AmerenUE P.O. BOX 66529 ST. LOUIS, MO 63166-6529

PRES RDG	PREV RDG	USE	READING	RATE	AMOUNT
08280	06695	1585	ACTUAL	1M SH	144.04
RIDER FAC ADJUSTMENT					1.58
RIDER ECRM ADJUSTMENT					1.58
ST LOUIS CITY MUNI TAX					6.00
AMOUNT DUE ON	07/25				153.20

FIRST CLASS MAIL
U.S. POSTAGE
PAID 1 OUNCE
ST LOUIS, MO
PERMIT NO. 2859

Service at:	1010 ABC STREET, UNIT 1F		
Service from	05/29 to 06/29/09	Days	31
Last Payment	06/29/09		$78.07
Acct. No	12345-67890	Bill Date	07/15/09

RETURN THIS STUB WITH PAYMENT TO:
AmerenUE
P.O. BOX 66529
ST. LOUIS, MO 63166-6529

Acct. No. **12345-67890**

AMT DUE	$153.20
Due By	07/25
Delinquent After	08/05

JOHN DOE
1010 ABC STREET, UNIT 1F
SAINT LOUIS, MO 63104

Attachment A

Ameren UE
Connecting Missouri

Please Return This Portion With Your Payment

AMOUNT DUE	DUE DATE
$8,337.89	July 24, 2009
AMOUNT PAYABLE AFTER DUE DATE	**ACCOUNT NUMBER**
$8,462.96	12345-67890

Amount Enclosed $ _____

ABC MARKET
1010 ABC STREET
CHESTERFIELD, MO 63006

AmerenUE
P. O. Box 66301
St. Louis, MO 63166-6301

60600000 00123456789000 000008337890 000008337890

Keep This Portion For Your Records

ACCOUNT NUMBER	12345-67890
NAME	ABC MARKET
SERVICE AT	1010 ABC STREET CHESTERFIELD, MO 63006

BILL DATE	July 14, 2009

TOTAL AMOUNT DUE BY	July 24, 2009	$8,337.89
AMOUNT PAYABLE AFTER DUE DATE		$8,462.96

Payment received on Jun 22, 2009 $6,852.52

TYPE OF READING	METER NUMBER	SERVICE FROM TO	NO. DAYS	METER READING PREVIOUS	METER READING PRESENT	READING DIFFERENCE	METER MULTIPLIER	THERM FACTOR	USAGE	R D
Total kWh	11111111	06/09-07/10	31	45840.0000	46999.0000	1159.0000	80.0000		92720.0000	A
Peak kW	11111111	06/09-07/10	31	0.0000	2.7500	2.7500	80.0000		220.0000	A

SUMMARY

	Service To			Service To	
Total kWh	07/10/2009	92720.0000	Peak kW	07/10/2009	220.0000
Total Billing Demand	07/10/2009	220.0000			
Billing Demand	07/10/2009	220.0000			

METERED ELECTRIC SERVICE BILLING

Rate 3M LGS - General Service			Service From	06/09/2009 to 07/10/2009	
Demand Charge	220.0 KW	@	$3.78000000	$831.60	
Base Energy Chg / Hours Used	33,000.0 KWH	@	$0.08090000	$2,669.70	
Base Energy Chg / Hours Used	44,000.0 KWH	@	$0.06090000	$2,679.60	
Base Energy Chg / Hours Used	15,720.0 KWH	@	$0.04100000	$644.52	
Customer Charge				$72.26	
Rider FAC Adjustment	92,720.0 KWH	@	$0.00100000	$92.72	
Rider ECRM Adjustment	92,720.0 KWH	@	$0.00100000	$92.72	
Total Service Amount					$7,083.12
Missouri State SalesTax				$299.26	
Missouri Local Sales Tax				$254.99	
Creve Coeur Annex Municipal Charge				$700.52	
Total Tax Related Charges					$1,254.77

Current Amount Due	$8,337.89
Prior Amount Due	$0.00
Total Amount Due	$8,337.89

A late payment charge of 1.5% will be addedfor any unpaid balance on all accounts after the due date.

Ameren UE

P. O. Box 66301
St. Louis, MO 63166
1-877-4AMEREN
www.ameren.com

Requirement (P) of 4 CSR 240-3.161(2)
Supply and Demand Side Resources

Unit Name	Ownership	Primary Fuel Type	Heat Rate 12 m Avg Rating Btu/Kwh	7/10-6/11 (MWh)	7/11-6/12 (MWh)	7/12-6/13 (MWh)	7/13-6/14 (MWh)
Callaway	AmerenUE	Nuclear	9,941	10,508,400	9,672,100	9,637,800	10,508,200
Labadie 1	AmerenUE	PRB Coal	9,677	943,800	970,700	983,600	983,800
Labadie 2	AmerenUE	PRB Coal	10,398	4,868,300	4,858,700	4,786,600	3,816,800
Labadie 3	AmerenUE	PRB Coal	10,050	4,715,400	4,728,600	3,499,000	4,441,800
Labadie 4	AmerenUE	PRB Coal	10,296	4,838,600	3,957,400	4,753,600	4,468,300
Rush 1	AmerenUE	PRB Coal	9,792	4,891,700	4,495,500	4,833,800	3,861,600
Rush 2	AmerenUE	PRB Coal	10,671	4,798,600	4,881,800	4,817,700	4,443,300
Sioux 1	AmerenUE	PRB /ILL Coal	9,873	3,220,700	2,955,700	3,508,000	3,381,000
Sioux 2	AmerenUE	PRB /ILL Coal	10,197	2,850,400	3,500,300	3,453,200	2,349,500
Meramec 1	AmerenUE	PRB Coal	11,603	875,000	901,900	688,100	805,600
Meramec 2	AmerenUE	PRB Coal	11,333	850,300	878,900	682,000	777,500
Meramec 3	AmerenUE	PRB Coal	11,649	1,772,000	1,901,300	1,907,600	1,459,100
Meramec 4	AmerenUE	PRB Coal	9,985	2,357,900	2,732,500	2,688,700	2,542,000
Audrain CT 1	AmerenUE	Gas	11,943	26,400	30,300	33,400	35,500
Audrain CT 2	AmerenUE	Gas	11,953	25,800	29,700	31,400	35,900
Audrain CT 3	AmerenUE	Gas	11,979	23,800	30,100	31,200	33,900
Audrain CT 4	AmerenUE	Gas	11,948	22,700	29,600	31,500	34,500
Audrain CT 5	AmerenUE	Gas	11,936	23,800	28,300	30,700	32,500
Audrain CT 6	AmerenUE	Gas	11,959	21,200	26,300	29,000	30,500
Audrain CT 7	AmerenUE	Gas	11,952	22,000	27,200	29,000	29,500
Audrain CT 8	AmerenUE	Gas	11,994	20,700	26,000	28,000	29,600
Fairgrounds CT	AmerenUE	Oil	12,345	-	-	-	-
Goose Creek CT 1	AmerenUE	Gas	11,931	30,300	32,800	32,900	36,500
Goose Creek CT 2	AmerenUE	Gas	11,959	28,700	32,200	31,400	38,100
Goose Creek CT 3	AmerenUE	Gas	11,971	27,800	31,600	31,700	38,600
Goose Creek CT 4	AmerenUE	Gas	11,935	29,200	31,200	32,600	37,300
Goose Creek CT 5	AmerenUE	Gas	11,937	28,800	32,600	31,900	35,200
Goose Creek CT 6	AmerenUE	Gas	11,952	28,500	29,600	30,600	34,100
Howard Bend CT	AmerenUE	Oil	12,728	-	-	-	-
Kinmundy CT 1	AmerenUE	Gas	12,000	-	-	-	-
Kinmundy CT 2	AmerenUE	Gas	12,115	-	-	-	-
Kirksville CT	AmerenUE	Gas	13,997	5,300	5,100	5,500	6,800
Meramec CT 1	AmerenUE	Oil	12,230	-	-	-	-
Meramec CT 2	AmerenUE	Gas	12,574	-	-	-	-
Mexico CT	AmerenUE	Oil	12,345	-	-	-	-
Moberly CT	AmerenUE	Oil	10,745	48,200	50,700	52,200	52,100
Moreau CT	AmerenUE	Oil	10,739	45,000	48,900	52,900	51,800
Peno Creek CT 1	AmerenUE	Gas	10,748	48,100	50,700	50,100	51,800
Peno Creek CT 2	AmerenUE	Gas	10,788	45,300	50,100	48,700	51,500
Peno Creek CT 3	AmerenUE	Gas	11,918	18,800	21,500	22,800	27,200
Peno Creek CT 4	AmerenUE	Gas	11,891	18,300	22,600	23,000	26,600
Pinkneyville CT 1	AmerenUE	Gas	11,914	19,300	25,700	23,300	28,000
Pinkneyville CT 2	AmerenUE	Gas	11,917	15,400	22,700	19,100	23,400
Pinkneyville CT 3	AmerenUE	Gas	11,402	34,700	39,100	42,700	43,400
Pinkneyville CT 4	AmerenUE	Gas	11,398	33,200	40,000	41,700	45,000
Pinkneyville CT 5	AmerenUE	Gas	10,177	34,700	36,000	36,800	40,100
Pinkneyville CT 6	AmerenUE	Gas	10,173	35,000	35,800	36,300	39,800
Pinkneyville CT 7	AmerenUE	Gas	10,165	34,700	36,100	36,100	39,800
Pinkneyville CT 8	AmerenUE	Gas	10,213	32,900	34,800	35,500	38,200
Raccoon Creek CT 1	AmerenUE	Gas	12,984	4,600	5,900	6,000	6,500
Raccoon Creek CT 2	AmerenUE	Gas	13,026	5,000	6,100	5,500	6,800
Raccoon Creek CT 3	AmerenUE	Gas	12,937	4,800	5,900	6,100	6,000
Raccoon Creek CT 4	AmerenUE	Gas	13,038	4,700	5,600	5,500	6,700
Venice CT 1	AmerenUE	Oil	15,798	-	-	-	-
Venice CT 2	AmerenUE	Gas	11,167	20,800	23,900	26,000	26,700
Venice CT 3	AmerenUE	Gas	10,935	80,000	100,200	108,900	119,500
Venice CT 4	AmerenUE	Gas	10,927	85,100	97,400	103,500	122,600
Venice CT 5	AmerenUE	Gas	11,431	35,300	42,400	44,500	53,000
Viaduct CTG	AmerenUE	Gas	18,235	300	300	200	200
Osage	AmerenUE	Pond Hydro		568,800	566,700	567,300	566,800
Keokuk	AmerenUE	Run of River Hydro		943,800	970,700	983,600	983,800
Taum Sauk 1	AmerenUE	Pumped Storage		405,950	413,600	412,550	399,050
Taum Sauk 2	AmerenUE	Pumped Storage		405,950	413,600	412,550	399,050
Wind	Purchase Power Begins in Sept 2009	Purchase Power Contract		338,100	339,200	338,100	338,100
Demnand Side Management				538,060	711,813	916,639	1,114,721

