 PSIG	T = 570.3 F	H = 1290.3 BTU/LB
ENT RH-1	P = 380.0 PSIG	T = 569.6 F	H = 1289.9 BTU/LB
LVG RH-1	P = 355.2 PSIG	T = 1003.8 F	H = 1526.1 BTU/LB
NO. 1 HTR FW ENT	P = 2569.3 PSIG	T = 443.6 F	H = 424.7 BTU/LB
NO. 1 HTR FW LVG	P = 2569.3 PSIG	T = 512.1 F	H = 501.4 BTU/LB
NO. 1 HTR DRAIN	P = 712.1 PSIG	T = 448.6 F	H = 428.9 BTU/LB
NO. 1 HTR EXTR	P = 712.1 PSIG	T = 728.6 F	H = 1361.2 BTU/LB
NO. 2 HTR FW ENT	P = 2569.3 PSIG	T = 364.7 F	H = 340.9 BTU/LB
NO. 2 HTR FW LVG	P = 2569.3 PSIG	T = 443.6 F	H = 424.7 BTU/LB
NO. 2 HTR DRAIN	P = 371.6 PSIG	T = 367.6 F	H = 340.7 BTU/LB
NO. 2 HTR EXTR	P = 371.6 PSIG	T = 569.2 F	H = 1290.4 BTU/LB
RH-1 SPRAY	P = 580.0 PSIG	T = 251.4 F	H = 221.2 BTU/LB

1st STAGE SPRAY	MEASURED	5.6	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	1.5	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	4089.2
STEAM LVG PRI-2 SH	=	4089.2
STEAM LVG PRI-1 SH	=	4089.2
FEEDWATER TO ECON	=	4089.2
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	3384.5
STEAM ENT RH-1 ATTEMP	=	3384.5
NO. 1 HTR. EXTR. FLOW	=	336.5
NO. 2 HTR. EXTR. FLOW	=	329.5
TURB LKG	=	38.7

HEAT ABSORPTION MKB/HR

BOILER	=	2428.4
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	1523.6
REHEATER 1	=	798.0
REHEATER 2	=	0.0
TOTAL OUTPUT	=	4750.0

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TEST NO 4A DATE 01/28/87 TIME START 1300 TIME END 1700

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2810.6 PSIG	T = 686.3 F	H = 774.2 BTU/LB
DRUM, SAT VAPOR	P = 2810.6 PSIG	T = 686.3 F	H = 1052.0 BTU/LB
DRUM, BLOWDOWN	P = 2810.6 PSIG	T = 686.3 F	H = 774.2 BTU/LB
SH SPRAY	P = 2960.6 PSIG	T = 322.0 F	H = 297.5 BTU/LB
ENT SEC.	P = 2694.1 PSIG	T = 782.8 F	H = 1270.5 BTU/LB
LVG PRI-2	P = 2694.1 PSIG	T = 782.8 F	H = 1270.5 BTU/LB
ENT PRI-2	P = 2744.3 PSIG	T = 725.5 F	H = 1185.9 BTU/LB
LVG PRI-1	P = 2744.3 PSIG	T = 725.5 F	H = 1185.9 BTU/LB
CORR LVG PRI-2	P = 2694.1 PSIG	T = 782.8 F	H = 1270.5 BTU/LB
CORR ENT SEC	P = 2694.1 PSIG	T = 782.8 F	H = 1270.5 BTU/LB
CORR LVG PRI-1	P = 2744.3 PSIG	T = 725.5 F	H = 1185.9 BTU/LB
CORR ENT PRI-2	P = 2744.3 PSIG	T = 725.5 F	H = 1185.9 BTU/LB
ENT ECON	P = 2868.3 PSIG	T = 552.3 F	H = 549.1 BTU/LB
LVG SEC SH	P = 2593.7 PSIG	T = 998.4 F	H = 1452.7 BTU/LB
ENT RH-1 ATTEMP	P = 587.2 PSIG	T = 620.2 F	H = 1303.3 BTU/LB
ENT RH-1	P = 587.2 PSIG	T = 618.8 F	H = 1302.3 BTU/LB
LVG RH-1	P = 551.6 PSIG	T = 1004.6 F	H = 1520.9 BTU/LB
NO. 1 HTR FW ENT	P = 2868.3 PSIG	T = 483.4 F	H = 468.7 BTU/LB
NO. 1 HTR FW LVG	P = 2868.3 PSIG	T = 558.2 F	H = 556.4 BTU/LB
NO. 1 HTR DRAIN	P = 1109.4 PSIG	T = 493.2 F	H = 479.8 BTU/LB
NO. 1 HTR EXTR	P = 1109.4 PSIG	T = 792.8 F	H = 1379.0 BTU/LB
NO. 2 HTR FW ENT	P = 2868.3 PSIG	T = 396.1 F	H = 374.2 BTU/LB
NO. 2 HTR FW LVG	P = 2868.3 PSIG	T = 483.4 F	H = 468.7 BTU/LB
NO. 2 HTR DRAIN	P = 572.4 PSIG	T = 400.2 F	H = 375.7 BTU/LB
NO. 2 HTR EXTR	P = 572.4 PSIG	T = 618.5 F	H = 1303.4 BTU/LB
RH-1 SPRAY	P = 787.2 PSIG	T = 275.3 F	H = 245.8 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	4.7	USED M

FLOWS MLB/HR

STEAM LVG SEC SH	=	6605.8
STEAM LVG PRI-2 SH	=	6605.8
STEAM LVG PRI-1 SH	=	6605.8
FEEDWATER TO ECON	=	6605.8
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	5301.8
STEAM ENT RH-1 ATTEMP	=	5301.8
NO. 1 HTR. EXTR. FLOW	=	644.0
NO. 2 HTR. EXTR. FLOW	=	600.4
TURB LKG	=	59.5

HEAT ABSORPTION MKB/HR

BOILER	=	3321.8
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2647.0
REHEATER 1	=	1153.9
REHEATER 2	=	0.0
TOTAL OUTPUT	=	7122.8

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TEST NO 5A DATE 1/29/87 TIME START 1240 TIME END 1630

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2681.2 PSIG	T = 679.3 F	H = 756.8 BTU/LB
DRUM, SAT VAPOR	P = 2681.2 PSIG	T = 679.3 F	H = 1070.2 BTU/LB
DRUM, BLOWDOWN	P = 2681.2 PSIG	T = 679.3 F	H = 756.8 BTU/LB
SH SPRAY	P = 2831.2 PSIG	T = 326.6 F	H = 302.1 BTU/LB
ENT SEC.	P = 2566.6 PSIG	T = 785.5 F	H = 1283.3 BTU/LB
LVG PRI-2	P = 2566.6 PSIG	T = 785.5 F	H = 1283.3 BTU/LB
ENT PRI-2	P = 2615.9 PSIG	T = 726.1 F	H = 1203.7 BTU/LB
LVG PRI-1	P = 2615.9 PSIG	T = 726.1 F	H = 1203.7 BTU/LB
CORR LVG PRI-2	P = 2566.6 PSIG	T = 785.5 F	H = 1283.3 BTU/LB
CORR ENT SEC	P = 2566.6 PSIG	T = 785.5 F	H = 1283.3 BTU/LB
CORR LVG PRI-1	P = 2615.9 PSIG	T = 726.1 F	H = 1203.7 BTU/LB
CORR ENT PRI-2	P = 2615.9 PSIG	T = 726.1 F	H = 1203.7 BTU/LB
ENT ECON	P = 2735.8 PSIG	T = 548.0 F	H = 544.0 BTU/LB
LVG SEC SH	P = 2467.8 PSIG	T = 1000.5 F	H = 1458.4 BTU/LB
ENT RH-1 ATTEMP	P = 558.6 PSIG	T = 622.8 F	H = 1307.2 BTU/LB
ENT RH-1	P = 558.6 PSIG	T = 621.4 F	H = 1306.3 BTU/LB
LVG RH-1	P = 524.5 PSIG	T = 997.4 F	H = 1517.8 BTU/LB
NO. 1 HTR FW ENT	P = 2735.8 PSIG	T = 479.6 F	H = 464.5 BTU/LB
NO. 1 HTR FW LVG	P = 2735.8 PSIG	T = 555.1 F	H = 552.7 BTU/LB
NO. 1 HTR DRAIN	P = 1051.7 PSIG	T = 491.4 F	H = 477.7 BTU/LB
NO. 1 HTR EXTR	P = 1051.7 PSIG	T = 795.8 F	H = 1383.8 BTU/LB
NO. 2 HTR FW ENT	P = 2735.8 PSIG	T = 392.6 F	H = 370.3 BTU/LB
NO. 2 HTR FW LVG	P = 2735.8 PSIG	T = 479.6 F	H = 464.5 BTU/LB
NO. 2 HTR DRAIN	P = 544.2 PSIG	T = 399.4 F	H = 374.8 BTU/LB
NO. 2 HTR EXTR	P = 544.2 PSIG	T = 621.3 F	H = 1307.5 BTU/LB
RH-1 SPRAY	P = 758.6 PSIG	T = 282.0 F	H = 252.6 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	4.4	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	6238.4
STEAM LVG PRI-2 SH	=	6238.4
STEAM LVG PRI-1 SH	=	6238.4
FEEDWATER TO ECON	=	6238.4
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	5012.0
STEAM ENT RH-1 ATTEMP	=	5012.0
NO. 1 HTR. EXTR. FLOW	=	607.6
NO. 2 HTR. EXTR. FLOW	=	562.6
TURB LKG	=	56.3

HEAT ABSORPTION MKB/HR

BOILER	=	3282.6
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2421.9
REHEATER 1	=	1055.2
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6759.7

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TEST NO 6A DATE 01/29/87 TIME START 1745 TIME END 1905

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2733.1 PSIG	T = 682.1 F	H = 763.6 BTU/LB
DRUM, SAT VAPOR	P = 2733.1 PSIG	T = 682.1 F	H = 1063.3 BTU/LB
DRUM, BLOWDOWN	P = 2733.1 PSIG	T = 682.1 F	H = 763.6 BTU/LB
SH SPRAY	P = 2883.1 PSIG	T = 310.5 F	H = 285.7 BTU/LB
ENT SEC.	P = 2617.7 PSIG	T = 0.0 F	H = 0.0 BTU/LB
LVG PRI-2	P = 2617.7 PSIG	T = 0.0 F	H = 0.0 BTU/LB
ENT PRI-2	P = 2667.4 PSIG	T = 714.4 F	H = 1176.1 BTU/LB
LVG PRI-1	P = 2667.4 PSIG	T = 714.4 F	H = 1176.1 BTU/LB
CALC LVG PRI-2	P = 2617.7 PSIG	T = 32.2 F	H = 0.0 BTU/LB
CALC ENT SEC	P = 2617.7 PSIG	T = 32.2 F	H = 0.0 BTU/LB
CORR LVG PRI-2	P = 2617.7 PSIG	T = 32.2 F	H = 8.1 BTU/LB
CORR ENT SEC	P = 2617.7 PSIG	T = 32.2 F	H = 8.1 BTU/LB
CORR LVG PRI-1	P = 2667.4 PSIG	T = 714.4 F	H = 1176.1 BTU/LB
CORR ENT PRI-2	P = 2667.4 PSIG	T = 714.4 F	H = 1176.1 BTU/LB
ENT ECON	P = 2791.2 PSIG	T = 548.1 F	H = 544.0 BTU/LB
LVG SEC SH	P = 2518.3 PSIG	T = 964.9 F	H = 1432.3 BTU/LB
ENT RH-1 ATTEMP	P = 570.9 PSIG	T = 594.2 F	H = 1287.8 BTU/LB
ENT RH-1	P = 570.9 PSIG	T = 593.1 F	H = 1287.1 BTU/LB
LVG RH-1	P = 536.5 PSIG	T = 951.5 F	H = 1492.6 BTU/LB
NO. 1 HTR FW ENT	P = 2791.2 PSIG	T = 0.0 F	H = 0.0 BTU/LB
NO. 1 HTR FW LVG	P = 2791.2 PSIG	T = 554.7 F	H = 552.1 BTU/LB
NO. 1 HTR DRAIN	P = 1075.5 PSIG	T = 10.0 F	H = 0.0 BTU/LB
NO. 1 HTR EXTR	P = 1075.5 PSIG	T = 761.9 F	H = 1361.2 BTU/LB
NO. 2 HTR FW ENT	P = 2791.2 PSIG	T = 393.8 F	H = 371.7 BTU/LB
NO. 2 HTR FW LVG	P = 2791.2 PSIG	T = 0.0 F	H = 0.0 BTU/LB
NO. 2 HTR DRAIN	P = 557.0 PSIG	T = 402.5 F	H = 378.1 BTU/LB
NO. 2 HTR EXTR	P = 557.0 PSIG	T = 592.8 F	H = 1288.1 BTU/LB
RH-1 SPRAY	P = 770.9 PSIG	T = 236.1 F	H = 206.1 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	3.5	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	= 6515.9
STEAM LVG PRI-2 SH	= 6515.9
STEAM LVG PRI-1 SH	= 6515.9
FEEDWATER TO ECON	= 6515.9
BLOWDOWN	= 0.0
SH EXTRACTION	= 0.0
STEAM LVG RH-1	= 5377.2
STEAM ENT RH-1 ATTEMP	= 5377.2
NO. 1 HTR. EXTR. FLOW	= 2643.1
NO. 2 HTR. EXTR. FLOW	= -1563.1
TURB LKG	= 58.7

HEAT ABSORPTION MKB/HR

BOILER	= 3383.5
BLOWDOWN HEAT	= 0.0
EXTRACTION HEAT	= 0.0
SUPERHEATER	= 2404.5
REHEATER 1	= 1101.1
REHEATER 2	= 0.0
TOTAL OUTPUT	= 6889.1

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TEST NO 7A DATE 01/30/87 TIME START 1140 TIME END 1540

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2663.2 PSIG	T = 678.3 F	H = 754.4 BTU/LB
DRUM, SAT VAPOR	P = 2663.2 PSIG	T = 678.3 F	H = 1072.5 BTU/LB
DRUM, BLOWDOWN	P = 2663.2 PSIG	T = 678.3 F	H = 754.4 BTU/LB
SH SPRAY	P = 2813.2 PSIG	T = 335.8 F	H = 311.4 BTU/LB
ENT SEC.	P = 2555.0 PSIG	T = 781.1 F	H = 1279.5 BTU/LB
LVG PRI-2	P = 2555.0 PSIG	T = 783.4 F	H = 1281.9 BTU/LB
ENT PRI-2	P = 2601.6 PSIG	T = 717.0 F	H = 1190.3 BTU/LB
LVG PRI-1	P = 2601.6 PSIG	T = 717.0 F	H = 1190.3 BTU/LB
CORR LVG PRI-1	P = 2601.6 PSIG	T = 717.0 F	H = 1190.3 BTU/LB
CORR ENT PRI-2	P = 2601.6 PSIG	T = 717.0 F	H = 1190.3 BTU/LB
ENT ECON	P = 2717.9 PSIG	T = 546.9 F	H = 542.7 BTU/LB
LVG SEC SH	P = 2461.9 PSIG	T = 1016.1 F	H = 1469.1 BTU/LB
ENT RH-1 ATTEMP	P = 547.0 PSIG	T = 636.0 F	H = 1316.3 BTU/LB
ENT RH-1	P = 547.0 PSIG	T = 634.2 F	H = 1315.2 BTU/LB
LVG RH-1	P = 513.4 PSIG	T = 1009.6 F	H = 1524.7 BTU/LB
NO. 1 HTR FW ENT	P = 2717.9 PSIG	T = 478.4 F	H = 463.1 BTU/LB
NO. 1 HTR FW LVG	P = 2717.9 PSIG	T = 553.3 F	H = 550.5 BTU/LB
NO. 1 HTR DRAIN	P = 1037.1 PSIG	T = 489.1 F	H = 475.0 BTU/LB
NO. 1 HTR EXTR	P = 1037.1 PSIG	T = 810.5 F	H = 1393.5 BTU/LB
NO. 2 HTR FW ENT	P = 2717.9 PSIG	T = 391.9 F	H = 369.6 BTU/LB
NO. 2 HTR FW LVG	P = 2717.9 PSIG	T = 478.4 F	H = 463.1 BTU/LB
NO. 2 HTR DRAIN	P = 534.7 PSIG	T = 399.9 F	H = 375.3 BTU/LB
NO. 2 HTR EXTR	P = 534.7 PSIG	T = 634.2 F	H = 1316.1 BTU/LB
RH-1 SPRAY	P = 747.0 PSIG	T = 289.2 F	H = 259.9 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	27.7	CALCULATED	14.9	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	5.2	USED M

FLOWS MLB/HR		HEAT ABSORPTION MKB/HR	
STEAM LVG SEC SH	= 6017.5	BOILER	= 3180.2
STEAM LVG PRI-2 SH	= 6002.7	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6002.7	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6002.7	SUPERHEATER	= 2397.5
BLOWDOWN	= 0.0	REHEATER 1	= 1012.0
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 4856.2	TOTAL OUTPUT	= 6589.7
STEAM ENT RH-1 ATTEMP	= 4856.2		
NO. 1 HTR. EXTR. FLOW	= 571.2		
NO. 2 HTR. EXTR. FLOW	= 535.8		
TURB LKG	= 54.3		

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TEST NO 8A DATE 01/30/87 TIME START 1615 TIME END 1815

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2661.5 PSIG	T = 678.2 F	H = 754.2 BTU/LB
DRUM, SAT VAPOR	P = 2661.5 PSIG	T = 678.2 F	H = 1072.8 BTU/LB
DRUM, BLOWDOWN	P = 2661.5 PSIG	T = 678.2 F	H = 754.2 BTU/LB
SH SPRAY	P = 2811.5 PSIG	T = 336.4 F	H = 312.1 BTU/LB
ENT SEC.	P = 2554.2 PSIG	T = 778.5 F	H = 1276.8 BTU/LB
LVG PRI-2	P = 2554.2 PSIG	T = 783.9 F	H = 1282.5 BTU/LB
ENT PRI-2	P = 2600.4 PSIG	T = 718.9 F	H = 1193.8 BTU/LB
LVG PRI-1	P = 2600.4 PSIG	T = 718.9 F	H = 1193.8 BTU/LB
CORR LVG PRI-1	P = 2600.4 PSIG	T = 718.9 F	H = 1193.8 BTU/LB
CORR ENT PRI-2	P = 2600.4 PSIG	T = 718.9 F	H = 1193.8 BTU/LB
ENT ECON	P = 2715.3 PSIG	T = 546.3 F	H = 542.0 BTU/LB
LVG SEC SH	P = 2461.8 PSIG	T = 1009.0 F	H = 1464.4 BTU/LB
ENT RH-1 ATTEMP	P = 545.1 PSIG	T = 629.6 F	H = 1312.5 BTU/LB
ENT RH-1	P = 545.1 PSIG	T = 626.9 F	H = 1310.8 BTU/LB
LVG RH-1	P = 511.5 PSIG	T = 999.4 F	H = 1519.3 BTU/LB
NO. 1 HTR FW ENT	P = 2715.3 PSIG	T = 477.9 F	H = 462.5 BTU/LB
NO. 1 HTR FW LVG	P = 2715.3 PSIG	T = 552.5 F	H = 549.5 BTU/LB
NO. 1 HTR DRAIN	P = 1031.5 PSIG	T = 488.5 F	H = 474.3 BTU/LB
NO. 1 HTR EXTR	P = 1031.5 PSIG	T = 803.1 F	H = 1389.3 BTU/LB
NO. 2 HTR FW ENT	P = 2715.3 PSIG	T = 391.7 F	H = 369.4 BTU/LB
NO. 2 HTR FW LVG	P = 2715.3 PSIG	T = 477.9 F	H = 462.5 BTU/LB
NO. 2 HTR DRAIN	P = 532.5 PSIG	T = 399.6 F	H = 375.0 BTU/LB
NO. 2 HTR EXTR	P = 532.5 PSIG	T = 628.1 F	H = 1312.6 BTU/LB
RH-1 SPRAY	P = 745.1 PSIG	T = 307.5 F	H = 278.7 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	28.8	CALCULATED	34.9	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	7.7	USED M

FLOWS MLB/HR

STEAM LVG SEG SH	=	5989.5
STEAM LVG PRI-2 SH	=	5954.5
STEAM LVG PRI-1 SH	=	5954.5
FEEDWATER TO ECON	=	5954.5
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	4837.7
STEAM ENT RH-1 ATTEMP	=	4837.7
NO. 1 HTR. EXTR. FLOW	=	566.1
NO. 2 HTR. EXTR. FLOW	=	531.6
TURB LKG	=	54.0

HEAT ABSORPTION MKB/HR

BOILER	=	3160.6
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2372.1
REHEATER 1	=	1000.3
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6533.0

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TEST NO 9A DATE 02/02/87 TIME START 0030 TIME END 0230

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2426.8 PSIG	T = 664.6 F	H = 724.2 BTU/LB
DRUM, SAT VAPOR	P = 2426.8 PSIG	T = 664.6 F	H = 1099.5 BTU/LB
DRUM, BLOWDOWN	P = 2426.8 PSIG	T = 664.6 F	H = 724.2 BTU/LB
SH SPRAY	P = 2576.8 PSIG	T = 306.7 F	H = 281.3 BTU/LB
ENT SEC.	P = 2385.0 PSIG	T = 757.4 F	H = 1268.0 BTU/LB
LVG PRI-2	P = 2385.0 PSIG	T = 757.4 F	H = 1268.0 BTU/LB
ENT PRI-2	P = 2403.0 PSIG	T = 693.9 F	H = 1178.2 BTU/LB
LVG PRI-1	P = 2403.0 PSIG	T = 693.9 F	H = 1178.2 BTU/LB
CORR LVG PRI-2	P = 2385.0 PSIG	T = 757.4 F	H = 1268.0 BTU/LB
CORR ENT SEC	P = 2385.0 PSIG	T = 757.4 F	H = 1268.0 BTU/LB
CORR LVG PRI-1	P = 2403.0 PSIG	T = 693.9 F	H = 1178.2 BTU/LB
CORR ENT PRI-2	P = 2403.0 PSIG	T = 693.9 F	H = 1178.2 BTU/LB
ENT ECON	P = 2462.5 PSIG	T = 483.2 F	H = 468.4 BTU/LB
LVG SEC SH	P = 2349.0 PSIG	T = 978.6 F	H = 1447.8 BTU/LB
ENT RH-1 ATTEMP	P = 296.7 PSIG	T = 534.4 F	H = 1277.0 BTU/LB
ENT RH-1	P = 296.7 PSIG	T = 533.2 F	H = 1276.3 BTU/LB
LVG RH-1	P = 276.5 PSIG	T = 961.8 F	H = 1506.3 BTU/LB
NO. 1 HTR FW ENT	P = 2462.5 PSIG	T = 420.6 F	H = 399.8 BTU/LB
NO. 1 HTR FW LVG	P = 2462.5 PSIG	T = 485.9 F	H = 471.4 BTU/LB
NO. 1 HTR DRAIN	P = 554.7 PSIG	T = 425.5 F	H = 403.1 BTU/LB
NO. 1 HTR EXTR	P = 554.7 PSIG	T = 683.9 F	H = 1344.3 BTU/LB
NO. 2 HTR FW ENT	P = 2462.5 PSIG	T = 345.7 F	H = 321.1 BTU/LB
NO. 2 HTR FW LVG	P = 2462.5 PSIG	T = 420.6 F	H = 399.8 BTU/LB
NO. 2 HTR DRAIN	P = 290.2 PSIG	T = 349.8 F	H = 321.8 BTU/LB
NO. 2 HTR EXTR	P = 290.2 PSIG	T = 533.3 F	H = 1277.1 BTU/LB
RH-1 SPRAY	P = 496.7 PSIG	T = 286.3 F	H = 256.5 BTU/LB

