

# SIBLEY STANDARD OPERATIONAL PRACTICE MANUAL

## JOB DESCRIPTION:

Quantify heat rate/efficiency for Sibley 1 & 2, in accordance with requirements for the Fuel Adjustment Clause (FAC) as described in 4 CSR 240-3.161 (2)(P).

**PROCEDURE NO.:** 0801-2400-0001

**LOCATION:** Sibley

**DATE:** 9/11/07

**REVISION NO.:** 0

## ***Information/Background:***

**Initial space below as steps are completed.**

1. \_\_\_\_\_ Current coal blend shall be maintained for at least 24 hours prior to test. No "wet" coal shall be used during the test.
2. \_\_\_\_\_ Testing shall be conducted at least once every 24 months.
3. \_\_\_\_\_ Testing should be conducted immediately following a Spring or Fall Outage or when the boiler/condenser are free of ash deposits/accumulation.
4. \_\_\_\_\_ Do not perform the test if a boiler tube leak is suspected.
5. \_\_\_\_\_ There shall be a 30 minute settling period before the 4-hour test begins. The unit shall be within 5% of the target load of 50 gross MW throughout the settling period for baseline testing. Only minor changes in unit control shall be made during this time as required to bring the unit into normal steady-state operation.
6. \_\_\_\_\_ Subsequent testing shall be performed at the same governor position as the original baseline test without the need to obtain the same MW load. Constant boiler outlet pressure shall be maintained.
7. \_\_\_\_\_ Sootblowing and equipment starting/stopping should be kept to a minimum and logged on Data Sheet.
8. \_\_\_\_\_ Any deviations from load shall be noted on Data Sheet 1.
9. \_\_\_\_\_ Ensure plant Distributed Control System (DCS) reports (described below in Step 18) are available for hourly printing.

## ***Operational Steps:***

8. \_\_\_\_\_ Determine proper testing conditions. If done during Southwest Power Pool (SPP) Operational Test, ambient site conditions must be met and test performed in the summer

months (June – September). If not performed in conjunction with the SPP test, determine when boiler/condenser is free from accumulation, instruments calibrated, minimal equipment out of service, etc. If there is equipment out of service, these items shall be noted on Data Sheet 1.

9. \_\_\_\_\_ Attach completed Maintenance Request (MR) for instrument calibration. Instruments that shall be calibrated prior to test include: throttle steam temperature and pressure (PT1004, PT2004, TT1004, TT2004), feedwater to economizer (FT1005, FT2005), flue gas oxygen (MT1016, MT2016), circulating water to condenser temperature and pressure (TT1062, TT2062, PT2131), coal feeder flow (1CH-XE001E, 1CH-XE001W, 2CH-XE001E, 2CH-XE001W), main steam attemperator flow (FT1011, FT2011).
10. \_\_\_\_\_ Ash samples (see Procedure 0801-2510-0102 for collecting ash samples) for the test shall be collected for each segment of the test including settling period and 4 hour test.
11. Fuel samples (see Procedure 0801-2300-0001 for collecting fuel samples) for the test shall be collected for each segment of the test including settling period and 4 hour test.
12. \_\_\_\_\_ Note the fuel blend on Data Sheet 1.
13. \_\_\_\_\_ Notify System Operations, Operations Maintenance and Coal Handling personnel of test date/time.
14. \_\_\_\_\_ Remove the unit from Remote Control.
15. \_\_\_\_\_ Raise load to 50 MW for the first test (baseline). The turbine governor valve position shall be recorded as this will be the testing point for future tests. The test will be performed for 30 minute settling period and continue holding for 4 hour test period.
16. \_\_\_\_\_ Begin ash sample collection and initial below that sample was collected.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
17. \_\_\_\_\_ Begin coal sample collection and initial below that sample was collected.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
18. \_\_\_\_\_ Begin hourly DCS data acquisition from Engineering console.  
Initial below that DCS reports were collected.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
19. Collect all information on Data Sheet 1 at the top of end of each hour for settling period and 4 hour test period.  
Initial below that information for Data Sheet 1 was collected.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
20. \_\_\_\_\_ Review the data hourly to determine if test data is reasonable. If inadequate, test will be stopped and performed at a later date.

