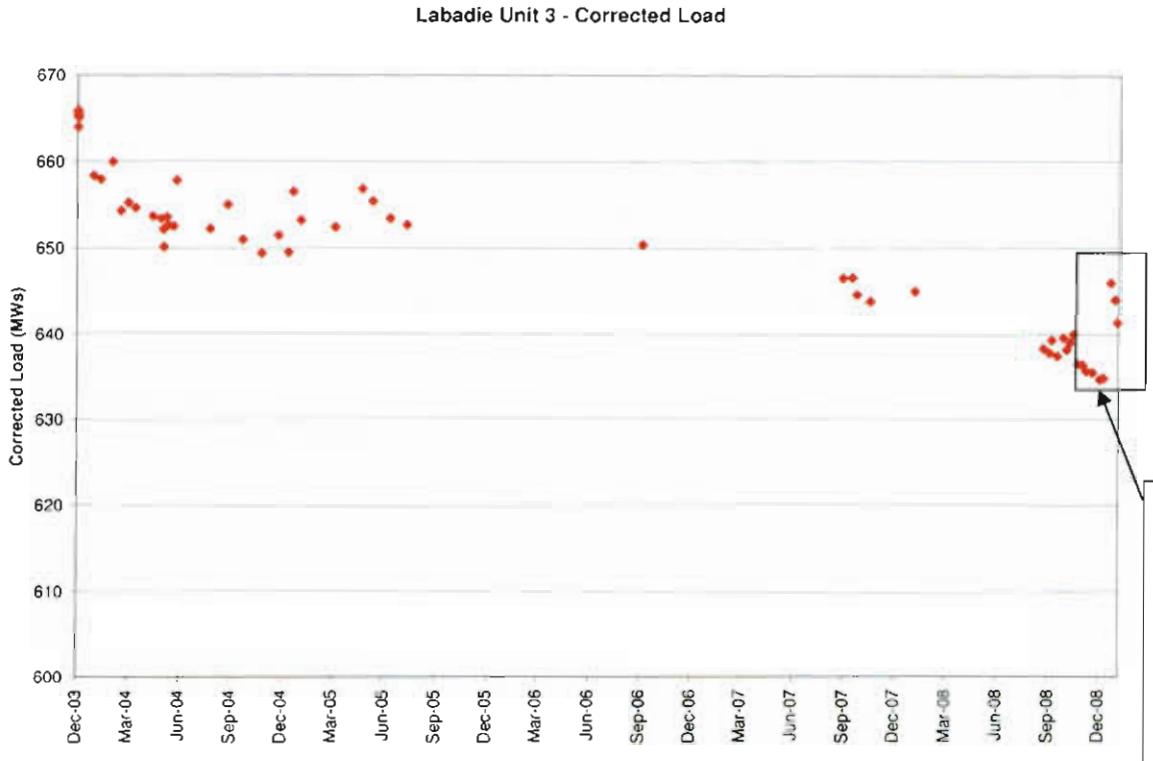
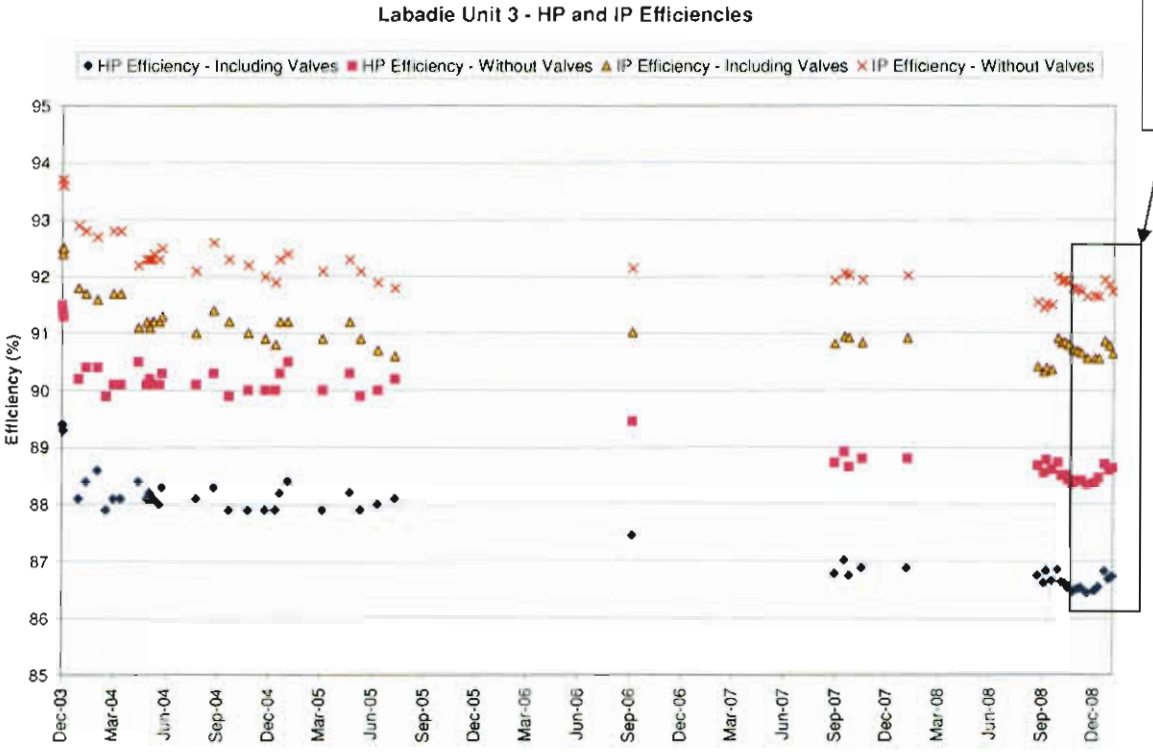
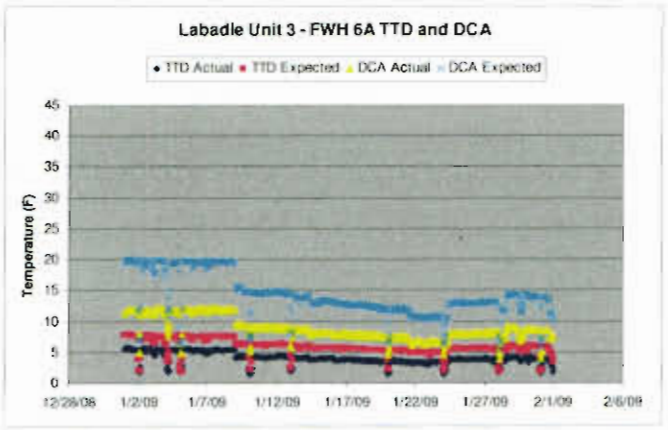
Summary of Performance Report for:

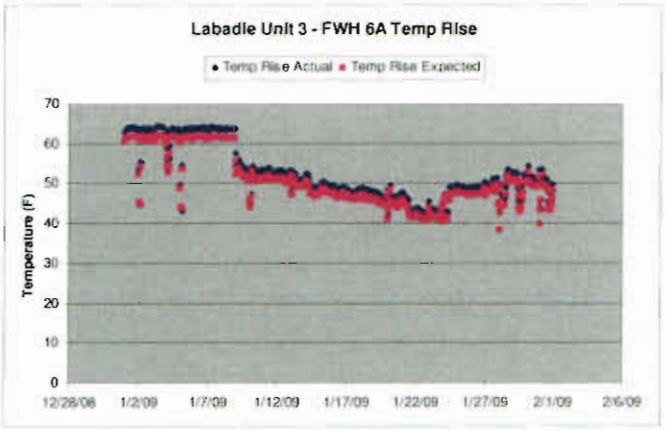
Plant	Labadie					
Unit	3					
Period	1/1/09	to	2/1/09			
Full Load Performance			Jan-09		Dec-08	Jan-08
Hours of Data			65		370	564.0
			Averages		Averages	Averages
GENERATOR MEGAWATTS	MW		617.2		617.9	646.4
AUX POWER	MW		29.5		30.0	29.2
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10060.0		10138.7	9957.4
Boiler Efficiency Actual	%		85.3		85.2	85.2
CONTROL VALVE POSITION LVDT	%		103.4		104.7	99.9
FEEDWATER TEMP TO ECON	degF		482.4		483.5	487.3
FEEDWATER TEMP TO HTR 1	degF		433.2		434.4	438.2
HP Turbine Efficiency Actual	%		86.4		86.5	87.3
IP Turbine Efficiency Corrected	%		94.9		94.8	94.1
Condenser Pressure HP	inHga		2.0		2.3	2.6
Condenser Pressure LP	inHga		1.9		2.2	2.3
AIRHTR-A GAS OUTLET TEMP	degF		327.0		320.3	324.1
AIRHTR-B GAS OUTLET TEMP	degF		317.5		319.7	304.4
AMBIENT AIR TEMP	degF		33.8		32.5	35.4
CIRC WTR TEMP TO LP CONDB	degF		36.1		36.7	37.8
CIRC WTR TEMP TO LP CONDB	degF		37.6		37.2	39.9
CIRC WTR TEMP TO LP CONDB	degF		36.1		37.2	38.4
CIRC WTR TEMP TO LP CONDB	degF		35.4		37.3	37.7
Minimum River Temperature	degF		35.4		36.7	37.7
FWH 1 Temperature Rise	degF		49.3		49.1	49.1
Net Load	MW		587.7		587.9	617.3
Average Cond Press	inHga		2.0		2.2	2.4
Average Exit Gas Temperature	degF		322.3		320.0	314.3
Aux Power	%		4.8		4.9	4.5
Gross Unit Heat Rate	BTU/KW-HR		9579.0		9646.3	9608.2
Gross Turbine Heat Rate	BTU/KW-HR		8167.8		8220.9	8103.3

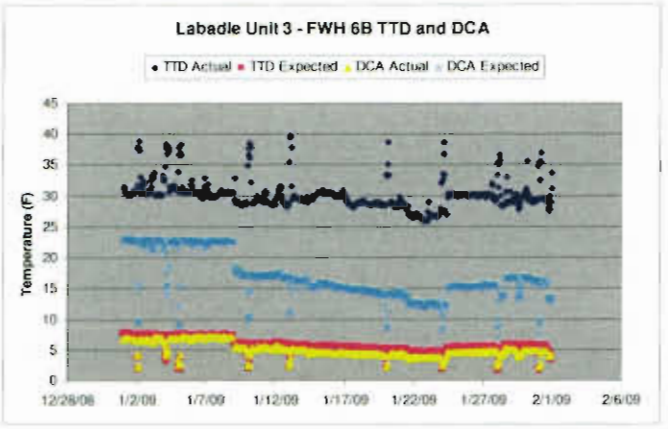


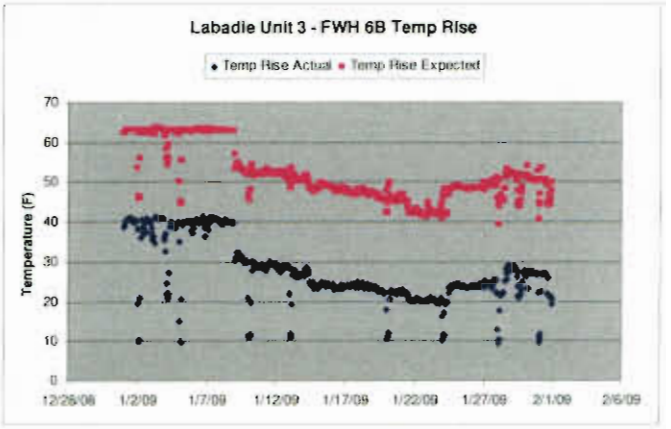
Note the decrease in load and turbine efficiencies followed by the step change up following the recent SBO

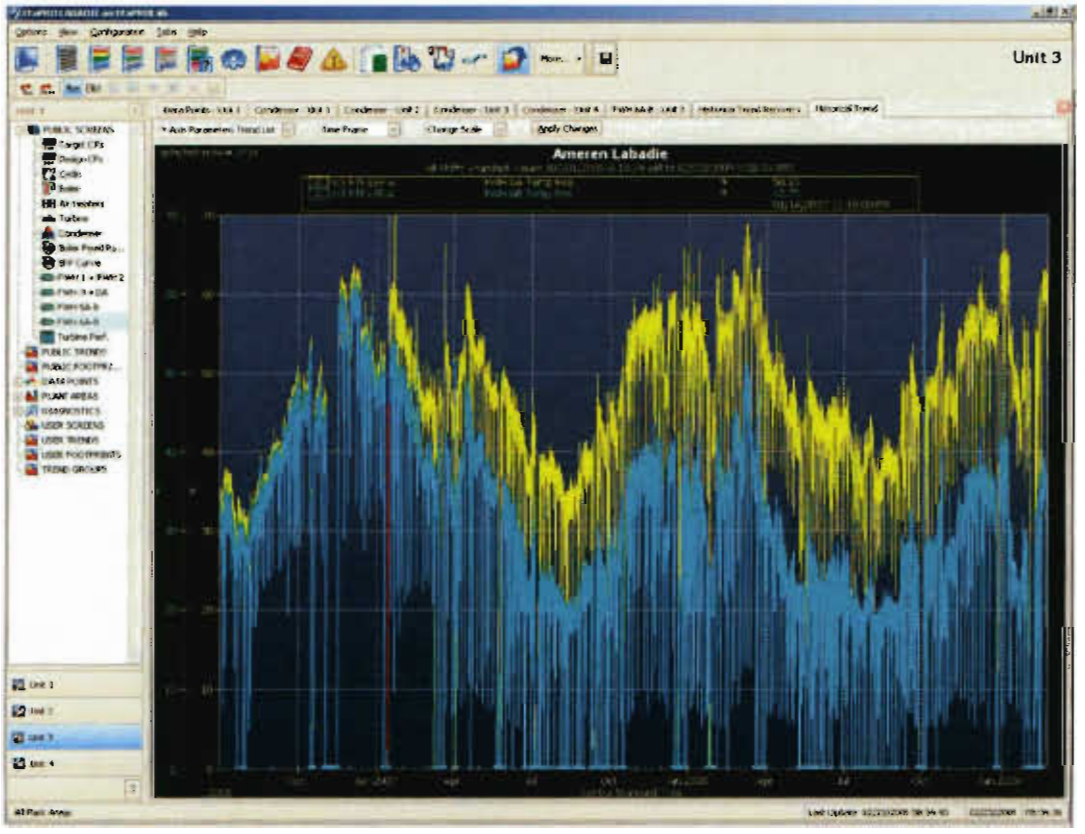


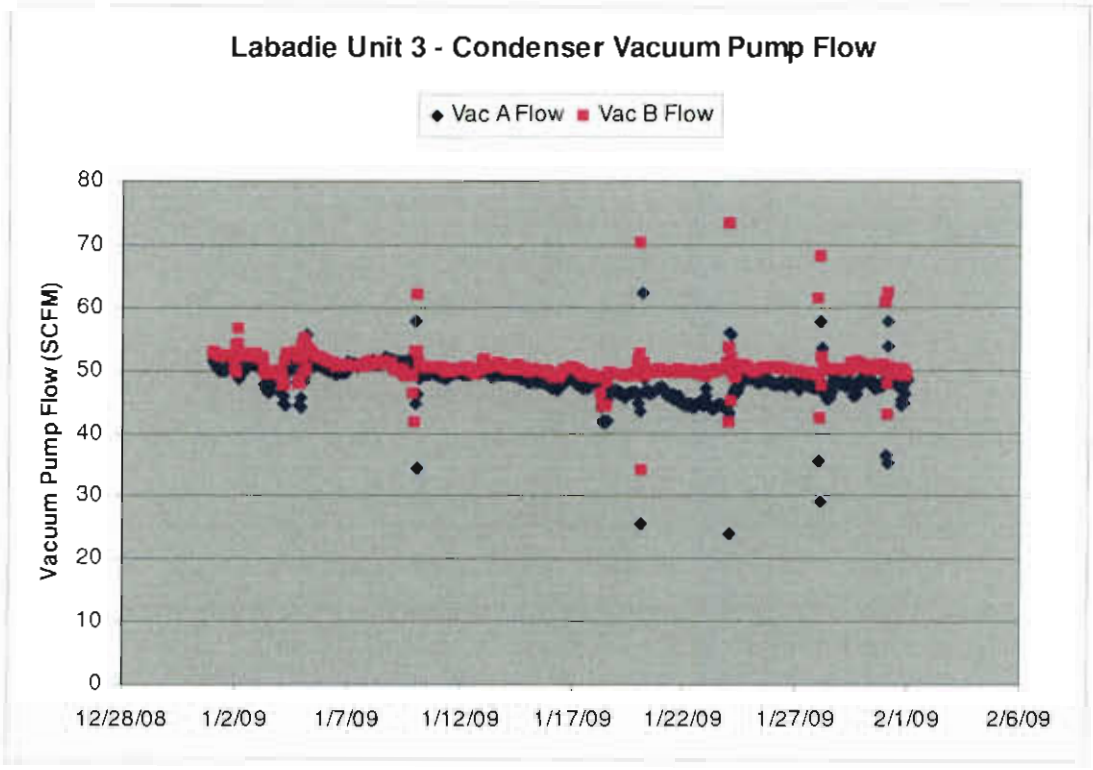

Labadie Unit 3 - FWH 6A TTD and DCA
TTD Actual
TTD Expected
DCA Actual
DCA Expected
Temperature (F)
12/26/08
1/2/09
1/7/09
1/12/09
1/17/09
1/22/09
1/27/09
2/1/09
2/6/09


Labadie Unit 3 - FWH 6A Temp Rise
Temp Rise Actual
Temp Rise Expected
Temperature (F)
12/26/08
1/2/09
1/7/09
1/12/09
1/17/09
1/22/09
1/27/09
2/1/09
2/6/09


Labadie Unit 3 - FWH 6B TTD and DCA
TTD Actual
TTD Expected
DCA Actual
DCA Expected
Temperature (F)
12/26/08
1/2/09
1/7/09
1/12/09
1/17/09
1/22/09
1/27/09
2/1/09
2/6/09


Labadie Unit 3 - FWH 6B Temp Rise
Temp Rise Actual
Temp Rise Expected
Temperature (F)
12/26/08
1/2/09
1/7/09
1/12/09
1/17/09
1/22/09
1/27/09
2/1/09
2/6/09


Unit 3
Ameren Labadie



Unit 3 has the highest condenser air inleakage of all the Units.

Unit 4 Observations

The following observations were made regarding Unit 4 operation and performance:

- Due to the lack of VWO data on the unit in December and January, this report has been based on times when the unit was operating within 5% of the monthly capability value. A switch to using all data for which gross load is greater than 90-95% of the monthly capability value will be used in future reports.
- HP/IP/LP turbine efficiencies steadily decline during continuous runs. Following SBOs, a step increase in efficiency is seen. This topic has been discussed before with regard to potential water soluble deposits with no known resolution. This will continue to be monitored.

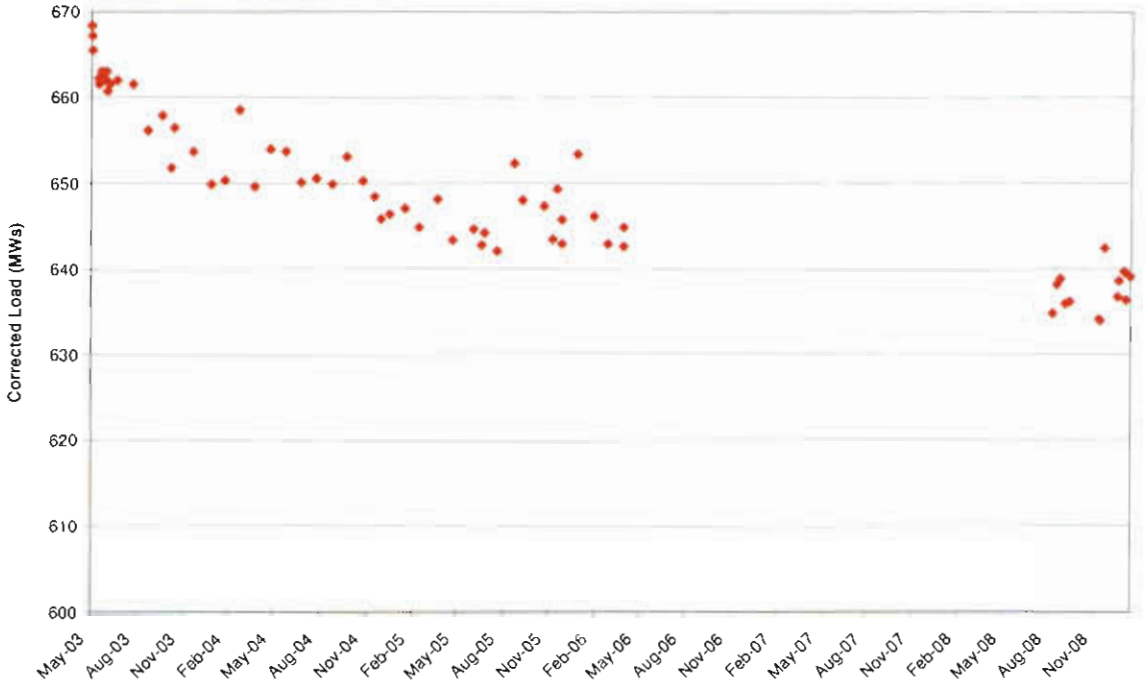
Summary of Performance Report for:

Plant	Labadie				
Unit	4				
Period	1/1/09	to	2/1/09		
Full Load Performance			Jan-09	Dec-08	Jan-08
Hours of Data			633	332	479
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		621.3	621.2	646.0
AUX POWER	MW		27.9	28.1	30.4
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10279.0	10184.1	10139.7
Boiler Efficiency Actual	%		84.8	84.8	85.0
CONTROL VALVE POSITION LVDT	%		88.5	85.6	99.0
FEEDWATER TEMP TO ECON	degF		484.1	483.3	484.3
FEEDWATER TEMP TO HTR 1	degF		433.7	432.6	430.0
HP Turbine Efficiency Actual	%		86.6	86.5	87.9
IP Turbine Efficiency Corrected	%		93.6	93.6	93.7
Condenser Pressure HP	inHga		3.1	2.1	2.0
Condenser Pressure LP	inHga		2.1	1.9	2.1
AIRHTR-A GAS OUTLET TEMP	degF		349.8	333.8	328.2
AIRHTR-B GAS OUTLET TEMP	degF		311.2	319.1	311.6
AMBIENT AIR TEMP	degF		35.2	33.1	34.6
CIRC WTR TEMP TO LP CONDB	degF		36.1	36.9	38.1
CIRC WTR TEMP TO LP CONDB	degF		37.9	38.3	39.6
CIRC WTR TEMP TO LP CONDB	degF		37.3	37.7	38.7
CIRC WTR TEMP TO LP CONDB	degF		37.1	37.6	37.6
Minimum River Temperature	degF		36.1	36.9	37.6
FWH 1 Temperature Rise	degF		50.4	50.7	54.3
Net Load	MW		593.4	593.0	615.6
Average Cond Press	inHga		2.6	2.0	2.1
Average Exit Gas Temperature	degF		330.5	326.4	319.9
Aux Power	%		4.5	4.5	4.7
Gross Unit Heat Rate	BTU/KW-HR		9817.8	9722.7	9662.4
Gross Turbine Heat Rate	BTU/KW-HR		8321.1	8245.0	8213.4

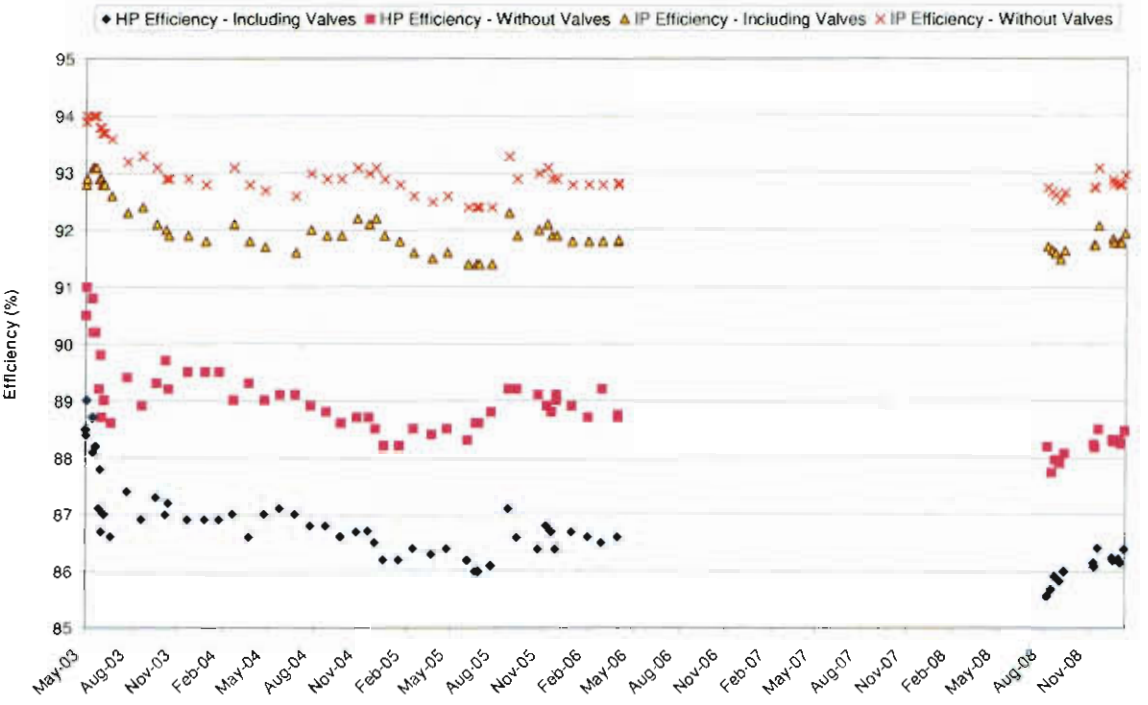
Kept all data for which load was above 95% of the monthly capability

Note the increase in heat rate from December to January with a corresponding increase in condenser pressure.