Labadie

Heat Rate Performance Reports

Attachment D

July 10, 2009

To: David Fox
From: Jeff Shelton
Cc: Bob Meiners, Mark Litzinger, Kevin Stumpe, Brian Griffen, Russ Hawkins, Greg Gurnow, Tony Balestreri, Greg Bolte, Chris Hegger, Scott McCormack, Ken Stuckmeyer, Don Clayton, Joe Sind, Matt Wallace, Scott Hixson, Jim Barnett, Glenn Tiffin, Cuong Pham

Subject: Labadie June 2009 Performance Report

Executive Summary

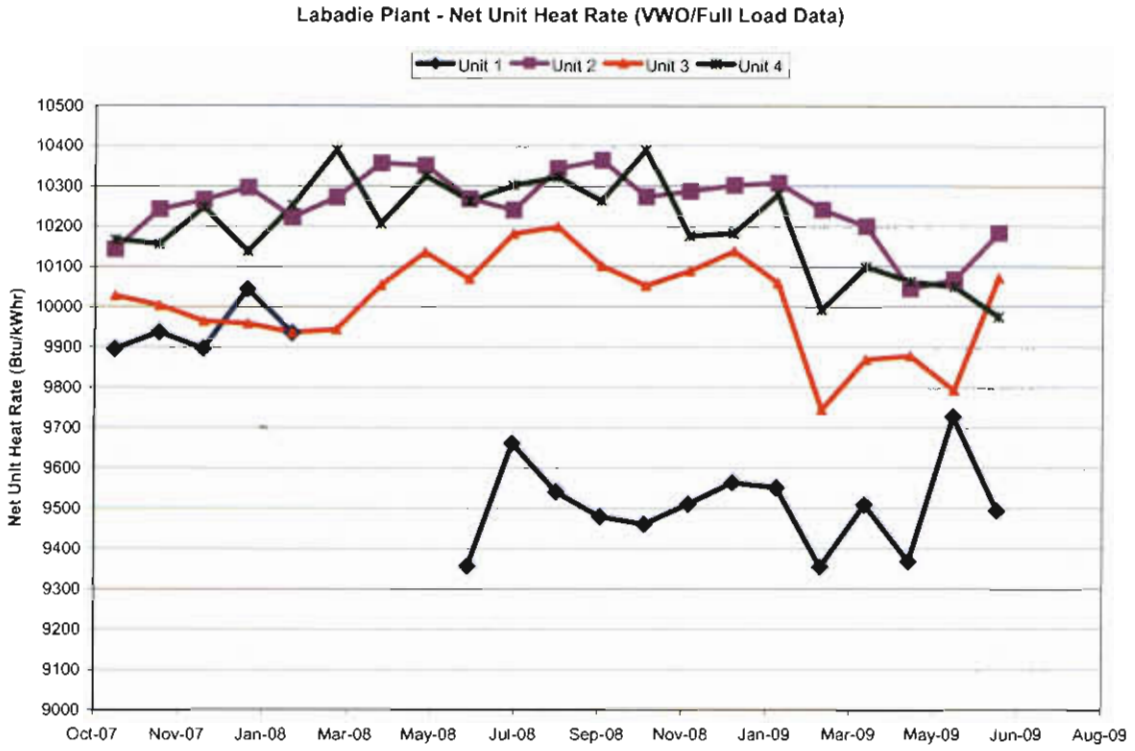
The most notable items regarding Labadie unit performance were:

- The Unit 2 HPBFPs are running near maximum speed to achieve full load on the unit. The B pump performance factor took two recent step changes down (5/28 and 6/4) coincident with spikes in vibration on the pump. The pump suction spool was removed during an SBO last week but the suction strainer was clean and no issues were found in the eye of the pump. On 6/26, a JR was written that the recirculation flow valve 2-FV8B would not close. Temperature data taken on 7/8 confirm that the valve is not closed. Investigation of the cause of the drop in pump performance on the 2B pump will continue. In addition, performance on all 8 HPBFPs at Labadie will be reviewed to determine any other potential issues.
- The heat rate calculation on Unit 1 was changed to use the condensate flow rate instead of the measured feedwater flow rate. This new calculation provides a more reasonable value for heat rate on the unit as compared to the other units, the unit's design heat rate, and the heat rate based on fuel flow.

The following table shows the instrument deficiencies for all four units.

Tag	Unit	Issue	Resolution	Carryover or New
3BFWSTM-08321, EXTRACT PRESS HTR 4B	3	Has only had valid data from Nov. 2003 to Jan. 2004	JR164407 to investigate and correct	Carryover
1BFWSTM-08318, EXTRACT PRESS HTR 4A	1	Flat-lined on 1/29	JR164611	Carryover
3TURB-23963, CROSSOVER WEST TEMP(B)	3	Has been bad since at least 1/1/2008		Carryover
3CONDTURB-08128 CNDSR VAC PMP A TOTAL FLOW	3	Flow varies significantly (from 40 to 160 scfm) since 6/23/09		New

Numerous changes occurred that led to changes in the heat rate of each unit (see plot below). Condenser pressure is starting to climb due to the increased river temperatures and will lead to higher heat rates during the summer. Unit 1 had both HPBFPs and the top FWHs in service at the end of the month allowing for a higher load and a lower heat rate. Unit 2 had a higher heat rate due to rising backpressure (increased river temperature). Unit 3 was higher due to a higher backpressure and having the top 3 FWHs OOS for a period of 4 days. Unit 4's heat rate dropped due to a reduction in aux. load following the outage and restoring the 4-1 FWH.



Heat Rate KPI

A trend only heat rate KPI has been created for 2009 with the intent of having a pay heat rate KPI in 2010. Below is a table showing the actual performance of the plant through May.

Plant	2009 Actual	Threshold	Target	Stretch
Labadie	9873	9888	9807	9764

A separate e-mail was sent to the plant describing how the trend only KPI targets were derived for 2009. An alternative approach for the heat rate KPI was discussed with the plant during the last quarterly performance meeting. In this meeting, a target band approach was discussed. Using this methodology for 2009 would be providing the following results.

Plant	2009 Actual	Modified Target Band
Labadie	9873	9690 - 9990

Action Items:

- Performance Engineering would like to create some PI tags to better monitor turbine and plant performance. An estimated 1000 Pi tags is requested for this purpose. The plant requested a meeting to discuss this request. ***Labadie plant is requested to provide a specific list of who should be involved in this meeting.*** A discussion of why the creation of these additional tags is important is provided at the end of the report. It is noted that Performance Engineering could most likely give up an equivalent number of OPM tags that would no longer be beneficial. In addition, Performance Engineering can create the tags directly from EtaPro.
- Performance Engineering will review the performance of all 8 HPBFPs and provide any observations made from the data.