Initial below that data was reviewed and is accurate

\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4

21. \_\_\_\_\_ At completion of test, notify System Operations and reduce/release load for remote control operation.
22. \_\_\_\_\_ At test conclusion, compile and ensure all data was collected.
23. \_\_\_\_\_ Prepare ash samples for testing and analysis. Ash samples shall be tested by in-house lab and shall include LOI.
24. \_\_\_\_\_ Prepare fuel samples for testing and analysis. Five samples (30 minute settling sample and 4 one-hour samples) are for in-house testing and five samples are to be sent to an outside laboratory. If various feeder samples, they shall be combined into one sample for each hour of the test period. An outside laboratory will perform a short proximate analysis in addition to the testing done in-house (Btu, ash, sulfur, moisture).
25. \_\_\_\_\_ Complete preliminary test calculations using in-house fuel Btu values. Record results on data sheet. Heat Rate results will be averaged over the testing period.
26. \_\_\_\_\_ Compare baseline (first test) and all subsequent testing data to actual test results and determine if adequate/consistent.
27. \_\_\_\_\_ Attach copies of DCS reports, data sheets, and other Operator logs/test sheets, if necessary.
28. \_\_\_\_\_ Once fuel sample results are obtained and reviewed, complete final averaged heat rate calculations. Record results using the average of all fuel Btu values received on Data Sheet 1.
29. \_\_\_\_\_ Include an executive summary of the findings with the test documentation including Data Sheet 1, DCS reports, and heat rate calculations.
30. \_\_\_\_\_ Forward to appropriate contact for the Aquila Regulatory Department.

**SAFETY:** All plant personnel shall follow Plant Safety Procedures

**CLEARANCE:** None required

**PERSONNEL:** Operator, Assistant Operator, Operations Engineer, Coal Handler, Laborer, System Operations

**EFFECTS ON OTHER EQUIPMENT:** None.

**LOCATIONS:** Control Room

Sibley Generating Station  
Procedure No. 08-01-2400-0002

1

Sibley Unit 1  
Heat Rate Test  
Data Sheet 1

Collected by:  
Hour  
Time

			Settling	1	2	3	4
Gross MW	ST1011	MW					
Net MW		MW					
MVARs		mvars					
Barometric Pressure		INHG					
Ambient Air Temperature	TT1757	°F					
HHV of coal	In house Lab	mbtu/lb					
HHV of coal	Outside Lab						
Gross Heat Rate Calculation	In house Lab	Btu/KWH					
Gross Heat Rate Calculation	Outside Lab	Btu/KWH					
Ash analysis		LOI					
SO <sub>2</sub> emissions		tons					
NO <sub>x</sub> emissions		lb/mmBtu					
CO <sub>2</sub> emissions		tons					
Governor valve position		%					
Make up flow	FT1057	gpm					
Circ Water to Condenser	TT1062	°F					
Selected O2	SELO21	%					
Excess O2	MT1016	%					
FD Fan Inlet Vane Position	MT1080	%					
FD Fan Amps		Amps					
BFP 1E Suction Flow	FT1006	KLB/HR					
BFP 1W Suction Flow	FT1007	KLB/HR					
Condensate from Pump Discharge	TT1054	°F					
BFP 1E Suction Temp	TT1043	°F					
BFP 1W Suction Temp	TT1038	°F					
Feedwater to Econ	FT1005	KLB/HR					
Feedwater to Econ Press	PT1028	psig					
Attemperator flow	1S-FT1011:UNIT12@U12						
Total Air Flow	AN1064	KLB/HR					
Coal Flow - east feeder	1CH-XE001E-HRF	KLB/HR					
Coal Flow - west feeder	1CH-XE001W-HRF	KLB/HR					
Total Fuel Flow	AN1078	KLB/HR					
Steam Flow	AN1076	KLB/HR					
Primary Furnace Gas Pressure	PT1063	INWC					
Air Heater Outlet Air Temp	TT1683	°F					
Air Heater Outlet Gas Temp	TT1687	°F					
Air Heater In Temp	TT1700	°F					
OFA settings							
Throttle Pressure	PT1004	psig					
Throttle Steam Temp	TT1004	°F					
Turbine Exhaust	TT1133	°F					
Condenser Hotwell	TT1053	°F					
Circ Water from Cond 1E	TT1064	°F					
Circ Water from Cond 1W	TT1068	°F					
Circ Water pressure	PT2131	psig					
Economizer Outlet Gas	TT1685	°F					
Boiler Master %	O001X196	%					
Furnace/Windbox Diff	PT1061	INWC					
Cond Abs Pressure	PT1026	INHGA					
Drum Level	BDLEVEL1	INWC					
Drum Pressure	PT1008	psig					
Secondary Furn Gas Press	PT1064	INWC					
Secondary Air Flow 1E	FT1022	KLB/HR					
Secondary Air Flow 1W	FT1021	KLB/HR					
Notes including list of equipment out of service							