Labadie Unit 4 - Corrected Load



Labadie Unit 4 - HP and IP Efficiencies



December 30, 2008

To: David Fox
From: Jeff Shelton
Cc: Mark Litzinger, Kevin Stumpe, Paul Piontek, Brian Griffen, Russ Hawkins, Greg Gurnow, Tony Balestreri, Greg Bolte, Chris Hegger, Scott McCormack, Ken Stuckmeyer, Don Clayton, Joe Sind, Matt Wallace

Subject: Labadie November Performance Report

Executive Summary

The most notable items regarding Labadie unit performance were:

- Unit 2 reheat temperature issue appears to be due in part to reduced flow through the reheat spray valves over time.
- Unit 2, 3, and 4 all exhibit some form of turbine efficiency degradation over time that is recovered following SBOs.
- Units 3 and 4 5A FWH emergency dump valves open greater than 50%. Tubes were plugged on both feedwater heaters during SBOs in December and the normal drainers are now controlling level in both heaters.

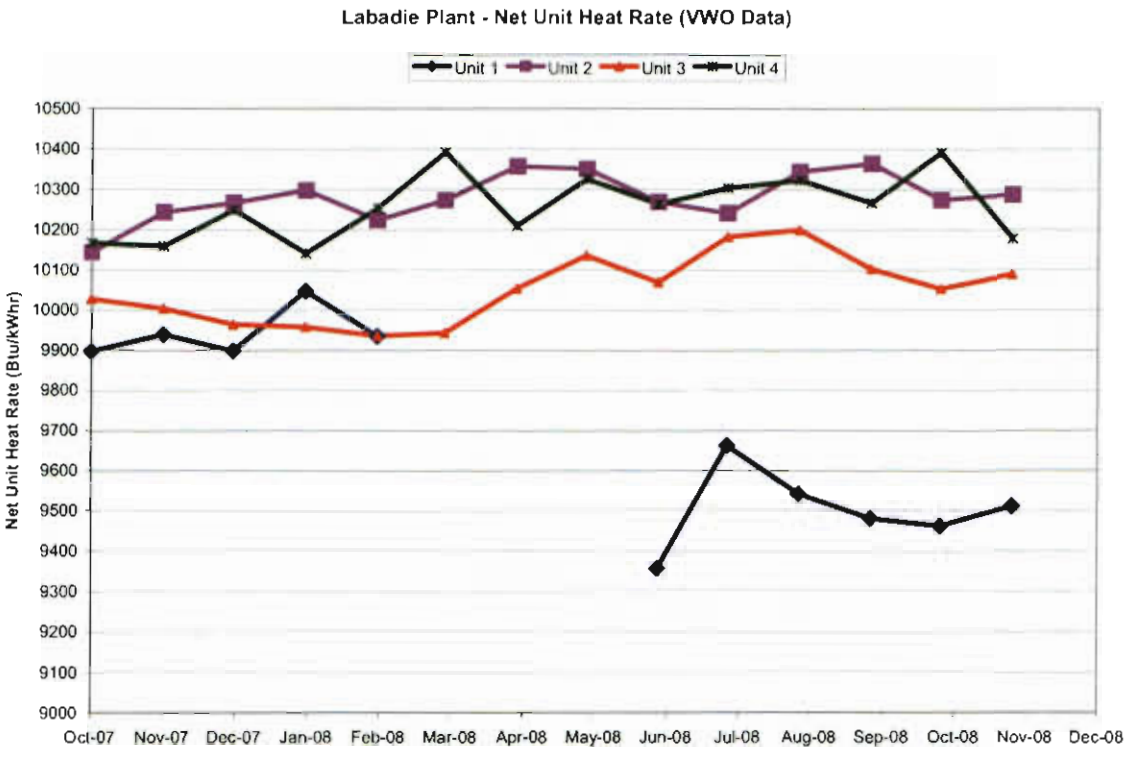
The following table shows the known instrument deficiencies for all four units:

Tag	Unit	Issue
1TURB-08084, COLD RHT TEMP A AT TURBINE	1	Went bad at about 9:00 pm on 12/23/08
3BFWSTM-08321, EXTRACT PRESS HTR 4B	3	Has only had valid data from Nov. 2003 to Jan. 2004
3AUXSTM-00849, 3PT-289B COLD RH PRESSURE	3	Did not come back up to normal range following SBO this weekend

A plot of monthly unit heat rates for all four units is included on the following page.

Action Items:

- Plant to determine action regarding reheat spray valve issue on Unit 2 (clean versus replace with larger size)


Labadie Plant - Net Unit Heat Rate (VWO Data)
Unit 1
Unit 2
Unit 3
Unit 4
Net Unit Heat Rate (Btu/kWhr)
10500
10400
10300
10200
10100
10000
9900
9800
9700
9600
9500
9400
9300
9200
9100
9000
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08

Unit 1 Observations

The following observations were made regarding Unit 1 operation and performance:

- The unit went from no VWO data in October to almost 300 hours of VWO operation in November.

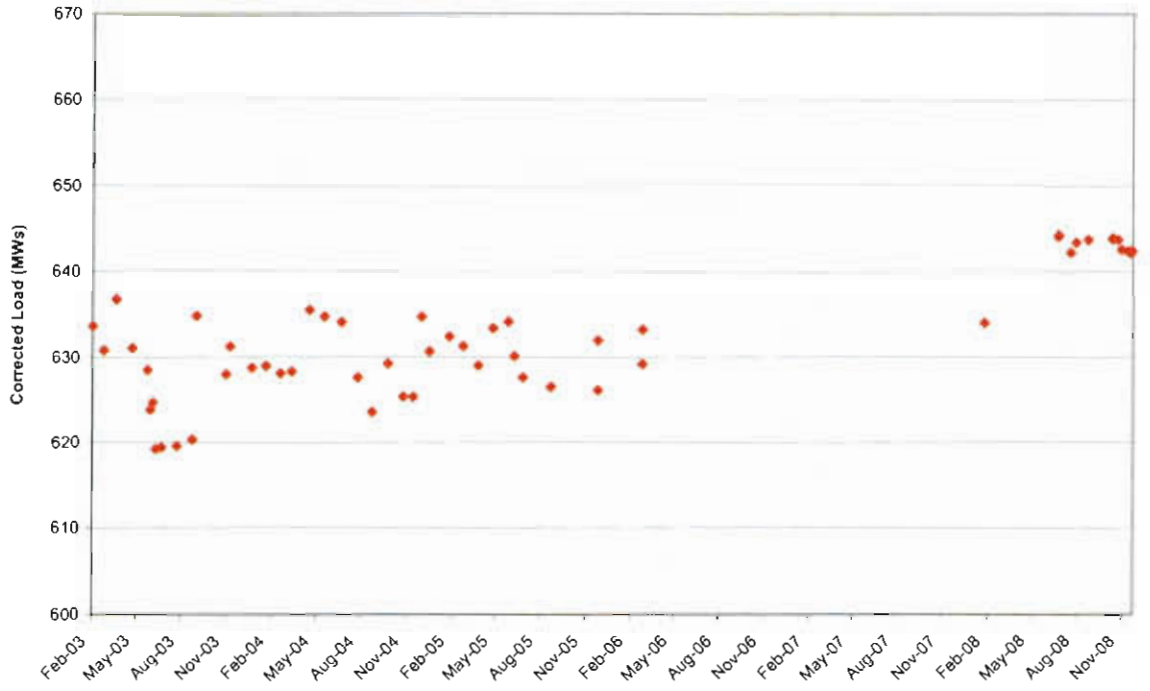
Summary of Performance Report for:

Plant	Labadie				
Unit	1				
Period	11/1/08	to	12/1/08		
			Nov-08	Oct-08	Nov-07
Full Load Performance					
Hours of Data			292	45	252
			Averages	**Averages**	**Averages**
GENERATOR MEGAWATTS	MW		636.9	634.6	628.7
AUX POWER	MW		27.6	27.1	29.9
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		9513.1	9463.0	9937.8
Boiler Efficiency Actual	%		85.4	85.3	85.3
CONTROL VALVE POSITION LVDT	%		99.5	54.1	100.5
FEEDWATER TEMP TO ECON	degF		492.2	491.8	491.5
FEEDWATER TEMP TO HTR 1	degF		437.0	436.6	439.6
HP Turbine Efficiency Actual	%		87.2	86.1	91.5
IP Turbine Efficiency Corrected	%		90.8	90.9	92.9
Condenser Pressure HP	inHga		1.7	1.6	2.3
Condenser Pressure LP	inHga		1.4	1.3	2.1
AIRHTR-A GAS OUTLET TEMP	degF		337.2	351.7	338.2
AIRHTR-B GAS OUTLET TEMP	degF		328.3	327.6	309.1
AMBIENT AIR TEMP	degF		42.1	61.3	45.8
CIRC WTR TEMP TO LP CONDB	degF		44.9	53.4	50.1
CIRC WTR TEMP TO LP CONDB	degF		45.9	54.8	50.9
CIRC WTR TEMP TO LP CONDB	degF		45.8	54.1	51.0
CIRC WTR TEMP TO LP CONDB	degF		47.2	53.7	50.4
Minimum River Temperature	degF		44.9	53.4	50.1
FWH 1 Temperature Rise	degF		55.2	55.2	51.9
Net Load	MW		609.2	607.6	598.7
Average Cond Press	inHga		1.5	1.4	2.2
Average Exit Gas Temperature	degF		332.8	339.7	323.7
Aux Power	%		4.3	4.3	4.8
Gross Unit Heat Rate	BTU/KW-HR		9100.4	9059.5	9464.6
Gross Turbine Heat Rate	BTU/KW-HR		7775.1	7725.8	8068.7

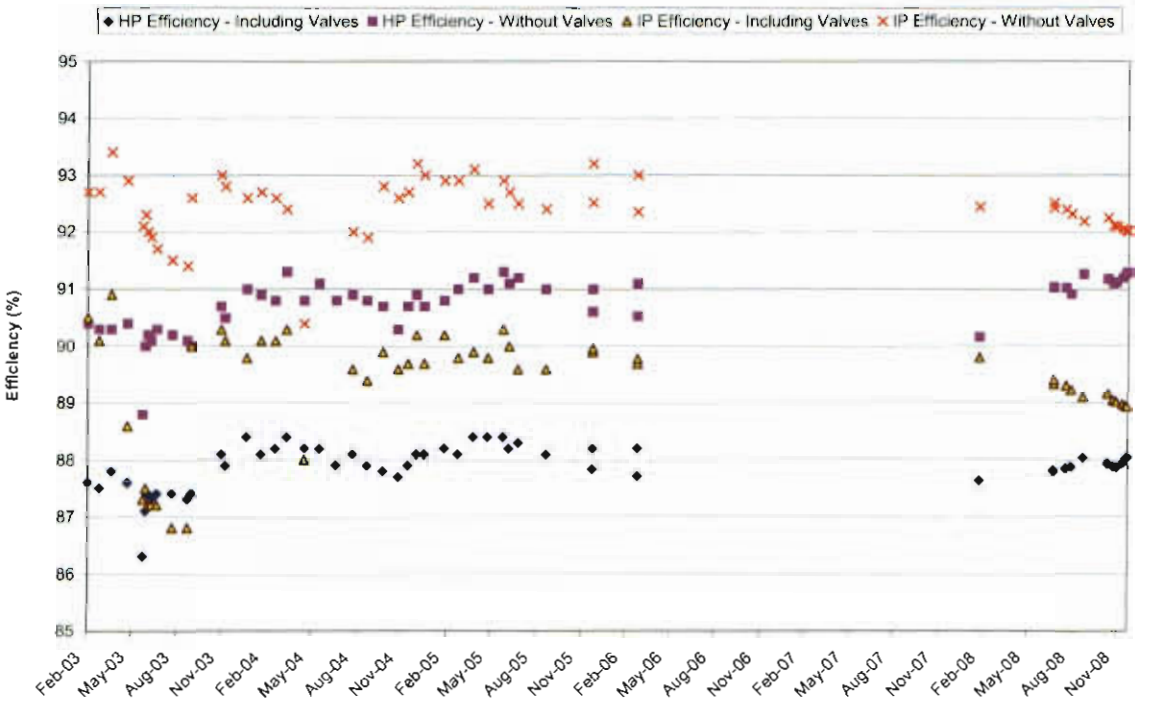
There was no VWO data in October 2008.

The HP turbine efficiency is lower than the Nov. 2007 value due to an erroneous main steam temperature indication that was fixed during the 2008 MBO. The IP efficiency change is still being investigated but is due in part to installation of the fine mesh screens. Note that the efficiencies given in this table (calculated by EtaPro) differ from those shown on the following graphs. Performance Engineering plans to update EtaPro this year so that all efficiencies are calculated in a consistent manner.

Labadie Unit 1 - Corrected Load



Labadie Unit 1 - HP and IP Efficiencies



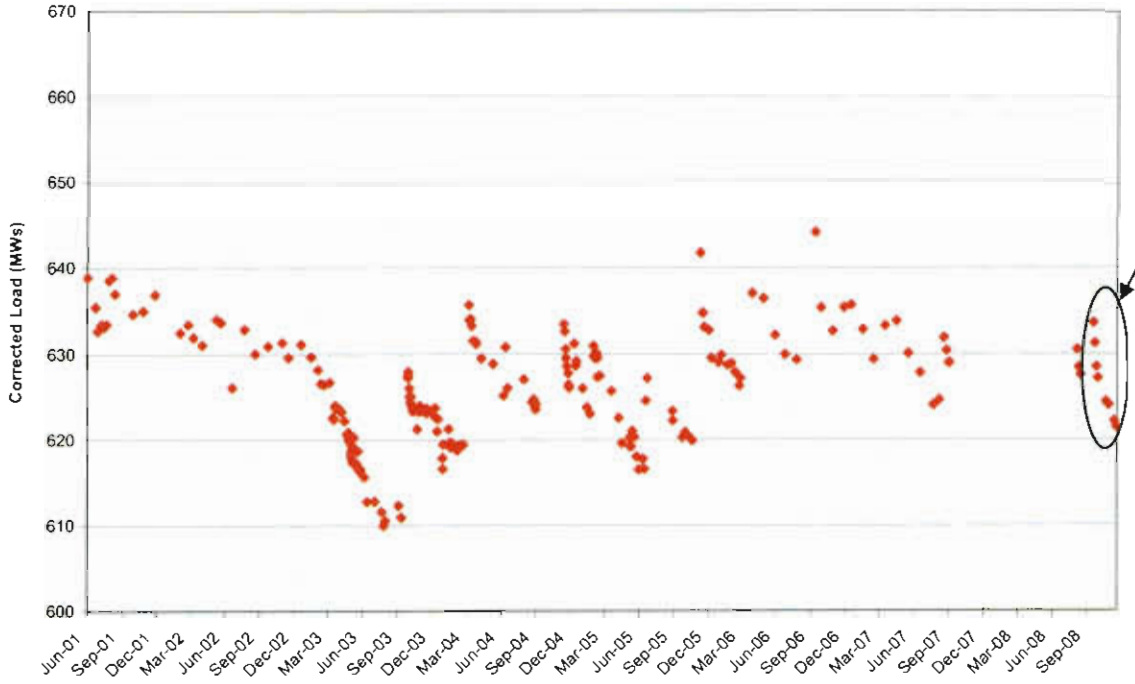
Unit 2 Observations

The following observations were made regarding Unit 2 operation and performance:

- The unit went from about 50 hours of VWO data in October to almost 200 hours of VWO operation in November.
- HP/IP/LP turbine efficiencies steadily decline during continuous runs. Following SBOs, a step increase in efficiency is seen. This topic has been discussed before with regard to potential water soluble deposits with no known resolution. This will continue to be monitored.
- A review of reheat spray data for the unit shows a steady decline in maximum spray flow over time which is a contributor to high reheat steam temperatures on the unit. The plant is considering options to address the issue (clean valves or replace with larger trim). This reduction in spray flow capacity is a contributor to high reheat temperatures on the unit.

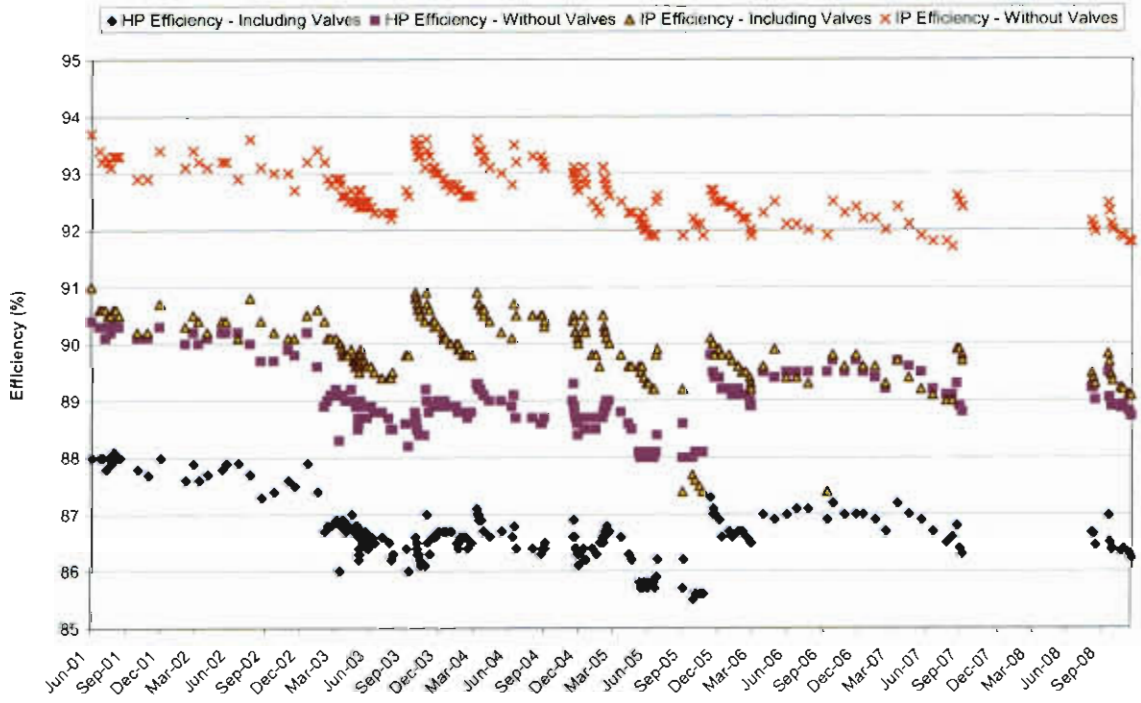
Summary of Performance Report for:						
Plant	Labadie					
Unit	2					
Period	11/1/08	to	12/1/08			
Full Load Performance			Nov-08		Oct-08	Nov-07
Hours of Data			191		53	376
			Averages		Averages	Averages
GENERATOR MEGAWATTS	MW		617.8		625.4	627.9
AUX POWER	MW		29.1		29.6	27.8
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10286.7		10273.1	10241.6
Boiler Efficiency Actual	%		85.6		85.1	85.3
CONTROL VALVE POSITION LVDT	%		99.8		99.9	99.9
FEEDWATER TEMP TO ECON	degF		494.7		494.7	495.7
FEEDWATER TEMP TO HTR 1	degF		446.3		446.3	447.6
HP Turbine Efficiency Actual	%		86.1		86.3	86.4
IP Turbine Efficiency Corrected	%		90.3		90.7	89.6
Condenser Pressure HP	inHga		1.9		2.4	2.7
Condenser Pressure LP	inHga		1.6		2.0	1.9
AIRHTR-A GAS OUTLET TEMP	degF		331.9		336.7	323.0
AIRHTR-B GAS OUTLET TEMP	degF		337.3		339.1	338.7
AMBIENT AIR TEMP	degF		41.8		60.0	47.7
CIRC WTR TEMP TO LP CONDB	degF		46.2		62.0	49.1
CIRC WTR TEMP TO LP CONDB	degF		46.5		62.7	49.7
CIRC WTR TEMP TO LP CONDB	degF		46.8		63.0	49.9
CIRC WTR TEMP TO LP CONDB	degF		47.1		62.9	49.7
Minimum River Temperature	degF		46.2		62.0	49.1
FWH 1 Temperature Rise	degF		48.4		48.4	48.2
Net Load	MW		588.7		595.8	600.2
Average Cond Press	inHga		1.8		2.2	2.3
Average Exit Gas Temperature	degF		334.6		337.9	330.9
Aux Power	%		4.7		4.7	4.4
Gross Unit Heat Rate	BTU/KW-HR		9802.3		9787.2	9788.9
Gross Turbine Heat Rate	BTU/KW-HR		8395.1		8330.1	8351.6