1st STAGE SPRAY	MEASURED	3.5	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	1.8	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	3178.4
STEAM LVG PRI-2 SH	=	3178.4
STEAM LVG PRI-1 SH	=	3178.4
FEEDWATER TO ECON	=	3178.4
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	2663.2
STEAM ENT RH-1 ATTEMP	=	2663.2
NO. 1 HTR. EXTR. FLOW	=	242.0
NO. 2 HTR. EXTR. FLOW	=	241.3
TURB LKG	=	32.0

HEAT ABSORPTION MKB/HR

BOILER	=	2006.0
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	1107.2
REHEATER 1	=	610.5
REHEATER 2	=	0.0
TOTAL OUTPUT	=	3723.7

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TEST NO 10A DATE 02/02/87 TIME START 0330 TIME END 0510

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2426.6 PSIG	T = 664.6 F	H = 724.2 BTU/LB
DRUM, SAT VAPOR	P = 2426.6 PSIG	T = 664.6 F	H = 1099.5 BTU/LB
DRUM, BLOWDOWN	P = 2426.6 PSIG	T = 664.6 F	H = 724.2 BTU/LB
SH SPRAY	P = 2576.6 PSIG	T = 299.0 F	H = 273.4 BTU/LB
ENT SEC.	P = 2385.7 PSIG	T = 770.6 F	H = 1281.8 BTU/LB
LVG PRI-2	P = 2385.7 PSIG	T = 770.6 F	H = 1281.8 BTU/LB
ENT PRI-2	P = 2403.3 PSIG	T = 701.7 F	H = 1191.9 BTU/LB
LVG PRI-1	P = 2403.3 PSIG	T = 701.7 F	H = 1191.9 BTU/LB
CORR LVG PRI-2	P = 2385.7 PSIG	T = 770.6 F	H = 1281.8 BTU/LB
CORR ENT SEC	P = 2385.7 PSIG	T = 770.6 F	H = 1281.8 BTU/LB
CORR LVG PRI-1	P = 2403.3 PSIG	T = 701.7 F	H = 1191.9 BTU/LB
CORR ENT PRI-2	P = 2403.3 PSIG	T = 701.7 F	H = 1191.9 BTU/LB
ENT ECON	P = 2461.3 PSIG	T = 482.1 F	H = 467.2 BTU/LB
LVG SEC SH	P = 2350.5 PSIG	T = 1002.2 F	H = 1463.5 BTU/LB
ENT RH-1 ATTEMP	P = 292.5 PSIG	T = 554.5 F	H = 1289.1 BTU/LB
ENT RH-1	P = 292.5 PSIG	T = 553.6 F	H = 1288.6 BTU/LB
LVG RH-1	P = 272.4 PSIG	T = 1004.8 F	H = 1529.0 BTU/LB
NO. 1 HTR FW ENT	P = 2461.3 PSIG	T = 420.0 F	H = 399.1 BTU/LB
NO. 1 HTR FW LVG	P = 2461.3 PSIG	T = 484.9 F	H = 470.4 BTU/LB
NO. 1 HTR DRAIN	P = 545.5 PSIG	T = 424.8 F	H = 402.4 BTU/LB
NO. 1 HTR EXTR	P = 545.5 PSIG	T = 706.6 F	H = 1357.9 BTU/LB
NO. 2 HTR FW ENT	P = 2461.3 PSIG	T = 345.7 F	H = 321.0 BTU/LB
NO. 2 HTR FW LVG	P = 2461.3 PSIG	T = 420.0 F	H = 399.1 BTU/LB
NO. 2 HTR DRAIN	P = 286.3 PSIG	T = 349.6 F	H = 321.6 BTU/LB
NO. 2 HTR EXTR	P = 286.3 PSIG	T = 553.2 F	H = 1288.9 BTU/LB
RH-1 SPRAY	P = 492.5 PSIG	T = 255.0 F	H = 224.7 BTU/LB

1st STAGE SPRAY	MEASURED	8.2	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	1.3	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	3075.8
STEAM LVG PRI-2 SH	=	3075.8
STEAM LVG PRI-1 SH	=	3075.8
FEEDWATER TO ECON	=	3075.8
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	2586.4
STEAM ENT RH-1 ATTEMP	=	2586.4
NO. 1 HTR. EXTR. FLOW	=	229.2
NO. 2 HTR. EXTR. FLOW	=	229.3
TURB LKG	=	30.9

HEAT ABSORPTION MKB/HR

BOILER	=	1944.8
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	1119.5
REHEATER 1	=	620.5
REHEATER 2	=	0.0
TOTAL OUTPUT	=	3684.8

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TEST NO 11A DATE 02/04/87 TIME START 0900 TIME END 1325

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2667.9 PSIG	T = 678.6 F	H = 755.0 BTU/LB
DRUM, SAT VAPOR	P = 2667.9 PSIG	T = 678.6 F	H = 1071.9 BTU/LB
DRUM, BLOWDOWN	P = 2667.9 PSIG	T = 678.6 F	H = 755.0 BTU/LB
SH SPRAY	P = 2817.9 PSIG	T = 311.5 F	H = 286.6 BTU/LB
ENT SEC.	P = 2562.2 PSIG	T = 785.0 F	H = 1283.1 BTU/LB
LVG PRI-2	P = 2562.2 PSIG	T = 785.0 F	H = 1283.1 BTU/LB
ENT PRI-2	P = 2607.7 PSIG	T = 721.6 F	H = 1197.4 BTU/LB
LVG PRI-1	P = 2607.7 PSIG	T = 721.6 F	H = 1197.4 BTU/LB
CORR LVG PRI-2	P = 2562.2 PSIG	T = 785.0 F	H = 1283.1 BTU/LB
CORR ENT SEC	P = 2562.2 PSIG	T = 785.0 F	H = 1283.1 BTU/LB
CORR LVG PRI-1	P = 2607.7 PSIG	T = 721.6 F	H = 1197.4 BTU/LB
CORR ENT PRI-2	P = 2607.7 PSIG	T = 721.6 F	H = 1197.4 BTU/LB
ENT ECON	P = 2725.6 PSIG	T = 550.9 F	H = 547.6 BTU/LB
LVG SEC SH	P = 2471.2 PSIG	T = 1001.6 F	H = 1459.1 BTU/LB
ENT RH-1 ATTEMP	P = 545.3 PSIG	T = 621.7 F	H = 1307.6 BTU/LB
ENT RH-1	P = 545.3 PSIG	T = 620.2 F	H = 1306.7 BTU/LB
LVG RH-1	P = 514.8 PSIG	T = 999.6 F	H = 1519.3 BTU/LB
NO. 1 HTR FW ENT	P = 2725.6 PSIG	T = 477.8 F	H = 462.4 BTU/LB
NO. 1 HTR FW LVG	P = 2725.6 PSIG	T = 552.7 F	H = 549.8 BTU/LB
NO. 1 HTR DRAIN	P = 1044.0 PSIG	T = 489.1 F	H = 475.1 BTU/LB
NO. 1 HTR EXTR	P = 1044.0 PSIG	T = 795.2 F	H = 1383.8 BTU/LB
NO. 2 HTR FW ENT	P = 2725.6 PSIG	T = 391.3 F	H = 369.0 BTU/LB
NO. 2 HTR FW LVG	P = 2725.6 PSIG	T = 477.8 F	H = 462.4 BTU/LB
NO. 2 HTR DRAIN	P = 536.6 PSIG	T = 399.6 F	H = 375.0 BTU/LB
NO. 2 HTR EXTR	P = 536.6 PSIG	T = 620.2 F	H = 1307.4 BTU/LB
RH-1 SPRAY	P = 745.3 PSIG	T = 293.6 F	H = 264.4 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	41.3	CALCULATED	0.0	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	4.3	USED M

FLOWS MLB/HR

STEAM LVG SEC SH	=	6161.4
STEAM LVG PRI-2 SH	=	6161.4
STEAM LVG PRI-1 SH	=	6161.4
FEEDWATER TO ECON	=	6161.4
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	4959.5
STEAM ENT RH-1 ATTEMP	=	4959.5
NO. 1 HTR. EXTR. FLOW	=	592.2
NO. 2 HTR. EXTR. FLOW	=	554.1
TURB LKG	=	55.6

HEAT ABSORPTION MKB/HR

BOILER	=	3230.7
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2385.4
REHEATER 1	=	1049.8
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6665.8

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TEST NO 12A DATE 02/05/87 TIME START 1425 TIME END 1820

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2646.6 PSIG	T = 677.4 F	H = 752.3 BTU/LB
DRUM, SAT VAPOR	P = 2646.6 PSIG	T = 677.4 F	H = 1074.6 BTU/LB
DRUM, BLOWDOWN	P = 2646.6 PSIG	T = 677.4 F	H = 752.3 BTU/LB
SH SPRAY	P = 2796.6 PSIG	T = 317.9 F	H = 293.1 BTU/LB
ENT SEC.	P = 2541.0 PSIG	T = 784.0 F	H = 1283.6 BTU/LB
LVG PRI-2	P = 2541.0 PSIG	T = 784.0 F	H = 1283.6 BTU/LB
ENT PRI-2	P = 2586.5 PSIG	T = 721.3 F	H = 1199.7 BTU/LB
LVG PRI-1	P = 2586.5 PSIG	T = 721.3 F	H = 1199.7 BTU/LB
CORR LVG PRI-2	P = 2541.0 PSIG	T = 784.0 F	H = 1283.6 BTU/LB
CORR ENT SEC	P = 2541.0 PSIG	T = 784.0 F	H = 1283.6 BTU/LB
CORR LVG PRI-1	P = 2586.5 PSIG	T = 721.3 F	H = 1199.7 BTU/LB
CORR ENT PRI-2	P = 2586.5 PSIG	T = 721.3 F	H = 1199.7 BTU/LB
ENT ECON	P = 2700.6 PSIG	T = 551.0 F	H = 547.7 BTU/LB
LVG SEC SH	P = 2450.1 PSIG	T = 1003.3 F	H = 1460.9 BTU/LB
ENT RH-1 ATTEMP	P = 547.2 PSIG	T = 625.5 F	H = 1309.8 BTU/LB
ENT RH-1	P = 547.2 PSIG	T = 623.9 F	H = 1308.8 BTU/LB
LVG RH-1	P = 516.6 PSIG	T = 1005.4 F	H = 1522.3 BTU/LB
NO. 1 HTR FW ENT	P = 2700.6 PSIG	T = 478.5 F	H = 463.2 BTU/LB
NO. 1 HTR FW LVG	P = 2700.6 PSIG	T = 552.8 F	H = 550.0 BTU/LB
NO. 1 HTR DRAIN	P = 1043.0 PSIG	T = 489.5 F	H = 475.5 BTU/LB
NO. 1 HTR EXTR	P = 1043.0 PSIG	T = 798.0 F	H = 1385.6 BTU/LB
NO. 2 HTR FW ENT	P = 2700.6 PSIG	T = 392.3 F	H = 369.9 BTU/LB
NO. 2 HTR FW LVG	P = 2700.6 PSIG	T = 478.5 F	H = 463.2 BTU/LB
NO. 2 HTR DRAIN	P = 538.6 PSIG	T = 400.3 F	H = 375.8 BTU/LB
NO. 2 HTR EXTR	P = 538.6 PSIG	T = 623.9 F	H = 1309.5 BTU/LB
RH-1 SPRAY	P = 747.2 PSIG	T = 253.4 F	H = 223.6 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	4.6	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	6136.4
STEAM LVG PRI-2 SH	=	6136.4
STEAM LVG PRI-1 SH	=	6136.4
FEEDWATER TO ECON	=	6136.4
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	4945.4
STEAM ENT RH-1 ATTEMP	=	4945.4
NO. 1 HTR. EXTR. FLOW	=	585.3
NO. 2 HTR. EXTR. FLOW	=	550.4
TURB LKG	=	55.3

HEAT ABSORPTION MKB/HR

BOILER	=	3233.4
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2370.6
REHEATER 1	=	1051.0
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6655.0

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TEST NO 13A DATE 02/07/87 TIME START 1330 TIME END 1730

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2651.8 PSIG	T = 677.7 F	H = 753.0 BTU/LB
DRUM, SAT VAPOR	P = 2651.8 PSIG	T = 677.7 F	H = 1074.0 BTU/LB
DRUM, BLOWDOWN	P = 2651.8 PSIG	T = 677.7 F	H = 753.0 BTU/LB
SH SPRAY	P = 2801.8 PSIG	T = 300.4 F	H = 275.2 BTU/LB
ENT SEC.	P = 2545.2 PSIG	T = 765.7 F	H = 1263.6 BTU/LB
LVG PRI-2	P = 2545.2 PSIG	T = 765.7 F	H = 1263.6 BTU/LB
ENT PRI-2	P = 2591.1 PSIG	T = 709.8 F	H = 1178.8 BTU/LB
LVG PRI-1	P = 2591.1 PSIG	T = 709.8 F	H = 1178.8 BTU/LB
CORR LVG PRI-2	P = 2545.2 PSIG	T = 765.7 F	H = 1263.6 BTU/LB
CORR ENT SEC	P = 2545.2 PSIG	T = 765.7 F	H = 1263.6 BTU/LB
CORR LVG PRI-1	P = 2591.1 PSIG	T = 709.8 F	H = 1178.8 BTU/LB
CORR ENT PRI-2	P = 2591.1 PSIG	T = 709.8 F	H = 1178.8 BTU/LB
ENT ECON	P = 2701.8 PSIG	T = 548.6 F	H = 544.8 BTU/LB
LVG SEC SH	P = 2453.4 PSIG	T = 960.5 F	H = 1431.7 BTU/LB
ENT RH-1 ATTEMP	P = 547.1 PSIG	T = 589.3 F	H = 1286.8 BTU/LB
ENT RH-1	P = 547.1 PSIG	T = 588.3 F	H = 1286.1 BTU/LB
LVG RH-1	P = 516.6 PSIG	T = 956.6 F	H = 1496.0 BTU/LB
NO. 1 HTR FW ENT	P = 2701.8 PSIG	T = 477.1 F	H = 461.7 BTU/LB
NO. 1 HTR FW LVG	P = 2701.8 PSIG	T = 550.9 F	H = 547.6 BTU/LB
NO. 1 HTR DRAIN	P = 1038.9 PSIG	T = 488.7 F	H = 474.6 BTU/LB
NO. 1 HTR EXTR	P = 1038.9 PSIG	T = 756.1 F	H = 1359.5 BTU/LB
NO. 2 HTR FW ENT	P = 2701.8 PSIG	T = 392.2 F	H = 369.9 BTU/LB
NO. 2 HTR FW LVG	P = 2701.8 PSIG	T = 477.1 F	H = 461.7 BTU/LB
NO. 2 HTR DRAIN	P = 538.9 PSIG	T = 400.6 F	H = 376.1 BTU/LB
NO. 2 HTR EXTR	P = 538.9 PSIG	T = 588.0 F	H = 1286.7 BTU/LB
RH-1 SPRAY	P = 747.1 PSIG	T = 261.4 F	H = 231.7 BTU/LB

1st STAGE SPRAY	MEASURED	2.4	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	36.0	CALCULATED	0.0	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	3.3	USED M

FLOWS MLB/HR

STEAM LVG SEC SH	=	6274.9
STEAM LVG PRI-2 SH	=	6274.9
STEAM LVG PRI-1 SH	=	6274.9
FEEDWATER TO ECON	=	6274.9
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	5042.7
STEAM ENT RH-1 ATTEMP	=	5042.7
NO. 1 HTR. EXTR. FLOW	=	609.2
NO. 2 HTR. EXTR. FLOW	=	566.4
TURB LKG	=	56.7

HEAT ABSORPTION MKB/HR

BOILER	=	3320.4
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2244.5
REHEATER 1	=	1055.0
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6619.9

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TEST NO 14A DATE 02/08/87 TIME START 1300 TIME END 1700

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2649.0 PSIG	T = 677.5 F	H = 752.6 BTU/LB
DRUM, SAT VAPOR	P = 2649.0 PSIG	T = 677.5 F	H = 1074.3 BTU/LB
DRUM, BLOWDOWN	P = 2649.0 PSIG	T = 677.5 F	H = 752.6 BTU/LB
SH SPRAY	P = 2799.0 PSIG	T = 307.7 F	H = 282.7 BTU/LB
ENT SEC.	P = 2544.8 PSIG	T = 758.5 F	H = 1255.4 BTU/LB
LVG PRI-2	P = 2544.8 PSIG	T = 758.5 F	H = 1255.4 BTU/LB
ENT PRI-2	P = 2589.6 PSIG	T = 707.7 F	H = 1175.0 BTU/LB
LVG PRI-1	P = 2589.6 PSIG	T = 707.7 F	H = 1175.0 BTU/LB
CORR LVG PRI-2	P = 2544.8 PSIG	T = 758.5 F	H = 1255.4 BTU/LB
CORR ENT SEC	P = 2544.8 PSIG	T = 758.5 F	H = 1255.4 BTU/LB
CORR LVG PRI-1	P = 2589.6 PSIG	T = 707.7 F	H = 1175.0 BTU/LB
CORR ENT PRI-2	P = 2589.6 PSIG	T = 707.7 F	H = 1175.0 BTU/LB
ENT ECON	P = 2696.6 PSIG	T = 543.6 F	H = 538.7 BTU/LB
LVG SEC SH	P = 2455.0 PSIG	T = 958.1 F	H = 1429.9 BTU/LB
ENT RH-1 ATTEMP	P = 543.5 PSIG	T = 587.4 F	H = 1285.9 BTU/LB
ENT RH-1	P = 543.5 PSIG	T = 586.5 F	H = 1285.3 BTU/LB
LVG RH-1	P = 513.2 PSIG	T = 958.9 F	H = 1497.4 BTU/LB
NO. 1 HTR FW ENT	P = 2696.6 PSIG	T = 476.8 F	H = 461.4 BTU/LB
NO. 1 HTR FW LVG	P = 2696.6 PSIG	T = 550.5 F	H = 547.1 BTU/LB
NO. 1 HTR DRAIN	P = 1030.1 PSIG	T = 488.1 F	H = 473.9 BTU/LB
NO. 1 HTR EXTR	P = 1030.1 PSIG	T = 753.5 F	H = 1358.4 BTU/LB
NO. 2 HTR FW ENT	P = 2696.6 PSIG	T = 392.5 F	H = 370.2 BTU/LB
NO. 2 HTR FW LVG	P = 2696.6 PSIG	T = 476.8 F	H = 461.4 BTU/LB
NO. 2 HTR DRAIN	P = 535.7 PSIG	T = 399.7 F	H = 375.1 BTU/LB
NO. 2 HTR EXTR	P = 535.7 PSIG	T = 586.2 F	H = 1285.8 BTU/LB
RH-1 SPRAY	P = 743.5 PSIG	T = 242.1 F	H = 212.1 BTU/LB

1st STAGE SPRAY	MEASURED	7.1	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	38.9	CALCULATED	0.0	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	3.0	USED M

FLOWS MLB/HR

STEAM LVG SEC SH	= 6187.7
STEAM LVG PRI-2 SH	= 6187.7
STEAM LVG PRI-1 SH	= 6187.7
FEEDWATER TO ECON	= 6187.7
BLOWDOWN	= 0.0
SH EXTRACTION	= 0.0
STEAM LVG RH-1	= 4977.3
STEAM ENT RH-1 ATTEMP	= 4977.3
NO. 1 HTR. EXTR. FLOW	= 600.0
NO. 2 HTR. EXTR. FLOW	= 554.6
TURB LKG	= 55.9

HEAT ABSORPTION MKB/HR

BOILER	= 3314.4
BLOWDOWN HEAT	= 0.0
EXTRACTION HEAT	= 0.0
SUPERHEATER	= 2200.2
REHEATER 1	= 1052.4
REHEATER 2	= 0.0
TOTAL OUTPUT	= 6566.9

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TEST NO 15A DATE 02/09/87 TIME START 1300 TIME END 1700

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2652.1 PSIG	T = 677.7 F	H = 753.0 BTU/LB
DRUM, SAT VAPOR	P = 2652.1 PSIG	T = 677.7 F	H = 1073.9 BTU/LB
DRUM, BLOWDOWN	P = 2652.1 PSIG	T = 677.7 F	H = 753.0 BTU/LB
SH SPRAY	P = 2802.1 PSIG	T = 323.6 F	H = 298.9 BTU/LB
ENT SEC.	P = 2545.9 PSIG	T = 777.7 F	H = 1276.6 BTU/LB
LVG PRI-2	P = 2545.9 PSIG	T = 777.7 F	H = 1276.6 BTU/LB
ENT PRI-2	P = 2591.7 PSIG	T = 715.0 F	H = 1188.3 BTU/LB
LVG PRI-1	P = 2591.7 PSIG	T = 715.0 F	H = 1188.3 BTU/LB
CORR LVG PRI-2	P = 2545.9 PSIG	T = 777.7 F	H = 1276.6 BTU/LB
CORR ENT SEC	P = 2545.9 PSIG	T = 777.7 F	H = 1276.6 BTU/LB
CORR LVG PRI-1	P = 2591.7 PSIG	T = 715.0 F	H = 1188.3 BTU/LB
CORR ENT PRI-2	P = 2591.7 PSIG	T = 715.0 F	H = 1188.3 BTU/LB
ENT ECON	P = 2702.9 PSIG	T = 547.2 F	H = 543.1 BTU/LB
LVG SEC SH	P = 2454.5 PSIG	T = 1002.3 F	H = 1460.1 BTU/LB
ENT RH-1 ATTEMP	P = 549.6 PSIG	T = 625.2 F	H = 1309.4 BTU/LB
ENT RH-1	P = 549.6 PSIG	T = 623.5 F	H = 1308.4 BTU/LB
LVG RH-1	P = 519.0 PSIG	T = 1000.8 F	H = 1519.8 BTU/LB
NO. 1 HTR FW ENT	P = 2702.9 PSIG	T = 479.4 F	H = 464.2 BTU/LB
NO. 1 HTR FW LVG	P = 2702.9 PSIG	T = 554.1 F	H = 551.6 BTU/LB
NO. 1 HTR DRAIN	P = 1050.0 PSIG	T = 490.5 F	H = 476.6 BTU/LB
NO. 1 HTR EXTR	P = 1050.0 PSIG	T = 798.2 F	H = 1385.3 BTU/LB
NO. 2 HTR FW ENT	P = 2702.9 PSIG	T = 393.9 F	H = 371.7 BTU/LB
NO. 2 HTR FW LVG	P = 2702.9 PSIG	T = 479.4 F	H = 464.2 BTU/LB
NO. 2 HTR DRAIN	P = 541.9 PSIG	T = 402.0 F	H = 377.6 BTU/LB
NO. 2 HTR EXTR	P = 541.9 PSIG	T = 623.8 F	H = 1309.2 BTU/LB
RH-1 SPRAY	P = 749.6 PSIG	T = 246.9 F	H = 217.0 BTU/LB