Unit 1 Observations

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

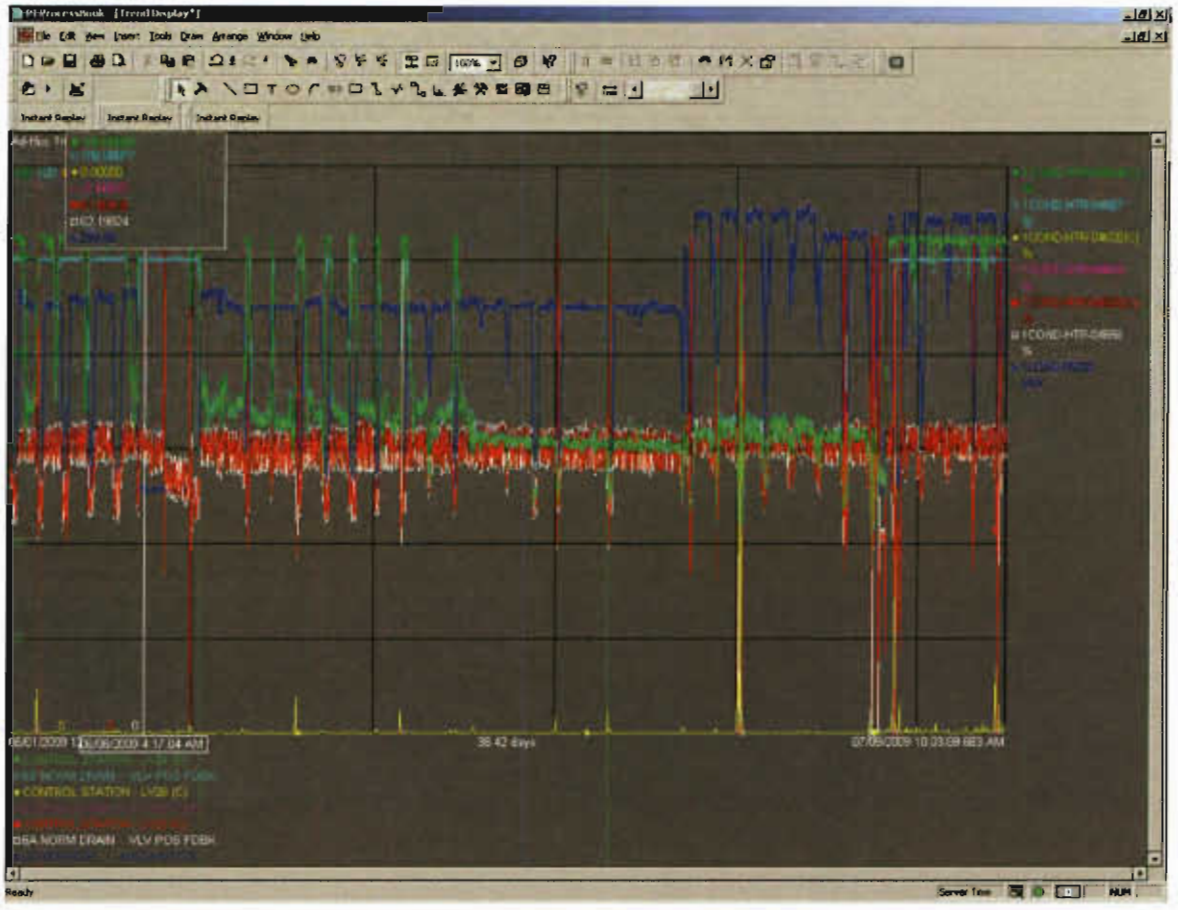
- Unit 1 put the 1B HPBFP and the top 3 FWHs back in service at the end of June.
- In the previous report, there was a discussion regarding the low heat rate being calculated on Unit 1. It was noted that the feedwater flow indication being used in the determination of the turbine cycle heat rate was lower than the other available indications. The proposal was to switch to using the flow based on the condensate flow. After the return of the 1B HPBFP, the condensate flow indication is much higher than the other indications. However, the heat rate calculated from the condensate flow shows much better agreement to the fuel based heat rate. The heat rate calculation was changed on 7/9/09 and now uses the condensate based flow rate. Performance engineering will investigate the difference in indicated flow and determine further potential calibration checks.
- In the beginning of June, the normal drainer position and demand on the 6B heater was at 100% most of the time. On 6/8/09, the normal drainer went to about 70% at full load and then increased to 100% on load drops. On 6/18/09, the position went to about 60% and started to behave like the 6A normal drainer. It did this until 7/4/09. Since then, the normal drainer has essentially indicated 100% open. The emergency drain has remained closed for most of this time period. The DCA of the 6B FWH is higher than that of the 6A FWH (although it is only higher by a couple of degrees) when the normal drainer indicates 100% open and did drop down to the same value as 6A in mid-June when the normal drainer indicated the same position as the 6A normal drainer. The plant should investigate the reason for the varying normal drainer position and demand.
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. The following tables show the indications that are indicating potential issues (either high temperatures or potential TC problems):

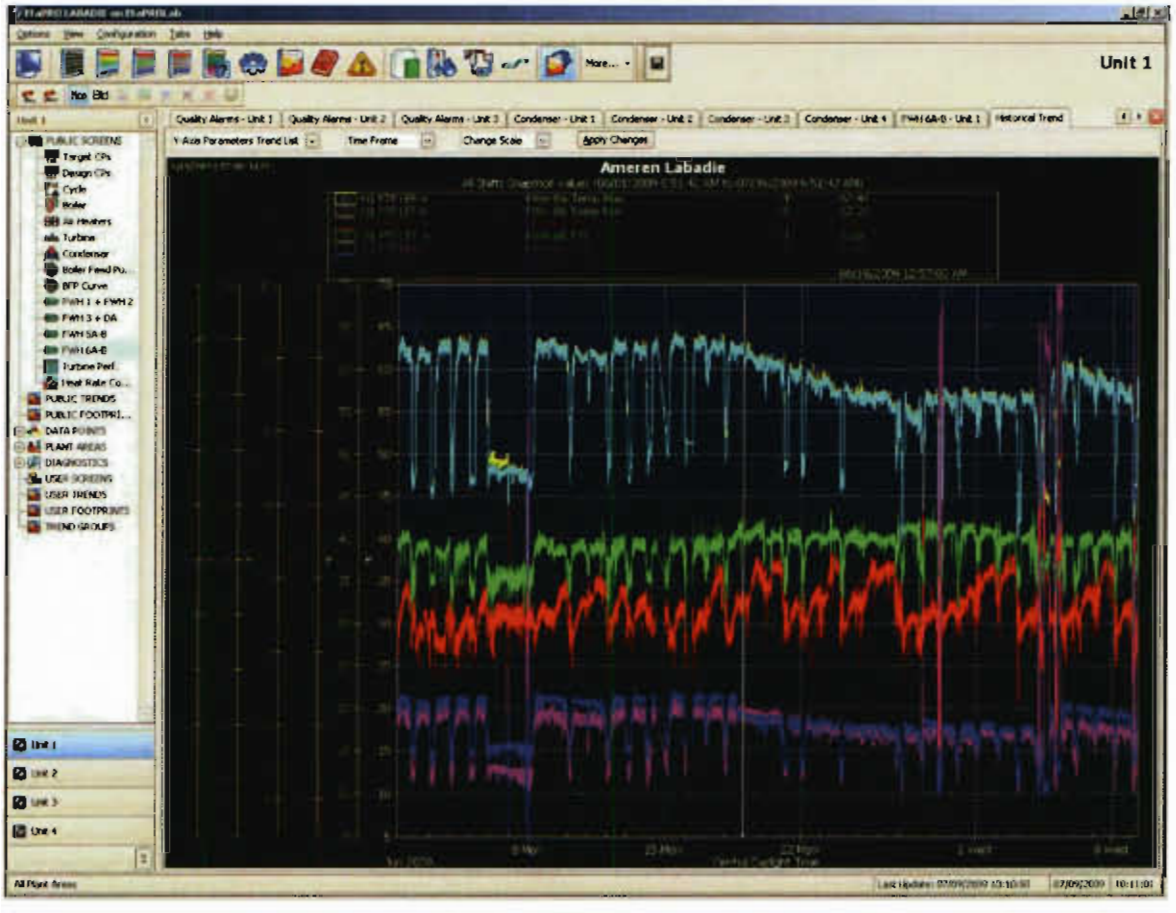
Pi Tag	Issue	JR
1STM-16179 MAIN STM BEFORE MO-137A TEMP	Reading 800F for the past year. Labadie stated that they close both the root valves and MO. Temperature before 137B is about 200F.	JR158443
1STM-16178 MAIN STM AFTER MO-137A TEMP	Reading close to 400F for the past year. This temperature increased about 100F following a short outage at the end of March. It appears both the root and MO valve are leaking.	JR158443?
1STM-16181 MAIN STM DRAIN MO-5B TEMP	Reading about 250F for the past year	
1STM-16103 MAIN STM LD DRN FV-26 TEMP	Reading too low since the end of March. Went from about 100F to 0F following the short outage at the end of March and has drifted back up since then.	