Sibley Generating Station  
Procedure No. 08-01-2400-0002

2

Sibley Unit 2  
Heat Rate Test  
Data Sheet 1

Collected by:  
Hour  
Time

			Settling	1	2	3	4
Gross MW	ST2011	MW					
Net MW		MW					
MVARS		mvars					
Barometric Pressure		INHG					
Ambient Air Temperature	TT2757	°F					
HHV of coal	In house Lab	mbtu/lb					
HHV of coal	Outside Lab	mbtu/lb					
Gross Heat Rate Calculation	In house Lab	Btu/KWH					
Gross Heat Rate Calculation	Outside Lab	Btu/KWH					
Ash analysis		LOI					
Sootblowing during test		Y/N					
Coal blend							
SO <sub>2</sub> emissions		tons					
NO <sub>x</sub> emissions		lb/mmBtu					
CO <sub>2</sub> emissions		tons					
Make up flow	FT2057	gpm					
Governor valve position		%					
Circ Water to Condenser	TT2062	°F					
Selected O <sub>2</sub>	SELO22	%					
Excess O <sub>2</sub> E	MT2016	%					
FD Fan Inlet Vane Position	MT2080	%					
FD Fan Amps		Amps					
BFP 2E Suction Flow	FT2006	KLB/HR					
BFP 2W Suction Flow	FT2007	KLB/HR					
Condensate from Pump Discharge	TT2054	°F					
BFP 2E Suction Temp	TT2043	°F					
BFP 2W Suction Temp	TT2038	°F					
Feedwater to Econ	FT2005	KLB/HR					
Feedwater to Econ Press	PT2028	psig					
Attemperator flow	FT2014						
Total Air Flow	AN2064	KLB/HR					
Coal Flow - east feeder	2CH-XE001E-HRF	KLB/HR					
Coal Flow - west feeder	2CH-XE001W-HRF	KLB/HR					
Total Fuel Flow	AN2078	KLB/HR					
Steam Flow	AN2076	KLB/HR					
Primary Furnace Gas Pressure	PT2063	INWC					
Air Heater Outlet Air Temp	TT2683	°F					
Air Heater Outlet Gas Temp	TT2687	°F					
Air Heater In Temp	TT2700	°F					
OFA settings							
Throttle Pressure	PT2004	psig					
Throttle Steam Temp	TT2004	°F					
Turbine Exhaust	TT2133	°F					
Condenser Hotwell	TT2053	°F					
Circ Water from Cond 2E	TT2064	°F					
Circ Water from Cond 2W	TT2068	°F					
Circ Water pressure	PT2131	psig					
Economizer Outlet Gas	TT2685	°F					
Boiler Master %	O006X196	%					
Furnace/Windbox Diff	PT2061	INWC					
Cond Abs Pressure	PT2026	INHGA					
Drum Level	BDLEVEL2	INWC					
Drum Pressure	PT2008	psig					
Secondary Furn Gas Press	PT2064	INWC					
Secondary Air Flow 2E	FT2022	KLB/HR					
Secondary Air Flow 2W	FT2021	KLB/HR					
Notes including list of equipment out of service							

Example Gross Heat Rate Calculation =

Fuel burned (klbs) \* fuel higher heating value (Btu/lb) / gross MW generated

Average Heat Rate Calculation for the complete testing period =

Data collected by:

Reviewed by:

Approved by:

WRITTEN BY

Kim Weir

DEPARTMENT HEAD

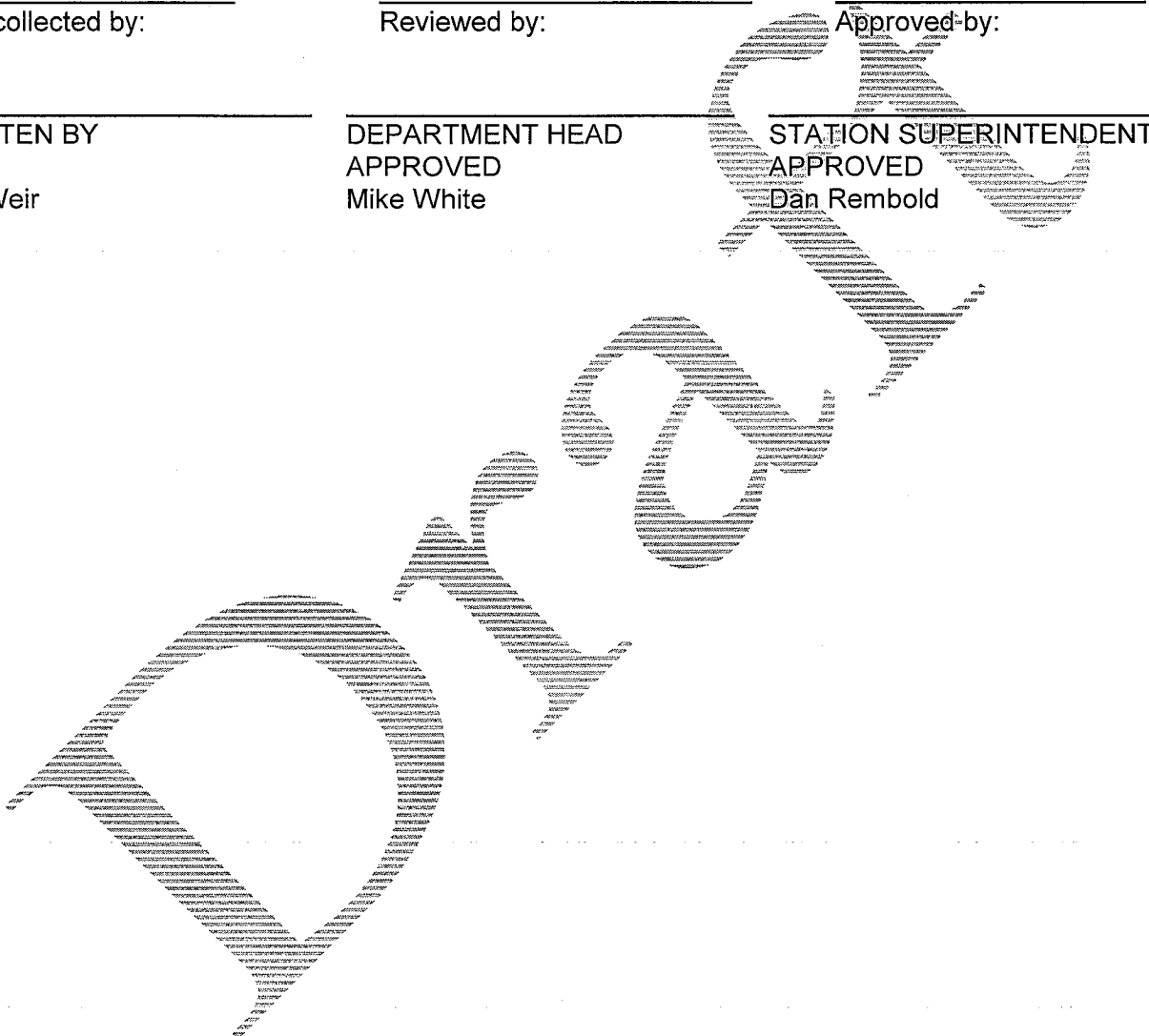
APPROVED

Mike White

STATION SUPERINTENDENT

APPROVED

Dan Rembold



# SIBLEY STANDARD OPERATIONAL PRACTICE MANUAL

## JOB DESCRIPTION:

Quantify heat rate/efficiency for Sibley 3, in accordance with requirements for the Fuel Adjustment Clause (FAC) as described in 4 CSR 240-3.161 (2)(P).