1st STAGE SPRAY	MEASURED	5.0	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	4.7	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	6122.0
STEAM LVG PRI-2 SH	=	6122.0
STEAM LVG PRI-1 SH	=	6122.0
FEEDWATER TO ECON	=	6122.0
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	4933.0
STEAM ENT RH-1 ATTEMP	=	4933.0
NO. 1 HTR. EXTR. FLOW	=	588.6
NO. 2 HTR. EXTR. FLOW	=	545.2
TURB LKG	=	55.2

HEAT ABSORPTION MKB/HR

BOILER	=	3249.8
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2364.3
REHEATER 1	=	1037.8
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6651.9

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TEST NO 16A DATE 02/10/87 TIME START 1500 TIME END 1900

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2649.3 PSIG	T = 677.5 F	H = 752.6 BTU/LB
DRUM, SAT VAPOR	P = 2649.3 PSIG	T = 677.5 F	H = 1074.3 BTU/LB
DRUM, BLOWDOWN	P = 2649.3 PSIG	T = 677.5 F	H = 752.6 BTU/LB
SH SPRAY	P = 2799.3 PSIG	T = 279.0 F	H = 253.5 BTU/LB
ENT SEC.	P = 2545.2 PSIG	T = 788.7 F	H = 1288.1 BTU/LB
LVG PRI-2	P = 2545.2 PSIG	T = 788.7 F	H = 1288.1 BTU/LB
ENT PRI-2	P = 2590.1 PSIG	T = 728.2 F	H = 1210.3 BTU/LB
LVG PRI-1	P = 2590.1 PSIG	T = 728.2 F	H = 1210.3 BTU/LB
CORR LVG PRI-2	P = 2545.2 PSIG	T = 788.7 F	H = 1288.1 BTU/LB
CORR ENT SEC	P = 2545.2 PSIG	T = 788.7 F	H = 1288.1 BTU/LB
CORR LVG PRI-1	P = 2590.1 PSIG	T = 728.2 F	H = 1210.3 BTU/LB
CORR ENT PRI-2	P = 2590.1 PSIG	T = 728.2 F	H = 1210.3 BTU/LB
ENT ECON	P = 2701.6 PSIG	T = 550.7 F	H = 547.4 BTU/LB
LVG SEC SH	P = 2455.6 PSIG	T = 1005.1 F	H = 1462.0 BTU/LB
ENT RH-1 ATTEMP	P = 543.7 PSIG	T = 626.1 F	H = 1310.4 BTU/LB
ENT RH-1	P = 543.7 PSIG	T = 624.3 F	H = 1309.4 BTU/LB
LVG RH-1	P = 513.3 PSIG	T = 1007.3 F	H = 1523.5 BTU/LB
NO. 1 HTR FW ENT	P = 2701.6 PSIG	T = 478.1 F	H = 462.8 BTU/LB
NO. 1 HTR FW LVG	P = 2701.6 PSIG	T = 552.7 F	H = 549.8 BTU/LB
NO. 1 HTR DRAIN	P = 1038.3 PSIG	T = 489.2 F	H = 475.2 BTU/LB
NO. 1 HTR EXTR	P = 1038.3 PSIG	T = 799.5 F	H = 1386.7 BTU/LB
NO. 2 HTR FW ENT	P = 2701.6 PSIG	T = 393.3 F	H = 371.0 BTU/LB
NO. 2 HTR FW LVG	P = 2701.6 PSIG	T = 478.1 F	H = 462.8 BTU/LB
NO. 2 HTR DRAIN	P = 535.8 PSIG	T = 401.4 F	H = 377.0 BTU/LB
NO. 2 HTR EXTR	P = 535.8 PSIG	T = 624.6 F	H = 1310.2 BTU/LB
RH-1 SPRAY	P = 743.7 PSIG	T = 265.4 F	H = 235.8 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	4.9	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	6099.9
STEAM LVG PRI-2 SH	=	6099.9
STEAM LVG PRI-1 SH	=	6099.9
FEEDWATER TO ECON	=	6099.9
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	4923.8
STEAM ENT RH-1 ATTEMP	=	4923.8
NO. 1 HTR. EXTR. FLOW	=	582.4
NO. 2 HTR. EXTR. FLOW	=	538.7
TURB LKG	=	55.0

HEAT ABSORPTION MKB/HR

BOILER	=	3213.9
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2364.8
REHEATER 1	=	1048.9
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6627.7

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TEST NO 17A DATE 02/11/87 TIME START 1530 TIME END 1925

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2650.1 PSIG	T = 677.6 F	H = 752.7 BTU/LB
DRUM, SAT VAPOR	P = 2650.1 PSIG	T = 677.6 F	H = 1074.2 BTU/LB
DRUM, BLOWDOWN	P = 2650.1 PSIG	T = 677.6 F	H = 752.7 BTU/LB
SH SPRAY	P = 2800.1 PSIG	T = 327.4 F	H = 302.8 BTU/LB
ENT SEC.	P = 2547.8 PSIG	T = 783.2 F	H = 1282.3 BTU/LB
LVG PRI-2	P = 2547.8 PSIG	T = 783.2 F	H = 1282.3 BTU/LB
ENT PRI-2	P = 2591.8 PSIG	T = 717.3 F	H = 1192.3 BTU/LB
LVG PRI-1	P = 2591.8 PSIG	T = 717.3 F	H = 1192.3 BTU/LB
CORR LVG PRI-2	P = 2547.8 PSIG	T = 783.2 F	H = 1282.3 BTU/LB
CORR ENT SEC	P = 2547.8 PSIG	T = 783.2 F	H = 1282.3 BTU/LB
CORR LVG PRI-1	P = 2591.8 PSIG	T = 717.3 F	H = 1192.3 BTU/LB
CORR ENT PRI-2	P = 2591.8 PSIG	T = 717.3 F	H = 1192.3 BTU/LB
ENT ECON	P = 2700.5 PSIG	T = 550.6 F	H = 547.2 BTU/LB
LVG SEC SH	P = 2459.6 PSIG	T = 1013.5 F	H = 1467.4 BTU/LB
ENT RH-1 ATTEMP	P = 540.9 PSIG	T = 632.5 F	H = 1314.6 BTU/LB
ENT RH-1	P = 540.9 PSIG	T = 630.7 F	H = 1313.5 BTU/LB
LVG RH-1	P = 510.7 PSIG	T = 1014.6 F	H = 1527.5 BTU/LB
NO. 1 HTR FW ENT	P = 2700.5 PSIG	T = 477.9 F	H = 462.5 BTU/LB
NO. 1 HTR FW LVG	P = 2700.5 PSIG	T = 552.5 F	H = 549.6 BTU/LB
NO. 1 HTR DRAIN	P = 1033.4 PSIG	T = 488.8 F	H = 474.7 BTU/LB
NO. 1 HTR EXTR	P = 1033.4 PSIG	T = 806.8 F	H = 1391.5 BTU/LB
NO. 2 HTR FW ENT	P = 2700.5 PSIG	T = 393.0 F	H = 370.7 BTU/LB
NO. 2 HTR FW LVG	P = 2700.5 PSIG	T = 477.9 F	H = 462.5 BTU/LB
NO. 2 HTR DRAIN	P = 532.9 PSIG	T = 401.2 F	H = 376.7 BTU/LB
NO. 2 HTR EXTR	P = 532.9 PSIG	T = 631.1 F	H = 1314.4 BTU/LB
RH-1 SPRAY	P = 740.9 PSIG	T = 282.5 F	H = 253.1 BTU/LB

1st STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
2nd STAGE SPRAY	MEASURED	0.0	CALCULATED	0.0	USED C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	5.2	USED M

FLOWS MLB/HR		HEAT ABSORPTION MKB/HR	
STEAM LVG SEC SH	= 6037.8	BOILER	= 3181.5
STEAM LVG PRI-2 SH	= 6037.8	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6037.8	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6037.8	SUPERHEATER	= 2374.2
BLOWDOWN	= 0.0	REHEATER 1	= 1038.3
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 4878.5	TOTAL OUTPUT	= 6594.1
STEAM ENT RH-1 ATTEMP	= 4878.5		
NO. 1 HTR. EXTR. FLOW	= 573.8		
NO. 2 HTR. EXTR. FLOW	= 531.1		
TURB LKG	= 54.5		

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TEST NO 18A DATE 02/12/87 TIME START 1230 TIME END 1630

USING MEASURED HP STEAM FLOW
USING DATA CHOICE 2

DRUM, SAT FLUID	P = 2638.5 PSIG	T = 676.9 F	H = 751.3 BTU/LB
DRUM, SAT VAPOR	P = 2638.5 PSIG	T = 676.9 F	H = 1075.6 BTU/LB
DRUM, BLOWDOWN	P = 2638.5 PSIG	T = 676.9 F	H = 751.3 BTU/LB
SH SPRAY	P = 2788.5 PSIG	T = 338.4 F	H = 314.0 BTU/LB
ENT SEC.	P = 2537.3 PSIG	T = 775.5 F	H = 1275.0 BTU/LB
LVG PRI-2	P = 2537.3 PSIG	T = 786.2 F	H = 1286.2 BTU/LB
ENT PRI-2	P = 2580.9 PSIG	T = 717.7 F	H = 1194.4 BTU/LB
LVG PRI-1	P = 2580.9 PSIG	T = 717.7 F	H = 1194.4 BTU/LB
CORR LVG PRI-1	P = 2580.9 PSIG	T = 717.7 F	H = 1194.4 BTU/LB
CORR ENT PRI-2	P = 2580.9 PSIG	T = 717.7 F	H = 1194.4 BTU/LB
ENT ECON	P = 2689.4 PSIG	T = 550.0 F	H = 546.6 BTU/LB
LVG SEC SH	P = 2450.2 PSIG	T = 1005.7 F	H = 1462.5 BTU/LB
ENT RH-1 ATTEMP	P = 538.4 PSIG	T = 626.3 F	H = 1311.0 BTU/LB
ENT RH-1	P = 538.4 PSIG	T = 624.6 F	H = 1309.9 BTU/LB
LVG RH-1	P = 508.4 PSIG	T = 1004.8 F	H = 1522.3 BTU/LB
NO. 1 HTR FW ENT	P = 2689.4 PSIG	T = 476.6 F	H = 461.1 BTU/LB
NO. 1 HTR FW LVG	P = 2689.4 PSIG	T = 551.1 F	H = 547.8 BTU/LB
NO. 1 HTR DRAIN	P = 1027.9 PSIG	T = 487.8 F	H = 473.5 BTU/LB
NO. 1 HTR EXTR	P = 1027.9 PSIG	T = 798.6 F	H = 1386.7 BTU/LB
NO. 2 HTR FW ENT	P = 2689.4 PSIG	T = 392.0 F	H = 369.6 BTU/LB
NO. 2 HTR FW LVG	P = 2689.4 PSIG	T = 476.6 F	H = 461.1 BTU/LB
NO. 2 HTR DRAIN	P = 530.8 PSIG	T = 400.5 F	H = 376.0 BTU/LB
NO. 2 HTR EXTR	P = 530.8 PSIG	T = 623.8 F	H = 1310.1 BTU/LB
RH-1 SPRAY	P = 738.4 PSIG	T = 285.4 F	H = 256.0 BTU/LB

1st STAGE SPRAY	MEASURED	2.4	CALCULATED	0.0	USED	C
2nd STAGE SPRAY	MEASURED	58.1	CALCULATED	68.3	USED	C
RH-1 SPRAY	MEASURED	0.0	CALCULATED	5.0	USED	M

FLOWS MLB/HR

STEAM LVG SEC SH	=	5977.1
STEAM LVG PRI-2 SH	=	5908.8
STEAM LVG PRI-1 SH	=	5908.8
FEEDWATER TO ECON	=	5908.8
BLOWDOWN	=	0.0
SH EXTRACTION	=	0.0
STEAM LVG RH-1	=	4841.7
STEAM ENT RH-1 ATTEMP	=	4841.7
NO. 1 HTR. EXTR. FLOW	=	561.2
NO. 2 HTR. EXTR. FLOW	=	520.2
TURB LKG	=	53.9

HEAT ABSORPTION MKB/HR

BOILER	=	3126.1
BLOWDOWN HEAT	=	0.0
EXTRACTION HEAT	=	0.0
SUPERHEATER	=	2364.6
REHEATER 1	=	1022.7
REHEATER 2	=	0.0
TOTAL OUTPUT	=	6513.4

Fluid Pressure Drop Summary

TEST ID	5A	7A	8A	11A	12A	13A
TEST DATE	1/29/87	1/30/87	1/30/87	2/4/87	2/5/87	2/7/87
SH Steam Flow (Mlb/hr)	6238.4	6017.5	5989.5	6161.4	6136.4	6274.9
Economizer Inlet (PSIG)	2735.8	2717.9	2715.3	2725.6	2700.6	2701.8
Drum (Indicated, PSIG)	2681.2	2663.2	2661.5	2667.9	2646.6	2651.8
Drum (Actual, PSIG)	2668.1	2650.1	2648.4	2654.8	2633.5	2638.7
SSH Outlet (PSIG)	2467.8	2461.9	2461.8	2471.2	2450.1	2453.4
RSH Inlet (PSIG)	558.6	547.0	545.1	545.8	547.2	547.1
RSH Outlet (PSIG)	524.5	513.4	511.5	514.8	516.6	516.6
Economizer ΔP (PSI)	25.1	27.1	26.4	28.8	25.4	20.5
Superheater ΔP (PSI)	191.5	193.4	193.5	180.0	181.2	175.1
Reheater ΔP (PSI)	32.6	34.5	34.9	30.4	30.2	28.8

TEST ID	14A	15A	16A	17A	18A	
TEST DATE	2/8/87	2/9/87	2/10/87	2/11/87	2/12/87	
SH Steam Flow (Mlb/hr)	6187.7	6122.0	6099.9	6037.8	5977.1	
Economizer Inlet (PSIG)	2696.6	2702.9	2701.6	2700.5	2689.4	
Drum (Indicated, PSIG)	2649.0	2652.1	2649.3	2650.1	2638.5	
Drum (Actual, PSIG)	2635.9	2639.0	2636.2	2637.0	2625.4	
SSH Outlet (PSIG)	2455.0	2454.5	2455.6	2459.6	2450.2	
RSH Inlet (PSIG)	543.5	549.6	543.7	540.9	538.4	
RSH Outlet (PSIG)	513.2	519.0	513.3	510.7	508.4	
						AVERAGE
Economizer ΔP (PSI)	18.8	22.3	24.0	22.6	23.5	**24.0**
Superheater ΔP (PSI)	175.8	183.2	180.6	181.1	182.5	**183.4**
Reheater ΔP (PSI)	29.4	30.4	30.4	30.8	31.2	**31.2**

Pressure drops are corrected for deviation from design steam flow of 6100 Mlb/hr

Air Heater ΔP Data Summary, Tests 2A-9A

Test ID Test Date	2A/3A 1/27/87	4A 1/28/87	5A 1/29/87	6A 1/29/87	7A 1/30/87	8A 1/30/87	9A 2/2/87
ΔP Measurement							
East PAH Gas	1.42	1.97	1.75	1.75	1.77	1.70	1.21
West PAH Gas	1.30	1.54	1.69	1.55	1.66	1.61	1.21
East SAH Gas	2.08	3.91	3.91	3.40	3.00	3.01	1.57
West SAH Gas	5.17	5.86	5.80	5.43	5.08	5.09	3.64
East PAH Air	0.47	0.85	0.77	0.73	0.74	0.70	0.33
West PAH Air	0.50	0.85	0.77	0.75	0.76	0.70	0.37
East SAH Air	1.02	2.08	2.05	1.70	1.47	1.48	0.68
West SAH Air	0.60	1.25	1.23	1.13	0.95	0.90	0.31
East PAH Air-Gas	39.98	45.58	44.12	43.28	42.52	39.12	37.13
West PAH Air-Gas	36.23	40.74	39.18	39.43	37.90	35.25	35.44
East SAH Air-Gas	8.10	14.51	14.55	12.20	10.75	10.67	7.13
West SAH Air-Gas	7.62	13.47	13.58	11.50	10.11	9.98	6.71
Furnace-AH out (Gas)	5.55	8.46	8.42	7.45	6.88	6.64	4.61
AH Inlet-Furnace (Air)	1.95	5.10	5.24	4.08	3.28	3.45	2.17

IP14_004002

Air Heater ΔP Data Summary, Tests 10A-18A

Test ID Test Date	10A 2/2/87	11A 2/4/87	12A 2/5/87	13A 2/7/87	14A 2/8/87	15A 2/9/87	16A 2/10/87	17A 2/11/87	18A 2/12/87
ΔP Measurement									
East PAH Gas	1.24	1.79	1.77	1.91	1.79	1.80	1.86	1.70	1.80
West PAH Gas	1.24	1.64	1.67	1.65	1.68	1.70	1.80	1.70	1.70
East SAH Gas	1.73	3.61	3.41	3.20	3.20	3.20	4.10	3.13	3.20
West SAH Gas	3.66	4.29	3.91	3.91	3.14	3.90	4.17	3.51	3.06
East PAH Air	0.36	0.73	0.80	0.74	0.80	0.80	0.80	0.70	0.70
West PAH Air	0.38	0.74	0.80	0.80	0.80	38.90	0.81	0.70	0.70
East SAH Air	0.84	1.81	1.67	1.70	1.60	1.60	2.16	1.50	1.50
West SAH Air	0.35	1.11	1.09	1.08	1.00	1.00	1.34	0.93	1.00
East PAH Air-Gas	37.65	43.83	43.18	43.10	42.91	43.00	44.72	42.58	42.50
West PAH Air-Gas	36.11	43.63	43.83	38.11	42.31	0.70	40.11	39.43	39.42
East SAH Air-Gas	8.63	12.76	11.98	11.50	11.50	11.20	14.82	11.00	10.70
West SAH Air-Gas	8.00	12.00	11.34	11.00	11.00	10.82	13.97	10.21	10.12
Furnace-AH out (Gas)	5.06	7.86	7.37	7.41	7.44	7.10	8.62	6.90	7.10
AH Inlet-Furnace (Air)	2.91	4.30	3.96	3.60	3.50	3.50	5.37	3.43	3.18

IP14_004003

B&W vs Plant O2 Measurement

East Econ Out

Test ID	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A
B&W, %O2	5.57	5.24	4.29	4.58	4.70	3.21	2.85	5.97	7.67	4.65	4.61	4.06	4.28	3.59	5.82	2.91	3.35
Plant, %O2	6.85	6.74	4.43	4.31	3.87	4.04	2.37	6.99	7.82	4.81	4.38	6.94	5.88	4.37	5.14	5.58	3.90

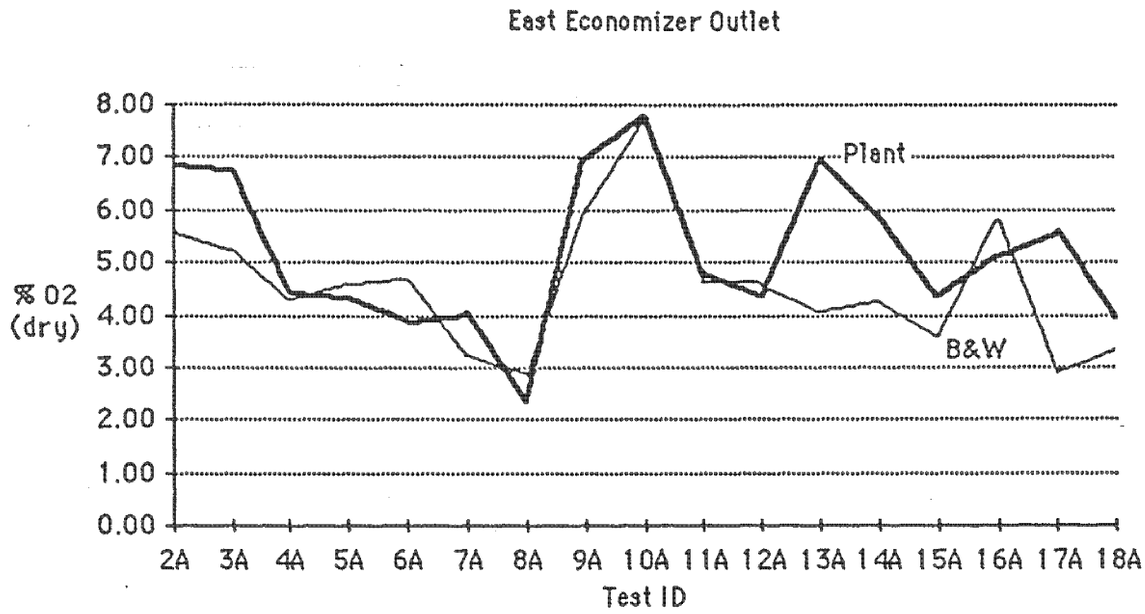
West Econ Out

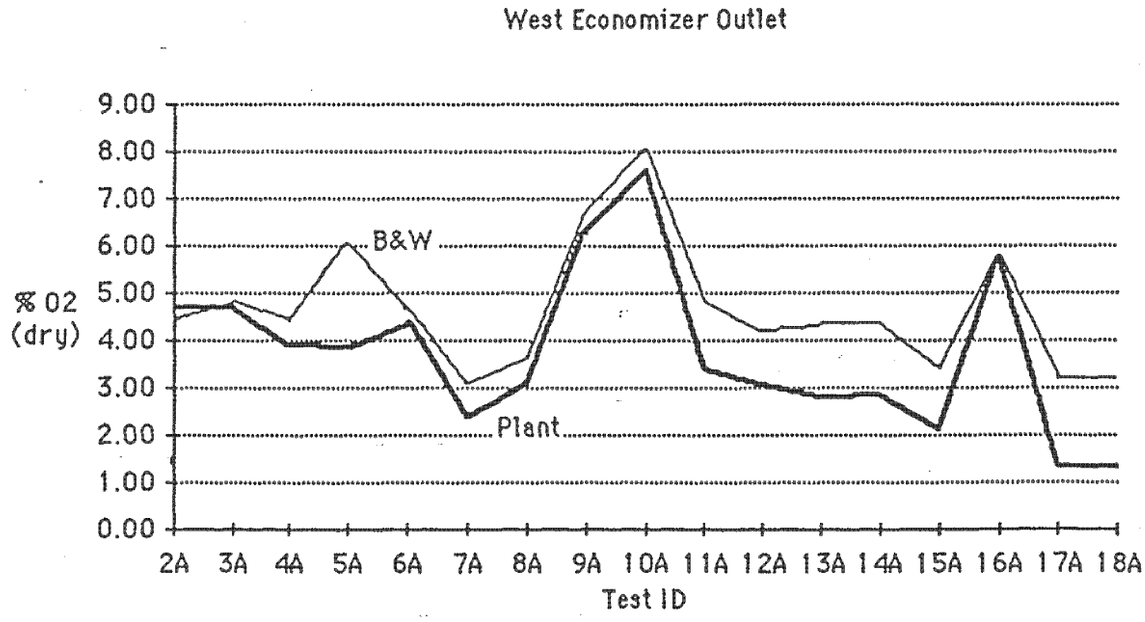
Test ID	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A
B&W, %O2	4.50	4.84	4.43	6.07	4.70	3.10	3.65	6.75	8.07	4.85	4.22	4.37	4.35	3.42	5.79	3.21	3.23
Plant, %O2	4.74	4.71	3.93	3.87	4.40	2.39	3.08	6.32	7.62	3.41	3.07	2.81	2.86	2.13	5.70	1.37	1.39