Summary of Performance Report for:

Plant	Labadie					
Unit	1					
Period	6/1/09	to	7/1/09			
			Jun-09		May-09	Jun-08
Full Load Performance						
Hours of Data (>90% Monthly Capability)			72		222	39
			Averages		**Averages**	**Averages**
GENERATOR MEGAWATTS	MW		631.9		538.0	650.1
AUX POWER	MW		28.3		25.4	26.1
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		9496.7		9729.6	9357.9
Boiler Efficiency Actual	%		84.0		84.5	85.3
CONTROL VALVE POSITION LVDT	%		90.7		80.9	99.9
FEEDWATER TEMP TO ECON	degF		492.7		317.3	492.8
FEEDWATER TEMP TO HTR 1	degF		438.3		317.8	437.8
HP Turbine Efficiency Actual	%		87.4		86.9	87.2
IP Turbine Efficiency Corrected	%		90.8		90.4	90.8
Condenser Pressure HP	inHga		3.3		2.1	2.6
Condenser Pressure LP	inHga		2.2		1.3	2.1
AIRHTR-A GAS OUTLET TEMP	degF		351.9		311.1	339.3
AIRHTR-B GAS OUTLET TEMP	degF		326.2		300.5	324.3
AMBIENT AIR TEMP	degF		81.5		65.3	75.2
CIRC WTR TEMP TO LP CONDB	degF		81.7		62.7	74.5
CIRC WTR TEMP TO LP CONDB	degF		82.6		63.6	75.5
CIRC WTR TEMP TO LP CONDB	degF		82.8		64.6	75.2
CIRC WTR TEMP TO LP CONDB	degF		81.9		65.9	74.7
Minimum River Temperature	degF		81.7		62.7	74.5
FWH 1 Temperature Rise	degF		54.4		-0.5	55.0
Net Load	MW		603.5		512.6	624.1
Average Cond Press	inHga		2.8		1.7	2.3
Average Exit Gas Temperature	degF		339.0		305.8	331.8
Aux Power	%		4.5		4.7	4.0
Gross Unit Heat Rate	BTU/KW-HR		9070.8		9269.8	8982.8
Gross Turbine Heat Rate	BTU/KW-HR		7620.9		7831.3	7666.7
Feedwater Flow	KPPH		3930.9		2531.8	
No data at >90% Monthly Capability - Used Data above 530 MWs						

The data for June is for after the return of the 1B HPBFP at the end of the month. The HP condenser pressure is up by about 0.7 inHgA compared to last year. Aux. load is down from last month (the gross load was is error last year due to a 4% CT change issue last year following the outage). The A side gas outlet temperature is 10F higher than last year.





The top plot shows the normal and emergency drainer demand and position for the 6B FWH and the normal drainer demand and position for the 6A FWH since 6/1/2009. As shown, the 6B normal drainer position and demand (light blue and green lines) have been up and down quite a bit over the time period.

The bottom plot shows the TTD, DCA, and temperature rise for the 6A and 6B FWHs since 6/1/2009. For the most past, the performance of the two heaters has been about the same. However, the DCA of the 6B FWH (dark blue line) is higher than that on the 6A (pink line) when the valve demand and position indicate 100% open.

Unit 2 Observations

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

- During the quarterly performance meeting held at the end of June at Labadie plant, Mr. Litzinger raised an issue regarding the performance of the Unit 2 HPBFPs. Specifically, he stated that the speed on the two HPBFPs on Unit 2 was much higher than the speed of the HPBFPs on the other units. He stated that this condition has existed since the later part of May. Performance Engineering reviewed some performance and vibration data and noted some step changes down in the pump performance factor that occurred in conjunction with step changes in vibration levels on the 2B HPBFP. Plots are given in the attached e-mail that show two step changes; one on 5/28 at about 7:12 am and the other on 6/4 at around 8:15 pm. The pump suction spool piece was removed during an SBO on 7/2. No debris was found in the pump suction strainer and no issues were found in the eye of the pump. Performance Engineering walked down the pump on 7/8/09. The HPBFP recirculation valve, 2FV8B, was found to be partially open as the temperature upstream and downstream of the valve was reading about 440F with a temperature gun. In talking with Mr. Balestreri, it is believed that this condition may have occurred on the shutdown in the end of June to clamp a leak on the pump. He stated that the configuration of the valve allows material to get stuck in the valve cage and this prevents the valve from shutting all of the way. JR168175 was written on 6/26/09 indicating that the valve could not be closed. Labadie plant intends to run a test this weekend in which the HPBFP recirc line stop valve will be closed. The performance of the pump will be reviewed during this test. Performance engineering will review the performance of all 8 HPBFPs and provide details in the next monthly report.


RE U2 HPBFPs.msg

- Condenser vacuum flow dropped from about 50 scfm to about 35 scfm in June. As seen in past years, condenser cleanliness has started to rise with the rising river temperature.
- The unit continues to see a decline in corrected load and turbine efficiencies during continuous online runs. The load and efficiencies recover during SBOs. This will continue to be monitored.
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. The following tables show the indications that are indicating potential issues (either high temperatures or potential TC problems):

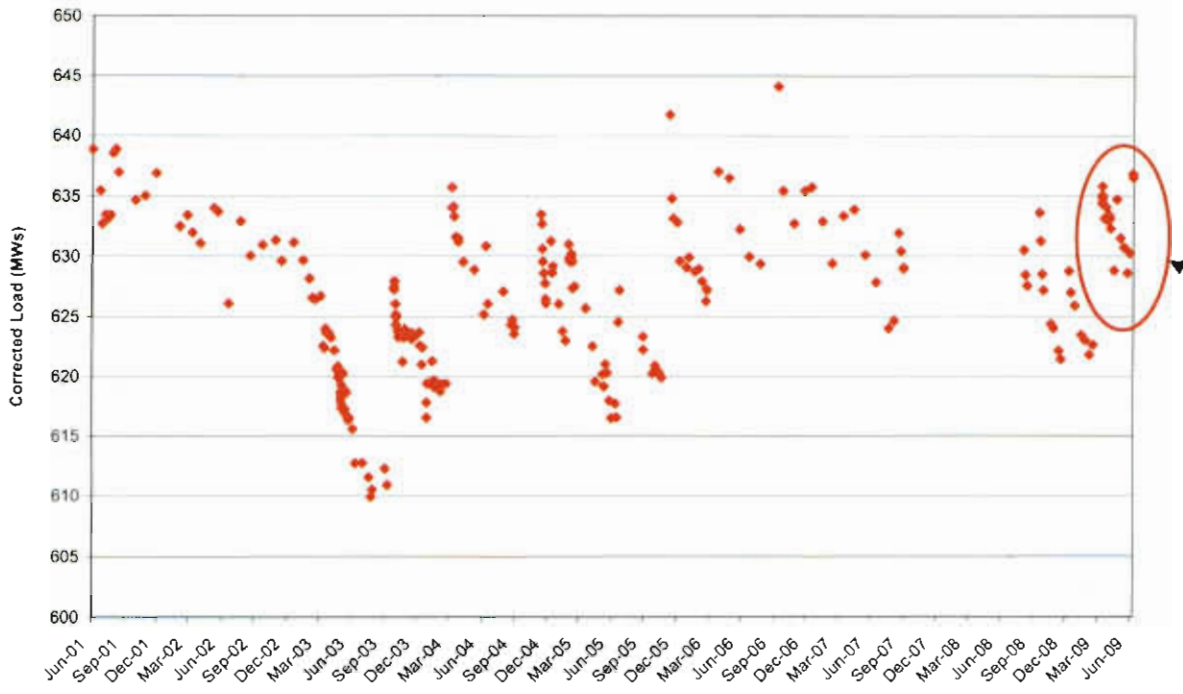
Pi Tag	Issue	JR
2turb-16216 Gland Steam Spillover Temp	Reading 300F since August of 2008. Parts are on order to repair valve	
2STM-16180 MAIN STM DRAIN MO-5A TEMP	Reading about 200F since April	JR166476 JR166477
2STM-16103 MAIN STM LD DRN FV-26 TEMP	Reading about 175F for the past year	JR134214
2STM-16177 MAIN STM DRAIN FV-27 TEMP	Reading about 200F for the past year	JR134215

Summary of Performance Report for:

Plant	Labadie					
Unit	2					
Period	6/1/09	to	7/1/09			
Full Load Performance			Jun-09		May-09	Jun-08
Hours of Data (>90% Monthly Capability)			524		530	266
			Averages		Averages	Averages
GENERATOR MEGAWATTS	MW		618.7		619.7	629.3
AUX POWER	MW		30.0		29.2	30.6
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10184.1		10068.7	10268.0
Boiler Efficiency Actual	%		85.4		85.4	85.3
CONTROL VALVE POSITION LVDT	%		94.2		82.4	99.9
FEEDWATER TEMP TO ECON	degF		494.1		493.2	495.8
FEEDWATER TEMP TO HTR 1	degF		444.7		443.8	447.6
HP Turbine Efficiency Actual	%		86.4		85.9	86.8
IP Turbine Efficiency Corrected	%		90.1		90.9	90.5
Condenser Pressure HP	inHga		3.1		2.4	3.0
Condenser Pressure LP	inHga		2.6		2.1	2.4
AIRHTR-A GAS OUTLET TEMP	degF		347.7		335.0	342.0
AIRHTR-B GAS OUTLET TEMP	degF		346.0		335.9	347.9
AMBIENT AIR TEMP	degF		79.4		69.2	79.1
CIRC WTR TEMP TO LP CONDB	degF		75.9		64.9	74.5
CIRC WTR TEMP TO LP CONDB	degF		76.2		65.6	75.3
CIRC WTR TEMP TO LP CONDB	degF		76.1		66.1	75.2
CIRC WTR TEMP TO LP CONDB	degF		75.6		68.4	74.6
Minimum River Temperature	degF		75.6		64.9	74.5
FWH 1 Temperature Rise	degF		49.3		49.5	48.1
Net Load	MW		588.7		590.5	598.6
Average Cond Press	inHga		2.9		2.3	2.7
Average Exit Gas Temperature	degF		346.9		335.4	345.0
Aux Power	%		4.8		4.7	4.9
Gross Unit Heat Rate	BTU/KW-HR		9690.6		9594.9	9767.9
Gross Turbine Heat Rate	BTU/KW-HR		8276.1		8193.8	8335.0
Feedwater Flow	KPPH		4136.8		4081.3	