**PROCEDURE NO.:** 0803-2400-0002

**LOCATION:** Sibley

**DATE:** 8/15/07

**REVISION NO.:** 0

## ***Information/Background:***

**Initial space below as steps are completed.**

1. \_\_\_\_\_ Current coal blend shall be maintained for at least 24 hours prior to test. No "wet" coal shall be used during the test.
2. \_\_\_\_\_ Testing shall be conducted at least once every 24 months.
3. \_\_\_\_\_ Testing should be conducted immediately following a Spring or Fall Outage or when the boiler/condenser are free of ash deposits/accumulation.
4. \_\_\_\_\_ Do not perform the test if a boiler tube leak is suspected.
5. \_\_\_\_\_ There shall be a 30 minute settling period before the 4-hour test begins. The unit shall be within 5% of the target load of 380 gross MW throughout the settling period. Only minor changes in unit control shall be made during this time as required to bring the unit into normal, steady-state operation.
6. \_\_\_\_\_ Sootblowing and equipment starting/stopping should be kept to a minimum and logged on Data Sheet 1.
7. \_\_\_\_\_ Any deviations from load shall be noted on Data Sheet 1.
8. \_\_\_\_\_ Ensure plant Distributed Control System (DCS) reports (described below in Step 18) are available for hourly printing.

## ***Operational Steps:***

8. \_\_\_\_\_ Determine proper testing conditions. If done during Southwest Power Pool (SPP) Operational Test, ambient site conditions must be met and test performed in the summer months (June – September). If not performed in conjunction with the SPP test, determine when boiler/condenser is free from accumulation, instruments calibrated, minimal equipment out of service, etc. If there is equipment out of service, these items shall be noted on Data Sheet 1.

9. \_\_\_\_\_ Attach completed Maintenance Request (MR) for instrument calibration. Instruments that shall be calibrated prior to test include: throttle steam temperature and pressure (PT006, PT004, TT004, TT005), feedwater to economizer (FT005), flue gas oxygen (MT017, MT028, MT040, MT041), circulating water to condenser temperature and pressure (TT062, PT026), coal feeder flow (MT63-70), main steam attemperator flow (FSSH), reheat attemperator flow (FT016), reheat temperature (TT007, TT006).
10. \_\_\_\_\_ Ash samples (see Procedure 0803-2510-0102 for collecting ash samples) for the test shall be collected for each segment of the test including settling period and 4 hour test.
11. \_\_\_\_\_ Fuel samples (see Procedure 0803-2300-0001 for collecting fuel samples) for the test shall be collected for each segment of the test including settling period and 4 hour test.
12. \_\_\_\_\_ Note the fuel blend on Data Sheet 1.
13. \_\_\_\_\_ Notify System Operations, Operations, Maintenance, and Coal Handling personnel of test date/time.
14. \_\_\_\_\_ Remove the unit from Remote Control.
15. \_\_\_\_\_ Raise load to 380 gross MW for 30 minute settling period and continue holding for 4 hour test period.
16. \_\_\_\_\_ Begin ash sample collection and initial below that sample was collected.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
17. \_\_\_\_\_ Begin coal sample collection and initial below that sample was collected.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
18. \_\_\_\_\_ Print daily DCS reports once testing is completed. Reports include Unit 3 Boiler Data, Unit 3 Heat Rate, Unit 3 Operations, Engineer Daily Report, Unit 3 Performance Testing Report, DPSC Test Data Sibley Unit 3.
19. Collect all information on Data Sheet 1 at the end of each hour for the 30 minute settling period and each 4 hour test period.  
Initial below that information for Data Sheet 1 was collected.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
20. \_\_\_\_\_ Review the data hourly to determine if test data is reasonable. If not reasonable, test will be stopped and performed at a later date.  
Initial below that data was reviewed and is reasonable.  
\_\_\_\_\_ Settling \_\_\_\_\_ Hour 1 \_\_\_\_\_ Hour 2 \_\_\_\_\_ Hour 3 \_\_\_\_\_ Hour 4
21. \_\_\_\_\_ At completion of test, notify System Operations and reduce/release load for remote control operation.
22. \_\_\_\_\_ At test conclusion, compile and ensure all data was collected.