East Econ Out	AVERAGE
B&W, %O2	4.55
Plant, %O2	5.20

West Econ Out	AVERAGE
B&W, %O2	4.68
Plant, %O2	3.75

Note: all plant data has been corrected to %O2, dry basis





B&W vs Plant O_2 Measurement

Section 3: Data Averages

Intermountain Power Project
Unit 1, RB-614

RB-614 12 Feb 1987 10:14:14

TEST NO.	2A	3A	4A	5A	6A
TEST SEQ. NO.	2	3	4	5	6
DATE	01/27/87	01/27/87	01/28/87	1/29/87	01/29/87
TIME START	1145	1430	1300	1240	1745
TIME END	1435	1640	1700	1630	1905
LOAD MW	606	607	902	854	862
FUEL	PC	PC	PC	PC	PC
ALPHA1	ADG OUT	ADG OUT	C OUT	E OUT	E OUT

2A AVE OF SCANS 1 - 33
3A AVE OF SCANS 1 - 25 : SHORT TEST
4A AVE OF SCANS 1 - 49 : MCR
5A AVERAGE OF SCANS 1 - 47
6A AVE OF SCANS 1 - 16

DATA PAGE NO. 2 FLOWS MLB/HR

LOAD MW			606.4	606.5	902.1	853.8	862.2	2 1
HP STEAM FLOW			4105.4	4089.2	6605.8	6238.4	6515.9	2 2
FW FLOW			4068.1	4055.0	6567.6	6201.8	6478.0	2 3
BLOW DOWN FLOW			0.0	0.0	0.0	0.0	0.0	2 4
RH-1 SP FLOW			2.9539	2.5436	6.2355	5.2925	6.4081	2 5
SH-1 SP FLOW	W		6.2952	5.5792	0.0000	0.0000	0.0000	2 7
SH-1 SP FLOW	E		3.0000	0.0000	0.0000	0.0000	0.0000	2 8
SH-2 SP FLOW	W		0.0	0.0	0.0	0.0	0.0	2 9
SH-2 SP FLOW	E		0.0	0.0	0.0	0.0	0.0	2 10
TOTAL AIR FLOW			63.36	63.18	89.65	88.87	82.64	2 18
TOTAL FUEL FLOW			234.8	233.3	349.7	329.1	330.5	2 19
FEGT - PYROSONICS		TG	1978.4	1999.1	2227.2	2130.1	2117.2	2 20

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

SSH OUT T (P)			998.8	1001.2	998.4	1000.5	964.9	3 1
TURB THROT T (P)			999.2	1001.9	997.4	999.7	963.9	3 3
ECON IN T (P)			505.8	505.5	552.3	548.0	548.1	3 5
SH-1 SPRAY TEMP			306.7	299.2	322.0	326.6	310.5	3 7
LVG 1st STG ATT(P)-W			703.6	702.7	725.8	722.5	712.1	3 8
LVG 1st STG ATT(P)-E			704.5	704.5	725.4	727.6	715.1	3 9
ENT 1st STG ATT(P)-W			703.4	702.3	726.3	727.0	715.7	3 10
ENT 1st STG ATT(P)-E			704.3	704.6	724.7	727.2	714.7	3 11
LVG RH-1 T (P)-N			998.0	1003.2	1002.4	995.5	949.7	3 12
LVG RH-1 T (P)-S			999.5	1004.3	1006.9	999.3	953.2	3 13
HRH AT TURB (P)-N			1000.0	1005.1	1004.5	997.6	951.6	3 14

TEST NO.		2A	3A	4A	5A	6A		
TEST SEQ. NO.		2	3	4	5	6		
DATE		01/27/87	01/27/87	01/28/87	1/29/87	01/29/87		
TIME START		1145	1430	1300	1240	1745		
TIME END		1435	1640	1700	1630	1905		
LOAD MW		606	607	902	854	862		

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

HRH AT TURB (P)-S		1000.7	1005.9	1008.4	1001.0	954.7	3	15
ENT RH-1 T (P)		567.8	569.6	618.8	621.4	593.1	3	16
CRH ENT ATT (P)	SGJ024	568.6	570.3	620.2	622.8	594.2	3	18
RH DSUPHTR INL T (P)	COA06A	567.0	568.7	618.0	620.5	592.4	3	19
RH-1 SPRAY T (P)		278.2	251.4	275.3	282.0	236.1	3	20
LVG 2nd STG AT (P)-W		774.3	776.5	783.3	778.4	0.0	3	21
LVG 2nd STG AT (P)-E		765.9	766.6	782.9	792.7	0.0	3	22
ENT 2nd STG AT (P)-L		774.7	775.9	782.2	778.4	0.0	3	23
ENT 2nd STG AT (P)-R		767.8	766.4	782.7	792.7	0.0	3	24
ECON OUT T (P)		526.7	526.5	573.9	570.4	567.6	3	27
ECON OUT T (P)		526.8	526.4	574.7	570.7	568.0	3	28
SAT CON TUBE(P)		669.7	669.7	684.9	0.0	0.0	3	29

DATA PAGE NO. 5 FLUID PRESSURES PSIG

SEC SH OUT PRESS (P)		2420.5	2419.6	2546.3	2424.8	2473.1	5	2
DRUM PRESS (P)		2508.6	2507.1	2781.8	2652.4	2703.0	5	3
HRH RH-1 PRESS (P)		356.7	355.9	549.5	0.0	0.0	5	4
CRH RH-1 PRESS (P)		379.1	378.4	584.7	554.9	567.8	5	5
NO.1 HTR EXT P (P)-A		713.6	712.1	1109.4	1051.7	1075.5	5	6
NO.1 HTR EXT P (P)-B		713.1	711.4	1107.2	1052.1	1073.6	5	7
NO.2 HTR EXT P (P)-A		372.1	371.6	572.4	544.2	557.0	5	8
NO.2 HTR EXT P (P)-B		375.0	374.4	577.1	548.1	560.8	5	9
ECON IN PRESS (P)		45.00	45.00	42.65	42.95	42.50	5	12
SEC SH IN PRES (P) E		2454.4	2453.2	2676.1	0.0	0.0	5	13
SEC SH IN PRES (P) W		2465.5	2464.9	2691.9	0.0	0.0	5	14
SEC SH OUT PRESS (B)		2427.6	2428.1	2593.7	2467.8	2518.3	5	17
DRUM PRESS (B)		2536.7	2535.9	2810.6	2681.2	2733.1	5	18
LVG RH-1 PRESS (B)		355.0	355.2	551.6	524.5	536.5	5	19
ENT RH-1 PRESS (B) E		0.0	0.0	0.0	0.0	0.0	5	20
ENT RH-1 PRESS (B) W		380.8	380.0	587.2	558.6	570.9	5	28
ECON IN PRESS (B)		2570.1	2569.3	2868.3	2735.8	2791.2	5	27

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

AMBIENT AIR TEMP		49.87	50.90	38.11	39.71	35.48	6	1
AIR ENT SEC AH (P)-A		71.35	68.63	67.70	82.10	0.00	6	2
AIR ENT SEC AH (P)-B		75.57	71.50	70.24	83.30	0.00	6	3
AIR ENT PRI AH (P)-A		104.4	98.6	94.0	106.0	104.8	6	4
AIR ENT PRI AH (P)-B		103.2	97.4	92.1	106.6	106.4	6	5
AIR LVG SEC AH (P)-A		614.0	616.3	658.0	653.5	644.9	6	6
AIR LVG SEC AH (P)-B		595.0	598.2	626.0	627.7	621.1	6	7
AIR LVG PRI AH (P)-A		524.9	531.2	536.8	534.2	531.9	6	8
AIR LVG PRI AH (P)-B		494.5	502.1	503.2	498.2	496.7	6	9
GAS LVG SEC AH (P)-A		291.8	292.9	315.2	319.7	317.6	6	10

TEST NO.		2A	3A	4A	5A	6A	
TEST SEQ. NO.		2	3	4	5	6	
DATE		01/27/87	01/27/87	01/28/87	1/29/87	01/29/87	
TIME START		1145	1430	1300	1240	1745	
TIME END		1435	1640	1700	1630	1905	
LOAD MW		606	607	902	854	862	

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

GAS LVG SEC AH (P)-B		281.7	280.3	322.6	325.7	321.2	6 11
GAS LVG PRI AH (P)-A		296.1	299.0	304.6	303.2	304.0	6 12
GAS LVG PRI AH (P)-B		303.4	309.4	310.6	307.4	307.2	6 13
GAS LVG ECON (P)-E		711.0	714.7	754.4	750.0	737.7	6 14
GAS LVG ECON (P)-W		705.5	705.8	755.5	750.1	740.1	6 15
GAS ENT SEC AH (P)-A		0.0	0.0	0.0	0.0	0.0	6 16
GAS ENT SEC AH (P)-B		0.0	0.0	0.0	0.0	0.0	6 17
GAS ENT PRI AH (P)-A		0.0	0.0	0.0	0.0	0.0	6 18
GAS ENT PRI AH (P)-B		0.0	0.0	0.0	0.0	0.0	6 19
O2 LVG ECON (P)-W		4.3224	4.3004	3.5810	5.2789	4.0181	6 20
O2 LVG ECON (P)-E		6.2485	6.1476	4.0380	4.2557	3.5300	6 21
NOX @ STACK (P)		165.3	174.6	266.4	245.4	230.2	6 24
O2 @ STACK (P)		165.3	174.6	266.4	0.0	230.2	6 25
MOIST IN AIR (P)	CALC	0.0	0.0	0.0	0.0	0.0	6 28
REL HUMIDITY (P)		34.77	36.82	68.05	44.42	64.33	7 30
BAROMETRIC PRESS (P)		25.36	25.30	25.22	25.41	25.41	6 29

DATA PAGE NO. 7 AIR & GAS DATA - TEST

GAS LVG SEC AH (B)-W		275.1	275.5	294.4	310.4	307.2	7 10
GAS LVG SEC AH (B)-E		275.9	275.8	303.1	313.3	310.4	7 11
GAS LVG PRI AH (B)-W		299.7	303.4	300.1	301.9	301.2	7 12
GAS LVG PRI AH (B)-E		319.2	322.2	325.1	325.1	325.0	7 13
GAS LVG ECON (B)-W		720.4	722.3	771.7	767.9	752.6	7 14
GAS LVG ECON (B)-E		721.1	723.9	769.0	767.8	750.8	7 15
O2 LVG ECON (B)-W		4.5029	4.8462	4.4348	6.0826	4.6962	7 20
O2 LVG ECON (B)-E		5.5710	5.2454	4.2886	4.5876	4.7028	7 21
CO2 LVG ECON (B)-W		0.0000	0.0000	5.3742	0.0000	0.0000	7 22
CO2 LVG ECON (B)-E		6.43	14.11	14.38	13.78	14.66	7 23
CO LVG ECON PPM E	TST	20.16	22.89	24.29	27.26	37.36	13 26
CO LVG ECON PPM W	TST	34.1	36.4	155.2	25.7	31.0	13 27
NOX LVG ECON (B)-W		165.6	138.5	232.5	178.0	144.1	7 24
NOX LVG ECON (B)-E		153.8	142.9	206.7	173.5	166.7	7 25

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.1 HTR EXT T (P)-A		727.0	728.6	792.8	795.8	761.9	8 1
NO.1 HTR EXT T (P)-B		727.3	729.0	793.1	796.2	762.4	8 2
NO.2 HTR EXT T (P)-A		567.6	569.2	618.5	621.3	592.8	8 3
NO.2 HTR EXT T (P)-B		567.8	569.5	619.0	621.5	593.3	8 4
NO.1 FW LVG T (P)-A		512.3	512.1	558.2	555.1	554.7	8 5
NO.1 FW LVG T (P)-B		512.1	511.8	558.4	553.5	554.2	8 6
NO.1 FW ENT T (P)-A		443.8	443.6	483.4	479.6	0.0	8 7
NO.1 FW ENT T (P)-B		442.9	442.7	483.2	478.8	0.0	8 8
NO.2 FW LVG T (P)-A		0.0	0.0	0.0	555.2	0.0	8 9

TEST NO.		2A	3A	4A	5A	6A	
TEST SEQ. NO.		2	3	4	5	6	
DATE		01/27/87	01/27/87	01/28/87	1/29/87	01/29/87	
TIME START		1145	1430	1300	1240	1745	
TIME END		1435	1640	1700	1630	1905	
LOAD MW		606	607	902	854	862	

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.2 FW LVG T (P)-B		0.0	0.0	0.0	553.8	0.0	8	10
NO.2 FW ENT T (P)-A		364.6	364.7	396.1	392.6	393.8	8	11
NO.2 FW ENT T (P)-B		366.2	366.3	398.1	394.1	395.1	8	12
NO.1 DRAIN T (P)-A		449.0	448.6	493.2	491.4	0.0	8	13
NO.1 DRAIN T (P)-B		447.3	447.1	492.0	486.8	0.0	8	14
NO.2 DRAIN T (P)-A		367.5	367.6	400.2	399.4	402.5	8	15
NO.2 DRAIN T (P)-B		370.6	370.5	405.4	400.9	402.3	8	16
INT SSH MANIF (P)-1		861.7	863.4	876.5	879.4	854.3	8	17
INT SSH MANIF (P)-2		887.4	889.3	903.1	906.5	882.8	8	18
INT SSH MANIF (P)-3		906.5	908.9	912.2	907.3	885.6	8	19
INT SSH MANIF (P)-4		942.5	944.2	947.5	945.6	921.5	8	20
INT SSH MANIF (P)-5		926.8	927.3	920.0	913.2	887.7	8	21
INT SSH MANIF (P)-6		949.3	951.9	947.3	938.2	910.8	8	22
INT SSH MANIF (P)-7		921.5	921.8	914.4	906.5	880.6	8	23
INT SSH MANIF (P)-8		946.0	948.6	941.0	932.4	904.5	8	24
INT SSH MANIF (P)-9		906.4	908.8	903.4	896.1	869.8	8	25
INT SSH MANIF (P)-10		944.0	948.3	943.5	931.0	902.2	8	26
INT SSH MANIF (P)-11		902.1	907.8	903.9	902.2	872.0	8	27
INT SSH MANIF (P)-12		935.3	941.5	936.2	932.6	898.8	8	28
INT SSH MANIF (P)-13		902.7	904.1	898.7	904.2	876.5	8	29
INT SSH MANIF (P)-14		942.8	945.7	931.7	940.4	910.6	8	30
INT SSH MANIF (P)-15		919.1	923.3	900.2	928.8	898.5	9	17
INT SSH MANIF (P)-16		956.0	961.1	932.4	962.5	933.5	9	18
INT SSH MANIF (P)-17		914.1	918.3	902.7	926.5	900.5	9	19
INT SSH MANIF (P)-18		943.8	948.2	927.5	0.0	927.1	9	20
INT SSH MANIF (P)-19		923.6	923.0	920.3	0.0	913.0	9	21
INT SSH MANIF (P)-20		951.6	954.0	950.5	0.0	940.8	9	22
INT SSH MANIF (P)-21		923.1	925.7	917.4	0.0	904.9	9	23
INT SSH MANIF (P)-22		954.2	954.5	950.9	0.0	931.6	9	24
INT SSH MANIF (P)-23		932.7	934.2	914.7	0.0	896.6	9	25
INT SSH MANIF (P)-24		963.4	966.5	949.9	0.0	924.9	9	26
INT SSH MANIF (P)-25		933.8	937.5	914.4	0.0	886.3	9	27
INT SSH MANIF (P)-26		964.5	969.3	949.8	0.0	909.8	9	28
INT SSH MANIF (P)-27		881.5	885.7	881.4	0.0	853.3	9	29
INT SSH MANIF (P)-28		907.5	912.1	908.8	0.0	873.4	9	30

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV A COAL FLOW		.07	.07	50.11	46.99	47.36	10	1
PULV B COAL FLOW		46.89	46.86	49.92	46.83	47.18	10	2
PULV C COAL FLOW		47.33	47.27	-.04	47.30	47.59	10	3
PULV D COAL FLOW		.34	.34	51.01	47.85	48.21	10	4
PULV E COAL FLOW		47.14	47.14	50.20	.07	.08	10	5
PULV F COAL FLOW		47.16	47.15	50.20	47.08	47.36	10	6
PULV G COAL FLOW		.06	.07	50.60	47.43	47.74	10	7
PULV H COAL FLOW		47.64	47.58	50.70	47.59	47.89	10	8

TEST NO.		2A	3A	4A	5A	6A	
TEST SEQ. NO.		2	3	4	5	6	
DATE		01/27/87	01/27/87	01/28/87	1/29/87	01/29/87	
TIME START		1145	1430	1300	1240	1745	
TIME END		1435	1640	1700	1630	1905	
LOAD MW		606	607	902	854	862	

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV A PA FLOW		28.78	28.78	82.67	79.75	79.93	10	16
PULV B PA FLOW		79.80	79.72	82.67	79.67	80.02	10	17
PULV C PA FLOW		79.78	79.61	5.17	79.70	-79.95	10	18
PULV D PA FLOW		0.00	0.00	82.01	78.97	79.34	10	19
PULV E PA FLOW		78.33	78.18	81.07	6.97	7.08	10	20
PULV F PA FLOW		79.77	79.57	82.51	79.56	79.89	10	21
PULV G PA FLOW		3.86	3.84	83.13	80.06	80.42	10	22
PULV H PA FLOW		79.52	79.49	82.40	79.35	79.76	10	23

DATA PAGE NO. 11 PULVERIZER INLET TEMP AND PA DIFF

PULV A INLET T		130.9	120.3	338.2	336.3	336.4	11	1
PULV B INLET T		358.6	352.1	362.4	350.8	349.6	11	2
PULV C INLET T		369.4	360.3	93.4	353.1	350.1	11	3
PULV D INLET T		96.8	94.0	342.2	337.0	334.7	11	4
PULV E INLET T		361.3	360.3	352.4	105.3	102.5	11	5
PULV F INLET T		391.7	393.0	380.0	408.8	374.1	11	6
PULV G INLET T		107.6	104.8	374.7	372.3	353.6	11	7
PULV H INLET T		399.5	398.9	402.0	410.3	377.0	11	8
PULV A PA DIFF		0.0	0.0	0.0	0.0	0.0	11	16
PULV B PA DIFF		0.0	0.0	0.0	0.0	0.0	11	17
PULV C PA DIFF		0.0	0.0	0.0	0.0	0.0	11	18
PULV D PA DIFF		0.0	0.0	0.0	0.0	0.0	11	19
PULV E PA DIFF		0.0	0.0	0.0	0.0	0.0	11	20
PULV F PA DIFF		0.0	0.0	0.0	0.0	0.0	11	21
PULV G PA DIFF		0.0	0.0	0.0	0.0	0.0	11	22
PULV H PA DIFF		0.0	0.0	0.0	0.0	0.0	11	23
PULV A PULV DIFF		.06	.04	14.38	13.02	13.46	11	24
PULV B PULV DIFF		11.25	11.15	12.46	11.48	11.75	11	25
PULV C PULV DIFF		11.35	11.73	-.03	11.39	10.87	11	26
PULV D PULV DIFF		.03	.03	13.41	12.51	12.63	11	27
PULV E PULV DIFF		14.27	13.95	15.08	.01	.01	11	28
PULV F PULV DIFF		13.65	13.46	14.23	13.63	13.62	11	29
PULV G PULV DIFF		.04	.04	14.53	13.81	13.28	11	30
PULV H DIFF P		13.65	13.74	14.51	13.96	13.49	11	9

DATA PAGE NO. 12 OPERATOR POSITIONS %

RH-1 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12	1
SH-1 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12	3
SH-1 SP VLV POSIT-B		0.0	0.0	0.0	0.0	0.0	12	4
SH-2 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12	5
SH-2 SP VLV POSIT-B		0.0	0.0	0.0	0.0	0.0	12	6
RH PASS DMPR POS-A		0.0	0.0	0.0	0.0	0.0	12	15
RH PASS DMPR POS-B		0.0	0.0	0.0	0.0	0.0	12	16

TEST NO.		2A	3A	4A	5A	6A	
TEST SEQ. NO.		2	3	4	5	6	
DATE		01/27/87	01/27/87	01/28/87	1/29/87	01/29/87	
TIME START		1145	1430	1300	1240	1745	
TIME END		1435	1640	1700	1630	1905	
LOAD MW		606	607	902	854	862	

DATA PAGE NO. 12 OPERATOR POSITIONS %

SH PASS DMPR POS-A		0.0	0.0	0.0	0.0	0.0	12 17
SH PASS DMPR POS-B		0.0	0.0	0.0	0.0	0.0	12 18

DATA PAGE NO. 13 MISCELLANEOUS GAS DATA - TEST

O2 LVG SEC AH W		10.21	9.41	9.69	8.56	7.90	13 1
O2 LVG SEC AH E		7.4000	7.4000	6.2100	7.5800	4.9400	13 2
CO2 LVG SEC AH W		10.21	10.21	9.97	11.02	11.53	13 3
CO2 LVG SEC AH E		11.94	11.94	13.08	11.76	13.44	13 4
O2 LVG PRI AH W		11.07	11.07	8.58	9.93	9.26	13 5
O2 LVG PRI AH E		9.50	9.50	11.58	7.50	6.38	13 6
CO2 LVG PRI AH W		8.70	8.70	10.98	9.71	10.42	13 7
CO2 LVG PRI AH E		10.06	10.06	8.18	11.59	12.63	13 8
GAS LVG RH PS (B)SW		737.8	740.4	746.7	744.4	729.3	13 21
GAS LVG RH PS (B)SE		731.2	734.6	741.5	0.0	699.4	13 22
GAS LVG PSH PS (B)NW		678.0	678.2	774.2	769.1	751.6	13 23
GAS LVG PSH PS (B)NE		685.9	687.6	772.8	0.0	754.3	13 24
STACK O2/CO2 (P)		7.3627	6.7512	6.3751	6.9425	6.0194	13 25
		0.0	0.0	0.0	0.0	0.0	13 28
A = RIGHT = EAST		0.0	0.0	0.0	0.0	0.0	13 29

TEST NO.	7A	8A	9A	10A	11A
TEST SEQ. NO.	7	8	9	10	11
DATE	01/30/87	01/30/87	02/02/87	02/02/87	02/04/87
TIME START	1140	1615	0030	0330	0900
TIME END	1540	1815	0230	0510	1325
LOAD MW	851	844	467	467	850
FUEL	PC	PC	PC	PC	PC
ALPHA1	F OUT	F OUT	EFH OUT	EFH OUT	D OUT