Labadie Unit 2 - Corrected Load

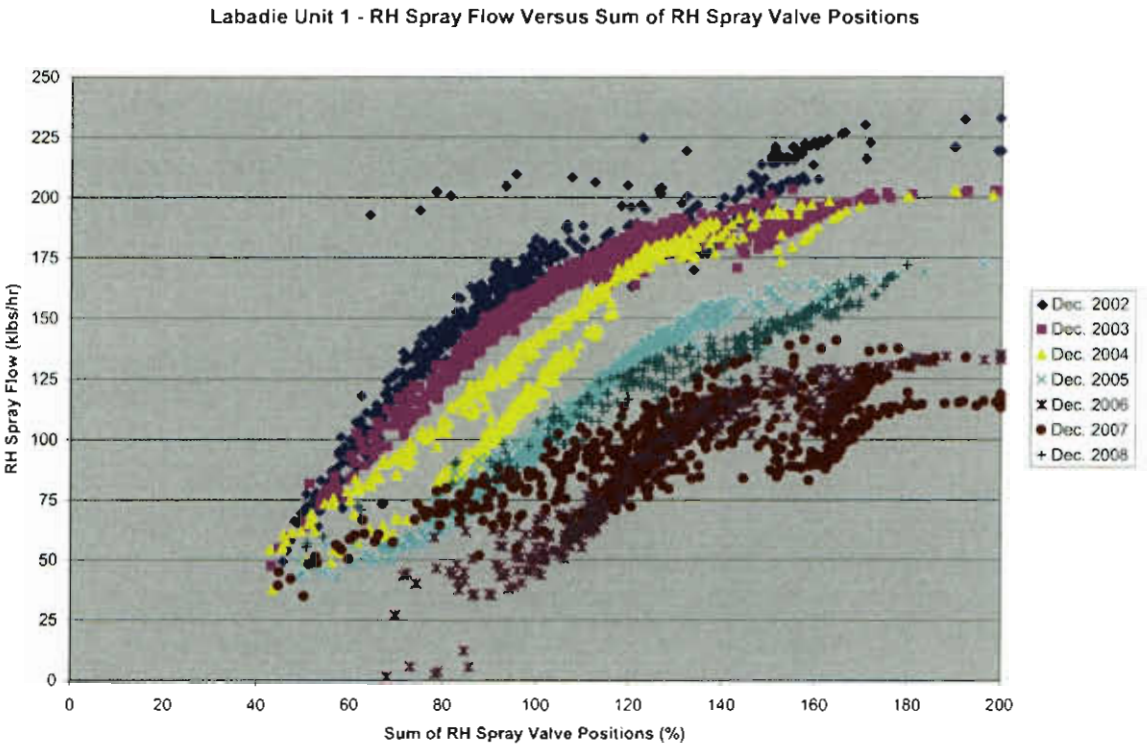


Note the decrease in load during the latest steady run on the Unit

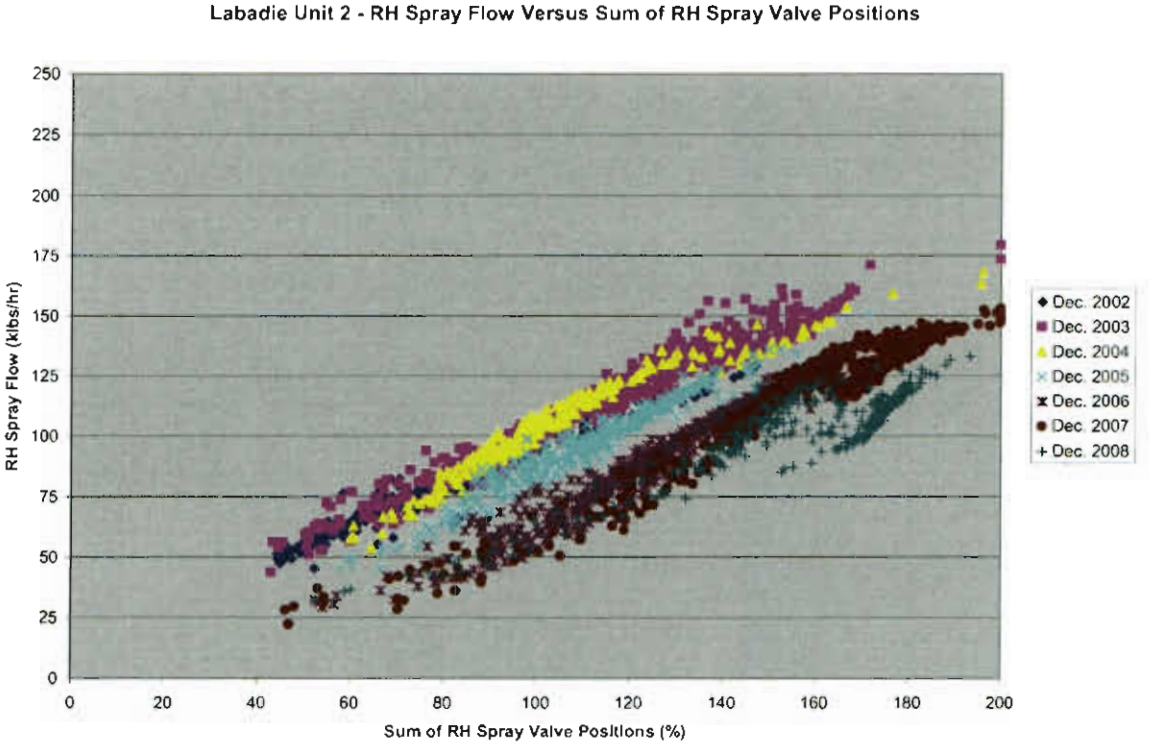
Labadie Unit 2 - HP and IP Efficiencies



Note the decrease in turbine efficiency over the same time period

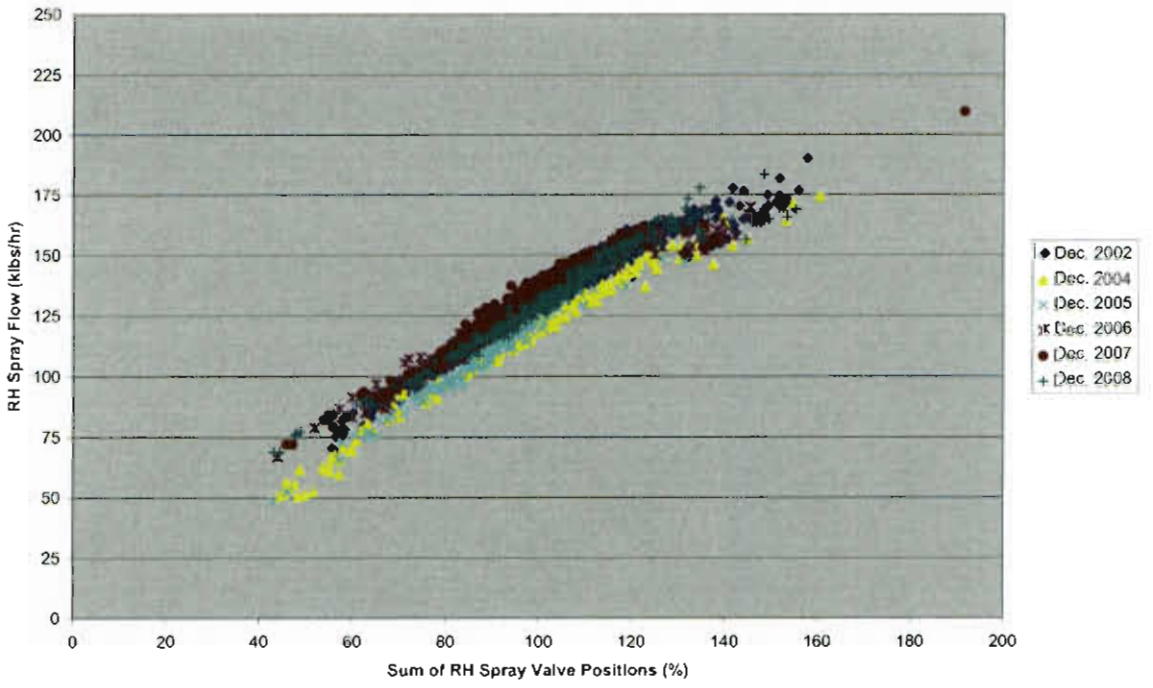


Note the decrease in total spray flow over time on Unit 1. Some flow was recovered in 2008 due to valve cleaning performed during the 2008 MBO. Also note that the total flow on Unit 1 is higher than the other units due to a larger valve trim installed in 2002.

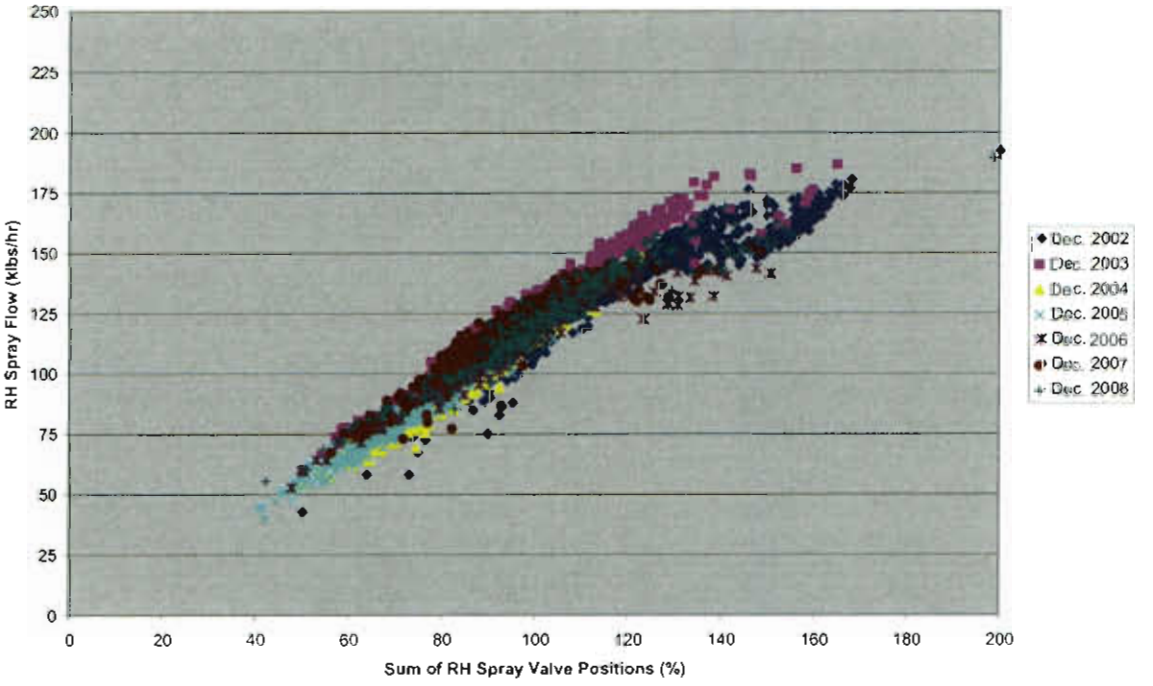


As seen on Unit 1, total reheat spray flow has been decreasing over time on Unit 2.

Labadie Unit 3 - RH Spray Flow Versus Sum of RH Spray Valve Positions



Labadie Unit 4 - RH Spray Flow Versus Sum of RH Spray Valve Positions



Units 3 and 4 have not seen a significant decrease in reheat spray flow over the same time period.

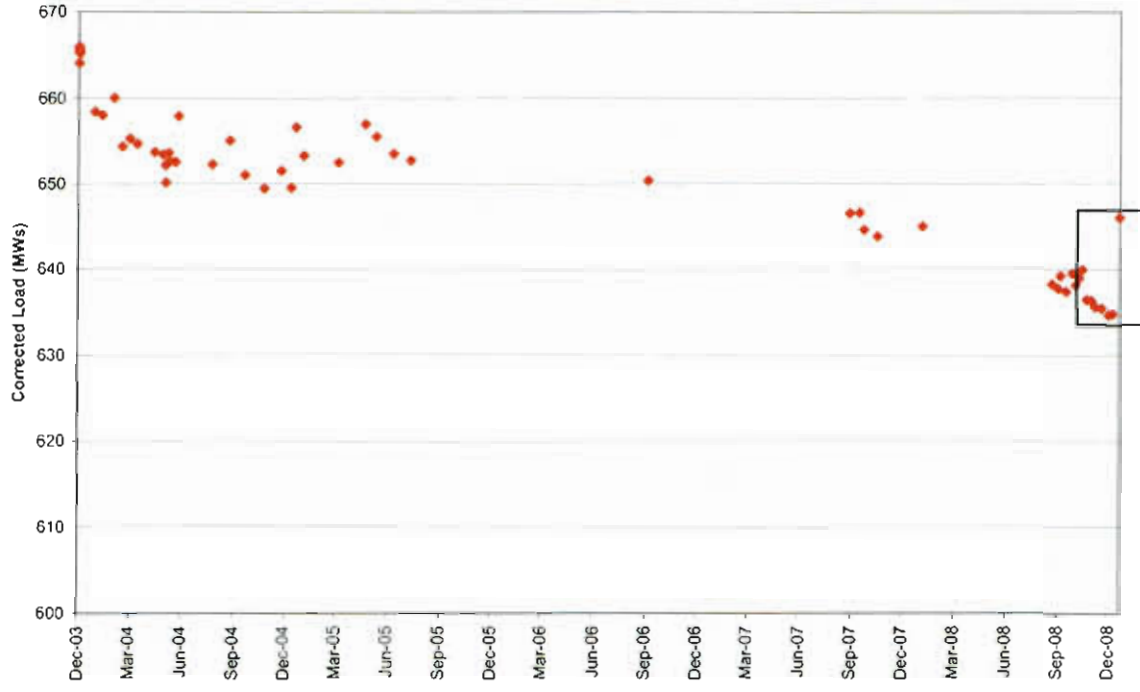
Unit 3 Observations

The following observations were made regarding Unit 3 operation and performance:

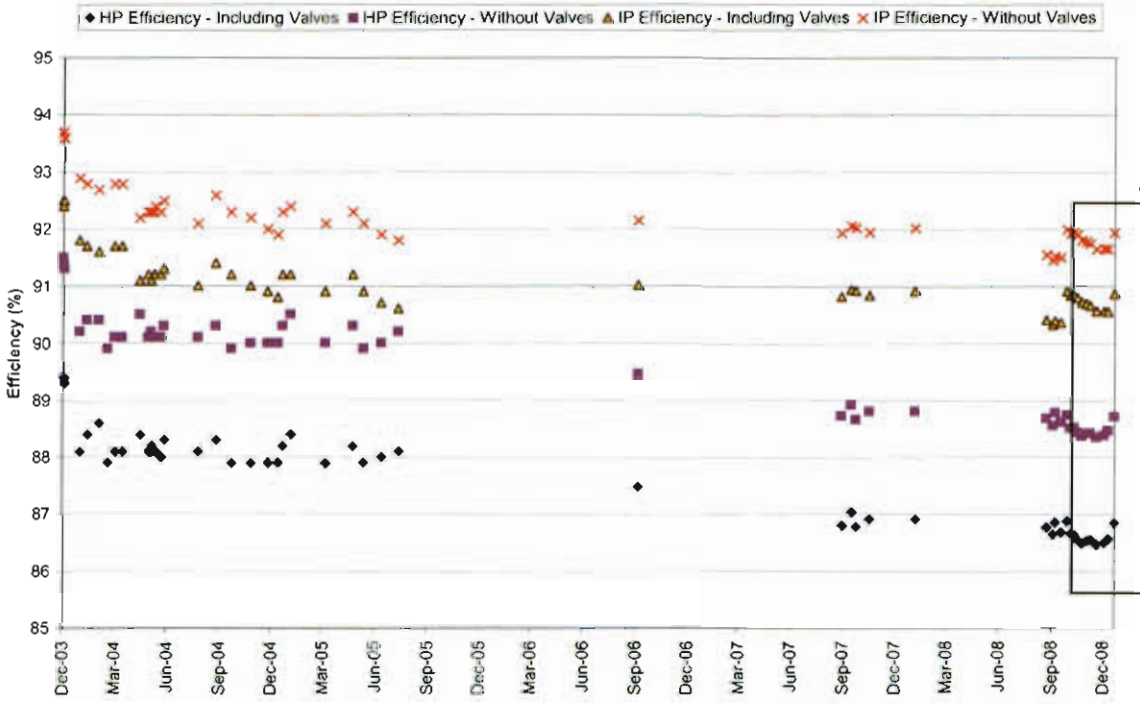
- Tube leaks in the 5A FWH were forcing the emergency dump valve open greater than 50%. These tube leaks were fixed on a recent SBO and the normal drainers are now controlling level.
- HP/IP/LP turbine efficiencies steadily decline during continuous runs. Following SBOs, a step increase in efficiency is seen. This topic has been discussed before with regard to potential water soluble deposits with no known resolution. This will continue to be monitored. This issue was specifically discussed at the last quarterly heat rate meeting but mainly with regards to Unit 2.

Summary of Performance Report for:						
Plant	Labadie					
Unit	3					
Period	11/1/08	to	12/1/08			
Full Load Performance			Nov-08		Oct-08	Nov-07
Hours of Data			269		418	560.0
			Averages		Averages	Averages
GENERATOR MEGAWATTS	MW		623.1		630.0	644.8
AUX POWER	MW		28.2		30.0	29.3
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10089.2		10052.8	10003.3
Boiler Efficiency Actual	%		85.5		85.5	85.4
CONTROL VALVE POSITION LVDT	%		104.8		104.7	99.8
FEEDWATER TEMP TO ECON	degF		483.9		484.1	486.1
FEEDWATER TEMP TO HTR 1	degF		435.2		435.6	437.1
HP Turbine Efficiency Actual	%		87.0		87.2	87.4
IP Turbine Efficiency Corrected	%		94.2		94.4	94.2
Condenser Pressure HP	inHga		2.8		3.0	2.3
Condenser Pressure LP	inHga		2.3		2.4	2.3
AIRHTR-A GAS OUTLET TEMP	degF		327.8		335.2	334.1
AIRHTR-B GAS OUTLET TEMP	degF		317.8		320.4	315.8
AMBIENT AIR TEMP	degF		55.2		61.1	48.3
CIRC WTR TEMP TO LP CONDB	degF		52.0		63.1	50.0
CIRC WTR TEMP TO LP CONDB	degF		52.7		64.6	50.9
CIRC WTR TEMP TO LP CONDB	degF		52.5		63.6	50.6
CIRC WTR TEMP TO LP CONDB	degF		52.2		63.4	50.5
Minimum River Temperature	degF		52.0		63.1	50.0
FWH 1 Temperature Rise	degF		48.7		48.4	49.0
Net Load	MW		594.9		600.1	615.5
Average Cond Press	inHga		2.5		2.7	2.3
Average Exit Gas Temperature	degF		322.8		327.8	324.9
Aux Power	%		4.5		4.8	4.5
Gross Unit Heat Rate	BTU/KW-HR		9631.9		9574.5	9548.4
Gross Turbine Heat Rate	BTU/KW-HR		8236.2		8189.9	8155.0

Labadie Unit 3 - Corrected Load



Labadie Unit 3 - HP and IP Efficiencies



Note the decrease in load and turbine efficiencies followed by the step change up following the recent SBO

Unit 4 Observations

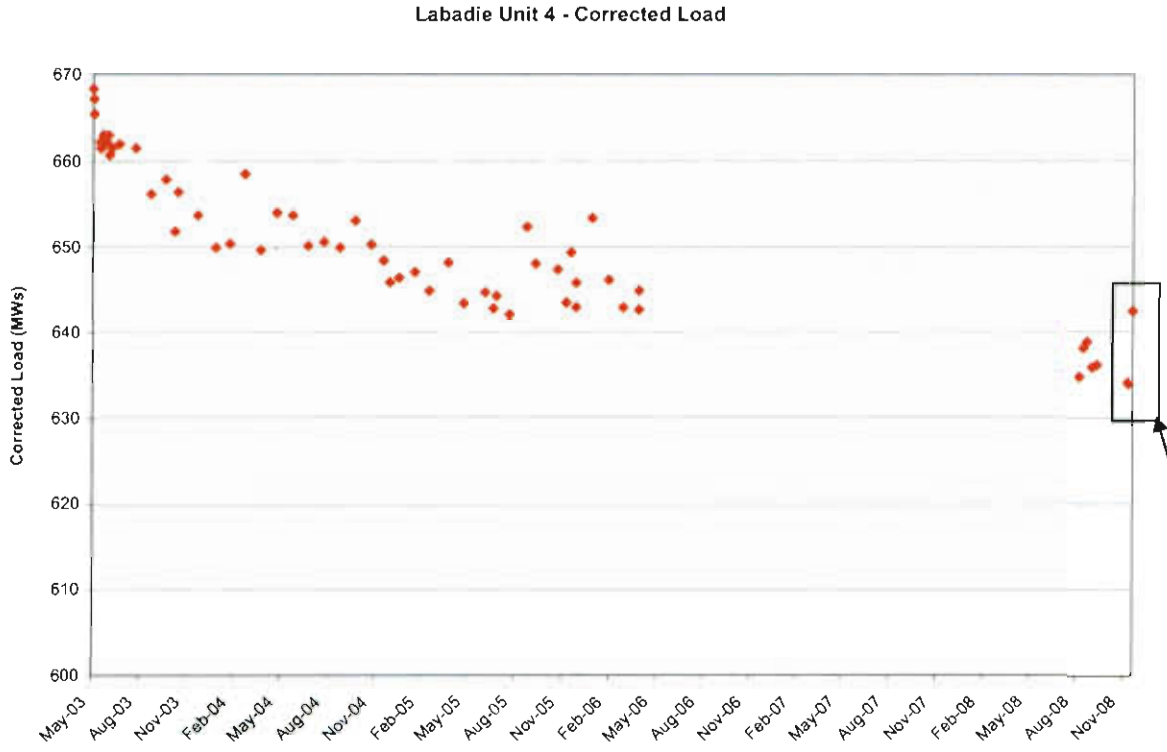
The following observations were made regarding Unit 4 operation and performance:

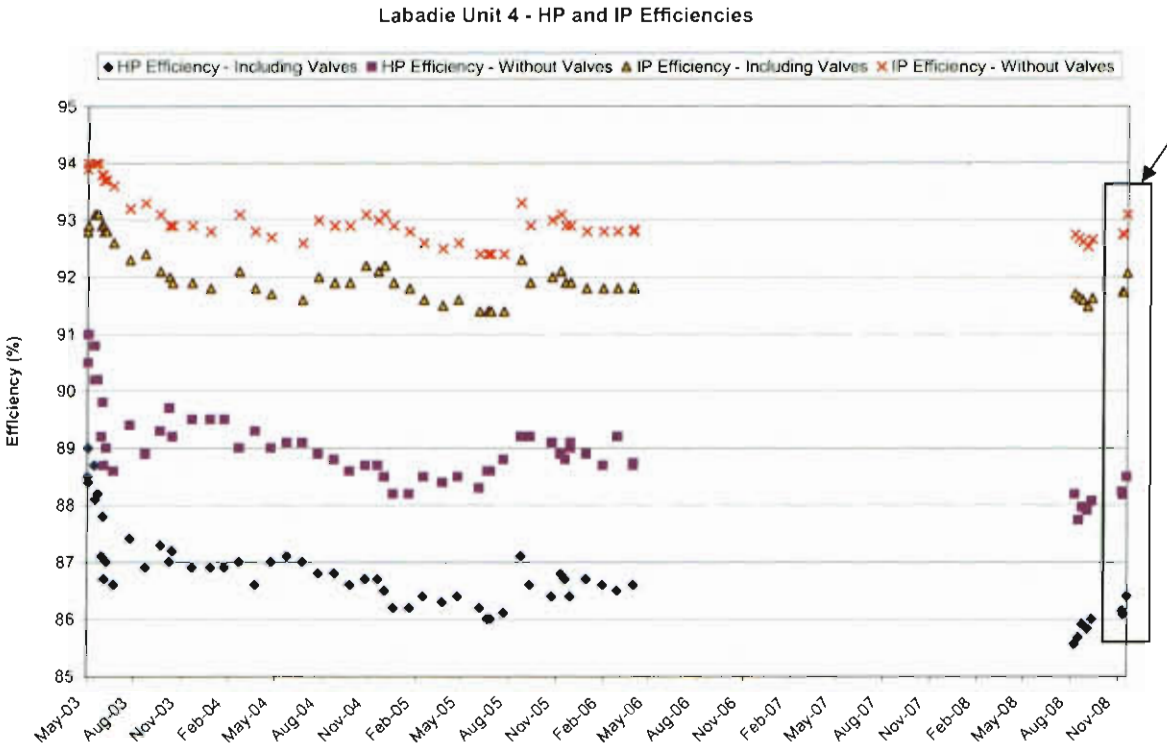
- No VWO data for the unit in November.
- Tube leaks in the 5A FWH were forcing the emergency dump valve open greater than 50%. These tube leaks were fixed on a recent SBO and the normal drainers are now controlling level.
- HP/IP/LP turbine efficiencies steadily decline during continuous runs. Following SBOs, a step increase in efficiency is seen. This topic has been discussed before with regard to potential water soluble deposits with no known resolution. This will continue to be monitored. This issue was specifically discussed at the last quarterly heat rate meeting but mainly with regards to Unit 2.