23. \_\_\_\_\_ Prepare ash samples for testing and analysis. Ash samples shall be tested by in-house lab and shall include LOI.
24. \_\_\_\_\_ Prepare fuel samples for testing and analysis. Five samples (30 minute settling sample and 4 one-hour samples) are for in-house testing and five samples are to be sent to an outside laboratory. If various feeder samples, they shall be combined into one sample for each hour of the test period. An outside laboratory will perform a short proximate analysis in addition to the testing done in-house (Btu, ash, sulfur, moisture).
25. \_\_\_\_\_ Complete preliminary test calculations using in-house fuel Btu values. Record results on data sheet. Heat Rate results will be averaged over the testing period.
26. \_\_\_\_\_ Compare baseline (first test) and all subsequent data to actual test results and determine if adequate/consistent.
27. \_\_\_\_\_ Attach copies of DCS reports, Data Sheet 1, and other Operator logs/test sheets, if necessary.
28. \_\_\_\_\_ Once fuel sample results are obtained and reviewed, complete final averaged heat rate calculation using the average of all fuel Btu values received. Record results on Data Sheet 1.
29. \_\_\_\_\_ Include an executive summary of the findings with the test documentation, including Data Sheet 1, DCS reports, and heat rate calculations.
30. \_\_\_\_\_ Forward to appropriate contact for the Aquila Regulatory Department.

**SAFETY:** All plant personnel shall follow Plant Safety Procedures

**CLEARANCE:** None required

**PERSONNEL:** Operator, Assistant Operator, Operations Engineer, Coal Handler, Laborer, System Operations

**EFFECTS ON OTHER EQUIPMENT:** None.

**LOCATIONS:** Control Room

Sibley Unit 3

Heat Rate Test  
Data Sheet 1

Collected  
by:

Hour  
Time

			Settling	1	2	3	4
Gross Megawatts		MW					
Station Use MW		MW					
Net Megawatts		MW					
MVARs		mvars					
Ambient Air Temperature		°F					
Barometric Pressure		INHG					
HHV of coal	In house Lab	mbtu/lb					
HHV of coal	Outside Lab	mbtu/lb					
Gross Heat Rate Calculation	In house Lab	Btu/KWH					
Gross Heat Rate Calculation	Outside Lab	Btu/KWH					
Ash analysis		LOI					
SO <sub>2</sub> emissions		tons					
NO <sub>x</sub> emissions		lb/mmBtu					
CO <sub>2</sub> emissions		tons					
Cdser Abs Pressure	PT026	INHG					
Turbine Vacuum		INHG					
Circ Water to Condenser	TT062	°F					
Condenser Steam	TT711	°F					
Cdser Hotwell Condensate	TT053	°F					
Circ Wtr Lvg Cdser	TT064	°F					
Circ Wtr Lvg Cdser	TT065	°F					
Flue Gas Oxygen	MSO2	%					
BFPT E Suction Flow	FT007	KLB/HR					
BFPT W Suction Flow	FT006	KLB/HR					
6W Htr Inlet Water	TT036	°F					
6E Htr Inlet Water	TT037	°F					
Ext Steam 7E Htr	PT017	PSIG					
Ext Steam 7W Htr	PT016	PSIG					
WBFP Suction Water	TT038	°F					
EBFP Suction Water	TT043	°F					
Ext. Steam BFPT E	FT004	KLB/HR					
Ext. Steam BFPT W	FT003	KLB/HR					
LP Demd Valve Pos EBFP	LPDEMDA	%					
LP Demd Valve Pos WBFP	LPDEMDB	%					
EBFP demand	AN0053	%					
WBFP demand	AN0054	%					
Cold Rht. Steam to BFPT's	PT125	PSIG					
EBFP discharge pressure	PT031	PSIG					
Feedwater to Econ	FT005	KLB/HR					
Air Htr Gas Inlet	PT071	INWC					
Air Htr Gas Outlet E	PT073	INWC					
Air Htr Outlet Gas E	TT687	°F					
Air Htr Outlet Gas W	TT688	°F					