7A AVE OF SCANS 1 - 49
8A AVE OF SCANS 1 - 22 : LOWERED PA DUCT PRESS
9A AVE OF SCANS 1 - 25 : LOW O2
10A AVE OF SCANS 37 - 57 : RAISED O2 FOR TEMPS
11A AVE OF SCANS 1 - 54 : PAH W O2/CO2 FROM 0950 - 1100

DATA PAGE NO. 2 FLOWS MLB/HR

LOAD MW			851.1	843.6	466.9	466.8	849.8	2 1
HP STEAM FLOW			6017.5	5989.5	3178.4	3075.8	6161.4	2 2
FW FLOW			5971.4	5933.6	3145.7	3046.1	6124.7	2 3
BLOW DOWN FLOW			0.0	0.0	0.0	0.0	0.0	2 4
RH-1 SP FLOW			4.7153	4.8755	1.9684	2.1290	4.6181	2 5
SH-1 SP FLOW	W		0.0000	0.0000	3.5022	5.0419	0.0000	2 7
SH-1 SP FLOW	E		0.0000	0.0000	0.0000	3.1937	0.0000	2 8
SH-2 SP FLOW	W		11.49	15.89	0.00	0.00	41.29	2 9
SH-2 SP FLOW	E		16.24	12.93	0.00	0.00	0.00	2 10
TOTAL AIR FLOW			75.29	74.77	53.21	58.32	84.09	2 18
TOTAL FUEL FLOW			321.9	319.4	184.5	184.8	331.1	2 19
FEGT - PYROSONICS		TG	2188.1	2171.3	1806.5	1807.0	2161.0	2 20

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

SSH OUT T (P)			1016.1	1009.0	978.6	1002.2	1001.6	3 1
TURB THROT T (P)			1015.4	1008.1	979.4	1002.9	1000.7	3 3
ECON IN T (P)			546.9	546.3	483.2	482.1	550.9	3 5
SH-1 SPRAY TEMP			335.8	336.4	306.7	299.0	311.5	3 7
LVG 1st STG ATT(P)-W			716.4	716.8	693.3	699.6	719.9	3 8
LVG 1st STG ATT(P)-E			715.9	718.5	693.9	703.0	722.1	3 9
ENT 1st STG ATT(P)-W			720.3	721.7	694.3	701.7	721.9	3 10
ENT 1st STG ATT(P)-E			715.2	718.4	694.1	702.5	722.6	3 11
LVG RH-1 T (P)-N			1008.0	997.7	961.5	1004.8	997.6	3 12
LVG RH-1 T (P)-S			1011.2	1001.2	962.0	1004.8	1001.7	3 13
HRH AT TURB (P)-N			1010.1	999.8	963.3	1006.4	999.5	3 14
HRH AT TURB (P)-S			1012.6	1002.9	962.7	1005.3	1003.2	3 15
ENT RH-1 T (P)			634.2	626.9	533.2	553.6	620.2	3 16
CRH ENT ATT (P)	SGJ024		636.0	629.6	534.4	554.5	621.7	3 18
RH DSUPHTR INL T (P)	COA06A		633.3	627.0	532.5	552.8	619.5	3 19
RH-1 SPRAY T (P)			289.2	307.5	286.3	255.0	293.6	3 20

TEST NO.	7A	8A	9A	10A	11A		
TEST SEQ. NO.	7	8	9	10	11		
DATE	01/30/87	01/30/87	02/02/87	02/02/87	02/04/87		
TIME START	1140	1615	0030	0330	0900		
TIME END	1540	1815	0230	0510	1325		
LOAD MW	851	844	467	467	850		

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

LVG 2nd STG AT (P)-W	783.8	787.5	761.5	779.9	790.1	3	21
LVG 2nd STG AT (P)-E	778.3	769.4	753.0	761.4	780.3	3	22
ENT 2nd STG AT (P)-L	784.2	790.6	761.7	779.1	789.2	3	23
ENT 2nd STG AT (P)-R	782.5	777.1	753.5	762.0	780.5	3	24
ECON OUT T (P)	565.5	565.5	504.4	505.9	570.8	3	27
ECON OUT T (P)	566.2	566.1	504.9	506.3	571.4	3	28
SAT CON TUBE(P)	676.9	676.9	663.0	663.2	678.6	3	29

DATA PAGE NO. 5 FLUID PRESSURES PSIG

SEC SH OUT PRESS (P)	2420.2	2421.0	2353.3	2353.6	2441.9	5	2
DRUM PRESS (P)	2634.2	2632.3	2399.2	2396.8	2663.3	5	3
HRH RH-1 PRESS (P)	511.8	509.7	277.9	274.0	514.3	5	4
CRH RH-1 PRESS (P)	544.6	542.4	294.9	290.9	547.2	5	5
NO.1 HTR EXT P (P)-A	1037.1	1031.5	554.7	545.5	1044.0	5	6
NO.1 HTR EXT P (P)-B	1035.4	1029.8	554.3	545.4	1042.0	5	7
NO.2 HTR EXT P (P)-A	534.7	532.5	290.2	286.3	536.6	5	8
NO.2 HTR EXT P (P)-B	538.2	536.0	292.2	288.3	540.2	5	9
ECON IN PRESS (P)	42.50	42.50	42.50	42.50	42.50	5	12
SEC SH IN PRES (P) E	2537.1	2536.0	2361.7	2360.9	2562.8	5	13
SEC SH IN PRES (P) W	2551.9	2550.9	2373.7	2373.2	2577.9	5	14
SEC SH OUT PRESS (B)	2461.9	2461.8	2349.0	2350.5	2471.2	5	17
DRUM PRESS (B)	2663.2	2661.5	2426.8	2426.6	2667.9	5	18
LVG RH-1 PRESS (B)	513.4	511.5	276.5	272.4	514.8	5	19
ENT RH-1 PRESS (B) E	0.0	0.0	0.0	0.0	0.0	5	20
ENT RH-1 PRESS (B) W	547.0	545.1	296.7	292.5	545.3	5	28
ECON IN PRESS (B)	2717.9	2715.3	2462.5	2461.3	2725.6	5	27

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

AMBIENT AIR TEMP	40.31	43.29	34.22	34.28	39.55	6	1
AIR ENT SEC AH (P)-A	81.30	79.83	83.45	68.23	81.96	6	2
AIR ENT SEC AH (P)-B	80.90	79.55	82.97	68.82	81.18	6	3
AIR ENT PRI AH (P)-A	105.2	103.0	114.4	96.8	106.1	6	4
AIR ENT PRI AH (P)-B	105.9	103.1	114.7	95.9	105.2	6	5
AIR LVG SEC AH (P)-A	650.9	651.3	583.5	595.8	650.3	6	6
AIR LVG SEC AH (P)-B	628.1	629.1	569.7	579.8	625.9	6	7
AIR LVG PRI AH (P)-A	530.6	535.5	517.1	527.0	535.1	6	8
AIR LVG PRI AH (P)-B	497.6	502.6	495.5	501.9	499.8	6	9
GAS LVG SEC AH (P)-A	316.7	317.5	288.7	285.6	319.1	6	10
GAS LVG SEC AH (P)-B	321.8	320.7	264.5	259.7	323.9	6	11
GAS LVG PRI AH (P)-A	303.6	305.1	300.7	299.6	303.5	6	12
GAS LVG PRI AH (P)-B	307.0	310.1	308.9	308.1	307.6	6	13
GAS LVG ECON (P)-E	738.8	736.8	660.7	687.1	741.7	6	14
GAS LVG ECON (P)-W	744.2	741.7	651.7	671.8	745.2	6	15

TEST NO.	7A	8A	9A	10A	11A
TEST SEQ. NO.	7	8	9	10	11
DATE	01/30/87	01/30/87	02/02/87	02/02/87	02/04/87
TIME START	1140	1615	0030	0330	0900
TIME END	1540	1815	0230	0510	1325
LOAD MW	851	844	467	467	850

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

GAS ENT SEC AH (P)-A		0.0	0.0	0.0	0.0	0.0	6 16
GAS ENT SEC AH (P)-B		0.0	0.0	0.0	0.0	0.0	6 17
GAS ENT PRI AH (P)-A		0.0	0.0	0.0	0.0	0.0	6 18
GAS ENT PRI AH (P)-B		0.0	0.0	0.0	0.0	0.0	6 19
O2 LVG ECON (P)-W		2.1847	2.8055	5.7564	6.9495	3.1170	6 20
O2 LVG ECON (P)-E		3.6843	2.1595	6.3780	7.1324	4.3930	6 21
NOX @ STACK (P)		230.2	234.4	159.6	169.5	246.1	6 24
O2 @ STACK (P)		0.0	234.4	159.6	169.5	246.1	6 25
MOIST IN AIR (P)	CALC	0.0	0.0	0.0	0.0	0.0	6 28
REL HUMIDITY (P)		74.34	58.45	55.66	55.66	55.66	7 30
BAROMETRIC PRESS (P)		25.27	25.25	25.32	25.28	25.51	6 29

DATA PAGE NO. 7 AIR & GAS DATA - TEST

GAS LVG SEC AH (B)-W		308.6	308.1	266.7	261.0	308.8	7 10
GAS LVG SEC AH (B)-E		311.1	311.3	269.5	264.1	311.6	7 11
GAS LVG PRI AH (B)-W		301.1	303.3	309.8	306.3	300.8	7 12
GAS LVG PRI AH (B)-E		324.8	326.3	325.7	323.8	324.4	7 13
GAS LVG ECON (B)-W		758.1	754.1	677.1	702.8	755.2	7 14
GAS LVG ECON (B)-E		755.6	752.6	676.6	703.7	762.8	7 15
O2 LVG ECON (B)-W		3.0950	3.6480	6.7495	8.0690	4.8478	7 20
O2 LVG ECON (B)-E		3.2147	2.8507	5.9793	7.6702	4.6483	7 21
CO2 LVG ECON (B)-W		8.55	30.00	0.00	0.00	0.00	7 22
CO2 LVG ECON (B)-E		15.70	15.52	13.09	12.24	14.43	7 23
CO LVG ECON PPM E	TST	57.12	37.58	32.91	30.89	24.10	13 26
CO LVG ECON PPM W	TST	166.3	108.5	1.9	26.7	20.5	13 27
NOX LVG ECON (B)-W		159.7	155.4	115.8	132.3	162.4	7 24
NOX LVG ECON (B)-E		152.6	165.3	109.7	143.1	182.5	7 25

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.1 HTR EXT T (P)-A		810.5	803.1	683.9	706.6	795.2	8 1
NO.1 HTR EXT T (P)-B		811.2	803.8	684.2	706.8	795.5	8 2
NO.2 HTR EXT T (P)-A		634.2	628.1	533.3	553.2	620.2	8 3
NO.2 HTR EXT T (P)-B		634.6	628.4	533.6	553.6	620.5	8 4
NO.1 FW LVG T (P)-A		553.3	552.5	485.9	484.9	552.7	8 5
NO.1 FW LVG T (P)-B		552.7	552.0	485.1	484.3	552.1	8 6
NO.1 FW ENT T (P)-A		478.4	477.9	420.6	420.0	477.8	8 7
NO.1 FW ENT T (P)-B		477.5	477.0	419.8	419.2	476.9	8 8
NO.2 FW LVG T (P)-A		0.0	0.0	0.0	0.0	0.0	8 9
NO.2 FW LVG T (P)-B		0.0	0.0	0.0	0.0	0.0	8 10
NO.2 FW ENT T (P)-A		391.9	391.7	345.7	345.7	391.3	8 11
NO.2 FW ENT T (P)-B		393.3	393.1	347.0	347.0	392.6	8 12
NO.1 DRAIN T (P)-A		489.1	488.5	425.5	424.8	489.1	8 13
NO.1 DRAIN T (P)-B		485.3	484.7	422.6	422.1	485.1	8 14

TEST NO.	7A	8A	9A	10A	11A		
TEST SEQ. NO.	7	8	9	10	11		
DATE	01/30/87	01/30/87	02/02/87	02/02/87	02/04/87		
TIME START	1140	1615	0030	0330	0900		
TIME END	1540	1815	0230	0510	1325		
LOAD MW	851	844	467	467	850		

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.2 DRAIN T (P)-A	399.9	399.6	349.8	349.6	399.6	8	15
NO.2 DRAIN T (P)-B	399.9	399.5	350.4	350.4	399.6	8	16
INT SSH MANIF (P)-1	879.4	865.1	840.3	858.0	871.5	8	17
INT SSH MANIF (P)-2	909.6	895.4	861.1	879.9	895.7	8	18
INT SSH MANIF (P)-3	927.6	910.4	888.9	910.3	901.7	8	19
INT SSH MANIF (P)-4	964.7	944.6	917.8	939.5	933.2	8	20
INT SSH MANIF (P)-5	940.7	929.4	910.9	930.2	920.2	8	21
INT SSH MANIF (P)-6	967.4	955.5	932.8	953.8	939.9	8	22
INT SSH MANIF (P)-7	928.1	915.0	901.4	918.5	915.8	8	23
INT SSH MANIF (P)-8	954.4	944.5	930.0	947.9	939.6	8	24
INT SSH MANIF (P)-9	909.8	896.8	889.2	904.8	903.0	8	25
INT SSH MANIF (P)-10	946.7	935.9	918.8	935.4	938.7	8	26
INT SSH MANIF (P)-11	910.7	899.4	894.5	908.5	905.6	8	27
INT SSH MANIF (P)-12	942.8	932.9	921.3	932.1	936.2	8	28
INT SSH MANIF (P)-13	908.4	898.5	893.8	909.4	907.4	8	29
INT SSH MANIF (P)-14	945.4	937.9	917.9	935.5	940.4	8	30
INT SSH MANIF (P)-15	928.2	929.8	916.0	939.8	919.3	9	17
INT SSH MANIF (P)-16	964.7	966.9	948.8	973.6	949.5	9	18
INT SSH MANIF (P)-17	939.5	936.2	910.5	935.7	920.7	9	19
INT SSH MANIF (P)-18	965.9	962.6	935.4	959.5	942.1	9	20
INT SSH MANIF (P)-19	957.1	951.4	913.4	932.4	932.7	9	21
INT SSH MANIF (P)-20	990.5	989.8	940.5	965.2	953.0	9	22
INT SSH MANIF (P)-21	951.9	945.7	910.6	929.0	931.4	9	23
INT SSH MANIF (P)-22	985.1	983.5	936.6	958.1	956.0	9	24
INT SSH MANIF (P)-23	943.6	934.8	909.4	925.0	931.3	9	25
INT SSH MANIF (P)-24	982.0	974.8	933.6	949.3	961.0	9	26
INT SSH MANIF (P)-25	923.3	925.0	892.7	912.4	923.2	9	27
INT SSH MANIF (P)-26	955.9	956.2	916.2	939.3	952.5	9	28
INT SSH MANIF (P)-27	876.4	878.9	853.6	872.0	880.7	9	29
INT SSH MANIF (P)-28	901.8	904.8	871.9	889.2	903.3	9	30

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV A COAL FLOW	46.01	45.85	36.74	36.97	47.58	10	1
PULV B COAL FLOW	45.77	45.62	36.63	36.84	47.37	10	2
PULV C COAL FLOW	46.20	46.06	36.85	37.07	47.79	10	3
PULV D COAL FLOW	46.85	46.69	37.51	37.76	.33	10	4
PULV E COAL FLOW	46.05	45.88	.08	.08	47.62	10	5
PULV F COAL FLOW	.08	.13	.13	.44	47.60	10	6
PULV G COAL FLOW	46.34	46.18	37.02	37.27	47.95	10	7
PULV H COAL FLOW	46.52	46.40	.21	.21	48.12	10	8
PULV A PA FLOW	78.82	77.78	69.94	69.98	80.16	10	16
PULV B PA FLOW	78.68	78.38	69.84	70.02	80.12	10	17
PULV C PA FLOW	78.61	78.38	69.69	69.89	80.12	10	18
PULV D PA FLOW	78.06	77.72	69.40	69.33	0.00	10	19
PULV E PA FLOW	77.11	76.70	7.64	7.45	78.57	10	20

TEST NO.		7A	8A	9A	10A	11A	
TEST SEQ. NO.		7	8	9	10	11	
DATE		01/30/87	01/30/87	02/02/87	02/02/87	02/04/87	
TIME START		1140	1615	0030	0330	0900	
TIME END		1540	1815	0230	0510	1325	
LOAD MW		851	844	467	467	850	

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV F PA FLOW		5.74	5.40	4.64	4.72	80.03	10 21
PULV G PA FLOW		79.15	78.88	70.22	70.40	80.63	10 22
PULV H PA FLOW		78.45	78.12	0.00	0.00	79.96	10 23

DATA PAGE NO. 11 PULVERIZER INLET TEMP AND PA DIFF

PULV A INLET T		333.7	329.3	308.3	307.7	336.4	11 1
PULV B INLET T		350.4	344.9	316.6	318.4	352.9	11 2
PULV C INLET T		350.2	350.5	340.9	341.8	363.3	11 3
PULV D INLET T		341.2	346.2	326.4	334.9	107.1	11 4
PULV E INLET T		360.5	348.1	142.8	124.7	347.5	11 5
PULV F INLET T		103.1	101.7	159.2	140.8	369.8	11 6
PULV G INLET T		367.0	350.5	327.0	326.6	361.8	11 7
PULV H INLET T		398.1	363.6	141.4	135.7	387.0	11 8
PULV A PA DIFF		0.0	0.0	0.0	0.0	0.0	11 16
PULV B PA DIFF		0.0	0.0	0.0	0.0	0.0	11 17
PULV C PA DIFF		0.0	0.0	0.0	0.0	0.0	11 18
PULV D PA DIFF		0.0	0.0	0.0	0.0	0.0	11 19
PULV E PA DIFF		0.0	0.0	0.0	0.0	0.0	11 20
PULV F PA DIFF		0.0	0.0	0.0	0.0	0.0	11 21
PULV G PA DIFF		0.0	0.0	0.0	0.0	0.0	11 22
PULV H PA DIFF		0.0	0.0	0.0	0.0	0.0	11 23
PULV A PULV DIFF		12.98	13.59	8.86	8.91	13.25	11 24
PULV B PULV DIFF		10.89	11.36	7.29	7.11	11.06	11 25
PULV C PULV DIFF		10.44	10.76	6.54	6.82	10.69	11 26
PULV D PULV DIFF		11.95	12.36	8.77	8.80	.04	11 27
PULV E PULV DIFF		13.43	13.49	.01	.01	13.97	11 28
PULV F PULV DIFF		.01	.01	0.00	0.00	14.06	11 29
PULV G PULV DIFF		13.16	13.32	9.04	9.02	14.08	11 30
PULV H DIFF P		13.40	13.19	0.00	0.00	13.54	11 9

DATA PAGE NO. 12 OPERATOR POSITIONS %

RH-1 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12 1
SH-1 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12 3
SH-1 SP VLV POSIT-B		0.0	0.0	0.0	0.0	0.0	12 4
SH-2 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12 5
SH-2 SP VLV POSIT-B		0.0	0.0	0.0	0.0	0.0	12 6
RH PASS DMPR POS-A		0.0	0.0	0.0	0.0	0.0	12 15
RH PASS DMPR POS-B		0.0	0.0	0.0	0.0	0.0	12 16
SH PASS DMPR POS-A		0.0	0.0	0.0	0.0	0.0	12 17
SH PASS DMPR POS-B		0.0	0.0	0.0	0.0	0.0	12 18

TEST NO.		7A	8A	9A	10A	11A	
TEST SEQ. NO.		7	8	9	10	11	
DATE		01/30/87	01/30/87	02/02/87	02/02/87	02/04/87	
TIME START		1140	1615	0030	0330	0900	
TIME END		1540	1815	0230	0510	1325	
LOAD MW		851	844	467	467	850	

DATA PAGE NO. 13 MISCELLANEOUS GAS DATA - TEST

O2 LVG SEC AH W		6.90	0.00	9.50	10.40	5.87	13 1
O2 LVG SEC AH E		5.6600	0.0000	7.3000	7.9500	5.8900	13 2
CO2 LVG SEC AH W		12.50	0.00	10.00	9.40	13.33	13 3
CO2 LVG SEC AH E		13.51	0.00	11.99	11.49	13.29	13 4
O2 LVG PRI AH W		10.30	0.00	10.30	11.09	8.67	13 5
O2 LVG PRI AH E		6.0800	0.0000	9.2900	9.6400	8.2800	13 6
CO2 LVG PRI AH W		8.90	0.00	9.44	8.72	10.93	13 7
CO2 LVG PRI AH E		13.31	0.00	10.28	10.04	11.14	13 8
GAS LVG RH PS (B)SW		744.6	727.7	690.2	725.9	751.4	13 21
GAS LVG RH PS (B)SE		0.0	718.0	685.6	722.5	746.4	13 22
GAS LVG PSH PS (B)NW		741.7	746.2	641.9	654.8	757.4	13 23
GAS LVG PSH PS (B)NE		0.0	722.7	642.5	657.3	758.8	13 24
STACK O2/CO2 (P)		5.1774	5.1250	8.4552	9.3352	6.5430	13 25
		0.0	0.0	0.0	0.0	0.0	13 28
A = RIGHT = EAST		0.0	0.0	0.0	0.0	0.0	13 29

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TEST NO.	12A	13A	14A	15A	16A
TEST SEQ. NO.	12	13	14	15	16
DATE	02/05/87	02/07/87	02/08/87	02/09/87	02/[illegible]
TIME START	1425	1330	1300		
TIME END	1820	173[illegible]			
LOAD MW	850	830			
FUEL	PC	PC			
ALPHA1	H OUT	D OUT			

one coal flow
#11A - 18A

12A AVE OF SCANS 5 - 50
13A AVE OF SCANS 1 - 47
14A AVE OF SCANS 8 - 51
15A AVE OF SCANS 1 - 45
16A AVE OF SCANS 1 - 49 : HIGH O2 TO MAK

331.1
325.9
318.6
319.5
323.1
333.8
318.8
316.2

323.4 TPH

DATA PAGE NO. 2 FLOWS MLB/HR

LOAD MW			849.7	829.8	[illegible]	[illegible]	[illegible]	2 1
HP STEAM FLOW			6136.4	6274.9	6187.7	6122.0	6099.9	2 2
FW FLOW			6099.2	6238.5	6152.1	6085.6	6060.4	2 3
BLOW DOWN FLOW			0.0	0.0	0.0	0.0	0.0	2 4
RH-1 SP FLOW			4.6889	5.0326	5.9102	4.5527	6.3490	2 5
SH-1 SP FLOW	W		0.0000	0.0000	4.1155	2.3600	0.0000	2 7
SH-1 SP FLOW	E		0.0000	2.3600	2.9491	2.6308	0.0000	2 8
SH-2 SP FLOW	W		0.00	36.04	38.89	0.00	0.00	2 9
SH-2 SP FLOW	E		0.0	0.0	0.0	0.0	0.0	2 10
TOTAL AIR FLOW			81.37	79.53	78.93	78.30	90.94	2 18
TOTAL FUEL FLOW			325.9	318.6	319.5	323.1	332.8	2 19
FEGT - PYROSONICS		TG	2176.1	2146.5	2076.2	2167.7	2090.8	2 20