Summary of Performance Report for:

Plant	Labadie				
Unit	4				
Period	11/1/08	to	12/1/08		
Full Load Performance			Nov-08	Oct-08	Nov-07
Hours of Data			496	31	302
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		619.3	627.0	646.2
AUX POWER	MW		29.0	30.2	29.2
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10177.8	10390.3	10156.9
Boiler Efficiency Actual	%		85.1	85.1	85.0
CONTROL VALVE POSITION LVDT	%		81.7	98.7	98.8
FEEDWATER TEMP TO ECON	degF		483.2	484.1	486.6
FEEDWATER TEMP TO HTR 1	degF		432.4	434.1	438.8
HP Turbine Efficiency Actual	%		86.0	87.2	87.7
IP Turbine Efficiency Corrected	%		93.6	93.4	93.6
Condenser Pressure HP	inHga		2.1	3.1	2.0
Condenser Pressure LP	inHga		2.0	2.5	2.0
AIRHTR-A GAS OUTLET TEMP	degF		327.6	342.3	327.9
AIRHTR-B GAS OUTLET TEMP	degF		319.0	328.7	318.6
AMBIENT AIR TEMP	degF		51.4	63.6	50.2
CIRC WTR TEMP TO LP CONDB	degF		49.9	69.9	49.9
CIRC WTR TEMP TO LP CONDB	degF		50.7	70.6	50.7
CIRC WTR TEMP TO LP CONDB	degF		50.6	70.5	50.4
CIRC WTR TEMP TO LP CONDB	degF		49.9	70.2	49.8
Minimum River Temperature	degF		49.9	69.9	49.8
FWH 1 Temperature Rise	degF		50.8	50.0	47.8
Net Load	MW		590.2	596.8	617.0
Average Cond Press	inHga		2.1	2.8	2.0
Average Exit Gas Temperature	degF		323.3	335.5	323.3
Aux Power	%		4.7	4.8	4.5
Gross Unit Heat Rate	BTU/KW-HR		9700.8	9889.9	9697.7
Gross Turbine Heat Rate	BTU/KW-HR		8256.8	8412.8	8239.4

No VWO data for Nov-08. Kept data with load above 95% of capability value.





Trends are more difficult to see on this unit since there was no VWO data from early October until early December. However, following the SBO in early December, corrected load and turbine efficiencies show a marked improvement.

November 12, 2008

To: David Fox
From: Jeff Shelton
Cc: Mark Litzinger, Kevin Stumpe, Paul Piontek, Brian Griffen, Russ Hawkins, Scott McCormack, Ken Stuckmeyer, Joe Sind, Matt Wallace

Subject: Labadie October Performance Report

This is the first regular report following the initial demonstration in July's performance meeting. The report should not be considered in its final form for regular publication. Please advise on anything you think would be an improvement: presentation, content (additional content needed or content that is of little use), format, etc. Attempts will be made to improve the report until all recipients are satisfied.

Executive Summary

The most notable items regarding Labadie unit performance were:

- Only Unit 3 spent a significant time at Valves Wide Open (VWO)
- Unit 2 turbine efficiencies gradually decline during continuous runs (possible water soluble deposit issue?)
- There is a notable difference in heat rate between Units 1&2 (pre-MBO) and Units 3&4 when similar heat rates are expected
- Units 2 and 4 both have a reheat temperature bias between the A and B side
- The turbine performance reports previously generated by Gary Blessing have been resurrected. VWO for each unit is needed each month to evaluate unit performance.

The following table shows the known instrument deficiencies for all four units:

Tag	Unit	Issue
1COND-HTR-08345 & 1COND-HTR-08348	Unit 1	FWH 5A&B shell pressures not reading since MBO
4BFW-HTR-16241	Unit 4	FWH 4 ext. temp west reading too high compared to east side temperature

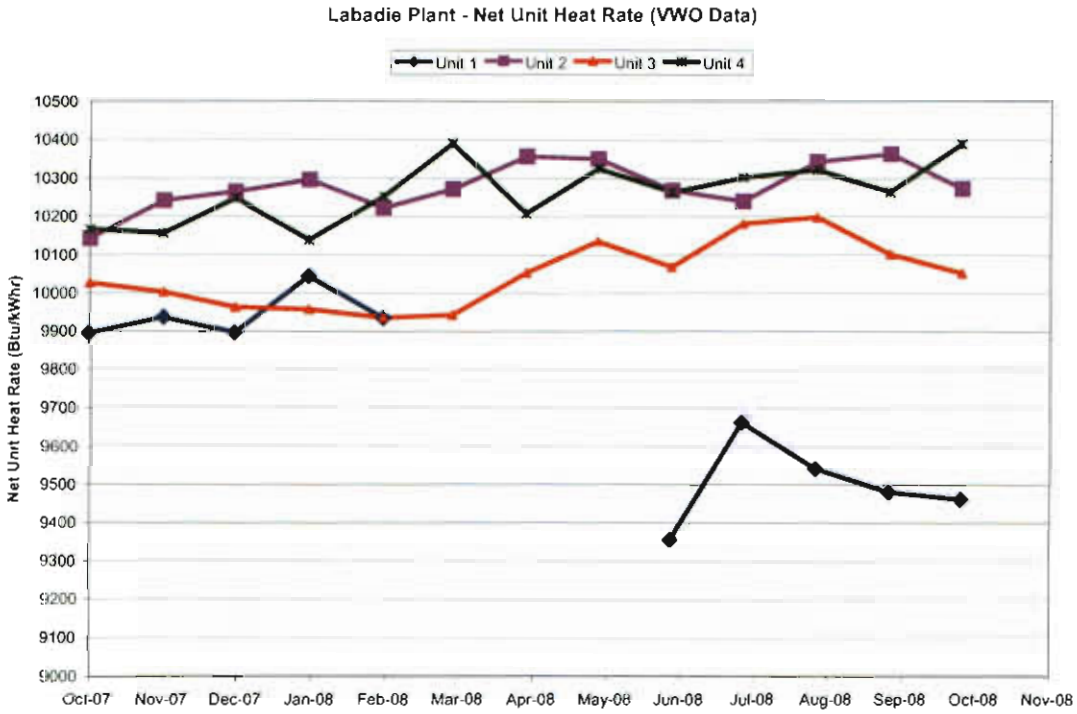
Action Items:

- JR the above instrument deficiencies
- Investigate the loss in turbine efficiencies on Unit 2
- Investigate the differences in heat rates between Units 1&2 (prior to the MBO) and Units 3&4

Detailed Observations

Actual data and graphs for the month's performance are at the end of this report. Observations concerning the data, the unit's operation and performance in general are as follows:

- The first observation is that Unit 4's heat rate is typically higher than Unit 3's heat rate by 100-200 Btu/kWhr. These units are expected to have similar heat rates due to their similarities. Further investigation will be done to determine if this is due to instrumentation/measurement issues or if the difference is real and what contributes to it.
- Prior to the 2008 MBO on Unit 1, Unit 1's heat rate was 100-250 Btu/kWhr better than Unit 2's heat rate. Again, prior to the spring 2008 outage, these units were expected to have similar heat rates. As with Units 3 & 4, further investigation will be done to determine the cause of the difference.
- Only Unit 3 spent a significant time at Valves Wide Open in October.
- Plots of corrected load (load corrected for initial and reheat temperature, initial pressure, backpressure, reheat spray flow, and hot water coil flow) as well as turbine efficiencies are presented at the back of the report for each unit.
- Summary data of unit performance is also given in the back of the report. This summary includes the current month's performance, the prior month's performance, and the performance from the same month in the prior year.



Unit 1

The following observations were made regarding Unit 1 operation and performance:

- The unit operated with one HPBFP and the top heaters OOS most of October.
- After restoration of the HPBFP, no valve wide open data in October (VWO data was obtained for the Unit on 11/5/08).
- Both vacuum pumps running with 80 SCFM total leakage.

Unit 2

The following observations were made regarding Unit 2 operation and performance:

- The unit is not being operated VWO.
- HP/IP/LP turbine efficiencies steadily decline during continuous runs. Following SBOs, a step increase in efficiency is seen. This phenomenon is seen on other units but to a much lesser extent. This topic has been discussed before with regard to potential water soluble deposits with no known resolution.
- There is a bias in reheat steam temperature between the A and B side. This bias is seen both at the boiler and at the turbine (i.e not an instrument issue). Using data from the elevated temperature tag, the unit is operating outside of the turbine instruction manual limits.
- Condenser cleanliness has decreased 10-15% since mid-October and condenser pressure has risen about 0.3 in HgA above the expected value in the same time period. However, this Unit has one of the lowest backpressures and the backpressure is consistent with the Oct 2007 value.

Unit 3

The following observations were made regarding Unit 3 operation and performance:

- Unit switched to one circ. pump on Oct. 24 with a corresponding increase in backpressure. The average backpressure is up to 1.0 in HgA greater than the other units.
- Air in-leakage is high with both pumps running at a total flowrate of up to 120 SCFM.
- FWH 5A tube leaks. Currently bypassing some flow around the LP heaters.
- FWH 6B has a large TTD. The 6B outlet temperature should be checked although it appears to not be achieving the temperature rise expected. This may be indicative of a partition plate leak.

Unit 4

The following observations were made regarding Unit 4 operation and performance:

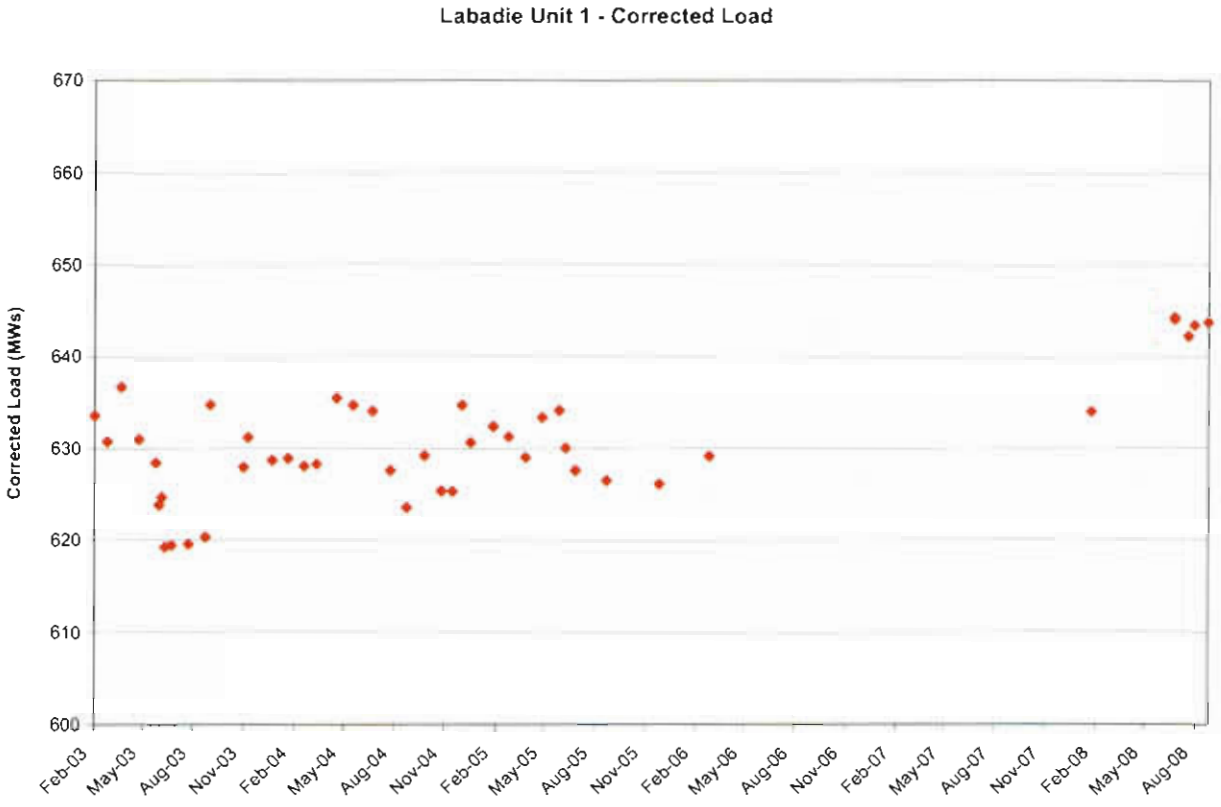
- Unit not operated VWO since beginning of October

- Condenser air in-leakage decreased from 120-60 SCFM following a SBO in October. Slop drain repair?
- Tube leaks in FWH 5A (maybe 5B) causing emergency dumps controlling level. The LP heaters have been partially bypassed.
- There is a bias in reheat steam temperature between the A and B side. This bias is seen both at the boiler and at the turbine (i.e not an instrument issue).

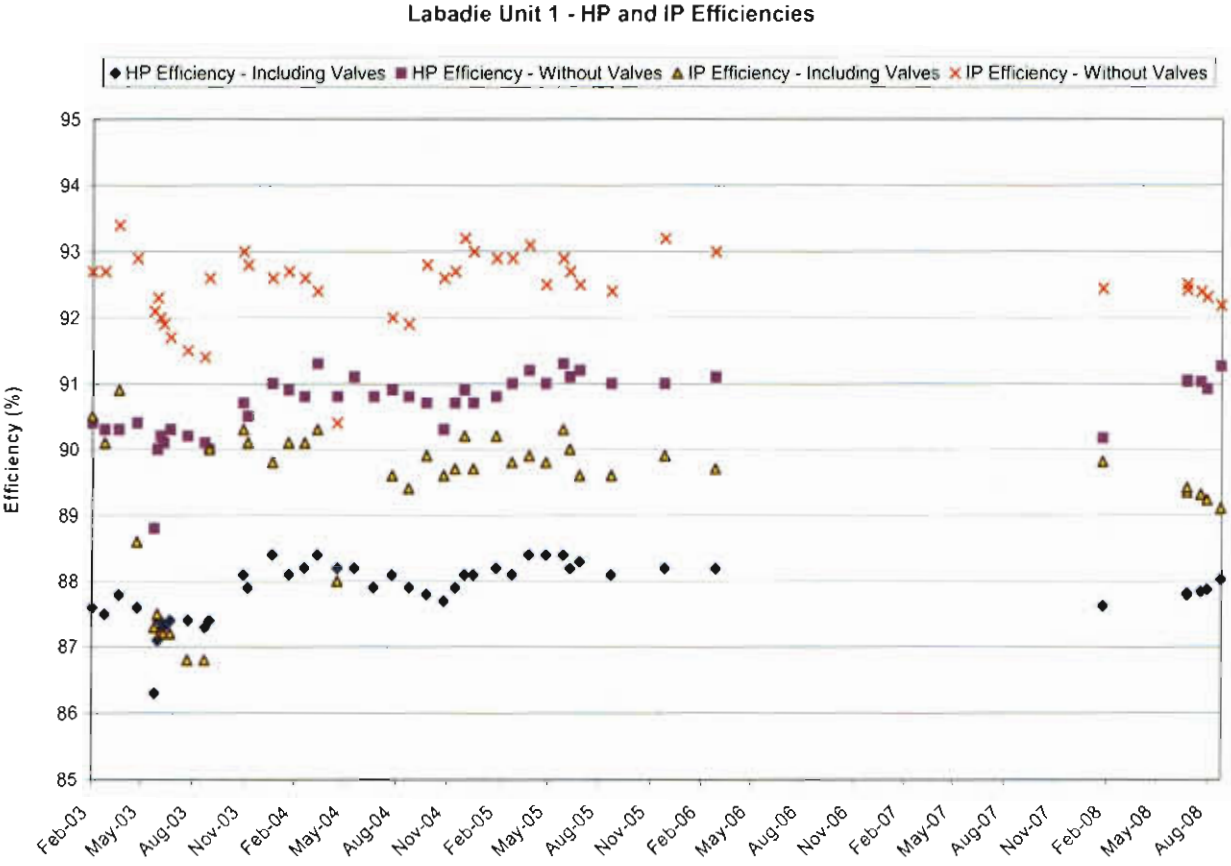
Plant	Labadie				
Unit	1				
Period	10/1/08	to	11/1/08		
			Oct-08	Sep-08	Oct-07
Full Load Performance					
Hours of Data			45	224	394
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		634 6	638.7	629.7
AUX POWER	MW		27.1	27.1	29 0
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		9463.0	9481.6	9896.2
Boiler Efficiency Actual	%		85.3	85 4	85 5
CONTROL VALVE POSITION LVDT	%		54.1	100.0	100.6
FEEDWATER TEMP TO ECON	degF		491 8	492.5	492.4
FEEDWATER TEMP TO HTR 1	degF		436 6	437.9	440.3
HP Turbine Efficiency Actual	%		86 1	87.2	91 8
IP Turbine Efficiency Corrected	%		90 9	90 8	92.6
Condenser Pressure HP	inHga		1.6	2 7	2.8
Condenser Pressure LP	inHga		1 3	2.1	2 3
AIRHTR-A GAS OUTLET TEMP	degF		351.7	343.1	335 6
AIRHTR-B GAS OUTLET TEMP	degF		327.6	325.3	311 4
AMBIENT AIR TEMP	degF		61.3	72 5	62.7
CIRC WTR TEMP TO LP CONDB	degF		53 4	73 4	65.2
CIRC WTR TEMP TO LP CONDB	degF		54 8	74.3	66.1
CIRC WTR TEMP TO LP CONDB	degF		54 1	74.2	66 0
CIRC WTR TEMP TO LP CONDB	degF		53.7	73.6	65.5
Minimum River Temperature	degF		53.4	73 4	65.2
FWH 1 Temperature Rise	degF		55.2	54 6	52.2
Net Load	MW		607.6	611 6	600 7
Average Cond Press	inHga		1.4	2.4	2 5
Average Exit Gas Temperature	degF		339.7	334 2	323.5
Aux Power	%		4 3	4 2	4 6
Gross Unit Heat Rate	BTU/KW-HR		9059 5	9079.4	9440.0
Gross Turbine Heat Rate	BTU/KW-HR		7725.8	7751.7	8069.6

The data for October was for gross loads greater than 600 MWs (no VWO data).

Plant	Labadie				
Unit	2				
Period	10/1/08	to	11/1/08		
Full Load Performance			Oct-08	Sep-08	Oct-07
Hours of Data			53	36	310
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		625 4	620.5	627 3577
AUX POWER	MW		29.6	29.4	29.2
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10273.1	10363.4	10142.3
Boiler Efficiency Actual	%		85.1	85.7	85.7
CONTROL VALVE POSITION LVDT	%		99 9	99.7	100.1
FEEDWATER TEMP TO ECON	degF		494.7	495.5	494.9
FEEDWATER TEMP TO HTR 1	degF		446.3	447.4	447.2
HP Turbine Efficiency Actual	%		86.3	86 4	86.3
IP Turbine Efficiency Corrected	%		90.7	90.5	90.6
Condenser Pressure HP	inHga		2.4	3.3	2.6
Condenser Pressure LP	inHga		2.0	2.6	2.0
AIRHTR-A GAS OUTLET TEMP	degF		336.7	343.6	317.0
AIRHTR-B GAS OUTLET TEMP	degF		339.1	351.3	325.6
AMBIENT AIR TEMP	degF		60.0	75.6	64.3
CIRC WTR TEMP TO LP CONDB	degF		62.0	76.1	63.8
CIRC WTR TEMP TO LP CONDB	degF		62 7	76.8	64.5
CIRC WTR TEMP TO LP CONDB	degF		63.0	76.8	64.4
CIRC WTR TEMP TO LP CONDB	degF		62 9	76.3	64.0
Minimum River Temperature	degF		62 0	76.1	63 8
FWH 1 Temperature Rise	degF		48.4	48 1	47.7
Net Load	MW		595.8	591.1	598.2
Average Cond Press	inHga		2.2	2.9	2.3
Average Exit Gas Temperature	degF		337.9	347.4	321 3
Aux Power	%		4.7	4.7	4 7
Gross Unit Heat Rate	BTU/KW-HR		9787.2	9872.0	9670.5
Gross Turbine Heat Rate	BTU/KW-HR		8330 1	8455.8	8287.7

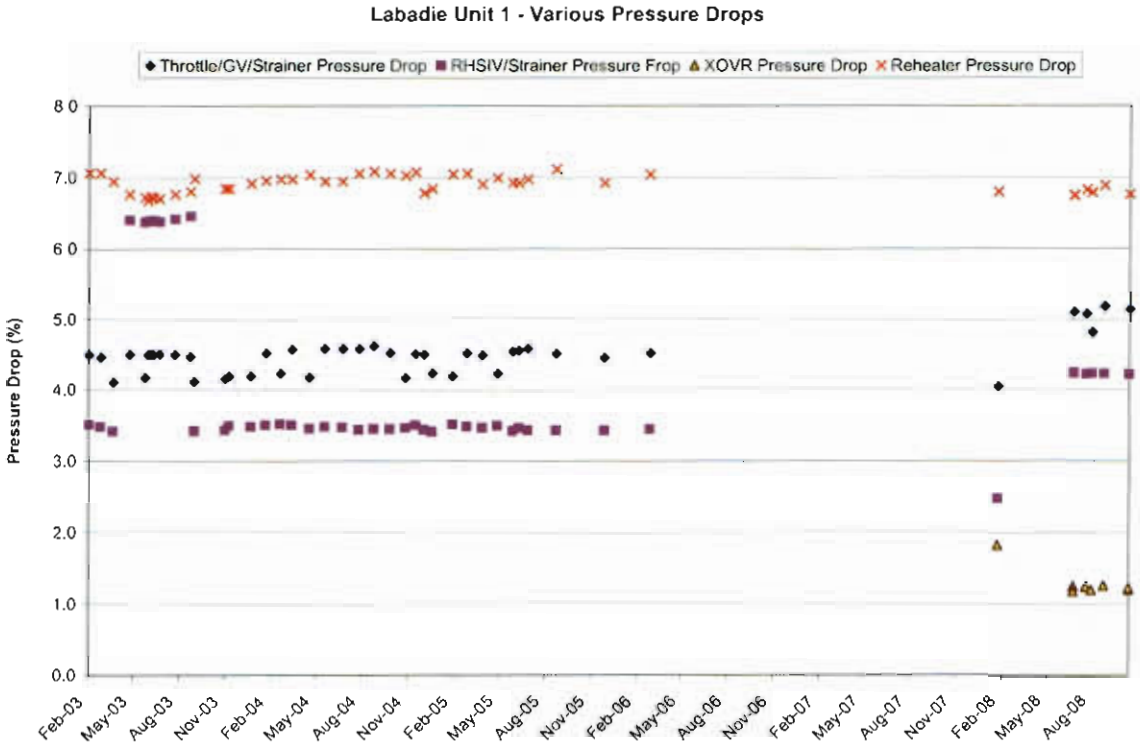


Corrected load up due to new LP turbines as expected

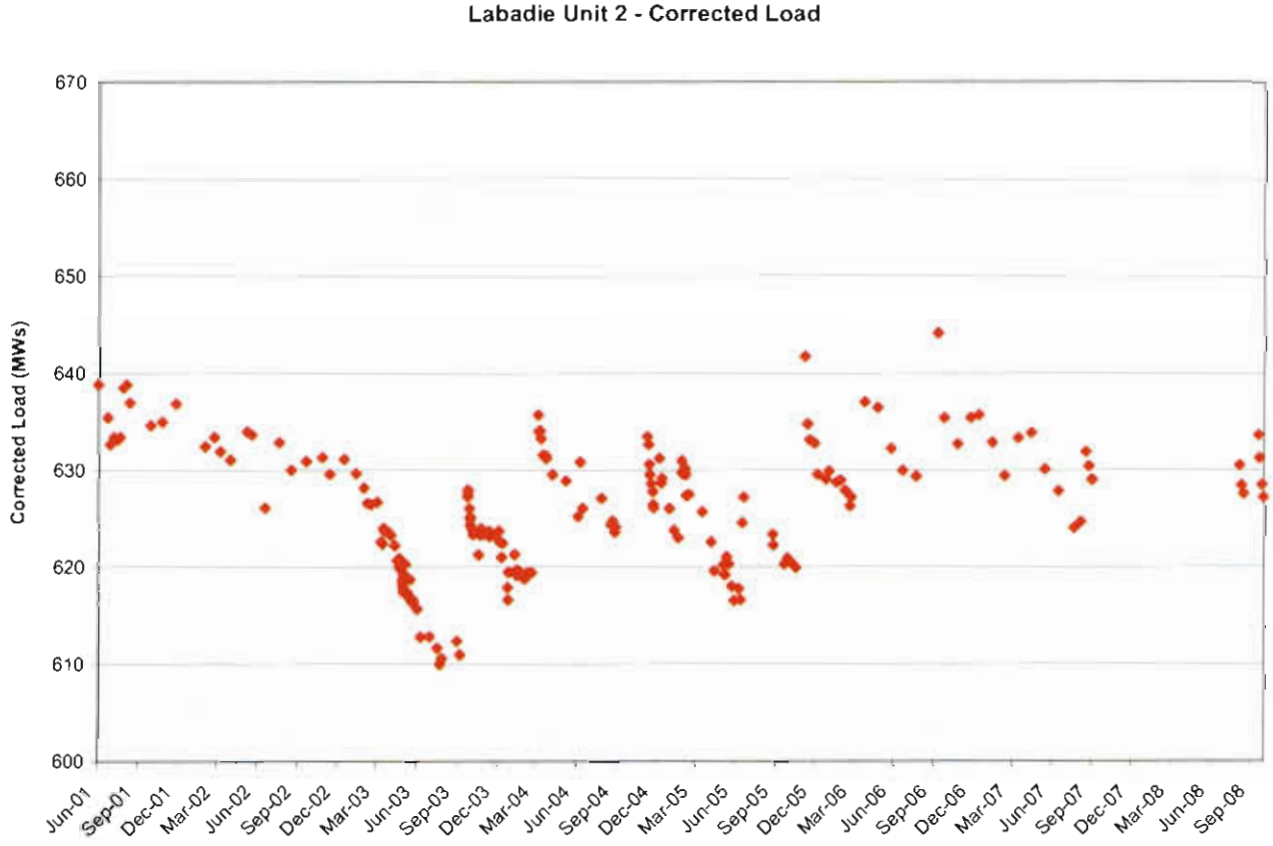


HP/IP Eff including valves has decreased after the MBO due to presence of screens