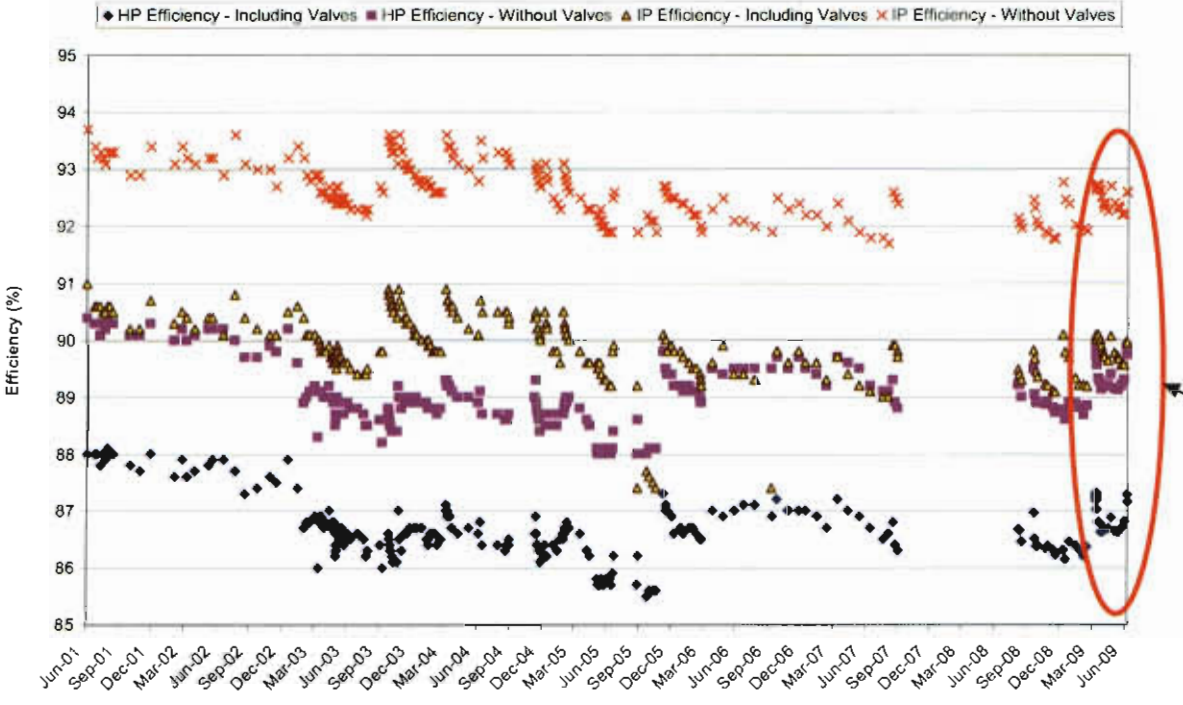
The heat rate increased from May to June due mainly to higher condenser backpressure.

Labadie Unit 2 - Corrected Load



Note that corrected load took a step change up following the most recent outage.

Labadie Unit 2 - HP and IP Efficiencies



Note the increase in turbine efficiency following this past spring outage followed by a continuous decrease until subsequent SBOs.

Unit 3 Observations

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

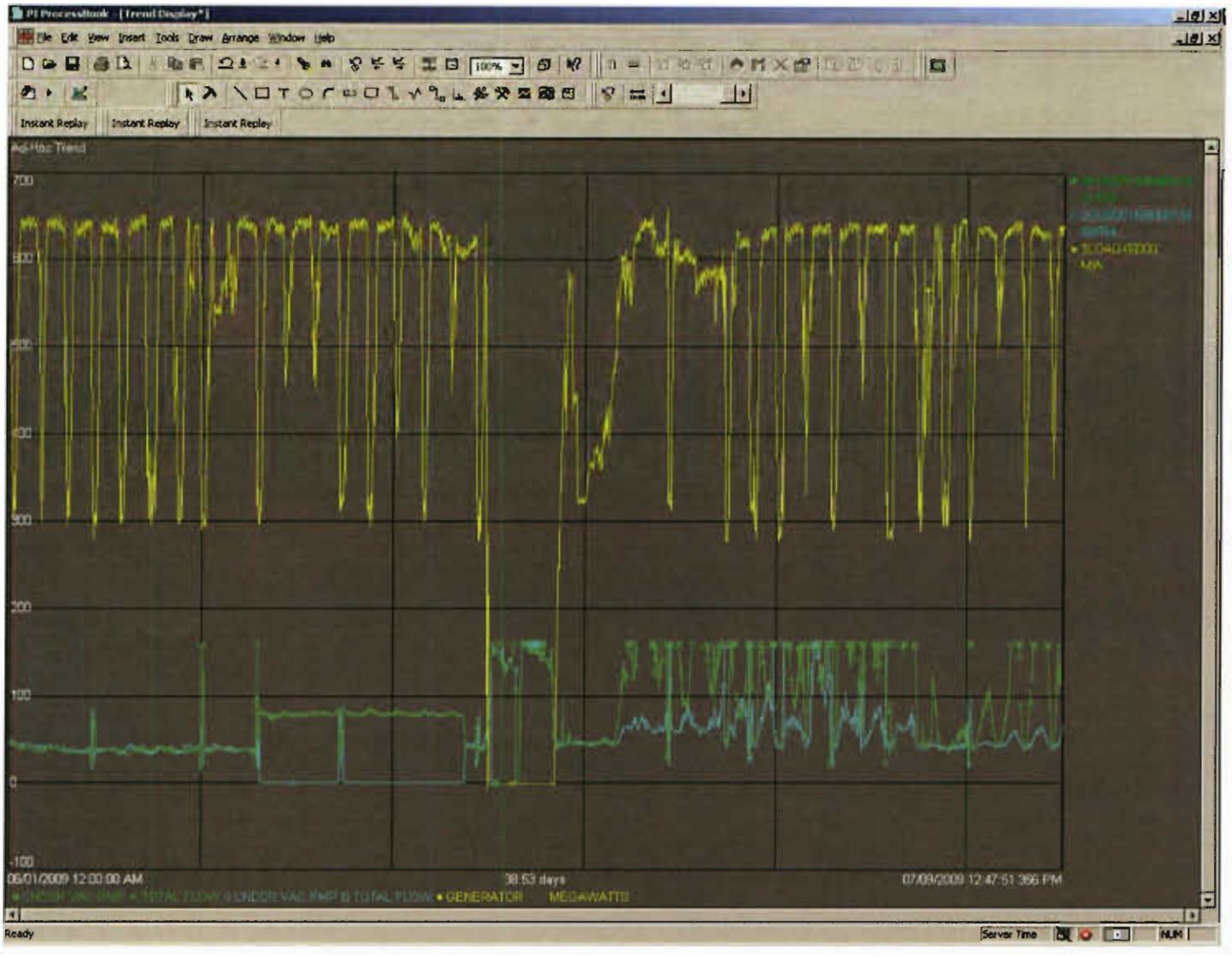
- The Unit had an SBO in mid-June. Following the outage, the top 3 FWHs were OOS for about 4 days to deal with various issues on the unit (silica spiked after cutting in 3-2 FWH following cleaning and work on 3-MO100).
- The gas side pressure drop across the A air heater increased by about an inch in June whereas the B side showed very little increase.
- The A condenser vacuum flow has been bouncing around quite a bit (from 40 to over 160 scfm) since the SBO in mid-June. The flow seems to be on scale at low load and then trends high when the unit is up on load. The 4B pump is exhibiting this same trend but to a much lesser degree.
- The unit continues to see a decline in corrected load and turbine efficiencies during continuous online runs. The load and efficiencies recover during SBOs. This will continue to be monitored.
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. The following tables show the indications that are indicating potential issues (either high temperatures or potential TC problems):

Pi Tag	Issue	JR
3STM-16109 MSSV BSD MO-110 & 112 TEMP	Reading 800F since spring outage	JR167497 JR167497
3STM-16105 MO-121B & 105B TEMP	Reading high since SBO in June. Reached about 350F and has drifted down to about 200F as of 7/9/09. This temperature is higher than prior to the SBO in mid-June.	
3stm-16104 MO-121A & 105A TEMP	Reading high since SBO in June. Reached about 200F and has drifted down to about 140F. This temperature is higher than prior to the SBO in mid-June.	
3STM-16106 MO-122A TEMP 3STM-16107 MO-122B TEMP	Has been reading high (above 200F) since the spring outage. Note from JR159234 indicates that the line has a ¼" orifice to allow for continuous flow through the line (and for MO-122A). MO-122A (3STM-16106) has read about 600F most of the year. On 6/23, the temperature dropped down to 100F. Has a root valve been closed on the 122A drain line?	