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

SSH OUT T (P)			1003.3	960.5	958.1	1002.3	1005.1	3 1
TURB THROT T (P)			1002.4	959.2	957.0	1001.5	1004.4	3 3
ECON IN T (P)			551.0	548.6	543.6	547.2	550.7	3 5
SH-1 SPRAY TEMP			317.9	300.4	307.7	323.6	279.0	3 7
LVG 1st STG ATT(P)-W			721.3	708.5	705.9	714.5	727.3	3 8
LVG 1st STG ATT(P)-E			720.6	710.7	708.6	715.6	729.9	3 9
ENT 1st STG ATT(P)-W			723.0	709.5	708.4	715.3	727.7	3 10
ENT 1st STG ATT(P)-E			720.3	710.3	707.7	714.6	728.0	3 11
LVG RH-1 T (P)-N			1003.5	955.0	957.7	999.2	1005.5	3 12
LVG RH-1 T (P)-S			1007.4	958.3	960.1	1002.5	1009.1	3 13
HRH AT TURB (P)-N			1005.4	956.6	959.4	1001.1	1007.5	3 14

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TEST NO.	12A	13A	14A	15A	16A
TEST SEQ. NO.	12	13	14	15	16
DATE	02/05/87	02/07/87	02/08/87	02/09/87	02/10/87
TIME START	1425	1330	1300	1300	1500
TIME END	1820	1730	1700	1700	1900
LOAD MW	850	830	825	847	846
FUEL	PC	PC	PC	PC	PC
ALPHA1	H OUT	D OUT	E OUT	F OUT	E OUT

12A AVE OF SCANS 5 - 50
13A AVE OF SCANS 1 - 47
14A AVE OF SCANS 8 - 51
15A AVE OF SCANS 1 - 45
16A AVE OF SCANS 1 - 49 : HIGH O2 TO MAKE TEMPS

DATA PAGE NO. 2 FLOWS MLB/HR

LOAD MW			849.7	829.8	825.4	847.3	845.9	2 1
HP STEAM FLOW			6136.4	6274.9	6187.7	6122.0	6099.9	2 2
FW FLOW			6099.2	6238.5	6152.1	6085.6	6060.4	2 3
BLOW DOWN FLOW			0.0	0.0	0.0	0.0	0.0	2 4
RH-1 SP FLOW			4.6889	5.0326	5.9102	4.5527	6.3490	2 5
SH-1 SP FLOW	W		0.0000	0.0000	4.1155	2.3600	0.0000	2 7
SH-1 SP FLOW	E		0.0000	2.3600	2.9491	2.6308	0.0000	2 8
SH-2 SP FLOW	W		0.00	36.04	38.89	0.00	0.00	2 9
SH-2 SP FLOW	E		0.0	0.0	0.0	0.0	0.0	2 10
TOTAL AIR FLOW			81.37	79.53	78.93	78.30	90.94	2 18
TOTAL FUEL FLOW			325.9	318.6	319.5	323.1	332.8	2 19
FEGT - PYROSONICS		TG	2176.1	2146.5	2076.2	2167.7	2090.8	2 20

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

SSH OUT T (P)			1003.3	960.5	958.1	1002.3	1005.1	3 1
TURB THROT T (P)			1002.4	959.2	957.0	1001.5	1004.4	3 3
ECON IN T (P)			551.0	548.6	543.6	547.2	550.7	3 5
SH-1 SPRAY TEMP			317.9	300.4	307.7	323.6	279.0	3 7
LVG 1st STG ATT(P)-W			721.3	708.5	705.9	714.5	727.3	3 8
LVG 1st STG ATT(P)-E			720.6	710.7	708.6	715.6	729.9	3 9
ENT 1st STG ATT(P)-W			723.0	709.5	708.4	715.3	727.7	3 10
ENT 1st STG ATT(P)-E			720.3	710.3	707.7	714.6	728.0	3 11
LVG RH-1 T (P)-N			1003.5	955.0	957.7	999.2	1005.5	3 12
LVG RH-1 T (P)-S			1007.4	958.3	960.1	1002.5	1009.1	3 13
HRH AT TURB (P)-N			1005.4	956.6	959.4	1001.1	1007.5	3 14

TEST NO.		12A	13A	14A	15A	16A		
TEST SEQ. NO.		12	13	14	15	16		
DATE		02/05/87	02/07/87	02/08/87	02/09/87	02/10/87		
TIME START		1425	1330	1300	1300	1500		
TIME END		1820	1730	1700	1700	1900		
LOAD MW		850	830	825	847	846		

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

HRH AT TURB (P)-S		1008.8	959.6	961.3	1003.9	1010.5	3	15
ENT RH-1 T (P)		623.9	588.3	586.5	623.5	624.3	3	16
CRH ENT ATT (P)	SGJ024	625.5	589.3	587.4	625.2	626.1	3	18
RH DSUPHTR INL T (P)	COA06A	626.9	587.5	585.7	622.6	623.6	3	19
RH-1 SPRAY T (P)		253.4	261.4	242.1	246.9	265.4	3	20
LVG 2nd STG AT (P)-W		785.4	770.5	763.2	780.6	793.6	3	21
LVG 2nd STG AT (P)-E		783.0	761.8	754.8	775.9	784.9	3	22
ENT 2nd STG AT (P)-L		784.3	768.8	761.1	778.2	791.6	3	23
ENT 2nd STG AT (P)-R		783.2	761.6	755.1	776.0	784.7	3	24
ECON OUT T (P)		570.9	566.1	561.1	565.6	573.4	3	27
ECON OUT T (P)		571.6	566.5	561.3	566.1	573.9	3	28
SAT CON TUBE(P)		677.5	677.5	677.2	677.5	677.6	3	29

DATA PAGE NO. 5 FLUID PRESSURES PSIG

SEC SH OUT PRESS (P)		2421.3	2425.2	2427.4	2425.3	2426.3	5	2
DRUM PRESS (P)		2643.4	2647.1	2641.7	2646.0	2644.8	5	3
HRH RH-1 PRESS (P)		516.3	516.8	513.2	518.7	513.4	5	4
CRH RH-1 PRESS (P)		549.1	549.5	545.8	552.1	546.2	5	5
NO.1 HTR EXT P (P)-A		1043.0	1038.9	1030.1	1050.0	1038.3	5	6
NO.1 HTR EXT P (P)-B		1041.1	1036.9	1028.8	1048.2	1036.1	5	7
NO.2 HTR EXT P (P)-A		538.6	538.9	535.7	541.9	535.8	5	8
NO.2 HTR EXT P (P)-B		542.2	542.4	538.9	545.4	539.2	5	9
ECON IN PRESS (P)		42.50	42.50	42.50	42.50	42.50	5	12
SEC SH IN PRES (P) E		2542.6	2544.2	2541.3	2545.7	2544.7	5	13
SEC SH IN PRES (P) W		2557.3	2559.3	2555.0	2560.3	2559.6	5	14
SEC SH OUT PRESS (B)		2450.1	2453.4	2455.0	2454.5	2455.6	5	17
DRUM PRESS (B)		2646.6	2651.8	2649.0	2652.1	2649.3	5	18
LVG RH-1 PRESS (B)		516.6	516.6	513.2	519.0	513.3	5	19
ENT RH-1 PRESS (B) E		0.0	0.0	0.0	0.0	0.0	5	20
ENT RH-1 PRESS (B) W		547.2	547.1	543.5	549.6	543.7	5	28
ECON IN PRESS (B)		2700.6	2701.8	2696.6	2702.9	2701.6	5	27

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

AMBIENT AIR TEMP		44.66	46.57	47.24	51.54	53.68	6	1
AIR ENT SEC AH (P)-A		80.83	78.65	79.77	75.86	72.78	6	2
AIR ENT SEC AH (P)-B		81.29	79.00	80.29	76.29	73.89	6	3
AIR ENT PRI AH (P)-A		104.6	102.0	103.6	97.8	93.3	6	4
AIR ENT PRI AH (P)-B		104.2	101.5	103.0	97.8	93.6	6	5
AIR LVG SEC AH (P)-A		652.3	633.5	631.4	645.2	652.6	6	6
AIR LVG SEC AH (P)-B		627.9	611.0	608.9	623.4	625.9	6	7
AIR LVG PRI AH (P)-A		534.0	526.7	524.8	533.3	541.6	6	8
AIR LVG PRI AH (P)-B		499.6	494.4	492.3	500.8	506.0	6	9
GAS LVG SEC AH (P)-A		318.7	312.7	312.5	314.5	317.9	6	10

TEST NO.		12A	13A	14A	15A	16A		
TEST SEQ. NO.		12	13	14	15	16		
DATE		02/05/87	02/07/87	02/08/87	02/09/87	02/10/87		
TIME START		1425	1330	1300	1300	1500		
TIME END		1820	1730	1700	1700	1900		
LOAD MW		850	830	825	847	846		

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

GAS LVG SEC AH (P)-B		322.1	312.3	311.8	315.9	319.4	6	11
GAS LVG PRI AH (P)-A		303.8	303.9	304.1	304.0	302.5	6	12
GAS LVG PRI AH (P)-B		308.5	307.8	307.1	310.5	310.9	6	13
GAS LVG ECON (P)-E		740.4	719.9	717.4	739.4	751.8	6	14
GAS LVG ECON (P)-W		747.4	721.3	721.7	737.1	751.5	6	15
GAS ENT SEC AH (P)-A		0.0	0.0	0.0	0.0	0.0	6	16
GAS ENT SEC AH (P)-B		0.0	0.0	0.0	0.0	0.0	6	17
GAS ENT PRI AH (P)-A		0.0	0.0	0.0	0.0	0.0	6	18
GAS ENT PRI AH (P)-B		0.0	0.0	0.0	0.0	0.0	6	19
O2 LVG ECON (P)-W		2.8000	2.5600	2.6089	1.9462	5.2000	6	20
O2 LVG ECON (P)-E		3.9993	6.3255	5.3625	3.9873	4.6884	6	21
NOX @ STACK (P)		208.7	218.7	212.0	226.9	237.5	6	24
O2 @ STACK (P)		208.7	218.7	212.0	226.9	237.5	6	25
MOIST IN AIR (P)	CALC	0.0	0.0	0.0	0.0	0.0	6	28
REL HUMIDITY (P)		-24.97	-24.97	-24.97	-24.97	-24.97	7	30
BAROMETRIC PRESS (P)		25.79	25.70	25.48	25.38	25.40	6	29

DATA PAGE NO. 7 AIR & GAS DATA - TEST

GAS LVG SEC AH (B)-W		308.2	300.0	300.0	303.0	304.7	7	10
GAS LVG SEC AH (B)-E		312.7	303.2	303.0	305.7	308.2	7	11
GAS LVG PRI AH (B)-W		301.4	301.0	300.6	302.1	301.5	7	12
GAS LVG PRI AH (B)-E		325.1	324.7	325.3	324.8	324.5	7	13
GAS LVG ECON (B)-W		763.6	742.0	740.1	752.9	767.4	7	14
GAS LVG ECON (B)-E		759.8	741.7	739.3	753.0	766.7	7	15
O2 LVG ECON (B)-W		4.2166	4.3713	4.3515	3.4165	5.7876	7	20
O2 LVG ECON (B)-E		4.6062	4.0588	4.2770	3.5948	5.8221	7	21
CO2 LVG ECON (B)-W		0.00	15.91	0.00	0.00	12.04	7	22
CO2 LVG ECON (B)-E		15.05	14.77	14.60	14.82	13.16	7	23
CO LVG ECON PPM E	TST	24.84	25.19	49.00	58.76	28.25	13	26
CO LVG ECON PPM W	TST	20.26	23.19	39.57	59.99	20.09	13	27
NOX LVG ECON (B)-W		171.2	156.8	152.5	165.5	186.2	7	24
NOX LVG ECON (B)-E		150.4	130.3	127.7	160.5	146.1	7	25

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.1 HTR EXT T (P)-A		798.0	756.1	753.5	798.2	799.5	8	1
NO.1 HTR EXT T (P)-B		798.6	756.7	753.9	798.6	799.8	8	2
NO.2 HTR EXT T (P)-A		623.9	588.0	586.2	623.8	624.6	8	3
NO.2 HTR EXT T (P)-B		624.2	588.1	586.4	624.1	624.9	8	4
NO.1 FW LVG T (P)-A		552.8	550.9	550.5	554.1	552.7	8	5
NO.1 FW LVG T (P)-B		552.2	550.0	550.0	553.5	551.9	8	6
NO.1 FW ENT T (P)-A		478.5	477.1	476.8	479.4	478.1	8	7
NO.1 FW ENT T (P)-B		477.7	476.3	476.4	478.7	477.5	8	8
NO.2 FW LVG T (P)-A		0.0	0.0	0.0	0.0	0.0	8	9

TEST NO.		12A	13A	14A	15A	16A	
TEST SEQ. NO.		12	13	14	15	16	
DATE		02/05/87	02/07/87	02/08/87	02/09/87	02/10/87	
TIME START		1425	1330	1300	1300	1500	
TIME END		1820	1730	1700	1700	1900	
LOAD MW		850	830	825	847	846	

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.2 FW LVG T (P)-B		0.0	0.0	0.0	0.0	0.0	8	10
NO.2 FW ENT T (P)-A		392.3	392.2	392.5	393.9	393.3	8	11
NO.2 FW ENT T (P)-B		393.3	392.2	392.5	393.9	393.2	8	12
NO.1 DRAIN T (P)-A		489.5	488.7	488.1	490.5	489.2	8	13
NO.1 DRAIN T (P)-B		485.6	484.8	484.2	486.8	485.6	8	14
NO.2 DRAIN T (P)-A		400.3	400.6	399.7	402.0	401.4	8	15
NO.2 DRAIN T (P)-B		400.1	399.3	399.4	401.1	400.7	8	16
INT SSH MANIF (P)-1		874.1	847.0	852.3	878.7	894.3	8	17
INT SSH MANIF (P)-2		900.8	871.9	882.0	907.6	919.7	8	18
INT SSH MANIF (P)-3		911.8	876.6	887.5	924.9	922.4	8	19
INT SSH MANIF (P)-4		943.3	908.2	924.2	959.6	959.3	8	20
INT SSH MANIF (P)-5		924.0	888.1	883.6	928.8	922.3	8	21
INT SSH MANIF (P)-6		947.9	909.0	905.8	952.6	944.0	8	22
INT SSH MANIF (P)-7		917.1	883.5	873.3	918.9	912.2	8	23
INT SSH MANIF (P)-8		943.3	904.6	894.1	937.2	935.5	8	24
INT SSH MANIF (P)-9		903.9	870.7	861.3	904.8	900.8	8	25
INT SSH MANIF (P)-10		936.2	905.2	893.3	933.2	931.0	8	26
INT SSH MANIF (P)-11		906.0	873.5	864.5	903.4	904.2	8	27
INT SSH MANIF (P)-12		931.9	901.3	891.9	932.4	931.0	8	28
INT SSH MANIF (P)-13		901.2	868.3	858.9	894.4	900.4	8	29
INT SSH MANIF (P)-14		932.2	898.9	890.9	926.0	930.8	8	30
INT SSH MANIF (P)-15		908.4	879.9	876.0	903.0	913.1	9	17
INT SSH MANIF (P)-16		939.4	909.3	904.9	931.7	941.8	9	18
INT SSH MANIF (P)-17		915.5	884.4	882.4	908.7	914.9	9	19
INT SSH MANIF (P)-18		937.0	904.6	903.9	927.0	935.6	9	20
INT SSH MANIF (P)-19		929.8	896.7	899.7	928.6	929.8	9	21
INT SSH MANIF (P)-20		951.7	920.8	925.1	951.6	954.8	9	22
INT SSH MANIF (P)-21		928.4	895.8	905.7	933.4	933.0	9	23
INT SSH MANIF (P)-22		956.5	920.3	931.6	958.4	958.2	9	24
INT SSH MANIF (P)-23		921.3	897.3	903.7	935.8	930.4	9	25
INT SSH MANIF (P)-24		953.4	925.5	933.8	966.9	958.7	9	26
INT SSH MANIF (P)-25		919.0	896.8	884.9	923.2	926.0	9	27
INT SSH MANIF (P)-26		949.1	924.9	911.1	952.9	955.1	9	28
INT SSH MANIF (P)-27		881.9	858.2	846.5	875.2	892.9	9	29
INT SSH MANIF (P)-28		907.5	883.1	869.5	901.0	917.3	9	30

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV A COAL FLOW		46.76	45.79	45.60	46.19	47.71	10	1
PULV B COAL FLOW		46.58	45.58	45.43	45.93	47.52	10	2
PULV C COAL FLOW		46.97	45.99	45.82	46.36	47.92	10	3
PULV D COAL FLOW		47.63	.94	46.48	47.02	48.63	10	4
PULV E COAL FLOW		46.80	45.89	.07	46.22	.09	10	5
PULV F COAL FLOW		46.78	44.97	45.65	.14	47.71	10	6
PULV G COAL FLOW		47.11	46.16	46.02	46.54	48.10	10	7
PULV H COAL FLOW		.25	46.34	46.15	46.69	48.29	10	8

TEST NO.		12A	13A	14A	15A	16A	
TEST SEQ. NO.		12	13	14	15	16	
DATE		02/05/87	02/07/87	02/08/87	02/09/87	02/10/87	
TIME START		1425	1330	1300	1300	1500	
TIME END		1820	1730	1700	1700	1900	
LOAD MW		850	830	825	847	846	

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV A PA FLOW		79.37	78.51	78.34	78.87	80.26	10	16
PULV B PA FLOW		79.38	78.49	78.32	78.83	80.24	10	17
PULV C PA FLOW		79.31	78.42	78.29	78.78	80.29	10	18
PULV D PA FLOW		78.66	0.00	77.68	78.17	79.58	10	19
PULV E PA FLOW		77.82	76.93	6.96	77.26	7.84	10	20
PULV F PA FLOW		79.26	77.92	78.21	5.07	80.17	10	21
PULV G PA FLOW		79.81	78.87	78.77	79.30	80.76	10	22
PULV H PA FLOW		0.00	78.21	78.07	78.64	80.02	10	23

DATA PAGE NO. 11 PULVERIZER INLET TEMP AND PA DIFF

PULV A INLET T		341.4	337.1	340.7	333.3	329.9	11	1
PULV B INLET T		357.0	328.5	321.1	345.9	338.0	11	2
PULV C INLET T		363.9	358.0	366.8	362.3	366.8	11	3
PULV D INLET T		343.9	109.5	355.0	346.5	344.6	11	4
PULV E INLET T		357.5	354.0	120.6	356.3	95.1	11	5
PULV F INLET T		386.2	377.7	383.2	92.3	373.4	11	6
PULV G INLET T		376.2	377.0	358.6	362.5	348.6	11	7
PULV H INLET T		111.9	404.9	401.0	395.3	379.3	11	8
PULV A PA DIFF		0.0	0.0	0.0	0.0	0.0	11	16
PULV B PA DIFF		0.0	0.0	0.0	0.0	0.0	11	17
PULV C PA DIFF		0.0	0.0	0.0	0.0	0.0	11	18
PULV D PA DIFF		0.0	0.0	0.0	0.0	0.0	11	19
PULV E PA DIFF		0.0	0.0	0.0	0.0	0.0	11	20
PULV F PA DIFF		0.0	0.0	0.0	0.0	0.0	11	21
PULV G PA DIFF		0.0	0.0	0.0	0.0	0.0	11	22
PULV H PA DIFF		0.0	0.0	0.0	0.0	0.0	11	23
PULV A PULV DIFF		11.72	12.10	12.48	11.93	13.12	11	24
PULV B PULV DIFF		10.10	10.65	10.73	10.27	11.13	11	25
PULV C PULV DIFF		10.10	10.34	9.36	9.10	10.83	11	26
PULV D PULV DIFF		11.64	.03	11.67	11.15	12.70	11	27
PULV E PULV DIFF		12.74	12.99	-.01	12.42	0.00	11	28
PULV F PULV DIFF		12.31	11.72	12.34	-.03	13.32	11	29
PULV G PULV DIFF		11.94	11.96	12.56	12.20	13.91	11	30
PULV H DIFF P		0.00	12.11	12.29	12.13	13.29	11	9

DATA PAGE NO. 12 OPERATOR POSITIONS %

RH-1 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12	1
SH-1 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12	3
SH-1 SP VLV POSIT-B		0.0	0.0	0.0	0.0	0.0	12	4
SH-2 SP VLV POSIT-A		0.0	0.0	0.0	0.0	0.0	12	5
SH-2 SP VLV POSIT-B		0.0	0.0	0.0	0.0	0.0	12	6
RH PASS DMPR POS-A		0.0	0.0	0.0	0.0	0.0	12	15
RH PASS DMPR POS-B		0.0	0.0	0.0	0.0	0.0	12	16

TEST NO.		12A	13A	14A	15A	16A	
TEST SEQ. NO.		12	13	14	15	16	
DATE		02/05/87	02/07/87	02/08/87	02/09/87	02/10/87	
TIME START		1425	1330	1300	1300	1500	
TIME END		1820	1730	1700	1700	1900	
LOAD MW		850	830	825	847	846	

DATA PAGE NO. 12 OPERATOR POSITIONS %

SH PASS DMPR POS-A		0.0	0.0	0.0	0.0	0.0	12	17
SH PASS DMPR POS-B		0.0	0.0	0.0	0.0	0.0	12	18

DATA PAGE NO. 13 MISCELLANEOUS GAS DATA - TEST

O2 LVG SEC AH W		5.3000	5.2000	5.1000	5.0000	7.0000	13	1
O2 LVG SEC AH E		5.7000	5.3000	5.4000	4.8000	6.9000	13	2
CO2 LVG SEC AH W		13.90	14.00	14.00	14.20	12.40	13	3
CO2 LVG SEC AH E		13.50	13.90	13.80	14.20	12.40	13	4
O2 LVG PRI AH W		7.7000	7.7000	7.4000	6.9000	9.7000	13	5
O2 LVG PRI AH E		7.2000	7.4000	7.6000	6.3000	7.6000	13	6
CO2 LVG PRI AH W		11.80	11.80	11.90	12.40	10.00	13	7
CO2 LVG PRI AH E		12.10	11.90	11.70	12.80	11.70	13	8
GAS LVG RH PS (B)SW		753.6	732.9	734.8	750.7	748.7	13	21
GAS LVG RH PS (B)SE		745.3	728.3	729.8	748.7	743.0	13	22
GAS LVG PSH PS (B)NW		755.9	736.3	731.7	740.1	767.9	13	23
GAS LVG PSH PS (B)NE		753.5	737.3	733.4	741.6	767.9	13	24
STACK O2/CO2 (P)		6.2239	6.0979	6.0402	5.6071	7.5145	13	25
		0.0	0.0	0.0	0.0	0.0	13	28
A = RIGHT = EAST		0.0	0.0	0.0	0.0	0.0	13	29

RB-614 19 Feb 1987 19:33:18

TEST NO.	17A	18A			
TEST SEQ. NO.	17	18			
DATE	02/11/87	02/12/87			
TIME START	1530	1230			
TIME END	1925	1630			
LOAD MW	846	842			
FUEL	PC	PC			
ALPHA	B OUT	B OUT			