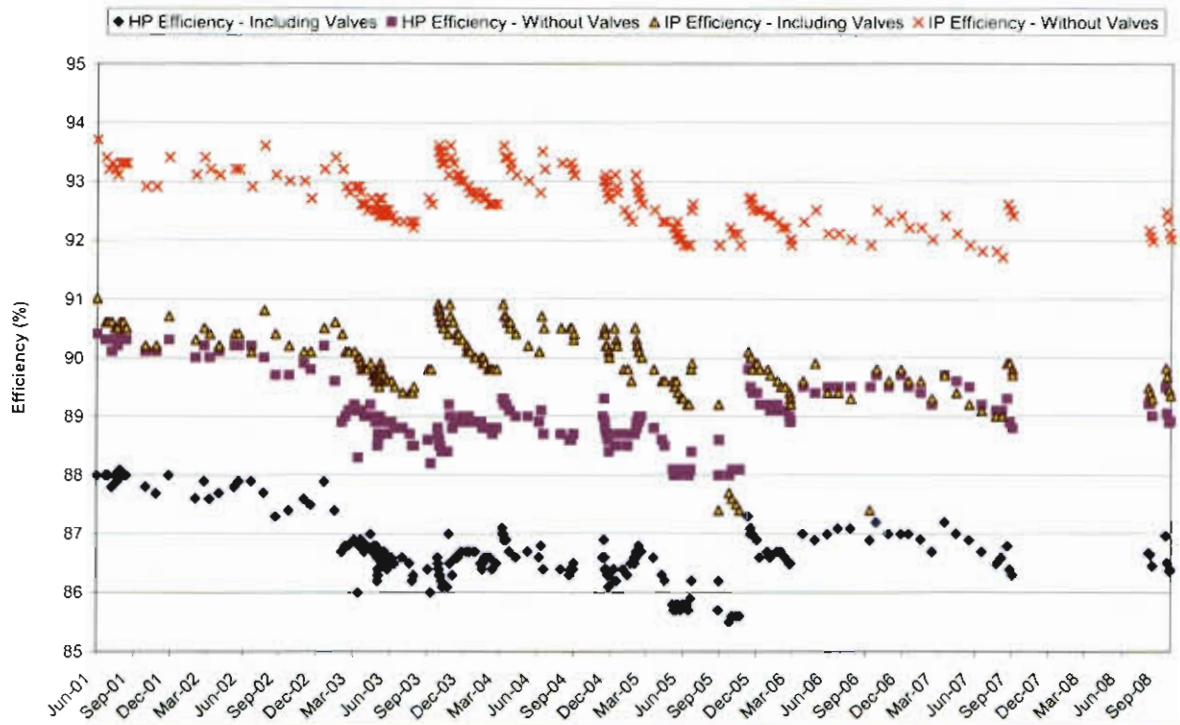
Feb. 08 HP Eff. data skewed due to MS thermocouple issue

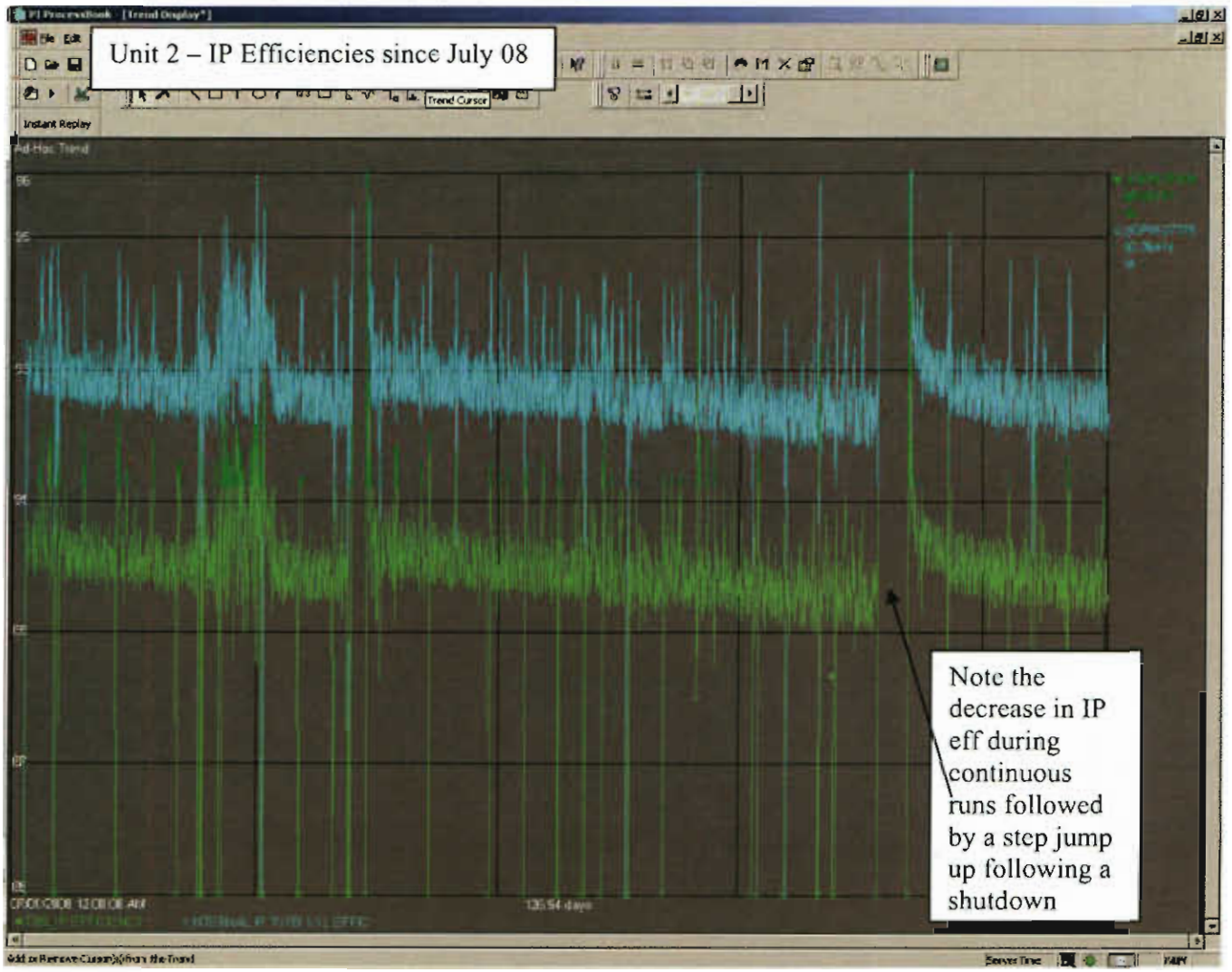


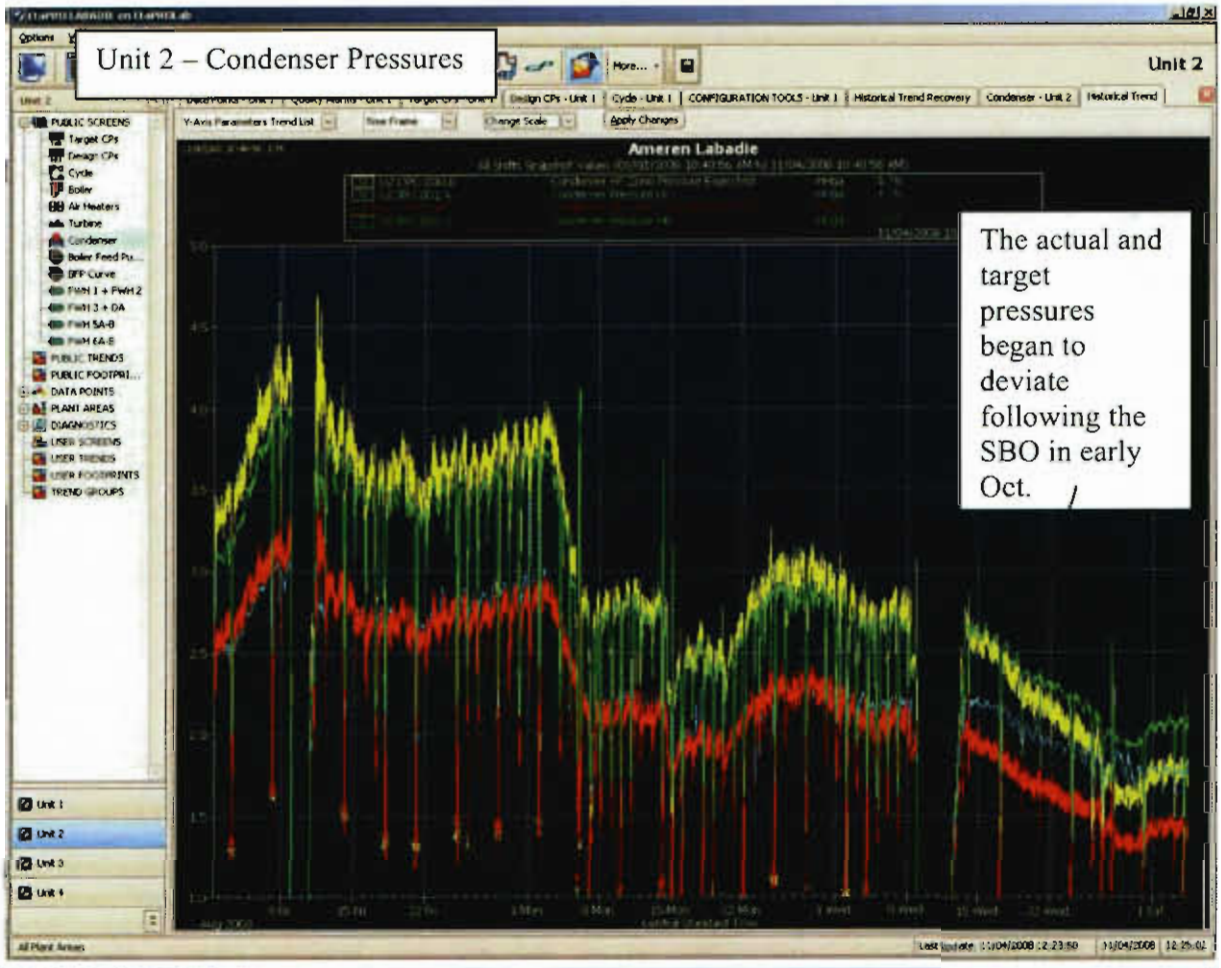
Note the increase in pressure drop following the MBO (0.5% for HP valves and 1.7% for IP valves). Note that the RHSIV Pressure drop was artificially high prior to Feb-08 due to double accounting of a water leg

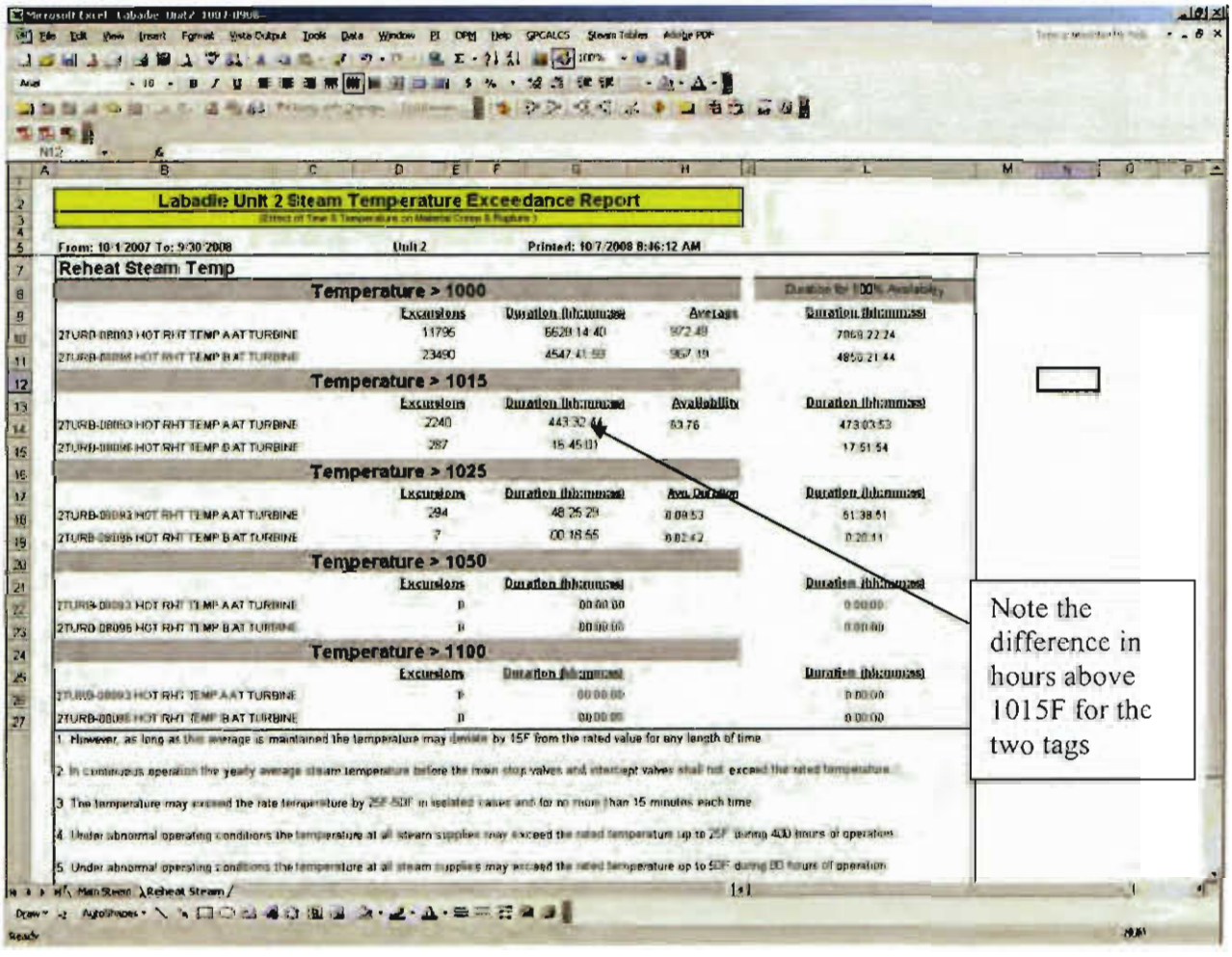


Labadie Unit 2 - HP and IP Efficiencies






Unit 2 – Condenser Pressures
Unit 2
Ameren Labadie
The actual and target pressures began to deviate following the SBO in early Oct.

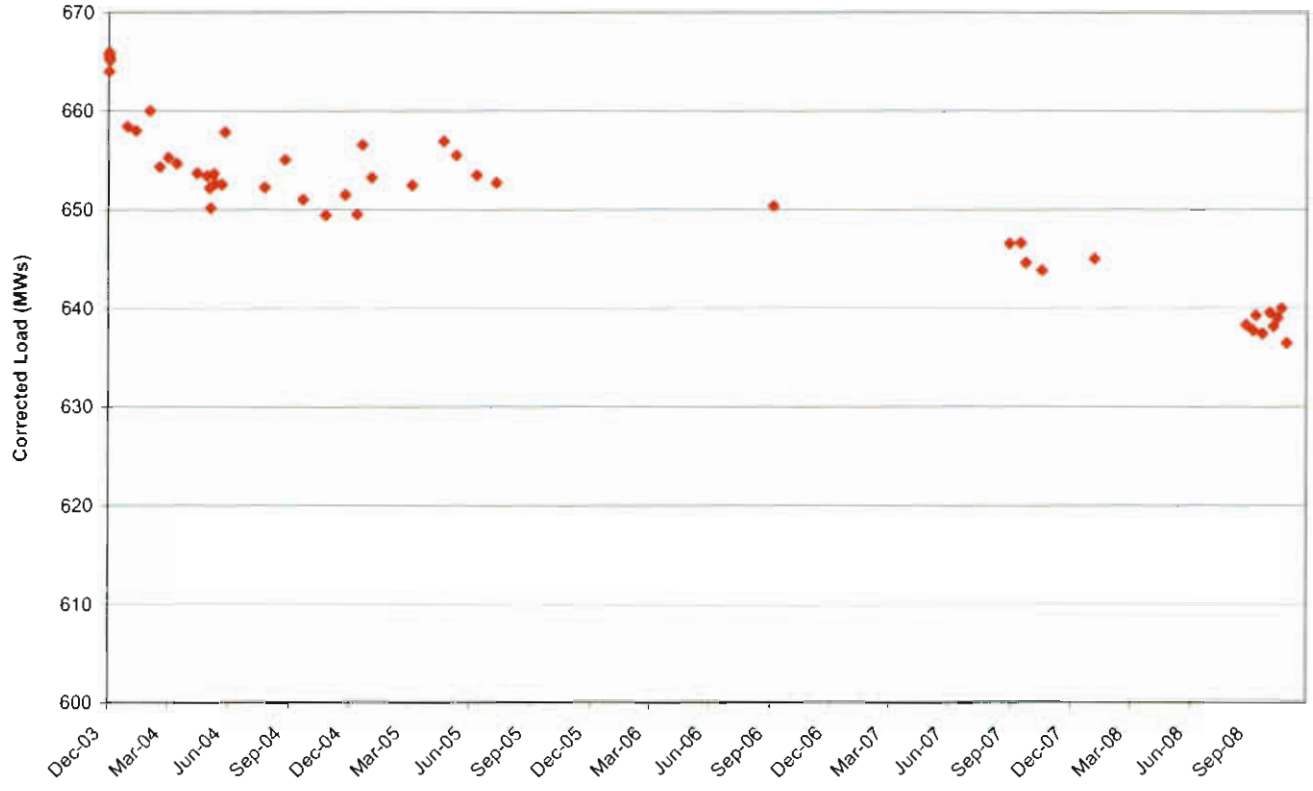

Labadie Unit 2 Steam Temperature Exceedance Report
From: 10/1/2007 To: 9/30/2008
Unit 2
Printed: 10/7/2008 8:36:12 AM
Reheat Steam Temp
Temperature > 1000
Excursions
Duration (hh:mm:ss)
Average
Duration (hh:mm:ss)
2TURB-DB093 HOT RHT TEMP A AT TURBINE
11796
6628:14:40
972.49
7068:22:24
2TURB-DB096 HOT RHT TEMP B AT TURBINE
23490
4547:41:53
967.19
4850:21:44
Temperature > 1015
Excursions
Duration (hh:mm:ss)
Availability
Duration (hh:mm:ss)
2TURB-DB093 HOT RHT TEMP A AT TURBINE
2240
443:32:44
93.76
473:03:53
2TURB-DB096 HOT RHT TEMP B AT TURBINE
287
16:45:01
17:51:54
Temperature > 1025
Excursions
Duration (hh:mm:ss)
Ave. Duration
Duration (hh:mm:ss)
2TURB-DB093 HOT RHT TEMP A AT TURBINE
294
48:25:29
0:09:53
51:38:51
2TURB-DB096 HOT RHT TEMP B AT TURBINE
7
00:18:55
0:02:42
0:20:11
Temperature > 1050
Excursions
Duration (hh:mm:ss)
Duration (hh:mm:ss)
2TURB-DB093 HOT RHT TEMP A AT TURBINE
0
00:00:00
0:00:00
2TURB-DB096 HOT RHT TEMP B AT TURBINE
0
00:00:00
0:00:00
Temperature > 1100
Excursions
Duration (hh:mm:ss)
Duration (hh:mm:ss)
2TURB-DB093 HOT RHT TEMP A AT TURBINE
0
00:00:00
0:00:00
2TURB-DB096 HOT RHT TEMP B AT TURBINE
0
00:00:00
0:00:00
1. However, as long as the average is maintained the temperature may deviate by 15F from the rated value for any length of time
2. In continuous operation the yearly average steam temperature before the main stop valves and interceptor valves shall not exceed the rated temperature
3. The temperature may exceed the rate temperature by 25F-50F in isolated cases and for no more than 15 minutes each time
4. Under abnormal operating conditions the temperature at all steam supplies may exceed the rated temperature up to 25F during 400 hours of operation
5. Under abnormal operating conditions the temperature at all steam supplies may exceed the rated temperature up to 50F during 80 hours of operation
Note the difference in hours above 1015F for the two tags

Plant	Labadie				
Unit	3				
Period	10/1/08	to	11/1/08		
Full Load Performance			Oct-08	Sep-08	Oct-07
Hours of Data			418	277.0	471.0
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		630.0	616.8	642.9
AUX POWER	MW		30.0	29.9	29.9
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10052.8	10102.0	10026.9
Boiler Efficiency Actual	%		85.5	85.7	85.5
CONTROL VALVE POSITION LVDT	%		104.7	103.9	100.0
FEEDWATER TEMP TO ECON	degF		484.1	484.6	486.0
FEEDWATER TEMP TO HTR 1	degF		435.6	436.5	437.0
HP Turbine Efficiency Actual	%		87.2	87.0	87.2
IP Turbine Efficiency Corrected	%		94.4	93.9	94.1
Condenser Pressure HP	inHga		3.0	3.2	2.9
Condenser Pressure LP	inHga		2.4	2.7	2.5
AIRHTR-A GAS OUTLET TEMP	degF		335.2	338.7	332.9
AIRHTR-B GAS OUTLET TEMP	degF		320.4	330.4	317.1
AMBIENT AIR TEMP	degF		61.1	73.7	65.2
CIRC WTR TEMP TO LP CONDB	degF		63.1	73.3	66.2
CIRC WTR TEMP TO LP CONDB	degF		64.6	74.3	66.8
CIRC WTR TEMP TO LP CONDB	degF		63.6	73.9	66.6
CIRC WTR TEMP TO LP CONDB	degF		63.4	73.5	66.5
Minimum River Temperature	degF		63.1	73.3	66.2
FWH 1 Temperature Rise	degF		48.4	48.1	49.0
Net Load	MW		600.1	587.0	612.9
Average Cond Press	inHga		2.7	3.0	2.7
Average Exit Gas Temperature	degF		327.8	334.6	325.0
Aux Power	%		4.8	4.8	4.7
Gross Unit Heat Rate	BTU/KW-HR		9574.5	9612.9	9559.9
Gross Turbine Heat Rate	BTU/KW-HR		8189.9	8238.0	8175.6