Throttle Steam S	PT006	PSIG					
Throttle Steam N	PT004	PSIG					
Throttle stm temp. N	TT004	°F					
Throttle stm temp. S	TT005	°F					
Selected Throttle Pressure	PSTP	PSIG					
Mn turb 1st stage - A	PT091	psig					
G.V. 1 Position	GV1PZ	%					
G.V. 2 Position	GV2PZ	%					
G.V. 3 Position	GV3PZ	%					
G.V. 4 Position	GV4PZ	%					
G.V. 5 Position	GV5PZ	%					
G.V. 6 Position	GV6PZ	%					
G.V. 7 Position	GV7PZ	%					
G.V. 8 Position	GV8PZ	%					
Conv Pass Encl Outlet	PT014	PSIG					
Deaerator Pressure	PT043	PSIG					
Boiler Master Demand	BLRMSTO3	%					
Furnace Gas Pressure	PAFURN	INWC					
E FD Fan Mtr	MT043	AMPS					
W FD Fan Mtr	MT044	AMPS					
Cyclone Master	CYCMASR	%					
Windbox Average Air Pres	PAWBAIR	INWG					
Selected WB/Furn dp	PSFRNDP	INWC					
Total Cyclone Air	FCAIR	KLB/HR					
OFA setting							
Total Coal Flow	TOTCOALH	KLB/HR					
SWL Coal Flow	MT063	KLB/HR					
SWU Coal Flow	MT064	KLB/HR					
SEL Coal Flow	MT065	KLB/HR					
SEU Coal Flow	MT066	KLB/HR					
NEL Coal Flow	MT067	KLB/HR					
NEU Coal Flow	MT068	KLB/HR					
NWL Coal Flow	MT069	KLB/HR					
NWU Coal Flow	MT070	KLB/HR					
Make up flow	MAKUPFLH	GPH					
Economizer outlet water	TT652	°F					
Cyclone supply dwncmr flow	FT018	KLB/HR					
CP out temp	TSCNVOUT	°F					
Main steam attemp flow	FSSH	KLB/HR					
Reheat steam attemp flow	FT016	KLB/HR					
Pri sprht in steam	TT655	°F					
Pr sprht out steam	TT663	°F					
Pri sprht in steam	PT055	PSIG					
Sec sprht in steam E	TT667	°F					
Sec sprht out steam S	TT001	°F					
Reheat out steam N	TT007	°F					
Reheat out steam S	TT006	°F					
Average reheat outlet temp	TARHOUT	°F					
Reheat in steam W	TT013	°F					

Furn 3rd Pass side wall RSR1	TT301	°F					
Furn 3rd Pass side wall RSR9	TT318	°F					
Conv. Pass side wass RSR1	TT340	°F					
Conv. Pass side wass RSR9	TT348	°F					
Conv. Pass front wall RSR1	TT360	°F					
Conv. Pass rear wall tube 1	TT367	°F					
Furn 1st pass RSR1	TT571	°F					
Furn 1st pass RSR9	TT579	°F					
Rear wall 2nd pass tube 1	TT601	°F					
Furn floor tube panel #1	TT793	°F					
Furn floor tube panel #4	TT800	°F					
SWU cyc reent thrt rsr bef tee	TT543	°F					
SEL cyc reent thrt rsr bef tee	TT545	°F					
SEU cyc reent thrt rsr bef tee	TT547	°F					
NWU cyc reent thrt rsr bef tee	TT549	°F					
NWL cyc reent thrt rsr bef tee	TT551	°F					
NEU cyc reent thrt rsr bef tee	TT553	°F					
NEL cyc reent thrt rsr bef tee	TT555	°F					
Notes including list of equipment out of service							

Example Gross Heat Rate Calculation =

Fuel burned (klbs) \* fuel higher heating value (Btu/lb) / gross MW generated

Average Heat Rate Calculation for the complete testing period =

Data collected by:

Reviewed by:

Approved by:

WRITTEN BY

Kim Weir

DEPARTMENT HEAD

APPROVED

Mike White

STATION SUPERINTENDENT

APPROVED

Dan Rembold