17A AVE OF SCANS 1 - 44 : WALLS BLOWN FOR TEMP CONTROL
18A AVE OF SCANS 1 - 44 : WALLS BLOWN BEFORE TEST

DATA PAGE NO. 2 FLOWS MLB/HR

LOAD MW			845.5	842.0			2 1
HP STEAM FLOW			6037.8	5977.1			2 2
FW FLOW			5998.9	5889.6			2 3
BLOW DOWN FLOW			0.0	0.0			2 4
RH-1 SP FLOW			6.4027	4.4177			2 5
SH-1 SP FLOW	W		0.0	0.0			2 7
SH-1 SP FLOW	E		0.0000	2.3600			2 8
SH-2 SP FLOW	W		0.00	28.97			2 9
SH-2 SP FLOW	E		0.00	29.17			2 10
TOTAL AIR FLOW			75.45	74.55			2 18
TOTAL FUEL FLOW			318.8	316.2			2 19
FEGT - PYROSONICS		TG	2188.9	2175.5			2 20

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

SSH OUT T (P)			1013.5	1005.7			3 1
TURB THROT T (P)			1012.9	1005.1			3 3
ECON IN T (P)			550.6	550.0			3 5
SH-1 SPRAY TEMP			327.4	338.4			3 7
LVG 1st STG ATT(P)-W			715.6	715.9			3 8
LVG 1st STG ATT(P)-E			718.3	718.5			3 9
ENT 1st STG ATT(P)-W			718.3	718.7			3 10
ENT 1st STG ATT(P)-E			716.9	717.6			3 11
LVG RH-1 T (P)-N			1013.0	1003.2			3 12
LVG RH-1 T (P)-S			1016.1	1006.4			3 13
HRH AT TURB (P)-N			1015.0	1005.3			3 14
HRH AT TURB (P)-S			1017.7	1008.0			3 15
ENT RH-1 T (P)			630.7	624.6			3 16
CRH ENT ATT (P)	SGJ024		632.5	626.3			3 18
RH DSUPHTR INL T (P)	COA06A		629.8	623.7			3 19
RH-1 SPRAY T (P)			282.5	285.4			3 20
LVG 2nd STG AT (P)-W			789.2	784.3			3 21

TEST NO.	17A	18A				
TEST SEQ. NO.	17	18				
DATE	02/11/87	02/12/87				
TIME START	1530	1230				
TIME END	1925	1630				
LOAD MW	846	842				

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

LVG 2nd STG AT (P)-E	778.4	766.7				3 22
ENT 2nd STG AT (P)-L	786.1	790.2				3 23
ENT 2nd STG AT (P)-R	779.0	782.1				3 24
ECON OUT T (P)	569.2	569.0				3 27
ECON OUT T (P)	569.6	569.4				3 28
SAT CON TUBE(P)	677.6	676.9				3 29

DATA PAGE NO. 5 FLUID PRESSURES PSIG

SEC SH OUT PRESS (P)	2431.9	2422.6				5 2
DRUM PRESS (P)	2645.2	2633.5				5 3
HRH RH-1 PRESS (P)	510.6	508.2				5 4
CRH RH-1 PRESS (P)	513.2	540.9				5 5
NO.1 HTR EXT P (P)-A	1033.4	1027.9				5 6
NO.1 HTR EXT P (P)-B	1031.3	1026.3				5 7
NO.2 HTR EXT P (P)-A	532.9	530.8				5 8
NO.2 HTR EXT P (P)-B	536.4	534.1				5 9
ECON IN PRESS (P)	42.50	42.50				5 12
SEC SH IN PRES (P) E	2548.1	2537.7				5 13
SEC SH IN PRES (P) W	2564.1	2552.8				5 14
SEC SH OUT PRESS (B)	2459.6	2450.2				5 17
DRUM PRESS (B)	2650.1	2638.5				5 18
LVG RH-1 PRESS (B)	510.7	508.4				5 19
ENT RH-1 PRESS (B) E	0.0	0.0				5 20
ENT RH-1 PRESS (B) W	540.9	538.4				5 28
ECON IN PRESS (B)	2700.5	2689.4				5 27

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

AMBIENT AIR TEMP	52.20	47.11				6 1
AIR ENT SEC AH (P)-A	72.49	71.13				6 2
AIR ENT SEC AH (P)-B	73.35	71.76				6 3
AIR ENT PRI AH (P)-A	93.80	92.18				6 4
AIR ENT PRI AH (P)-B	92.78	91.46				6 5
AIR LVG SEC AH (P)-A	651.7	650.2				6 6
AIR LVG SEC AH (P)-B	632.4	631.9				6 7
AIR LVG PRI AH (P)-A	539.2	539.2				6 8
AIR LVG PRI AH (P)-B	504.1	507.4				6 9
GAS LVG SEC AH (P)-A	316.6	319.0				6 10
GAS LVG SEC AH (P)-B	315.1	319.0				6 11
GAS LVG PRI AH (P)-A	304.1	304.8				6 12
GAS LVG PRI AH (P)-B	312.2	311.8				6 13
GAS LVG ECON (P)-E	744.5	738.3				6 14
GAS LVG ECON (P)-W	752.4	739.4				6 15
GAS ENT SEC AH (P)-A	0.0	0.0				6 16

TEST NO.		17A	18A			
TEST SEQ. NO.		17	18			
DATE		02/11/87	02/12/87			
TIME START		1530	1230			
TIME END		1925	1630			
LOAD MW		846	842			

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

GAS ENT SEC AH (P)-B		0.0	0.0			6 17
GAS ENT PRI AH (P)-A		0.0	0.0			6 18
GAS ENT PRI AH (P)-B		0.0	0.0			6 19
O2 LVG ECON (P)-W		1.2464	1.2695			6 20
O2 LVG ECON (P)-E		5.0866	3.5536			6 21
NOX @ STACK (P)		247.7	243.4			6 24
O2 @ STACK (P)		247.6	243.4			6 25
MOIST IN AIR (P)	CALC	0.0	0.0			6 28
REL HUMIDITY (P)		-24.97	96.19			7 30
BAROMETRIC PRESS (P)		25.49	25.46			6 29

DATA PAGE NO. 7 AIR & GAS DATA - TEST

GAS LVG SEC AH (B)-W		304.8	306.7			7 10
GAS LVG SEC AH (B)-E		308.6	311.9			7 11
GAS LVG PRI AH (B)-W		302.6	302.8			7 12
GAS LVG PRI AH (B)-E		325.5	325.8			7 13
GAS LVG ECON (B)-W		759.2	752.5			7 14
GAS LVG ECON (B)-E		758.9	752.0			7 15
O2 LVG ECON (B)-W		3.2138	3.2297			7 20
O2 LVG ECON (B)-E		2.9138	3.3502			7 21
CO2 LVG ECON (B)-W		23.06	27.64			7 22
CO2 LVG ECON (B)-E		15.64	15.88			7 23
CO LVG ECON PPM E	TST	100.7	79.4			13 26
CO LVG ECON PPM W	TST	139.7	121.9			13 27
NOX LVG ECON (B)-W		211.6	180.4			7 24
NOX LVG ECON (B)-E		170.2	149.8			7 25

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.1 HTR EXT T (P)-A		806.8	798.6			8 1
NO.1 HTR EXT T (P)-B		807.1	800.2			8 2
NO.2 HTR EXT T (P)-A		631.1	623.8			8 3
NO.2 HTR EXT T (P)-B		631.4	624.2			8 4
NO.1 FW LVG T (P)-A		552.5	551.1			8 5
NO.1 FW LVG T (P)-B		551.7	550.1			8 6
NO.1 FW ENT T (P)-A		477.9	476.6			8 7
NO.1 FW ENT T (P)-B		477.2	475.9			8 8
NO.2 FW LVG T (P)-A		0.0	0.0			8 9
NO.2 FW LVG T (P)-B		0.0	0.0			8 10
NO.2 FW ENT T (P)-A		393.0	392.0			8 11
NO.2 FW ENT T (P)-B		392.9	392.0			8 12
NO.1 DRAIN T (P)-A		488.8	487.8			8 13
NO.1 DRAIN T (P)-B		485.2	484.2			8 14
NO.2 DRAIN T (P)-A		401.2	400.5			8 15

TEST NO.	17A	18A				
TEST SEQ. NO.	17	18				
DATE	02/11/87	02/12/87				
TIME START	1530	1230				
TIME END	1925	1630				
LOAD MW	846	842				

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.2 DRAIN T (P)-B		400.4	399.6			8 16
INT SSH MANIF (P)-1		888.0	871.9			8 17
INT SSH MANIF (P)-2		918.9	901.6			8 18
INT SSH MANIF (P)-3		930.6	914.8			8 19
INT SSH MANIF (P)-4		965.8	951.0			8 20
INT SSH MANIF (P)-5		934.9	928.8			8 21
INT SSH MANIF (P)-6		958.4	952.1			8 22
INT SSH MANIF (P)-7		919.6	912.0			8 23
INT SSH MANIF (P)-8		941.4	933.7			8 24
INT SSH MANIF (P)-9		903.5	892.6			8 25
INT SSH MANIF (P)-10		936.2	928.3			8 26
INT SSH MANIF (P)-11		904.2	892.6			8 27
INT SSH MANIF (P)-12		935.4	921.8			8 28
INT SSH MANIF (P)-13		897.6	885.2			8 29
INT SSH MANIF (P)-14		926.6	921.0			8 30
INT SSH MANIF (P)-15		918.7	911.6			9 17
INT SSH MANIF (P)-16		950.7	943.3			9 18
INT SSH MANIF (P)-17		927.8	921.9			9 19
INT SSH MANIF (P)-18		946.4	942.8			9 20
INT SSH MANIF (P)-19		949.5	942.3			9 21
INT SSH MANIF (P)-20		974.8	968.3			9 22
INT SSH MANIF (P)-21		951.2	948.2			9 23
INT SSH MANIF (P)-22		979.6	972.2			9 24
INT SSH MANIF (P)-23		951.8	949.9			9 25
INT SSH MANIF (P)-24		986.8	984.1			9 26
INT SSH MANIF (P)-25		938.4	933.6			9 27
INT SSH MANIF (P)-26		973.1	967.6			9 28
INT SSH MANIF (P)-27		886.2	879.0			9 29
INT SSH MANIF (P)-28		912.2	906.0			9 30

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV A COAL FLOW		45.60	45.14			10 1
PULV B COAL FLOW		.2400	.2400			10 2
PULV C COAL FLOW		45.78	45.38			10 3
PULV D COAL FLOW		46.54	46.05			10 4
PULV E COAL FLOW		45.65	45.29			10 5
PULV F COAL FLOW		45.59	45.18			10 6
PULV G COAL FLOW		46.00	45.53			10 7
PULV H COAL FLOW		46.13	45.71			10 8
PULV A PA FLOW		78.23	86.16			10 16
PULV B PA FLOW		1.7130	2.8955			10 17
PULV C PA FLOW		78.25	86.00			10 18
PULV D PA FLOW		77.57	85.38			10 19
PULV E PA FLOW		76.68	84.35			10 20
PULV F PA FLOW		78.14	85.91			10 21

TEST NO.	17A	18A				
TEST SEQ. NO.	17	18				
DATE	02/11/87	02/12/87				
TIME START	1530	1230				
TIME END	1925	1630				
LOAD MW	846	842				

DATA PAGE NO. 10 PULVERIZER COAL AND PA FLOW

PULV G PA FLOW		78.73	86.55			10 22
PULV H PA FLOW		78.01	85.68			10 23

DATA PAGE NO. 11 PULVERIZER INLET TEMP AND PA DIFF

PULV A INLET T		325.1	296.8			11 1
PULV B INLET T		116.9	172.4			11 2
PULV C INLET T		346.7	317.9			11 3
PULV D INLET T		328.1	310.6			11 4
PULV E INLET T		338.1	302.8			11 5
PULV F INLET T		375.2	328.1			11 6
PULV G INLET T		358.6	315.1			11 7
PULV H INLET T		374.3	337.4			11 8
PULV A PA DIFF		0.0	0.0			11 16
PULV B PA DIFF		0.0	0.0			11 17
PULV C PA DIFF		0.0	0.0			11 18
PULV D PA DIFF		0.0	0.0			11 19
PULV E PA DIFF		0.0	0.0			11 20
PULV F PA DIFF		0.0	0.0			11 21
PULV G PA DIFF		0.0	0.0			11 22
PULV H PA DIFF		0.0	0.0			11 23
PULV A PULV DIFF		12.15	13.66			11 24
PULV B PULV DIFF		.0400	.0400			11 25
PULV C PULV DIFF		10.43	10.81			11 26
PULV D PULV DIFF		11.68	12.99			11 27
PULV E PULV DIFF		13.34	14.12			11 28
PULV F PULV DIFF		12.34	13.31			11 29
PULV G PULV DIFF		12.53	13.72			11 30
PULV H DIFF P		12.92	13.51			11 9

DATA PAGE NO. 12 OPERATOR POSITIONS %

RH-1 SP VLV POSIT-A		0.0	0.0			12 1
SH-1 SP VLV POSIT-A		0.0	0.0			12 3
SH-1 SP VLV POSIT-B		0.0	0.0			12 4
SH-2 SP VLV POSIT-A		0.0	0.0			12 5
SH-2 SP VLV POSIT-B		0.0	0.0			12 6
RH PASS DMPR POS-A		0.0	0.0			12 15
RH PASS DMPR POS-B		0.0	0.0			12 16
SH PASS DMPR POS-A		0.0	0.0			12 17
SH PASS DMPR POS-B		0.0	0.0			12 18

TEST NO.	17A	18A				
TEST SEQ. NO.	17	18				
DATE	02/11/87	02/12/87				
TIME START	1530	1230				
TIME END	1925	1630				
LOAD MW	846	842				

DATA PAGE NO. 13 MISCELLANEOUS GAS DATA - TEST

O2 LVG SEC AH W		4.8000	4.7000			13 1
O2 LVG SEC AH E		4.6000	4.9000			13 2
CO2 LVG SEC AH W		14.40	14.40			13 3
CO2 LVG SEC AH E		14.50	14.20			13 4
O2 LVG PRI AH W		7.4000	7.3000			13 5
O2 LVG PRI AH E		6.6000	6.7000			13 6
CO2 LVG PRI AH W		12.00	12.00			13 7
CO2 LVG PRI AH E		12.70	12.60			13 8
GAS LVG RH PS (B)SW		761.7	750.4			13 21
GAS LVG RH PS (B)SE		757.9	747.0			13 22
GAS LVG PSH PS (B)NW		744.2	740.7			13 23
GAS LVG PSH PS (B)NE		746.7	741.8			13 24
STACK O2/CO2 (P)		5.2036	5.3702			13 25
		0.0	0.0			13 28
A = RIGHT = EAST		0.0	0.0			13 29

Coal Analysis Summary

Test ID	2A / 3A	4A	5A	7A / 8A	9A / 10A	11A	12A	13A	14A
Sample Date	1/27/87	1/28/87	1/29/87	1/30/87	2/2/87	2/4/87	2/5/87	2/7/87	2/8/87
ULTIMATE ANALYSIS (% by weight):									
Carbon	67.02	67.05	67.02	67.28	67.00	66.62	67.02	67.99	67.79
Hydrogen	5.49	5.36	5.30	5.38	5.07	4.89	5.41	5.52	5.21
Oxygen	9.60	9.36	10.28	10.17	10.60	10.44	9.23	9.54	9.92
Nitrogen	0.93	0.97	1.03	0.96	0.99	1.03	1.00	1.07	1.06
Sulfur	0.55	0.52	0.51	0.51	0.50	0.52	0.52	0.59	0.54
Ash	8.36	8.44	8.10	7.91	8.19	8.93	8.00	6.93	7.83
Moisture	8.05	8.30	7.76	7.79	7.65	7.57	8.82	8.36	7.65
Btu/lb (as fired)	12043	12044	12058	12149	12130	11991	11923	12201	12113

Test ID	15A	16A	17A	---	18A	AVERAGE ANALYSIS	
Sample Date	2/9/87	2/10/87	2/11/87	2/11/87	2/12/87	1/27/87 thru	2/12/87
			test 1	test 2			
Carbon	68.66	66.81	67.26	67.32	68.20	67.36	+/- 0.58
Hydrogen	5.51	5.23	5.20	5.11	5.20	5.28	+/- 0.18
Oxygen	9.53	10.75	10.91	10.20	10.97	10.11	+/- 0.59
Nitrogen	1.03	1.04	0.91	0.98	0.99	1.00	+/- 0.05
Sulfur	0.55	0.57	0.52	0.52	0.57	0.54	+/- 0.03
Ash	7.02	7.97	7.62	8.07	7.24	7.90	+/- 0.55
Moisture	7.70	7.63	7.58	7.80	6.83	7.82	+/- 0.46
Btu/lb (as fired)	12333	12169	12194	11990	12433	12126.50	+/- 137.5

IP14_004032

Ash Sample Summary

Test ID	2A / 3A	4A	5A	7A / 8A	9A / 10A	11A	12A	13A
Sample Date	1/27/87	1/28/87	1/29/87	1/30/87	2/2/87	2/4/87	2/5/87	2/7/87
SAMPLE LOCATION:								
Fly Ash	0.90	0.77	0.58	1.02	0.65	0.66	0.32	0.68
Economizer Ash	1.02	0.30	0.39	0.42	0.34	0.22	0.25	0.32
Bottom Ash	<0.50>	0.29	0.81	0.94	0.58	1.27	0.49	0.40
Weighted Average: (% carbon in ash)	**0.88**	**0.72**	**0.59**	**1.00**	**0.64**	**0.69**	**0.33**	**0.65**

Test ID	14A	15A	16A	17A	---	18A
Sample Date	2/8/87	2/9/87	2/10/87	2/11/87	2/11/87	2/12/87
SAMPLE LOCATION:						
Fly Ash	0.99	1.48	0.75	0.65	0.84	1.29
Economizer Ash	0.39	0.29	0.19	<0.30>	0.22	0.34
Bottom Ash	1.16	1.25	0.65	<0.50>	1.22	0.40
Weighted Average: (% carbon in ash)	**0.98**	**1.43**	**0.73**	**0.63**	**0.85**	**1.20**

< > = assumed value; data not reported

Sample locations were weighted:
90% fly ash
3% economizer ash
7% bottom ash
to produce the weighted average

Appendix

Intermountain Power Project
Unit 1, RB-614

12 Feb 1987 17:45 - POINT SUMMARY: RB-614 Performance Test

Pt	Description		Data type
0	%O2 Econ Out East	0 to .1 in;	0 to 21 out
1	PPM CO Econ Out East	0 to .1 in;	0 to 500 out
2	%CO2 Econ Out East	0 to .1 in;	0 to 30 out
3	PPM NOx Econ Out East	0 to 10 in;	0 to 1000 out
4	NIS		unassigned
5	%O2 Econ Out West	0 to 1 in;	0 to 10 out
6	PPM CO Econ Out West	0 to 5 in;	0 to 2000 out
7	%CO2 Econ Out West	0 to .1 in;	0 to 30 out
8	PPM NOx Econ Out West	0 to 1 in;	0 to 500 out
9	NIS		unassigned
10	Drum Pressure PSIG	.8 to 4 in;	0 to 3000 out
11	Econ Inlet Press PSIG	.8 to 4 in;	0 to 3000 out
12	East RH In Press PSIG	.8 to 4 in;	0 to 1000 out
13	West RH In Press PSIG	.8 to 4 in;	0 to 1000 out
14	RH Out Press PSIG	.8 to 4 in;	0 to 1000 out
15	NIS		unassigned
16	SSH Out Press PSIG	.8 to 4 in;	0 to 3000 out
17	Pyrosonic FEGT °F	.8 to 4 in;	100 to 3000 out
18	NIS		unassigned
19	REFERENCE TEMP		REF TEMP
20	Bias Dmpr South A-1		Type-E sc
21	Bias Dmpr South A-2		Type-E sc
22	Bias Dmpr South A-3		Type-E sc
23	Bias Dmpr South A-4		Type-E sc
24	Bias Dmpr South A-5		Type-E sc
25	Bias Dmpr South A-6		Type-E sc
26	Bias Dmpr South A-7		Type-E sc
27	Bias Dmpr South A-8		Type-E sc
28	Bias Dmpr South A-9		Type-E sc
29	Bias Dmpr South B-1		Type-E sc
30	Bias Dmpr South B-2		Type-E sc
31	Bias Dmpr South B-3		Type-E sc
32	Bias Dmpr South B-4		Type-E sc
33	Bias Dmpr South B-5		Type-E sc
34	Bias Dmpr South B-6		Type-E sc
35	Bias Dmpr South B-7		Type-E sc
36	Bias Dmpr South B-8		Type-E sc
37	Bias Dmpr South B-9		Type-E sc
38	Bias Dmpr South C-1		Type-E sc
39	REFERENCE TEMP		REF TEMP
40	Bias Dmpr South C-2		Type-E sc
41	Bias Dmpr South C-3		Type-E sc
42	Bias Dmpr South C-4		Type-E sc
43	Bias Dmpr South C-5		Type-E sc
44	Bias Dmpr South C-6		Type-E sc
45	Bias Dmpr South C-7		Type-E sc
46	Bias Dmpr South C-8		Type-E sc
47	Bias Dmpr South C-9		Type-E sc
48	Bias Dmpr South D-1		Type-E sc
49	Bias Dmpr South D-2		Type-E sc

12 Feb 1987 17:45 - POINT SUMMARY: RB-614 Performance Test

Pt	Description	Data type
50	Bias Dmpr South D-3	Type-E sc
51	Bias Dmpr South D-4	Type-E sc
52	Bias Dmpr South D-5	Type-E sc
53	Bias Dmpr South D-6	Type-E sc
54	Bias Dmpr South D-7	Type-E sc
55	Bias Dmpr South D-8	Type-E sc
56	Bias Dmpr South D-9	Type-E sc
57	Bias Dmpr South E-1	Type-E sc
58	Bias Dmpr South E-2	Type-E sc
59	REFERENCE TEMP	REF TEMP
60	Bias Dmpr South E-3	Type-E sc
61	Bias Dmpr South E-4	Type-E sc
62	Bias Dmpr South E-5	Type-E sc
63	Bias Dmpr South E-6	Type-E sc
64	Bias Dmpr South E-7	Type-E sc
65	Bias Dmpr South E-8	Type-E sc
66	Bias Dmpr South E-9	Type-E sc
67	Bias Dmpr South F-1	Type-E sc
68	Bias Dmpr South F-2	Type-E sc
69	Bias Dmpr South F-3	Type-E sc
70	Bias Dmpr South F-4	Type-E sc
71	Bias Dmpr South F-5	Type-E sc
72	Bias Dmpr South F-6	Type-E sc
73	Bias Dmpr South F-7	Type-E sc
74	Bias Dmpr South F-8	Type-E sc
75	Bias Dmpr South F-9	Type-E sc
76	Bias Dmpr North A-1	Type-E sc
77	Bias Dmpr North A-2	Type-E sc
78	Bias Dmpr North A-3	Type-E sc
79	REFERENCE TEMP	REF TEMP
80	Bias Dmpr North A-4	Type-E sc
81	Bias Dmpr North A-5	Type-E sc
82	Bias Dmpr North A-6	Type-E sc
83	Bias Dmpr North A-7	Type-E sc
84	Bias Dmpr North A-8	Type-E sc
85	Bias Dmpr North A-9	Type-E sc
86	Bias Dmpr North B-1	Type-E sc
87	Bias Dmpr North B-2	Type-E sc
88	Bias Dmpr North B-3	Type-E sc
89	Bias Dmpr North B-4	Type-E sc
90	Bias Dmpr North B-5	Type-E sc
91	Bias Dmpr North B-6	Type-E sc
92	Bias Dmpr North B-7	Type-E sc
93	Bias Dmpr North B-8	Type-E sc
94	Bias Dmpr North B-9	Type-E sc
95	Bias Dmpr North C-1	Type-E sc
96	Bias Dmpr North C-2	Type-E sc
97	Bias Dmpr North C-3	Type-E sc
98	Bias Dmpr North C-4	Type-E sc
99	REFERENCE TEMP	REF TEMP