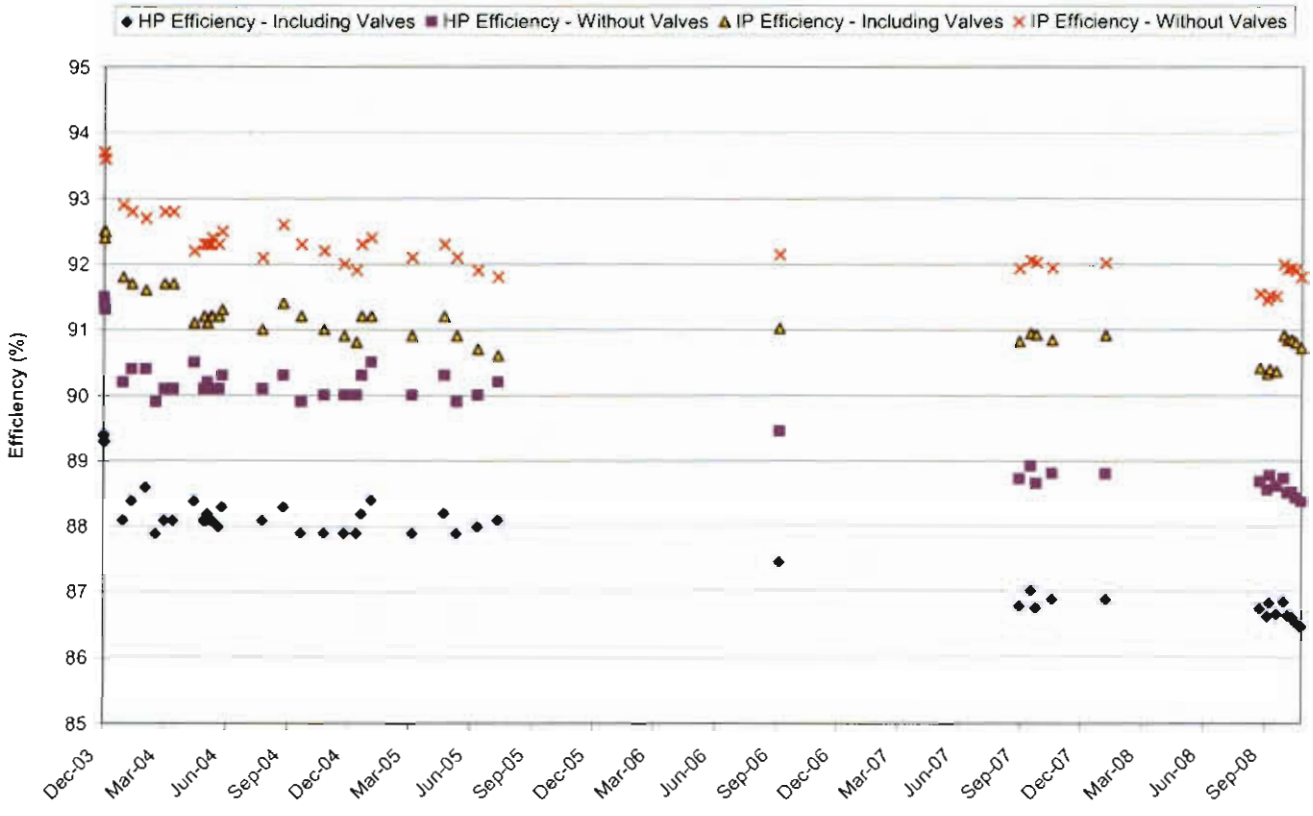
Plant	Labadie				
Unit	4				
Period	10/1/08	to	11/1/08		
Full Load Performance			Oct-08	Sep-08	Oct-07
Hours of Data			31	437	211
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		627.0	633.6	642.8
AUX POWER	MW		30.2	30.5	29.7
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10390.3	10265.1	10166.4
Boiler Efficiency Actual	%		85.1	85.3	85.2
CONTROL VALVE POSITION LVDT	%		98.7	98.7	99.1
FEEDWATER TEMP TO ECON	degF		484.1	485.7	482.8
FEEDWATER TEMP TO HTR 1	degF		434.1	435.7	431.3
HP Turbine Efficiency Actual	%		87.2	87.1	87.7
IP Turbine Efficiency Corrected	%		93.4	93.5	93.8
Condenser Pressure HP	inHga		3.1	3.2	2.7
Condenser Pressure LP	inHga		2.5	2.6	2.3
AIRHTR-A GAS OUTLET TEMP	degF		342.3	345.2	330.7
AIRHTR-B GAS OUTLET TEMP	degF		328.7	332.1	324.7
AMBIENT AIR TEMP	degF		63.6	72.2	69.0
CIRC WTR TEMP TO LP CONDB	degF		69.9	72.2	66.6
CIRC WTR TEMP TO LP CONDB	degF		70.6	73.1	67.6
CIRC WTR TEMP TO LP CONDB	degF		70.5	72.9	67.3
CIRC WTR TEMP TO LP CONDB	degF		70.2	72.4	66.7
Minimum River Temperature	degF		69.9	72.2	66.6
FWH 1 Temperature Rise	degF		50.0	50.0	51.5
Net Load	MW		596.8	603.1	613.2
Average Cond Press	inHga		2.8	2.9	2.5
Average Exit Gas Temperature	degF		335.5	338.6	327.7
Aux Power	%		4.8	4.8	4.6
Gross Unit Heat Rate	BTU/KW-HR		9889.9	9770.8	9697.2
Gross Turbine Heat Rate	BTU/KW-HR		8412.8	8332.2	8264.8

Unit 4 heat rate 300 Btu/kWhr greater than Unit 3 in October and 200 Btu/kWhr higher than last October

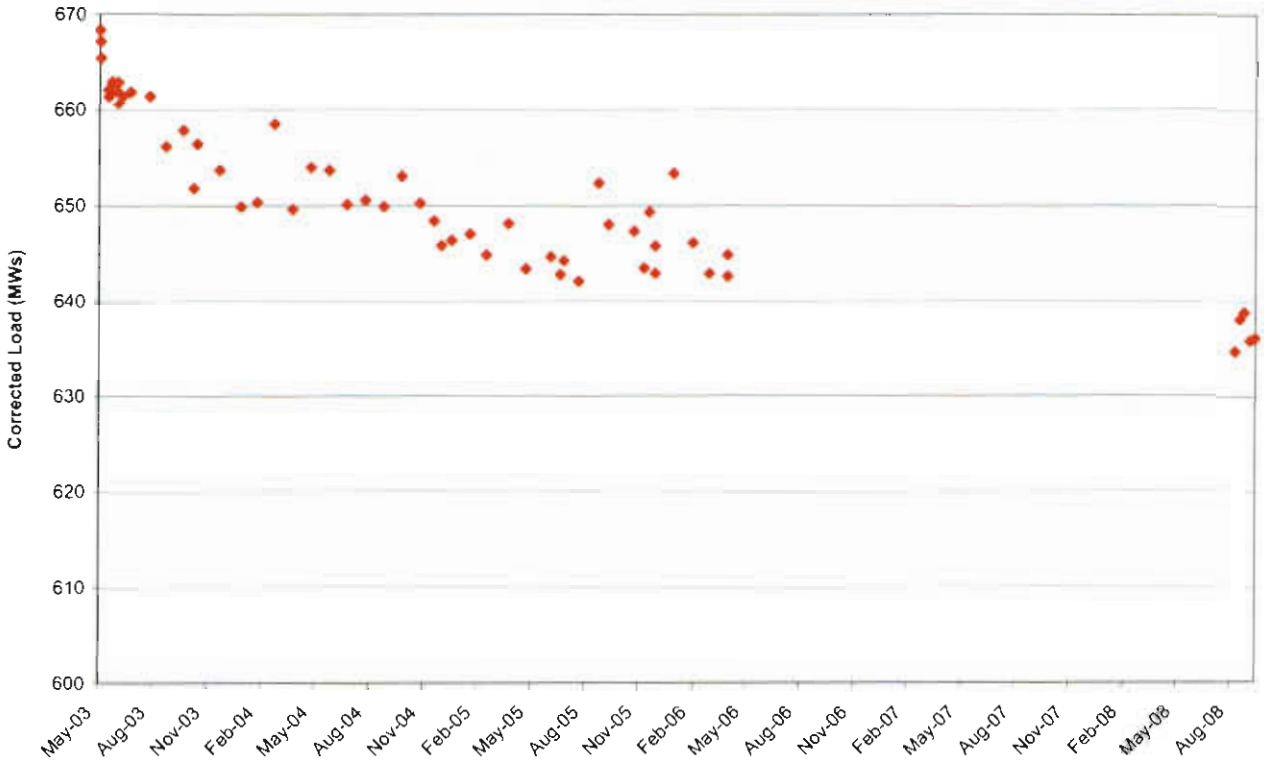
Labadie Unit 3 - Corrected Load



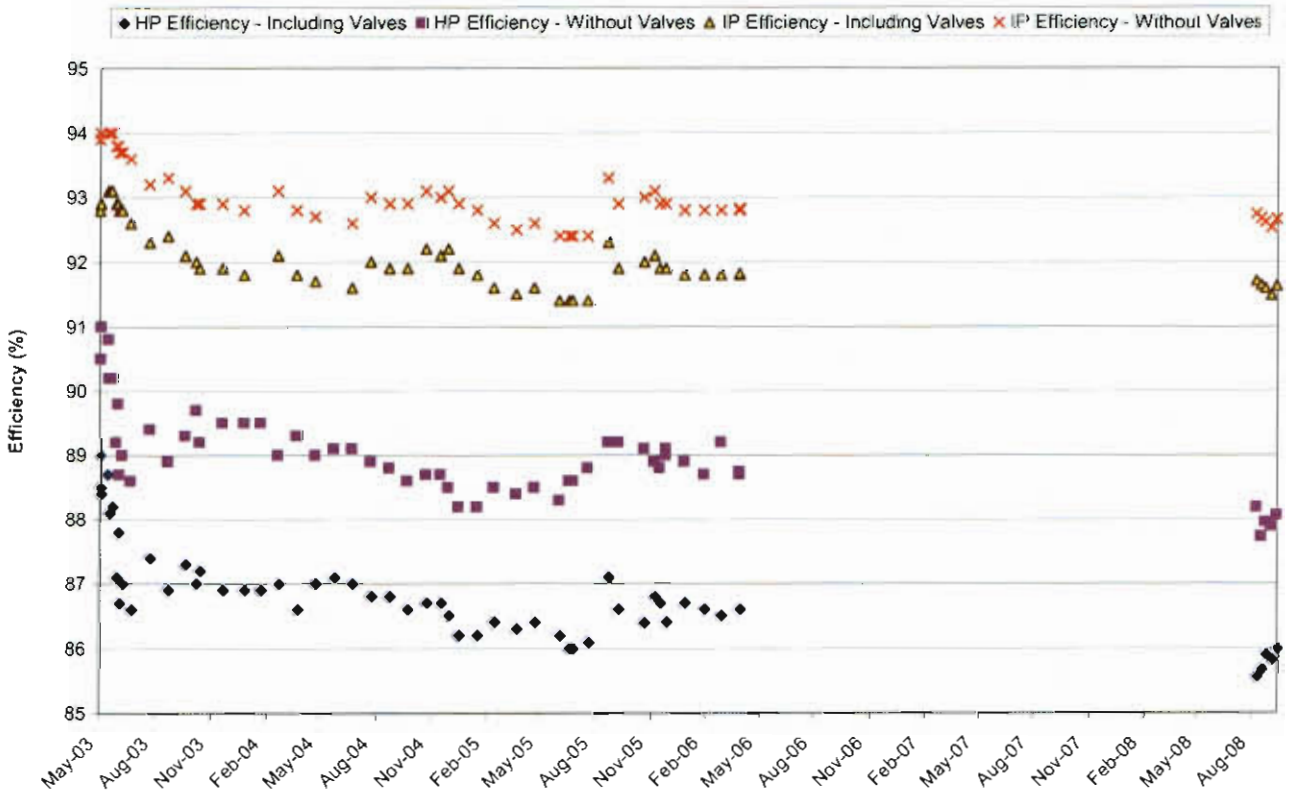
Labadie Unit 3 - HP and IP Efficiencies



Labadie Unit 4 - Corrected Load



Labadie Unit 4 - HP and IP Efficiencies



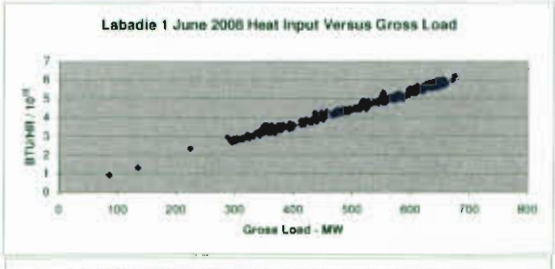
Summary of Performance Report for:

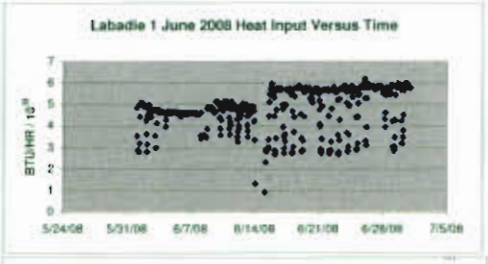
Plant	Labadie		
Unit	1		
Period	6/1/08	to	7/1/08

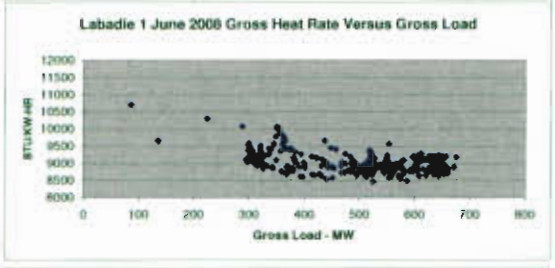
Full Load Performance

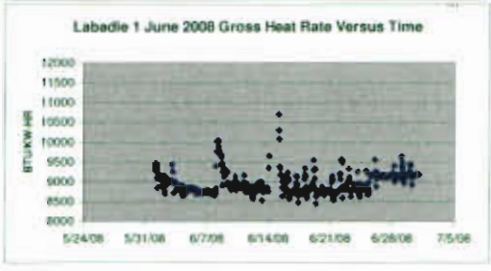
Hours of Data 39

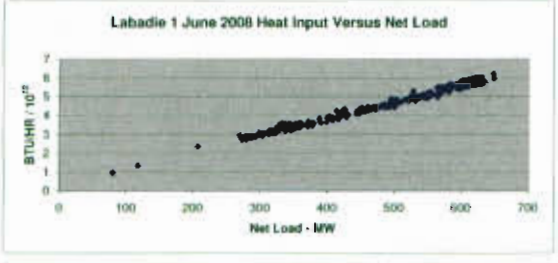
	Averages	
GENERATOR MEGAWATTS	650.1	MW
AUX POWER	26.1	MW
Net Unit Heat Rate Actual (GPHR)	9357.9	BTU/KW-HR
Boiler Efficiency Actual	85.3	%
CONTROL VALVE POSITION LVDT	99.9	%
FEEDWATER TEMP TO ECON	492.8	degF
FEEDWATER TEMP TO HTR 1	437.8	degF
HP Turbine Efficiency Actual	87.2	%
IP Turbine Efficiency Corrected	90.8	%
Condenser Pressure HP	2.6	inHga
Condenser Pressure LP	2.1	inHga
AIRHTR-A GAS OUTLET TEMP	339.3	degF
AIRHTR-B GAS OUTLET TEMP	324.3	degF
AMBIENT AIR TEMP	75.2	degF
CIRC WTR TEMP TO LP CONDB	74.5	degF
CIRC WTR TEMP TO LP CONDB	75.5	degF
CIRC WTR TEMP TO LP CONDB	75.2	degF
CIRC WTR TEMP TO LP CONDB	74.7	degF
Minimum River Temperature	74.5	degF
FWH 1 Temperature Rise	55.0	degF
Net Load	624.1	MW
Average Cond Press	2.3	inHga
Average Exit Gas Temperature	331.8	degF
Aux Power	4.0	%
Gross Unit Heat Rate	8982.8	BTU/KW-HR
Gross Turbine Heat Rate	7666.7	BTU/KW-HR

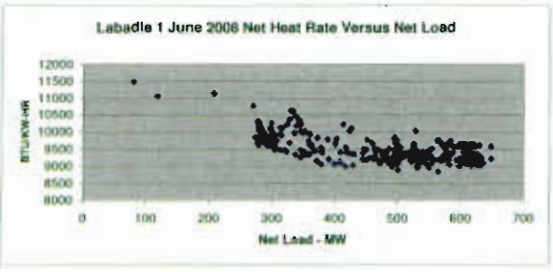


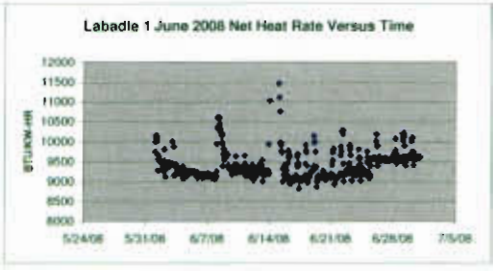












Labadie Unit 1 Rollup, June 2008

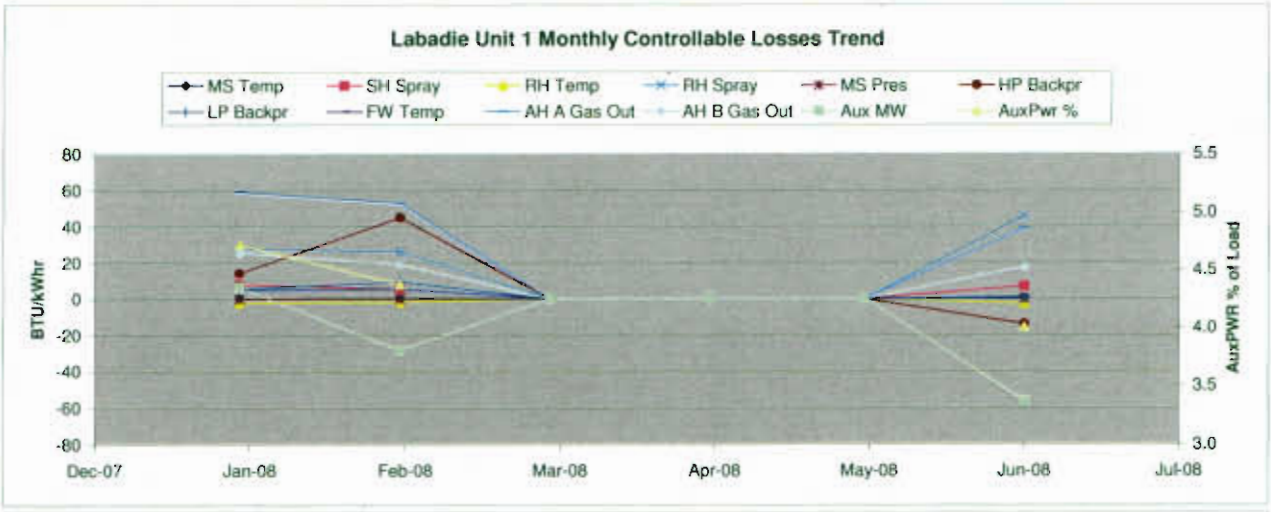
Notable Deviations in Plant Performance Data / Discussion Topics, etc.

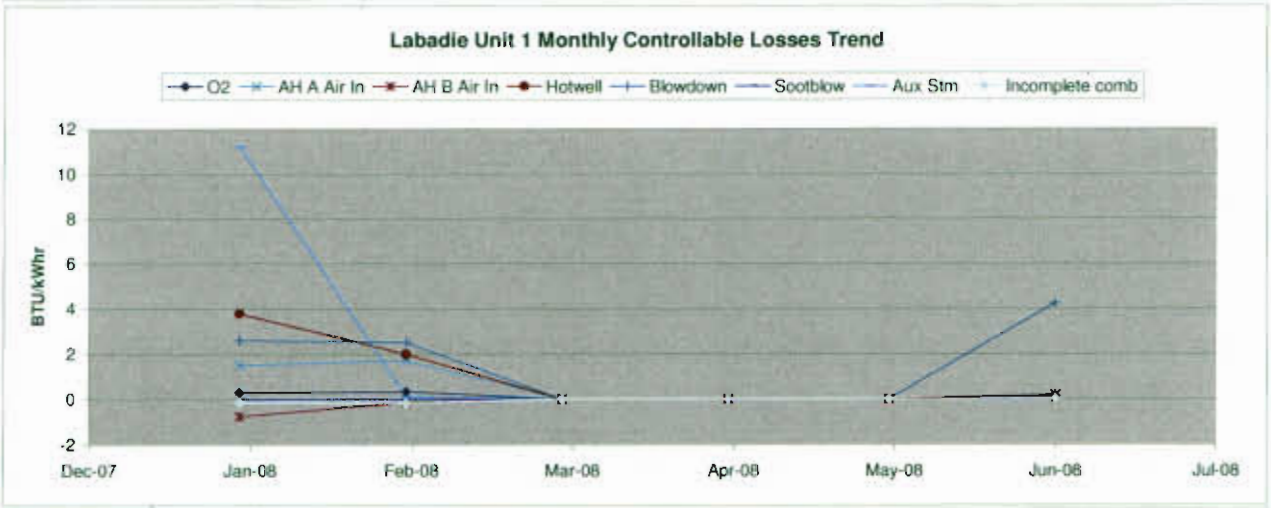
1. The controllable loss parameter target values need to be updated to reflect current plant operation. The target values for all controllable loss parameters have been reviewed using actual 2007 unit data.
2. Reheat Spray loss is about double the value from prior to the outage.
3. Net Unit Heat Rate did decrease following the outage as expected.