Summary of Performance Report for:

Plant	Labadie					
Unit	3					
Period	6/1/09	to	7/1/09			
Full Load Performance			Jun-09		May-09	Jun-08
Hours of Data			412		306	546
			Averages		Averages	Averages
GENERATOR MEGAWATTS	MW		624.6		633.3	636.7
AUX POWER	MW		28.4		28.8	30.8
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10072.4		9793.4	10068.8
Boiler Efficiency Actual	%		85.3		85.1	85.5
CONTROL VALVE POSITION LVDT	%		99.2		101.1	104.8
FEEDWATER TEMP TO ECON	degF		455.2		485.9	486.7
FEEDWATER TEMP TO HTR 1	degF		414.5		435.4	438.7
HP Turbine Efficiency Actual	%		85.0		86.6	87.3
IP Turbine Efficiency Corrected	%		95.2		95.4	93.8
Condenser Pressure HP	inHga		3.5		2.7	3.4
Condenser Pressure LP	inHga		2.8		2.3	2.7
AIRHTR-A GAS OUTLET TEMP	degF		362.1		363.5	340.6
AIRHTR-B GAS OUTLET TEMP	degF		341.1		339.8	336.0
AMBIENT AIR TEMP	degF		78.0		71.6	78.4
CIRC WTR TEMP TO LP CONDB	degF		75.8		67.5	74.0
CIRC WTR TEMP TO LP CONDB	degF		76.0		68.2	75.0
CIRC WTR TEMP TO LP CONDB	degF		75.8		68.0	74.7
CIRC WTR TEMP TO LP CONDB	degF		75.4		70.2	74.3
Minimum River Temperature	degF		75.4		67.5	74.0
FWH 1 Temperature Rise	degF		40.7		50.5	48.0
Net Load	MW		596.1		604.6	605.8
Average Cond Press	inHga		3.1		2.5	3.0
Average Exit Gas Temperature	degF		351.6		351.6	338.3
Aux Power	%		4.6		4.5	4.8
Gross Unit Heat Rate	BTU/KW-HR		9613.7		9348.6	9581.0
Gross Turbine Heat Rate	BTU/KW-HR		8201.5		7959.8	8190.6
Feedwater Flow	KPPH		3735.7		3809.7	

The heat rate increased from May for several reasons. First, the average condenser pressure was up about 0.6 in HgA which leads to about a 1% increase in heat rate. Second, the average feedwater temperature was down for the month due to having the top 3 heaters OOS for several days. This caused an average heat rate impact of about 0.7% for the month. Third, the average HP efficiency for the month was down about 1.6% which correlates to about a 0.25% in heat rate. The average efficiency was down due to pinching down on the control valves during the time period the top 3 FWHs were OOS.



The above plot shows condenser vacuum pump flow and load since 6/1. As shown, the indicated flow from the A pump has bounced between about 40 SCFM and over 160 SCFM since the SBO in mid-June.

Unit 4 Observations

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

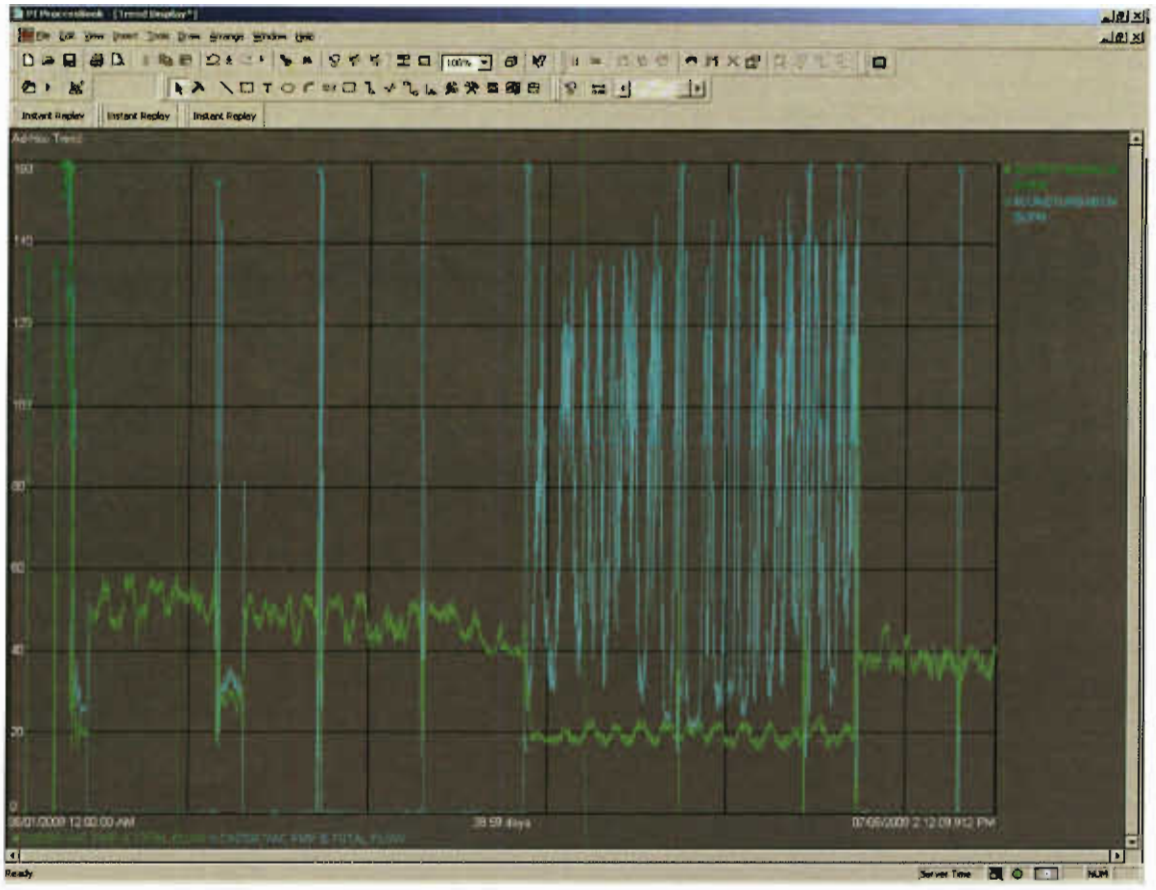
- The average heat rate in June is lower than the May data due to the spring outage. During the outage, repairs were made to the 4-1 FWH which was OOS prior to the outage. Operating without the top heater in service was about a 1.1% hit on heat rate. In addition, the auxiliary load on the unit is down.
- There was no VWO data in June.
- The indicated flow from the B condenser vacuum pump was erratic for the last half of June (see plot below).
- The tube leaks in the 4-5A FWH continue to get worse. The emergency drainer on both the 6A and 5A FWHs has increased in the month of June. The DCA is high on the 4-5A FWH which could indicate leaks on the outlet side of the FWH.
- The normal drainer on the 4-3 FWH took a step change up on 6/22. The step change occurred about 12 hours after all three IPBFPs were running and at a steady high load. The drainer position did not change once the 3rd IPBFP was removed from service.
- The normal drainer indications on the 4-2 FWH (4BFW-HTR-04604(C) and 4BFW-HTR-04652) started swinging in the later part of June. The DCA has gone from about 10F in the beginning of the month to over 30F at the end of the month. Mr. Balestreri wrote JR165033 to address the issue.
- The normal drainer feedback (4bfw-htr-04650) took a step change up to about 100% open on the 4-1 FWH on 6/1//09. After 6/21, it has read bad input (off scale high).
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. The following tables show the indications that are indicating potential issues (either high temperatures or potential TC problems):

Pi Tag	Issue	JR
4STM-16106 FV-634A TEMP 4STM-16107 FV-634B TEMP	634A was reading about 550 for a year until June when it dropped to 100F. 634B has been reading about 450F for at least a year. Notes from JR159234 indicate that the line has a ¼" orifice to allow for continuous flow. Was a root valve to 634A closed in late June? This occurred 3 hours after the temperature for MO-122A dropped to 100F.	JR159234
4BFW-HPA-16042 BFPT-A FV-215A TEMP	Reading about 250F for at least a year	JR126163
4BFW-HPB-16043 BFPT-B FV-215B TEMP	Reading about 250F for at least a year	JR126164