12 Feb 1987 17:45 - POINT SUMMARY: RB-614 Performance Test

Pt	Description	Data type
100 :	Bias Dmpr North C-5	Type-E sc
101 :	Bias Dmpr North C-6	Type-E sc
102 :	Bias Dmpr North C-7	Type-E sc
103 :	Bias Dmpr North C-8	Type-E sc
104 :	Bias Dmpr North C-9	Type-E sc
105 :	Bias Dmpr North D-1	Type-E sc
106 :	Bias Dmpr North D-2	Type-E sc
107 :	Bias Dmpr North D-3	Type-E sc
108 :	Bias Dmpr North D-4	Type-E sc
109 :	Bias Dmpr North D-5	Type-E sc
110 :	Bias Dmpr North D-6	Type-E sc
111 :	Bias Dmpr North D-7	Type-E sc
112 :	Bias Dmpr North D-8	Type-E sc
113 :	Bias Dmpr North D-9	Type-E sc
114 :	Bias Dmpr North E-1	Type-E sc
115 :	Bias Dmpr North E-2	Type-E sc
116 :	Bias Dmpr North E-3	Type-E sc
117 :	Bias Dmpr North E-4	Type-E sc
118 :	Bias Dmpr North E-5	Type-E sc
119 :	REFERENCE TEMP	REF TEMP
120 :	Bias Dmpr North E-6	Type-E sc
121 :	Bias Dmpr North E-7	Type-E sc
122 :	Bias Dmpr North E-8	Type-E sc
123 :	Bias Dmpr North E-9	Type-E sc
124 :	Bias Dmpr North F-1	Type-E sc
125 :	Bias Dmpr North F-2	Type-E sc
126 :	Bias Dmpr North F-3	Type-E sc
127 :	Bias Dmpr North F-4	Type-E sc
128 :	Bias Dmpr North F-5	Type-E sc
129 :	Bias Dmpr North F-6	Type-E sc
130 :	Bias Dmpr North F-7	Type-E sc
131 :	Bias Dmpr North F-8	Type-E sc
132 :	Bias Dmpr North F-9	Type-E sc
133 :	Econ Outlet A-1	Type-E sc
134 :	Econ Outlet A-2	Type-E sc
135 :	Econ Outlet A-3	Type-E sc
136 :	Econ Outlet A-4	Type-E sc
137 :	Econ Outlet B-1	Type-E sc
138 :	Econ Outlet B-2	Type-E sc
139 :	REFERENCE TEMP	REF TEMP
140 :	Econ Outlet B-3	Type-E sc
141 :	Econ Outlet B-4	Type-E sc
142 :	Econ Outlet C-1	Type-E sc
143 :	Econ Outlet C-2	Type-E sc
144 :	Econ Outlet C-3	Type-E sc
145 :	Econ Outlet C-4	Type-E sc
146 :	Econ Outlet D-1	Type-E sc
147 :	Econ Outlet D-2	Type-E sc
148 :	Econ Outlet D-3	Type-E sc
149 :	Econ Outlet D-4	Type-E sc

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Pt	Description	Data type
150 :	Econ Outlet E-1	Type-E sc
151 :	Econ Outlet E-2	Type-E sc
152 :	Econ Outlet E-3	Type-E sc
153 :	Econ Outlet E-4	Type-E sc
154 :	Econ Outlet F-1	Type-E sc
155 :	Econ Outlet F-2	Type-E sc
156 :	Econ Outlet F-3	Type-E sc
157 :	Econ Outlet F-4	Type-E sc
158 :	Econ Outlet G-1	Type-E sc
159 :	REFERENCE TEMP	REF TEMP
160 :	Econ Outlet G-2	Type-E sc
161 :	Econ Outlet G-3	Type-E sc
162 :	Econ Outlet G-4	Type-E sc
163 :	Econ Outlet H-1	Type-E sc
164 :	Econ Outlet H-2	Type-E sc
165 :	Econ Outlet H-3	Type-E sc
166 :	Econ Outlet H-4	Type-E sc
167 :	Econ Outlet I-1	Type-E sc
168 :	Econ Outlet I-2	Type-E sc
169 :	Econ Outlet I-3	Type-E sc
170 :	Econ Outlet I-4	Type-E sc
171 :	Econ Outlet J-1	Type-E sc
172 :	Econ Outlet J-2	Type-E sc
173 :	Econ Outlet J-3	Type-E sc
174 :	Econ Outlet J-4	Type-E sc
175 :	Econ Outlet K-1	Type-E sc
176 :	Econ Outlet K-2	Type-E sc
177 :	Econ Outlet K-3	Type-E sc
178 :	Econ Outlet K-4	Type-E sc
179 :	REFERENCE TEMP	REF TEMP
180 :	Econ Outlet L-1	Type-E sc
181 :	Econ Outlet L-2	Type-E sc
182 :	Econ Outlet L-3	Type-E sc
183 :	Econ Outlet L-4	Type-E sc
184 :	Econ Outlet M-1	Type-E sc
185 :	Econ Outlet M-2	Type-E sc
186 :	Econ Outlet M-3	Type-E sc
187 :	Econ Outlet M-4	Type-E sc
188 :	Econ Outlet N-1	Type-E sc
189 :	Econ Outlet N-2	Type-E sc
190 :	Econ Outlet N-3	Type-E sc
191 :	Econ Outlet N-4	Type-E sc
192 :	Ambient Temp @ Level 10	Type-E sc
193 :	NIS	Type-E sc
194 :	NIS	Type-E sc
195 :	NIS	Type-E sc
196 :	NIS	Type-E sc
197 :	NIS	Type-E sc
198 :	NIS	Type-E sc
199 :	REFERENCE TEMP	REF TEMP

12 Feb 1987 17:45 - POINT SUMMARY: RB-614 Performance Test

Pt	Description	Data type
200	EAST PRI TAP 1-A	Type-E sc
201	EAST PRI TAP 1-B	Type-E sc
202	EAST PRI TAP 1-C	Type-E sc
203	EAST PRI TAP 2-A	Type-E sc
204	EAST PRI TAP 2-B	Type-E sc
205	EAST PRI TAP 2-C	Type-E sc
206	EAST PRI TAP 3-A	Type-E sc
207	EAST PRI TAP 3-B	Type-E sc
208	EAST PRI TAP 3-C	Type-E sc
209	EAST SEC TAP 1-A	Type-E sc
210	EAST SEC TAP 1-B	Type-E sc
211	EAST SEC TAP 1-C	Type-E sc
212	EAST SEC TAP 2-A	Type-E sc
213	EAST SEC TAP 2-B	Type-E sc
214	EAST SEC TAP 2-C	Type-E sc
215	EAST SEC TAP 3-A	Type-E sc
216	EAST SEC TAP 3-B	Type-E sc
217	EAST SEC TAP 3-C	Type-E sc
218	EAST SEC TAP 4-A	Type-E sc
219	REFERENCE TEMP	REF TEMP
220	EAST SEC TAP 4-B	Type-E sc
221	EAST SEC TAP 4-C	Type-E sc
222	EAST SEC TAP 5-A	Type-E sc
223	EAST SEC TAP 5-B	Type-E sc
224	EAST SEC TAP 5-C	Type-E sc
225	EAST SEC TAP 6-A	Type-E sc
226	EAST SEC TAP 6-B	Type-E sc
227	EAST SEC TAP 6-C	Type-E sc
228	EAST SEC TAP 7-A	Type-E sc
229	EAST SEC TAP 7-B	Type-E sc
230	EAST SEC TAP 7-C	Type-E sc
231	EAST SEC TAP 8-A	Type-E sc
232	EAST SEC TAP 8-B	Type-E sc
233	EAST SEC TAP 8-C	Type-E sc
234	EAST SEC TAP 9-A	Type-E sc
235	EAST SEC TAP 9-B	Type-E sc
236	EAST SEC TAP 9-C	Type-E sc
237	EAST SEC TAP 10-A	Type-E sc
238	EAST SEC TAP 10-B	Type-E sc
239	REFERENCE TEMP	REF TEMP
240	EAST SEC TAP 10-C	Type-E sc
241	EAST SEC TAP 11-A	Type-E sc
242	EAST SEC TAP 11-B	Type-E sc
243	EAST SEC TAP 11-C	Type-E sc
244	EAST SEC TAP 12-A	Type-E sc
245	EAST SEC TAP 12-B	Type-E sc
246	EAST SEC TAP 12-C	Type-E sc
247	EAST SEC TAP 13-A	Type-E sc
248	EAST SEC TAP 13-B	Type-E sc
249	EAST SEC TAP 13-C	Type-E sc

12 Feb 1987 17:45 - POINT SUMMARY: RB-614 Performance Test

Pt	Description	Data type
250	EAST SEC TAP 14-A	Type-E sc
251	EAST SEC TAP 14-B	Type-E sc
252	EAST SEC TAP 14-C	Type-E sc
253	EAST SEC TAP 15-A	Type-E sc
254	EAST SEC TAP 15-B	Type-E sc
255	EAST SEC TAP 15-C	Type-E sc
256	EAST SEC TAP 16-A	Type-E sc
257	EAST SEC TAP 16-B	Type-E sc
258	EAST SEC TAP 16-C	Type-E sc
259	REFERENCE TEMP	REF TEMP
260	EAST SEC TAP 17-A	Type-E sc
261	EAST SEC TAP 17-B	Type-E sc
262	EAST SEC TAP 17-C	Type-E sc
263	WEST PRI TAP 1-A	Type-E sc
264	WEST PRI TAP 1-B	Type-E sc
265	WEST PRI TAP 1-C	Type-E sc
266	WEST PRI TAP 2-A	Type-E sc
267	WEST PRI TAP 2-B	Type-E sc
268	WEST PRI TAP 2-C	Type-E sc
269	WEST PRI TAP 3-A	Type-E sc
270	WEST PRI TAP 3-B	Type-E sc
271	WEST PRI TAP 3-C	Type-E sc
272	WEST SEC TAP 1-A	Type-E sc
273	WEST SEC TAP 1-B	Type-E sc
274	WEST SEC TAP 1-C	Type-E sc
275	WEST SEC TAP 2-A	Type-E sc
276	WEST SEC TAP 2-B	Type-E sc
277	WEST SEC TAP 2-C	Type-E sc
278	WEST SEC TAP 3-A	Type-E sc
279	REFERENCE TEMP	REF TEMP
280	WEST SEC TAP 3-B	Type-E sc
281	WEST SEC TAP 3-C	Type-E sc
282	WEST SEC TAP 4-A	Type-E sc
283	WEST SEC TAP 4-B	Type-E sc
284	WEST SEC TAP 4-C	Type-E sc
285	WEST SEC TAP 5-A	Type-E sc
286	WEST SEC TAP 5-B	Type-E sc
287	WEST SEC TAP 5-C	Type-E sc
288	WEST SEC TAP 6-A	Type-E sc
289	WEST SEC TAP 6-B	Type-E sc
290	WEST SEC TAP 6-C	Type-E sc
291	WEST SEC TAP 7-A	Type-E sc
292	WEST SEC TAP 7-B	Type-E sc
293	WEST SEC TAP 7-C	Type-E sc
294	WEST SEC TAP 8-A	Type-E sc
295	WEST SEC TAP 8-B	Type-E sc
296	WEST SEC TAP 8-C	Type-E sc
297	WEST SEC TAP 9-A	Type-E sc
298	WEST SEC TAP 9-B	Type-E sc
299	REFERENCE TEMP	REF TEMP

12 Feb 1987 17:45 - POINT SUMMARY: RB-614 Performance Test

Pt	Description	Data type
300	WEST SEC TAP 9-C	Type-E sc
301	WEST SEC TAP 10-A	Type-E sc
302	WEST SEC TAP 10-B	Type-E sc
303	WEST SEC TAP 10-C	Type-E sc
304	WEST SEC TAP 11-A	Type-E sc
305	WEST SEC TAP 11-B	Type-E sc
306	WEST SEC TAP 11-C	Type-E sc
307	WEST SEC TAP 12-A	Type-E sc
308	WEST SEC TAP 12-B	Type-E sc
309	WEST SEC TAP 12-C	Type-E sc
310	WEST SEC TAP 13-A	Type-E sc
311	WEST SEC TAP 13-B	Type-E sc
312	WEST SEC TAP 13-C	Type-E sc
313	WEST SEC TAP 14-A	Type-E sc
314	WEST SEC TAP 14-B	Type-E sc
315	WEST SEC TAP 14-C	Type-E sc
316	WEST SEC TAP 15-A	Type-E sc
317	WEST SEC TAP 15-B	Type-E sc
318	WEST SEC TAP 15-C	Type-E sc
319	REFERENCE TEMP	REF TEMP
320	WEST SEC TAP 16-A	Type-E sc
321	WEST SEC TAP 16-B	Type-E sc
322	WEST SEC TAP 16-C	Type-E sc
323	WEST SEC TAP 17-A	Type-E sc
324	WEST SEC TAP 17-B	Type-E sc
325	WEST SEC TAP 17-C	Type-E sc
326	NIS	unassigned
327	NIS	unassigned
328	NIS	unassigned
329	NIS	unassigned
330	NIS	unassigned
331	NIS	unassigned
332	NIS	unassigned
333	NIS	unassigned
334	NIS	unassigned
335	NIS	unassigned
336	NIS	unassigned
337	NIS	unassigned
338	NIS	unassigned
339	REFERENCE TEMP	REF TEMP
340	ECON DELTA P (11-10)	Calculated
341	SUPERHT DELTA P (16-10)	Calculated
342	REHEAT DELTA P (14-13)	Calculated
343	AVE BIAS DMPR SOUTH	Calculated
344	AVE BIAS DMPR NORTH	Calculated
345	AVE EAST ECON OUT	Calculated
346	AVE WEST ECON OUT	Calculated
347	AVE EAST PRI AH OUT	Calculated
348	AVE EAST SEC AH OUT	Calculated
349	AVE WEST PRI AH OUT	Calculated
350	AVE WEST SEC AH OUT	Calculated

12 Feb 1987 17:45 - POINT SUMMARY: RB-614 Performance Test

Pt	Description	Data type
351 :	AVE BIAS DAMPER NE	Calculated
352 :	AVE BIAS DAMPER SE	Calculated
353 :	AVE BIAS DAMPER NW	Calculated
354 :	AVE BIAS DAMPER SW	Calculated

IPP Plant Computer Point Summary for B&W Performance Test, Unit 1

Point Description	Point ID
Total Air Flow	COAXI078A
Total Fuel Flow	COAXI001A
FW Flow to Econ	COAXI021A
Stm Flow (FW+SH spray)	COAXI023A
Unit Load (MW)	COAXI027A
Drum Pressure	COAXI043A
Main Stm Pressure	SGGPT0001
FW Temp to Econ	COAXI025A
Econ Inlet Press	FWAPT032
Econ Out Water Temp	SGATE0861
SSH Out Stm Temp	SGGTE0002
Throttle Temp	COAXI015A
HP Htr 8A Inlet Temp	FWATE0055
HP Htr 8B Inlet Temp	FWATE0056
HP Htr 8A Outlet Temp	FWATE0059
HP Htr 8B Outlet Temp	FWATE0154
HP Htr 8A Drain Temp	TEDTE0185
HP Htr 8B Drain Temp	TEDTE0186
HP Htr 8A Ext Stm Temp	TEDTE0030
HP Htr 8B Ext Stm Temp	TEDTE0031
HP Htr 8A Ext Stm Press	TEAPT0021
HP Htr 8B Ext Stm Press	TEAPT0022
Sat Conn Tube at Drum	SGATE0448
Turb Cold RH Out Temp	SGJTE0024
Turbine Cold RH Out Press	SGJPT0012
Turbine N Hot RH Inlet Temp	SGJTE0013
Turbine S Hot RH Inlet Temp	SGJTE0016
Ave Hot RH Press	SGJKV0015
Pulv 1A Coal Flow	COAXI002A
Pulv 1B Coal Flow	COAXI003A
Pulv 1C Coal Flow	COAXI004A
Pulv 1D Coal Flow	COAXI005A
Pulv 1E Coal Flow	COAXI006A
Pulv 1F Coal Flow	COAXI007A
Pulv 1G Coal Flow	COAXI008A
Pulv 1H Coal Flow	COAXI009A
First Stg SH E Attemp In Temp	SGATE0863
First Stg SH E Attemp Out Temp	SGATE0865
First Stg SH W Attemp Out Temp	SGATE0866
SSH E Attemp Temp	SGATE0871
SSH W Attemp Temp	SGATE0872
SSH E Attemp Stm In Press	SGAPT0198
SSH E Attemp Stm In Press	SGAPT0199
Cold RH Attemp In Temp	SGJTE1205
Cold RH Attemp In Temp	SGJTE1206
RH Attemp Spray Temp	SGJTE0060
RH Attemp Spray Flow	SGJFT0020
Ambient Temp	INAKK0531

Point Description	Point ID
Barometric Press	INAPT0227
Econ E Out Flue Gas %O2	SGAAZ0022
Econ W Out Flue Gas %O2	SGAAZ0023
Stack NOX	SAAKK0006
Econ E Out Flue Gas Temp	SGATE0707
Econ W Out Flue Gas Temp	SGATE0710
PAH 2A Air In Temp	SGBTE0911
PAH 2B Air In Temp	SGBTE0912
PAH 2A Air Out Temp	SGBTE0917
PAH 2B Air Out Temp	SGBTE0918
SAH 1A Air Inlet Temp	SGBTE0938
SAH 1B Air Inlet Temp	SGBTE0940
SAH 1A Air Out Temp	SGBTE0919
SAH 1A Air Out Temp (CCS)	COAXI149A
SAH 1B Air Out Temp	SGBTE0920
SAH 1B Air Out Temp (CCS)	COAXI150A
PAH 2A Gas Out Temp	SGBTE0913
PAH 2B Gas Out Temp	SGBTE0916
SAH 1A Gas Out Temp	SGBTE0927
SAH 1B Gas Out Temp	SGBTE0929
First Stg SH W Attemp In Temp	SGATE0864
SSH E Attemp Stm Out Temp	SGATE0873
SSH W Attemp Stm Out Temp	SGATE0874
SSH Attemp Spray Water Temp	SGATE0991
Pulv 1A PA D/P	SGAPT0150
Pulv 1B PA D/P	SGAPT0151
Pulv 1C PA D/P	SGAPT0152
Pulv 1D PA D/P	SGAPT0153
Pulv 1E PA D/P	SGAPT0154
Pulv 1F PA D/P	SGAPT0155
Pulv 1G PA D/P	SGAPT0156
Pulv 1H PA D/P	SGAPT0157
Pulv 1A PA Inlet Temp	SGATE0639
Pulv 1B PA Inlet Temp	SGATE0640
Pulv 1C PA Inlet Temp	SGATE0641
Pulv 1D PA Inlet Temp	SGATE0642
Pulv 1E PA Inlet Temp	SGATE0643
Pulv 1F PA Inlet Temp	SGATE0644
Pulv 1G PA Inlet Temp	SGATE0645
Pulv 1H PA Inlet Temp	SGATE0646
Pulv 1A PA Flow %	COAXI056A
Pulv 1B PA Flow %	COAXI057A
Pulv 1C PA Flow %	COAXI058A
Pulv 1D PA Flow %	COAXI059A
Pulv 1E PA Flow %	COAXI060A
Pulv 1F PA Flow %	COAXI061A
Pulv 1G PA Flow %	COAXI062A
Pulv 1H PA Flow %	COAXI063A

NOTE:
all PA D/P points
actually represent
Pulverizer D/Ps

Point Description	Point ID
First Stg Attemp Flow W	COAXI097A
First Stg Attemp Flow E	COAXI096A
Second Stg Attemp Flow W	COAXI092A
Second Stg Attemp Flow E	COAXI091A
N Hot RH Out Temp	SGJTE0011
S Hot RH Out Temp	SGJTE0015
RH Attemp Out Temp	COAXI107A
RH Attemp In Temp	COAXI106A
Econ Out Water Temp	SGATE0862
HP Htr 7A Ext Stm Press	TEAPTE0019
HP Htr 7B Ext Stm Press	TEAPTE0020
Relative Humidity	INAKK0530
Stack O2/CO2	SAAKK0008
HP Htr 7A Ext Stm Temp	TEATE0028
HP Htr 7B Ext Stm Temp	TEATE0029
HP Htr 7A Inlet Temp	FWATE0053
HP Htr 7B Inlet Temp	FWATE0054
HP Htr 7A Drain Temp	TEDTE0183
HP Htr 7B Drain Temp	TEDTE0184
SSH E Intermediate Out Leg Temp	SGATE0521
SSH E Intermediate Out Leg Temp	SGATE0522
SSH E Intermediate Out Leg Temp	SGATE0523
SSH E Intermediate Out Leg Temp	SGATE0524
SSH E Intermediate Out Leg Temp	SGATE0525
SSH E Intermediate Out Leg Temp	SGATE0526
SSH E Intermediate Out Leg Temp	SGATE0527
SSH E Intermediate Out Leg Temp	SGATE0528
SSH E Intermediate Out Leg Temp	SGATE0529
SSH E Intermediate Out Leg Temp	SGATE0530
SSH Ctr Intermediate Out Leg Temp	SGATE0531
SSH Ctr Intermediate Out Leg Temp	SGATE0532
SSH Ctr Intermediate Out Leg Temp	SGATE0533
SSH Ctr Intermediate Out Leg Temp	SGATE0534
SSH Ctr Intermediate Out Leg Temp	SGATE0535
SSH Ctr Intermediate Out Leg Temp	SGATE0536
SSH Ctr Intermediate Out Leg Temp	SGATE0537
SSH Ctr Intermediate Out Leg Temp	SGATE0538
SSH W Intermediate Out Leg Temp	SGATE0539
SSH W Intermediate Out Leg Temp	SGATE0540
SSH W Intermediate Out Leg Temp	SGATE0541
SSH W Intermediate Out Leg Temp	SGATE0542
SSH W Intermediate Out Leg Temp	SGATE0543
SSH W Intermediate Out Leg Temp	SGATE0544
SSH W Intermediate Out Leg Temp	SGATE0545
SSH W Intermediate Out Leg Temp	SGATE0546
SSH W Intermediate Out Leg Temp	SGATE0547
SSH W Intermediate Out Leg Temp	SGATE0548