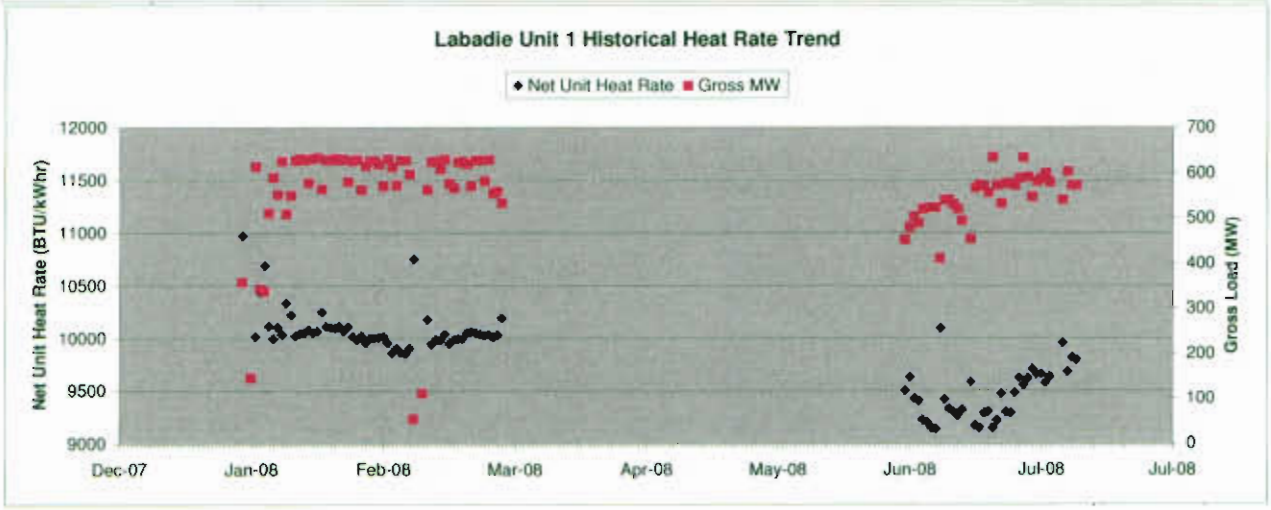
Top Priority Engineering Action Items	JR#	Priority	Resp Pty

Top Instrumentation Deficiencies	Point ID	Actual	Expected	JR#	Priority	Resp Pty

Top Priority EtaPro/OPM Action Items	Priority	Resp Pty
Update target values with agreed upon target values/curves	1	JDS


Labadie Unit 1 Monthly Controllable Losses Trend
MS Temp
SH Spray
RH Temp
RH Spray
MS Pres
HP Backpr
LP Backpr
FW Temp
AH A Gas Out
AH B Gas Out
Aux MW
AuxPwr %
BTU/kWhr
AuxPWR % of Load
80
60
40
20
0
-20
-40
-60
-80
5.5
5.0
4.5
4.0
3.5
3.0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 1 Monthly Controllable Losses Trend
O2
AH A Air In
AH B Air In
Hotwell
Blowdown
Sootblow
Aux Stm
Incomplete comb
BTU/kWhr
12
10
8
6
4
2
0
-2
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 1 Historical Heat Rate Trend
Net Unit Heat Rate
Gross MW
Net Unit Heat Rate (BTU/kWhr)
Gross Load (MW)
12000
11500
11000
10500
10000
9500
9000
700
600
500
400
300
200
100
0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Jul-08

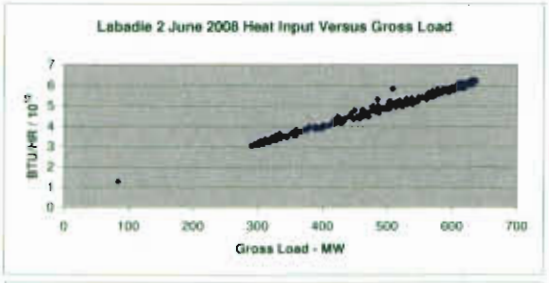
Unit 1 Performance Analysis June-08
Overall Heat Rate & Losses Summary
1. The controllable loss parameter target values need to be updated to reflect current plant operation.
Steam Generator Performance Summary:
1. AH A Efficiency And Effectiveness much lower than AH B 2. RH Temperature and Spray up in late June
Steam Turbine Performance Summary:
Separate evaluation performed for LP turbine acceptance
Condenser Performance Summary:
No items noted
Feedwater Heater Performance Summary:
No items noted
Recommended Actions:
Instrumentation or calculation related issues:
The EtaPro target values need to be updated to reflect current plant operation.
Changes made to the system that affects this month's report:

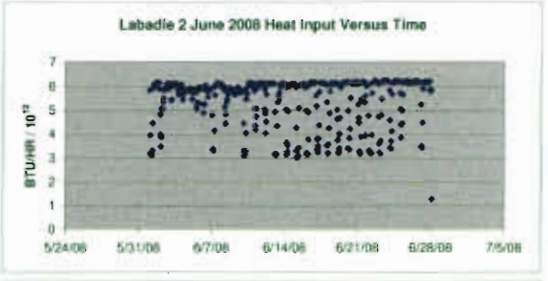
Summary of Performance Report for:

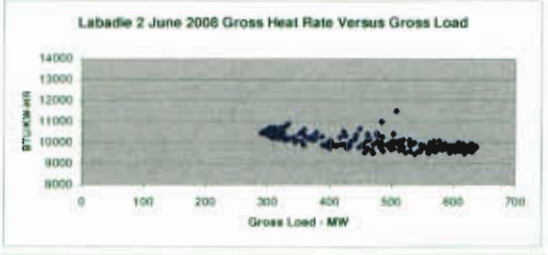
Plant	Labadie		
Unit	2		
Period	6/1/08	to	7/1/08

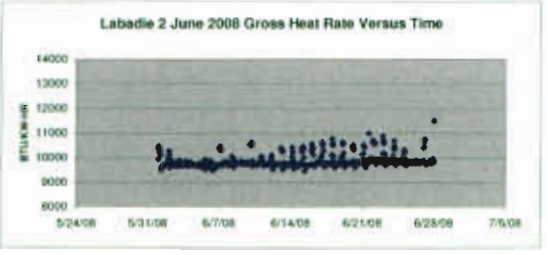
Full Load Performance
Hours of Data 266

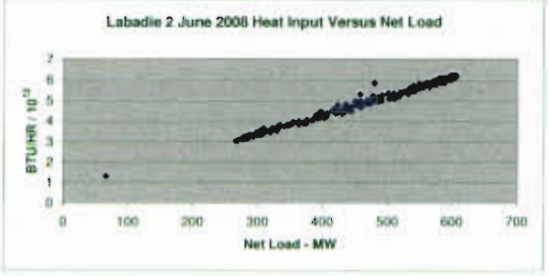
	Averages	
GENERATOR MEGAWATTS	629.5	MW
AUX POWER	30.6	MW
Net Unit Heat Rate Actual (GPHI)	10268.8	BTU/KW-HR
Boiler Efficiency Actual	85.3	%
CONTROL VALVE POSITION LVDT	99.9	%
FEEDWATER TEMP TO ECON	495.8	degF
FEEDWATER TEMP TO HTR 1	447.6	degF
HP Turbine Efficiency Actual	86.8	%
IP Turbine Efficiency Corrected	90.5	%
Condenser Pressure HP	3.0	in Hga
Condenser Pressure LP	2.4	in Hga
AIRHTR-A GAS OUTLET TEMP	342.0	degF
AIRHTR-B GAS OUTLET TEMP	347.9	degF
AMBIENT AIR TEMP	79.1	degF
CIRC WTR TEMP TO LP CONDB	74.5	degF
CIRC WTR TEMP TO LP CONDB	75.3	degF
CIRC WTR TEMP TO LP CONDB	75.2	degF
CIRC WTR TEMP TO LP CONDB	74.6	degF
Minimum River Temperature	74.5	degF
FWH 1 Temperature Rise	48.1	degF
Net Load	598.6	MW
Average Cond Press	2.7	in Hga
Average Exit Gas Temperature	345.0	degF
Aux Power	4.9	%
Gross Unit Heat Rate	9767.9	BTU/KW-HR
Gross Turbine Heat Rate	8338.0	BTU/KW-HR

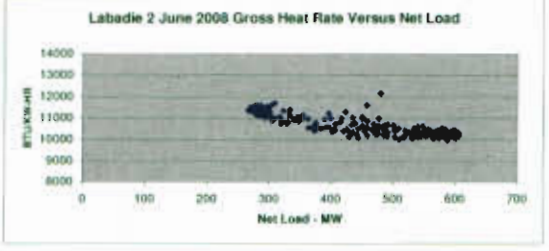


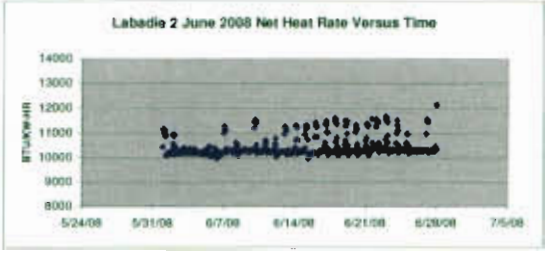












Labadie Unit 2 Rollup, June 2008

Notable Deviations in Plant Performance Data / Discussion Topics, etc.

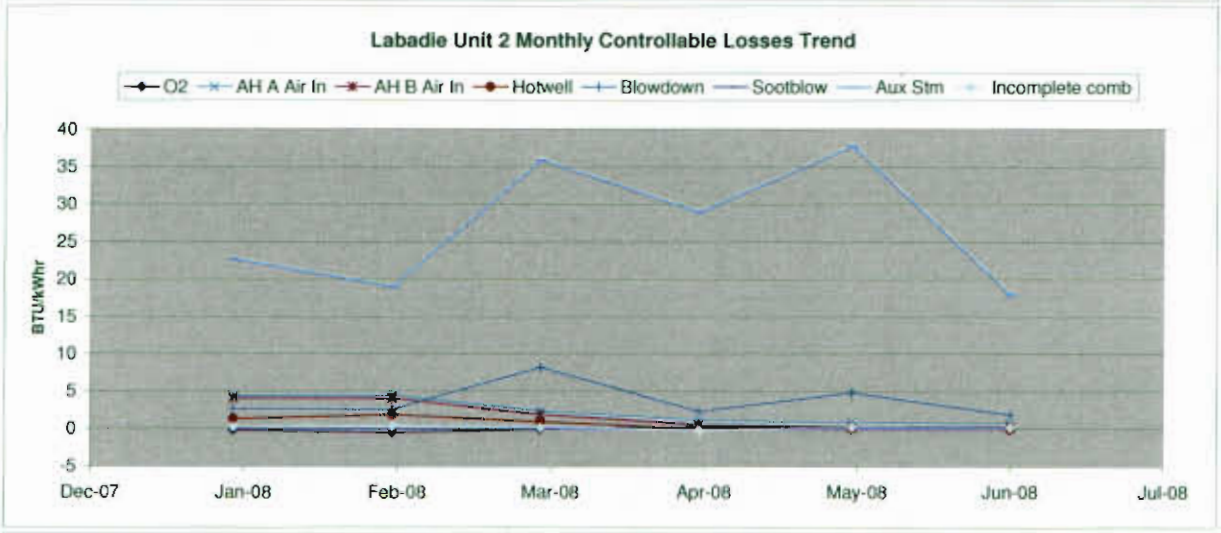
1. The controllable loss parameter target values need to be updated to reflect current plant operation. The target values for all controllable loss parameters have been reviewed using actual 2007 unit data.

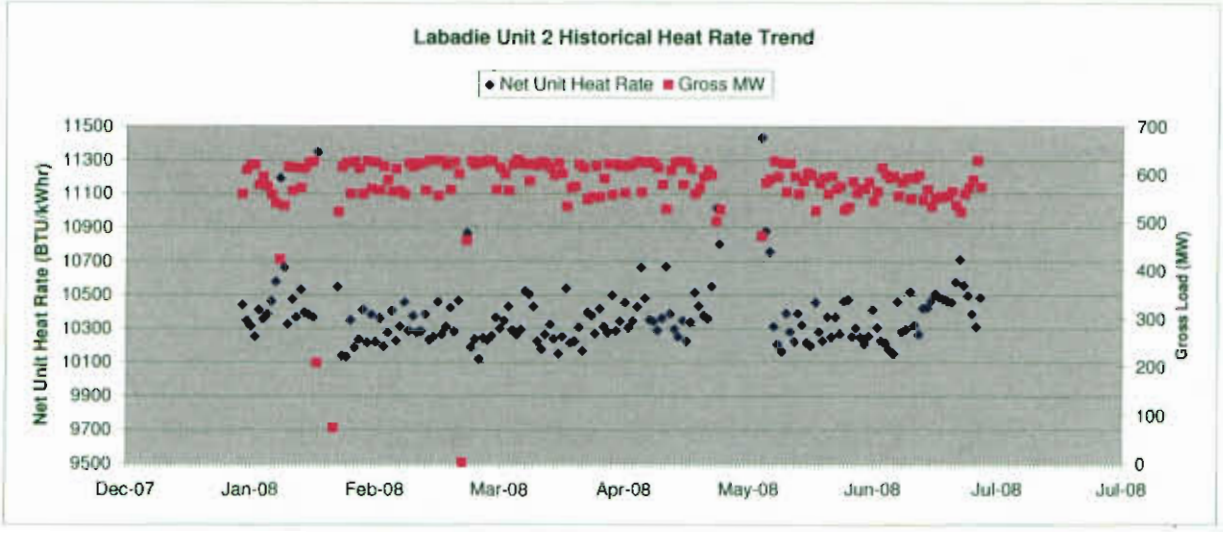
Top Priority Engineering Action Items	JR#	Priority	Resp Pty

Top Instrumentation Deficiencies	Point ID	Actual	Expected	JR#	Priority	Resp Pty

Top Priority EtaPro/OPM Action Items	Priority	Resp Pty
Update target values with agreed upon target values/curves	1	JDS


Labadie Unit 2 Monthly Controllable Losses Trend
MS Temp
SH Spray
RH Temp
RH Spray
MS Pres
HP Backpr
LP Backpr
FW Temp
AH A Gas Out
AH B Gas Out
Aux MW
AuxPwr %
BTU/kWhr
AuxPWR % of Load
70
60
50
40
30
20
10
0
-10
5.5
5.0
4.5
4.0
3.5
3.0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 2 Monthly Controllable Losses Trend
O2
AH A Air In
AH B Air In
Hotwell
Blowdown
Sootblow
Aux Stm
Incomplete comb
BTU/kWhr
40
35
30
25
20
15
10
5
0
-5
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 2 Historical Heat Rate Trend
Net Unit Heat Rate
Gross MW
Net Unit Heat Rate (BTU/kWhr)
Gross Load (MW)
11500
11300
11100
10900
10700
10500
10300
10100
9900
9700
9500
700
600
500
400
300
200
100
0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Jul-08

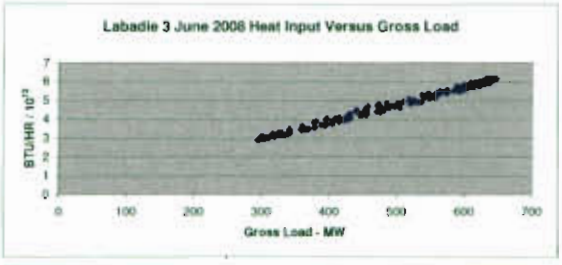
Unit 2 Performance Analysis June-08
Overall Heat Rate & Losses Summary
1. The controllable loss parameter target values need to be updated to reflect current plant operation.
Steam Generator Performance Summary:
1. AH Gas Side Differential Pressure increased by over an inch in June.
Steam Turbine Performance Summary:
1. Internal IP Efficiency decreased 0.5% over the month
Condenser Performance Summary:
No items noted
Feedwater Heater Performance Summary:
No items noted
Recommended Actions:
Instrumentation or calculation related issues:
The EtaPro target values need to be updated to reflect current plant operation.
Changes made to the system that affects this month's report:

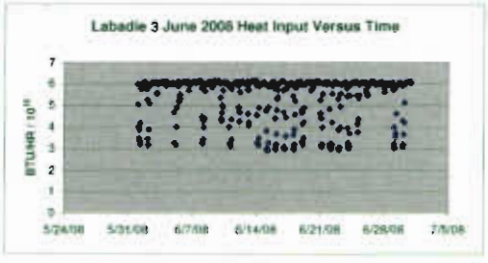
Summary of Performance Report for:

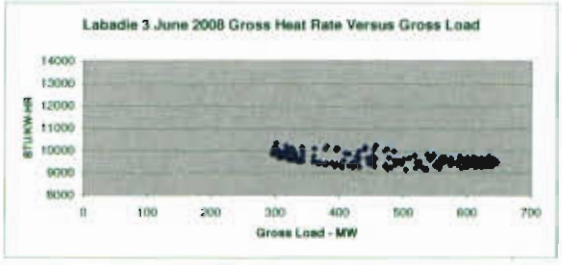
Plant	Labadie		
Unit	3		
Period	6/1/08	to	7/1/08

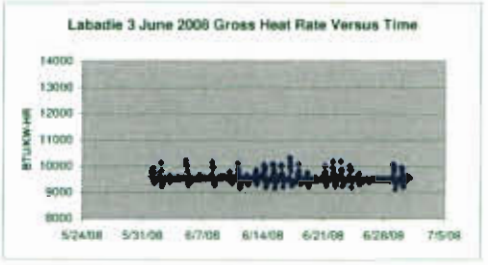
Full Load Performance

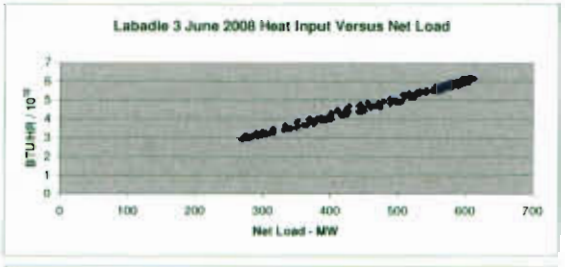
Hours of Data	546	
	Averages	
GENERATOR MEGAWATTS	636.7	MW
AUX POWER	30.8	MW
Net Unit Heat Rate Actual (GPHI)	10068.8	BTU/KW-HR
Boiler Efficiency Actual	85.5	%
CONTROL VALVE POSITION LVDT	104.8	%
FEEDWATER TEMP TO ECON	486.7	degF
FEEDWATER TEMP TO HTR 1	438.7	degF
HP Turbine Efficiency Actual	87.3	%
IP Turbine Efficiency Corrected	93.8	%
Condenser Pressure HP	3.4	in-Hga
Condenser Pressure LP	2.7	in-Hga
AIRHTR-A GAS OUTLET TEMP	340.6	degF
AIRHTR-B GAS OUTLET TEMP	336.0	degF
AMBIENT AIR TEMP	78.4	degF
CIRC WTR TEMP TO LP CONDB	74.0	degF
CIRC WTR TEMP TO LP CONDB	75.0	degF
CIRC WTR TEMP TO LP CONDB	74.7	degF
CIRC WTR TEMP TO LP CONDB	74.3	degF
Minimum River Temperature	74.0	degF
FWH 1 Temperature Rise	48.0	degF
Net Load	605.8	MW
Average Cond Press	3.0	in-Hga
Average Exit Gas Temperature	338.3	degF
Aux Power	4.8	%
Gross Unit Heat Rate	9561.0	BTU/KW-HR
Gross Turbine Heat Rate	8190.6	BTU/KW-HR

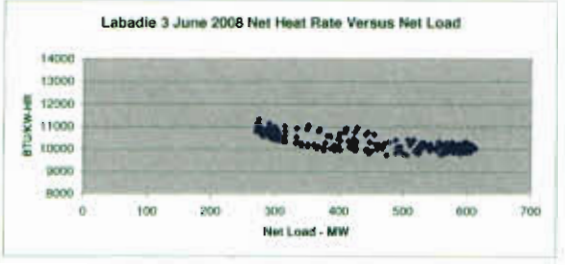


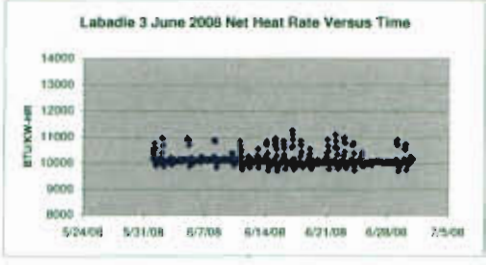












Labadie Unit 3 Rollup, June 2008

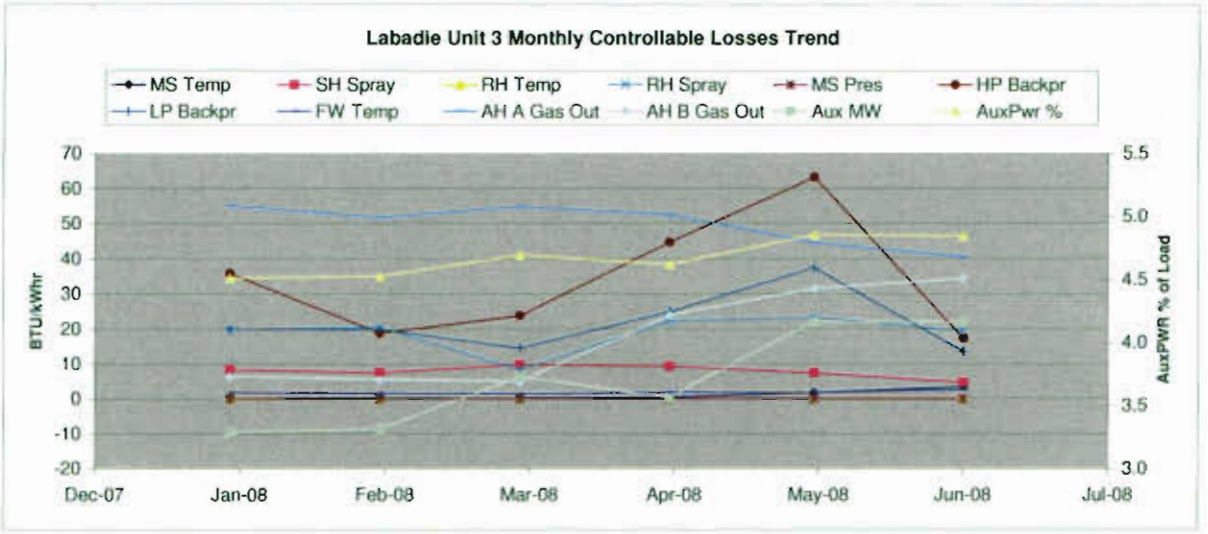
Notable Deviations in Plant Performance Data / Discussion Topics, etc

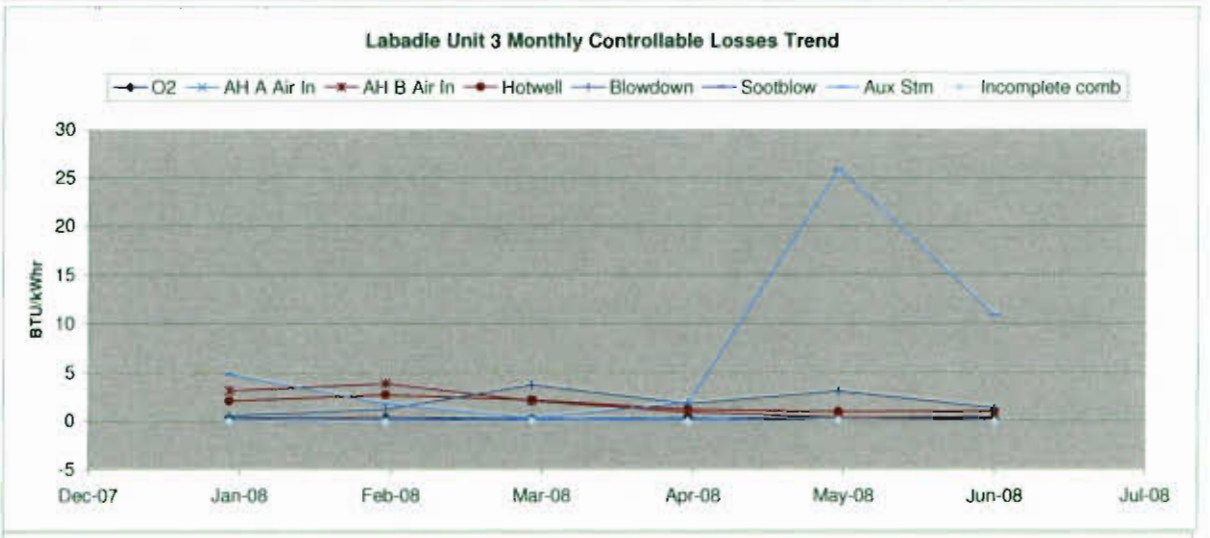
1. The controllable loss parameter target values need to be updated to reflect current plant operation. The target values for all controllable loss parameters have been reviewed using actual 2007 unit data.
2. HP and LP backpressure loss was increasing through May. Both losses decreased significantly in June.