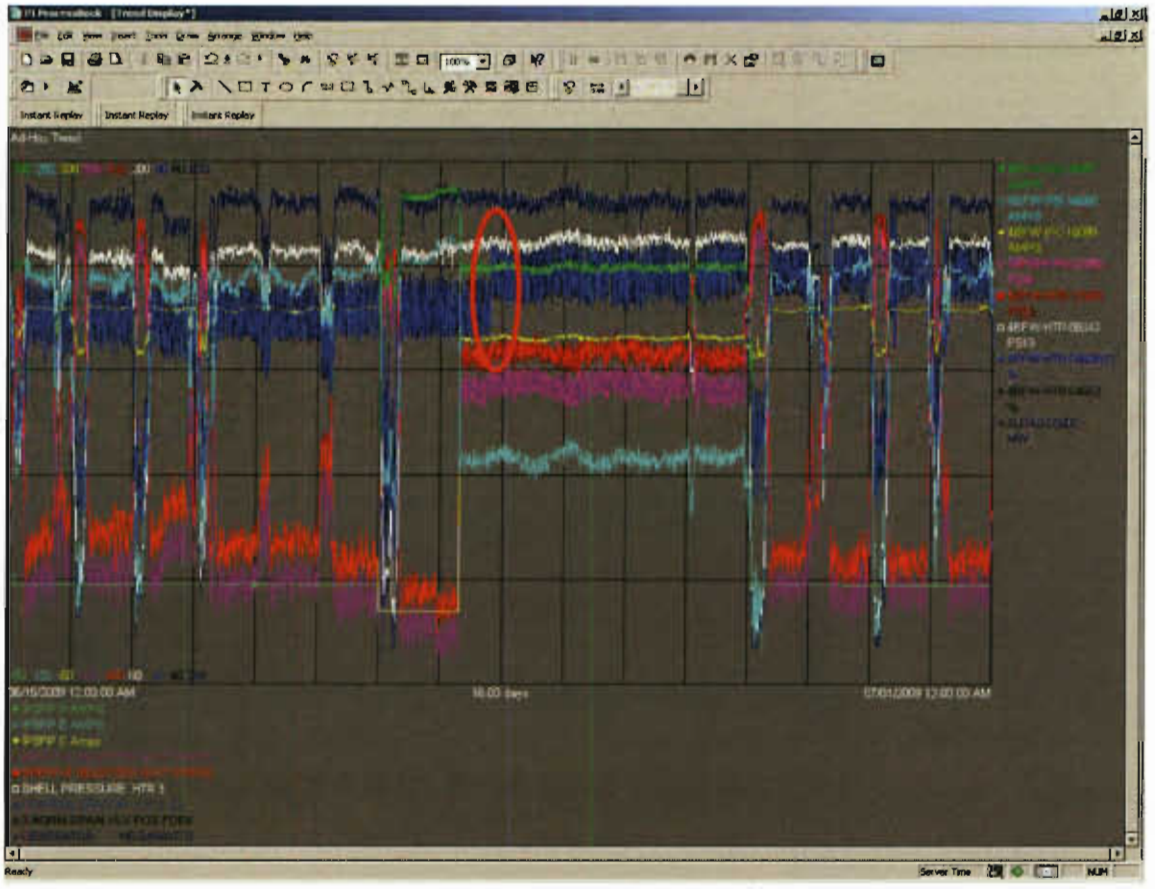
Summary of Performance Report for:

Plant	Labadie					
Unit	4					
Period	6/1/09	to	7/1/09			
Full Load Performance			Jun-09		May-09	Jun-08
Hours of Data (>90% Monthly Capability)			460		89	157
			Averages		Averages	Averages
GENERATOR MEGAWATTS	MW		616.5		612.0	641.0
AUX POWER	MW		26.9		30.7	29.9
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		9975.3		10050.8	10263.0
Boiler Efficiency Actual	%		85.3		85.3	85.3
CONTROL VALVE POSITION LVDT	%		84.0		75.1	98.7
FEEDWATER TEMP TO ECON	degF		484.7		432.6	484.5
FEEDWATER TEMP TO HTR 1	degF		434.8		433.7	423.3
HP Turbine Efficiency Actual	%		84.9		82.2	87.3
IP Turbine Efficiency Corrected	%		95.6		94.8	93.7
Condenser Pressure HP	inHga		3.0		2.4	3.4
Condenser Pressure LP	inHga		2.5		2.3	2.6
AIRHTR-A GAS OUTLET TEMP	degF		349.7		334.6	339.5
AIRHTR-B GAS OUTLET TEMP	degF		343.7		320.0	332.9
AMBIENT AIR TEMP	degF		81.0		62.5	78.3
CIRC WTR TEMP TO LP CONDB	degF		76.5		60.4	75.4
CIRC WTR TEMP TO LP CONDB	degF		76.7		61.3	76.3
CIRC WTR TEMP TO LP CONDB	degF		76.6		61.6	76.0
CIRC WTR TEMP TO LP CONDB	degF		76.0		60.7	75.5
Minimum River Temperature	degF		76.0		60.4	75.4
FWH 1 Temperature Rise	degF		49.9		-1.1	61.2
Net Load	MW		589.7		581.2	611.1
Average Cond Press	inHga		2.8		2.3	3.0
Average Exit Gas Temperature	degF		346.7		327.3	336.2
Aux Power	%		4.4		5.0	4.7
Gross Unit Heat Rate	BTU/KW-HR		9540.8		9546.4	9783.7
Gross Turbine Heat Rate	BTU/KW-HR		8139.4		8141.9	8344.3
Feedwater Flow	KPPH		3707.3		3551.1	

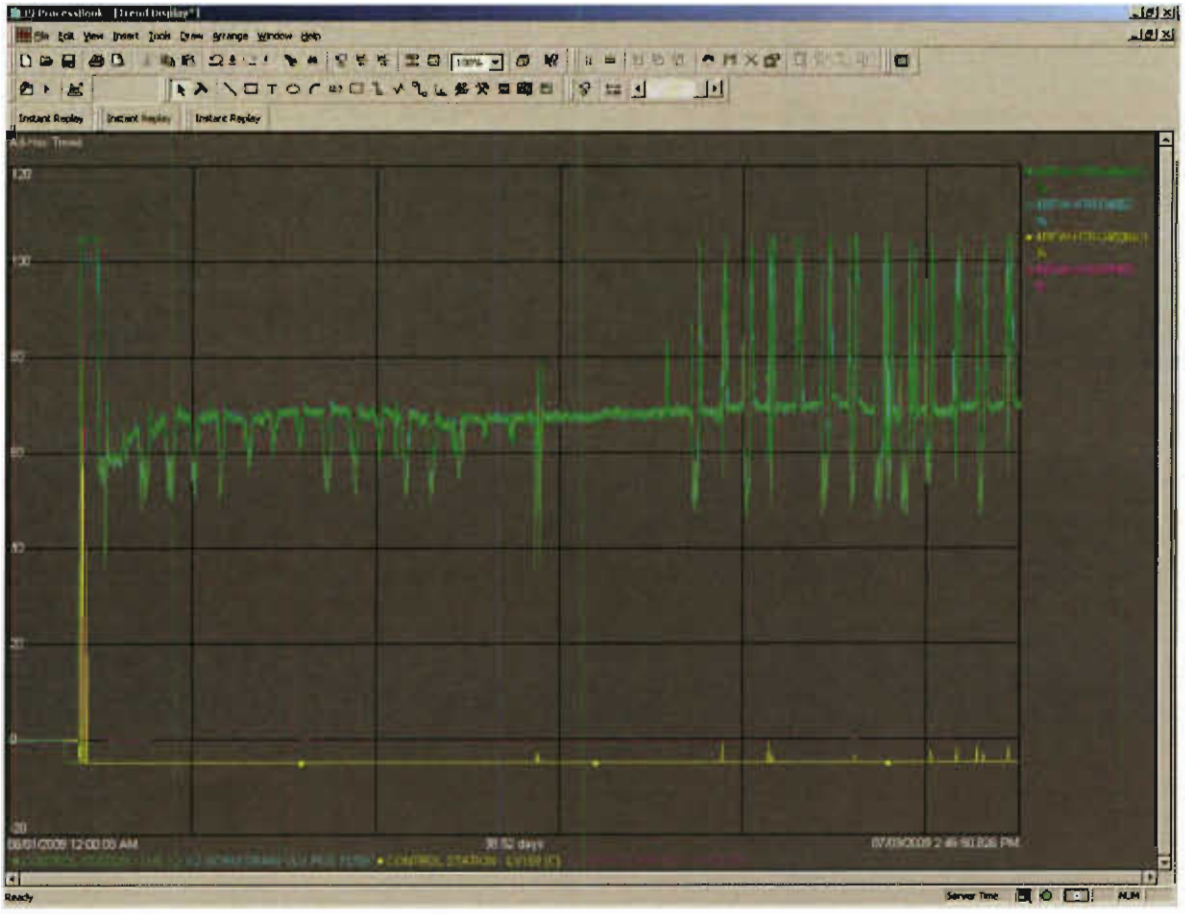
The data for June shows a heat rate improvement following the outage. This is due to a reduced auxiliary load on the unit and having the top FWH back in service. Condenser pressure is up by about 0.5 in HgA and will continue to rise as the river temperature goes up.