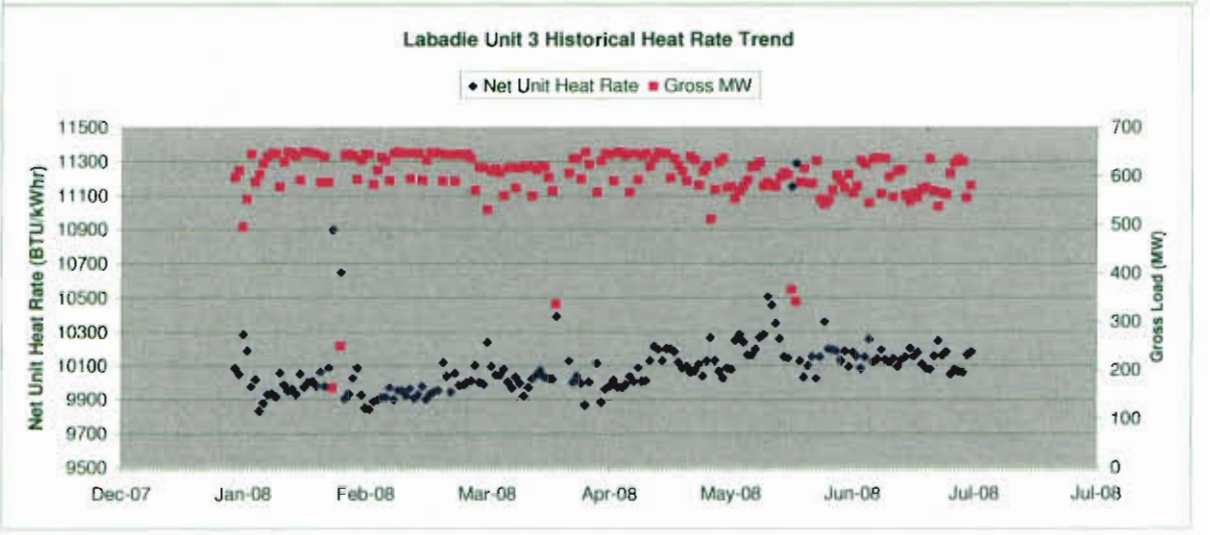
Top Priority Engineering Action Items	JR#	Priority	Resp Pty

Top Instrumentation Deficiencies	Point ID	Actual	Expected	JR#	Priority	Resp Pty

Top Priority EtaPro/OPM Action Items	Priority	Resp Pty
Update target values with agreed upon target values/curves	1	JDS


Labadie Unit 3 Monthly Controllable Losses Trend
MS Temp
SH Spray
RH Temp
RH Spray
MS Pres
HP Backpr
LP Backpr
FW Temp
AH A Gas Out
AH B Gas Out
Aux MW
AuxPwr %
BTU/kWhr
AuxPWR % of Load
70
60
50
40
30
20
10
0
-10
-20
5.5
5.0
4.5
4.0
3.5
3.0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 3 Monthly Controllable Losses Trend
O2
AH A Air In
AH B Air In
Hotwell
Blowdown
Sootblow
Aux Stm
Incomplete comb
BTU/kWhr
30
25
20
15
10
5
0
-5
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 3 Historical Heat Rate Trend
Net Unit Heat Rate
Gross MW
Net Unit Heat Rate (BTU/kWhr)
Gross Load (MW)
11500
11300
11100
10900
10700
10500
10300
10100
9900
9700
9500
700
600
500
400
300
200
100
0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Jul-08

Unit 3 Performance Analysis June-08
Overall Heat Rate & Losses Summary
1. The controllable loss parameter target values need to be updated to reflect current plant operation.
Steam Generator Performance Summary:
No items noted
Steam Turbine Performance Summary:
No items noted
Condenser Performance Summary:
1. Cleanliness factor up by 10-15% since beginning on the month
Feedwater Heater Performance Summary:
1. FWH 6A Drain Inlet Flow 30 klbs/hr less than FWH 6B. FWH 6A Extraction Flow 30 klbs/hr higher than FWH 6B. FWH 6A outlet temp is 20F higher than FWH 6B outlet temperature. 2. FWH 5A Extraction flow 30 klbs/hr less than FWH 5B. 3. FWH 2 temperature rise is 7F lower than expected.
Recommended Actions:
Instrumentation or calculation related issues:
The EtaPro target values need to be updated to reflect current plant operation.
Changes made to the system that affects this month's report:

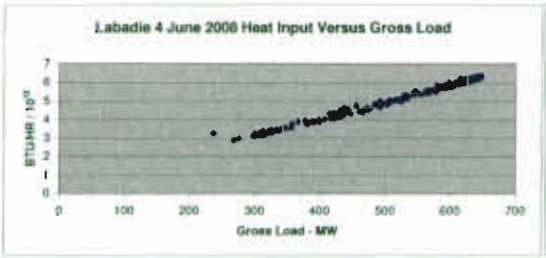
Summary of Performance Report for:

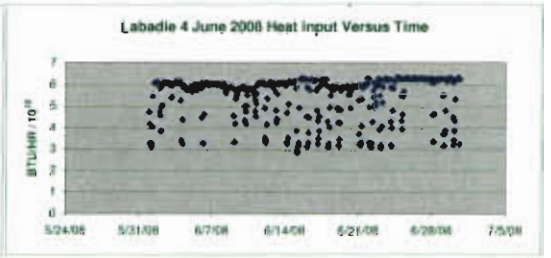
Plant	Labadie		
Unit	4		
Period	6/1/08	to	7/1/08

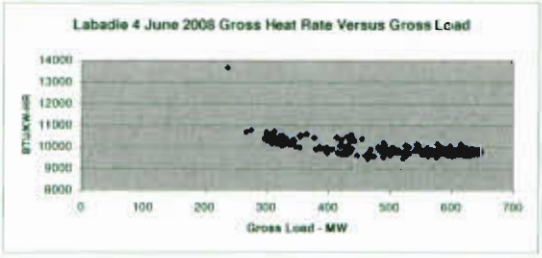
Full Load Performance

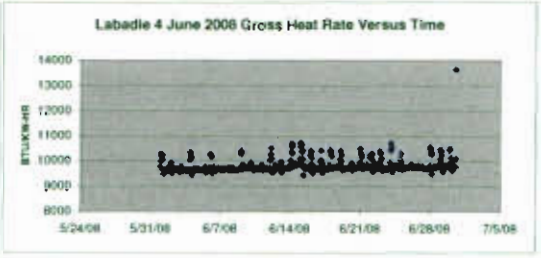
Hours of Data 157

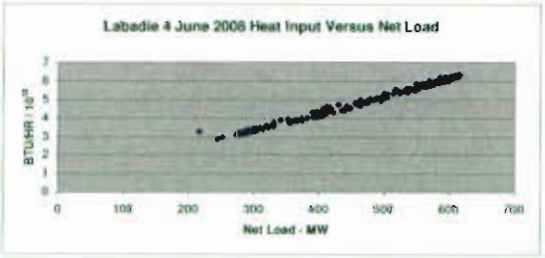
	Averages	
GENERATOR MEGAWATTS	641.0	MW
AUX POWER	29.9	MW
Net Unit Heat Rate Actual (GPHI)	10263.0	BTU/KW-HR
Boiler Efficiency Actual	85.3	%
CONTROL VALVE POSITION LVDT	98.7	%
FEEDWATER TEMP TO ECON	484.5	degF
FEEDWATER TEMP TO HTR 1	423.3	degF
HP Turbine Efficiency Actual	87.3	%
IP Turbine Efficiency Corrected	93.7	%
Condenser Pressure HP	3.4	inHga
Condenser Pressure LP	2.6	inHga
AIRHTR-A GAS OUTLET TEMP	339.5	degF
AIRHTR-B GAS OUTLET TEMP	337.9	degF
AMBIENT AIR TEMP	78.3	degF
CIRC WTR TEMP TO LP CONDB	75.4	degF
CIRC WTR TEMP TO LP CONDB	76.3	degF
CIRC WTR TEMP TO LP CONDB	76.0	degF
CIRC WTR TEMP TO LP CONDB	75.5	degF
Minimum River Temperature	75.4	degF
FWH 1 Temperature Rise	61.2	degF
Net Load	611.1	MW
Average Cond Press	3.0	inHga
Average Exit Gas Temperature	338.2	degF
Aux Power	4.7	%
Gross Unit Heat Rate	9783.7	BTU/KW-HR
Gross Turbine Heat Rate	8344.3	BTU/KW-HR

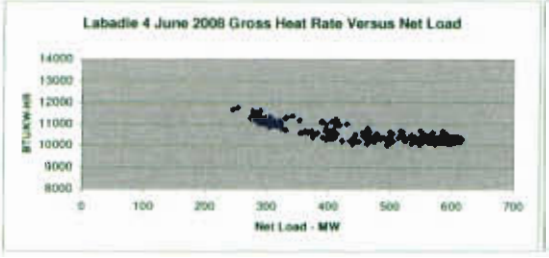


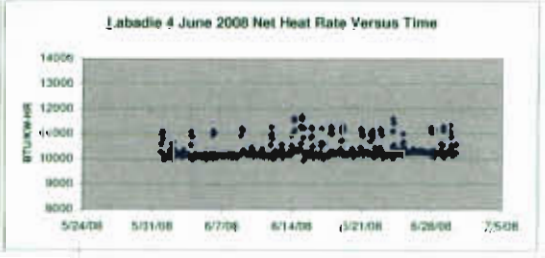




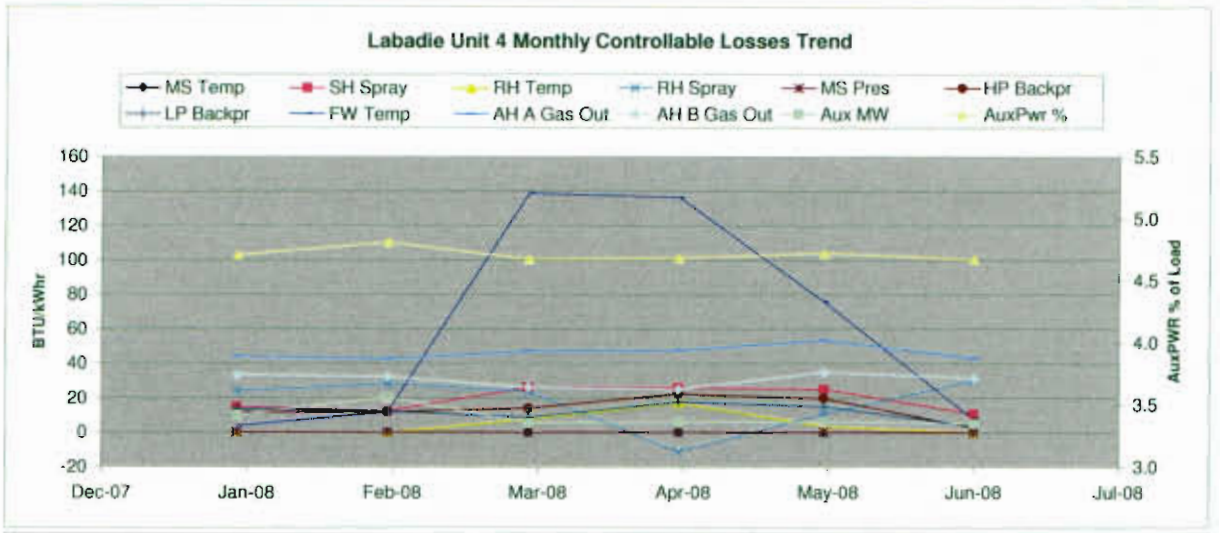


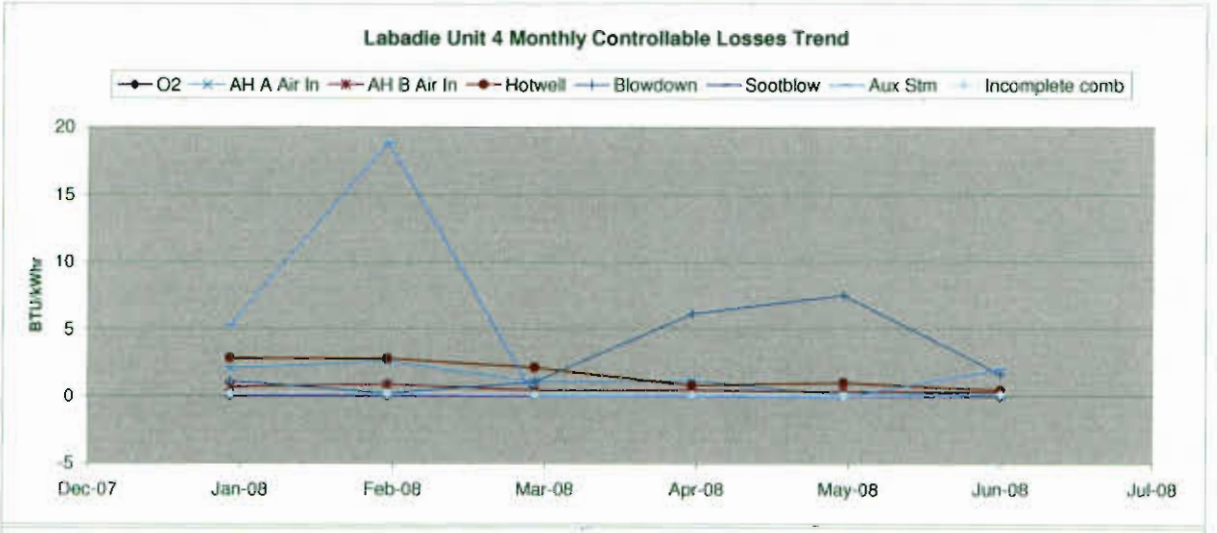


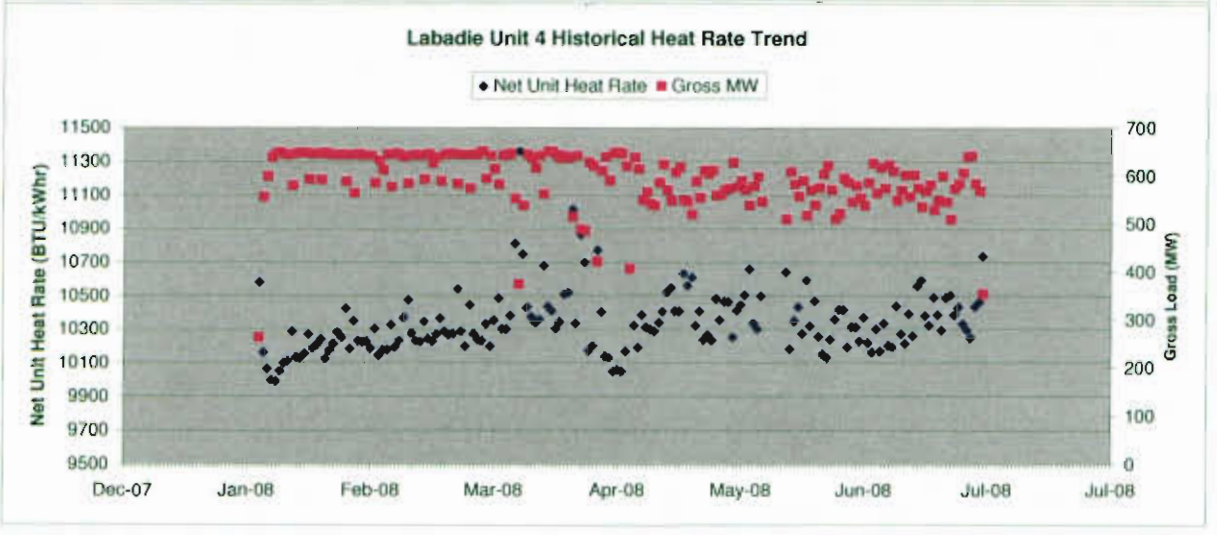




Labadie Unit 4 Scorecard, June 2008						
Notable Deviations in Plant Performance Data / Discussion Topics, etc.						
1. The controllable loss parameter target values need to be updated to reflect current plant operation. The target values for all controllable loss parameters have been reviewed using actual 2007 unit data. 2. FW Temp was the largest controllable loss for the unit during March, April, and May						
Top Priority Engineering Action Items				JR#	Priority	Resp Pty
Top Instrumentation Deficiencies	Point ID	Actual	Expected	JR#	Priority	Resp Pty
Top Priority EtaPro/OPM Action Items					Priority	Resp Pty
Update target values with agreed upon target values/curves					1	JDS
6A normal drainer between 30 and 60% open. 6B normal drainer 100% open with emergency drain 20-30% open						
3. DA Extraction temp dropped by 100F in the middle of June - instrumentation issue corrected?						


Labadie Unit 4 Monthly Controllable Losses Trend
MS Temp
SH Spray
RH Temp
RH Spray
MS Pres
HP Backpr
LP Backpr
FW Temp
AH A Gas Out
AH B Gas Out
Aux MW
AuxPwr %
BTU/kWhr
AuxPWR % of Load
160
140
120
100
80
60
40
20
0
-20
5.5
5.0
4.5
4.0
3.5
3.0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 4 Monthly Controllable Losses Trend
O2
AH A Air In
AH B Air In
Hotwell
Blowdown
Sootblow
Aux Stm
Incomplete comb
BTU/kWhr
20
15
10
5
0
-5
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08


Labadie Unit 4 Historical Heat Rate Trend
Net Unit Heat Rate
Gross MW
Net Unit Heat Rate (BTU/kWhr)
Gross Load (MW)
11500
11300
11100
10900
10700
10500
10300
10100
9900
9700
9500
700
600
500
400
300
200
100
0
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Jul-08

Unit 4 Performance Analysis
June-08

Overall Heat Rate & Losses Summary

1. The controllable loss parameter target values need to be updated to reflect current plant operation.

Steam Generator Performance Summary:

No items noted

Steam Turbine Performance Summary:

No items noted

Condenser Performance Summary:

1. Both vacuum pumps running with a total removal rate of 140 SCFM.

Feedwater Heater Performance Summary:

1. 6A extraction temp and drain temp reading the same
   6A TTD and DCA showing unusual trends - venting issue
   6A normal drainer between 30 and 60% open. 6B normal drainer 100% open with emergency drain 20-30% open
2. 5A DCA 5F higher than expected
3. DA Extraction temp dropped by 100F in the middle of June - instrumentation issue corrected?

Recommended Actions:

Instrumentation or calculation related issues:

The EtaPro target values need to be updated to reflect current plant operation.

Changes made to the system that affects this month's report:

Meramec

Heat Rate Performance Reports

Attachment D

July 14, 2009

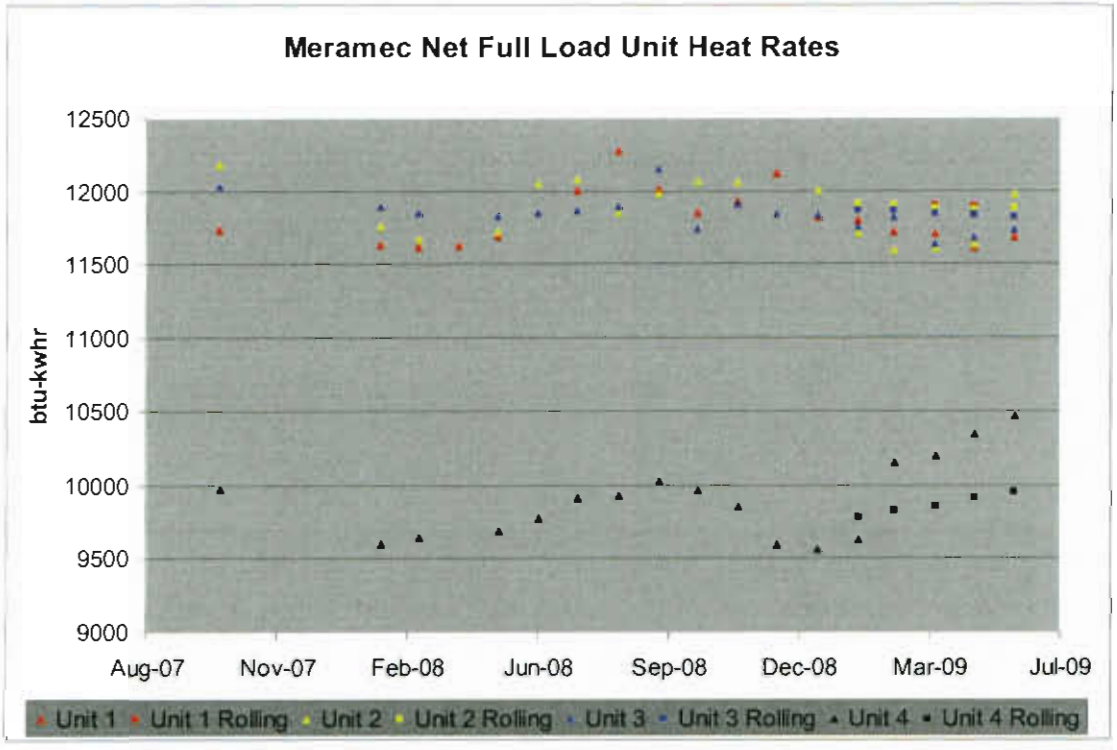
To: Tim Lafser

From: Joe Sind

CC: Bob Meiners, John Beck, Steve Schaeffer, Jim Vaughn, Tom Hart, Jeff Scott, Mike Moade, Chris Brown, Kyle Witgcs, Matt Wallace, Ken Stuckmeyer, Don Clayton, Jeff Colter, Scott McCormack, Chris Taylor, Jeff Shelton, Scott Hixson, Jim Barnett, Glenn Tiffin, Tim Finnell

Re: Meramec June 2009 Performance Report

Executive Summary



- All units show an increase in heat rate compared with the previous month mostly due to increased back pressure with unit's 2 and 4 showing the biggest increase in both. However all units are in the same shape or slightly better than this time last year.
- I:\MERAMEC\Performance\Instrument & other issues.xls has been updated and most issues have been JR'd and are in scheduling.

Action Items

- The plant is being asked for guidance concerning any available Pi information which could be used to determine how much each unit may be blowing down or supplying building heat (aux) steam.
- Performance Engineering has action to redesign the per-unit tabular data in the monthly reports (remove redundant information and add items to hopefully better explain heat rate changes).
- Performance Engineering has action to work with the plant concerning valve leakage and cycle isolation surveys. This has begun with Co-opt Cuong Pham doing Perf. Eng's. duties
- Performance Engineering has action to work with the plant to try and validate a primary flow for EtaPRO to use for heat rate calculations. This is done for unit 4. Unit 1's primary flow (feedwater) is in very good agreement with steam flow from turbine first stage pressure, and Unit 2's steam flow/load relation is very similar to Unit 1(feedwater flow not available on unit 2). Therefore any validation efforts for these units will be after cycle isolation checks. This leaves Unit 3 as the high priority unit.

Below is the plant heat rate YTD through June for the trend only KPI

Plant	2009 Actual	Threshold	Target	Stretch
Meramec	11164	11320	11114	10965

Unit 1

Summary of Performance Report for:

Plant	Meramec			
Unit	1			
Period		Jun-08	May-09	Jun-09
Full Load Performance				
Hours of Data		465	238	336
		Averages	**Averages**	**Averages**
GENERATOR MEGAWATTS	MW	131	131.3	131.0
AUX POWER	MW	8.9	9.1	9.3
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR	11854	11610	11680.4
Boiler Efficiency Actual	%	85.2	85.6	85.6
CONTROL VALVE POSITION LVDT	%	100.0	99.8	99.9
FEEDWATER TEMP TO ECON	degF	450.3	448.5	449.6
FEEDWATER TEMP TO HTR 1	degF	371.5	370.3	372.2
HP Turbine Efficiency Actual	%	80.4	79.0	79.1
IP Turbine Efficiency Corrected	%	86.1	80.8	89.4
Condenser Pressure HP	inHga	2.8	2.6	2.9
AIRHTR-A GAS OUTLET TEMP	degF	318	318.2	314.1
AMBIENT AIR TEMP	degF	82.0	72.5	86.0
CIRC WTR TEMP TO COND	degF	75.5	67.0	79.7
River Temperature	degF	75.5	67.0	79.7
FWH 1 Temperature Rise	degF	78.8	78.2	77.4
Net Load	MW	122.1	122.2	121.7
Average Cond Press	inHga	2.8	2.6	2.9
Average Exit Gas Temperature	degF	318	318.2	314.1
Aux Power	%	6.8	7.0	7.1
Gross Unit Heat Rate	BTU/KW-HR	11051	10802	10850.7
Gross Turbine Heat Rate	BTU/KW-HR	9413	9250	9291.8
12 Month Rolling Average Net Unut Heat Rate			11892	11877

feedwater flow for heat rate calc. has not been validated

erroneous IP efficiency due to intermittent bad reheat temp

changes in cylinder efficiencies reflect proper corrections to data going forward, made late April

In last month's report it was stated that the elevated extraction steam temps to the No. 3 feedwater heater (600 vs expected around 525) and to the No. 5 feedwater heater (735 vs expected around 220) were investigated and found to be correct. Potential causes for these elevated temperatures are excess turbine seal leakages. The effects of these potential leaks were modeled with Virtual Plant and results are as follows:

No. 3 FWH – 12000 pph from HP turbine end glands causing a loss of 0.7 MW and a heat rate increase of 0..7 %

No. 5 FWH – 11600 pph from the IP dummy piston leakoff causing a loss of 0.8 MW and a heat rate increase of 0.9%

Combined effect of 1.6 MW and 1.6 % to heat rate.