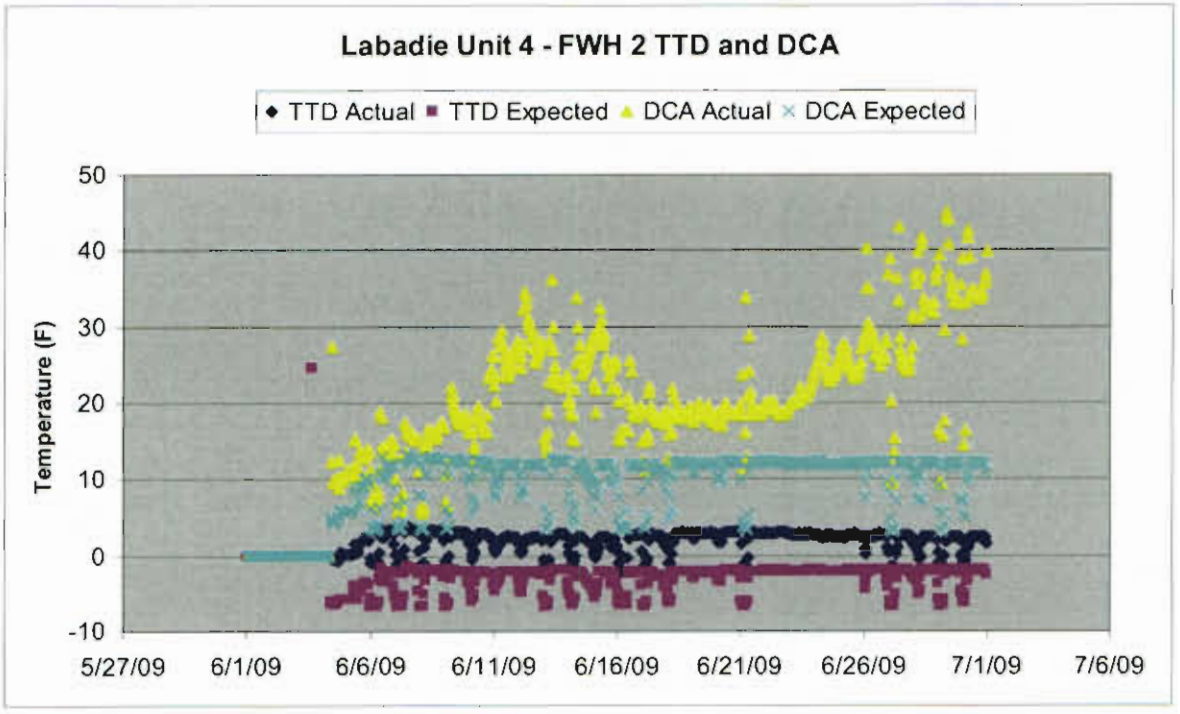
The top plot shows the B vacuum pump cycling while it was on in June.



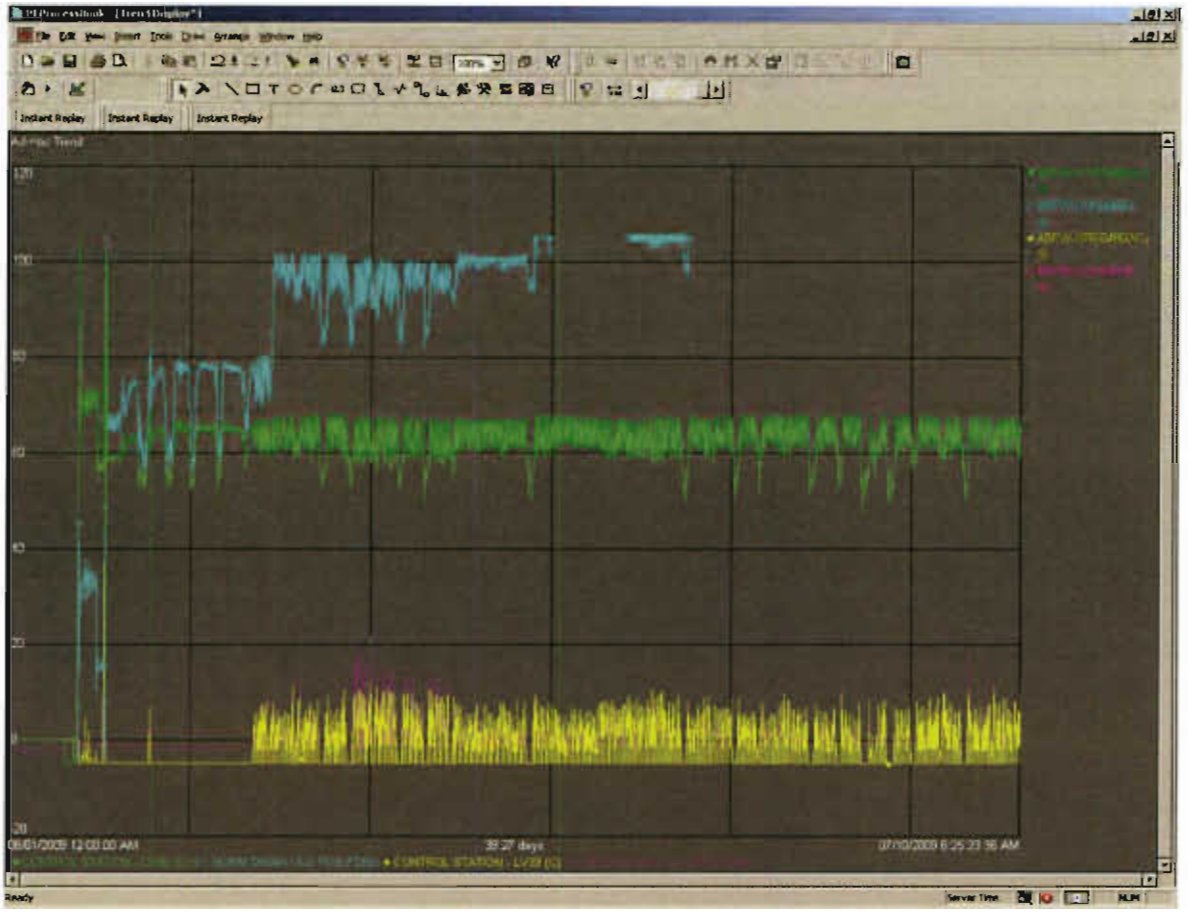
The bottom plot shows a step change up in the normal drainer position on the 4-3 FWH in the middle of June.



The top plot shows the normal drainer position and demand from the 4-2 FWH cycling at the end of the month.



The bottom plot shows that the DCA has gone up on the 4-2 FWH over the month of June and especially at the end of the month when the normal drainer was cycling.



This plot shows that the normal drainer position has gone off-scale the last half of June on the 4-1 FWH.

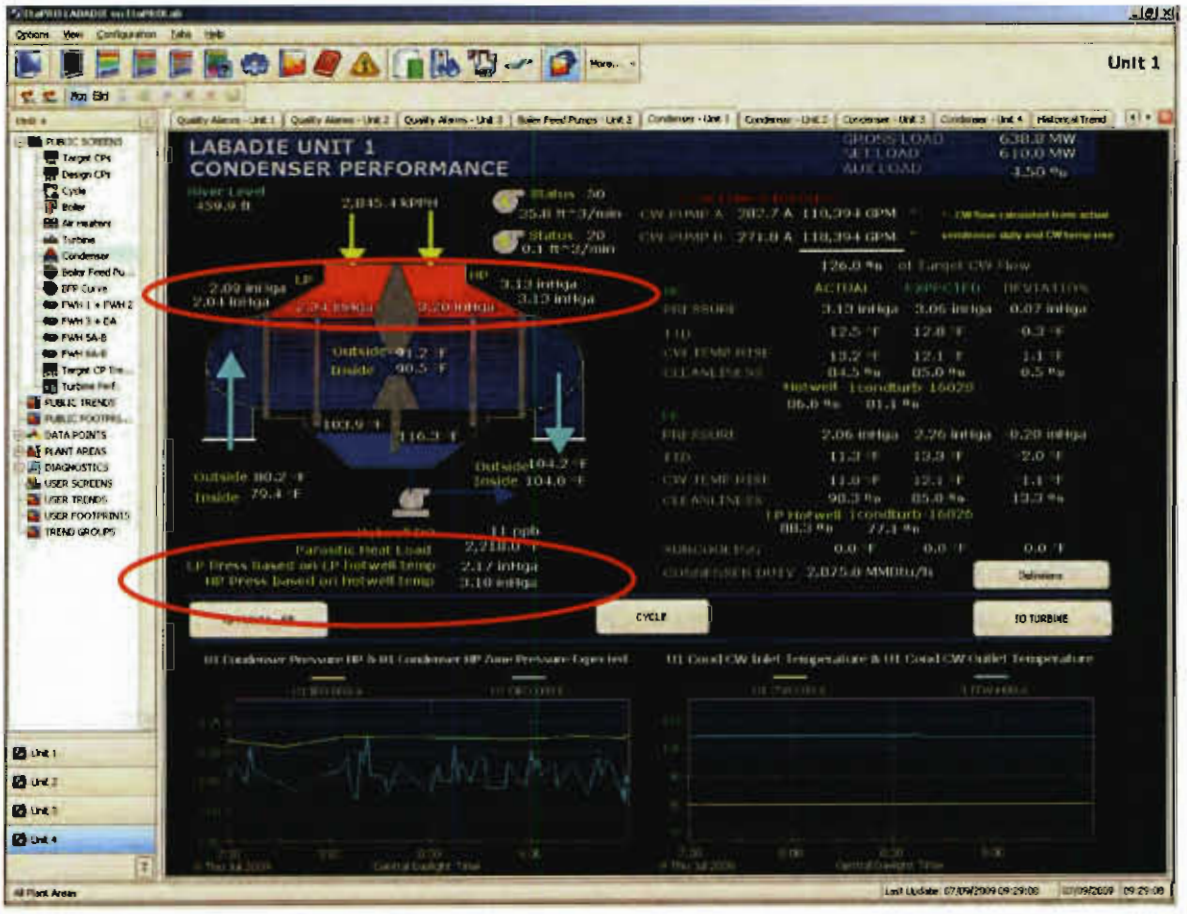
General Observations

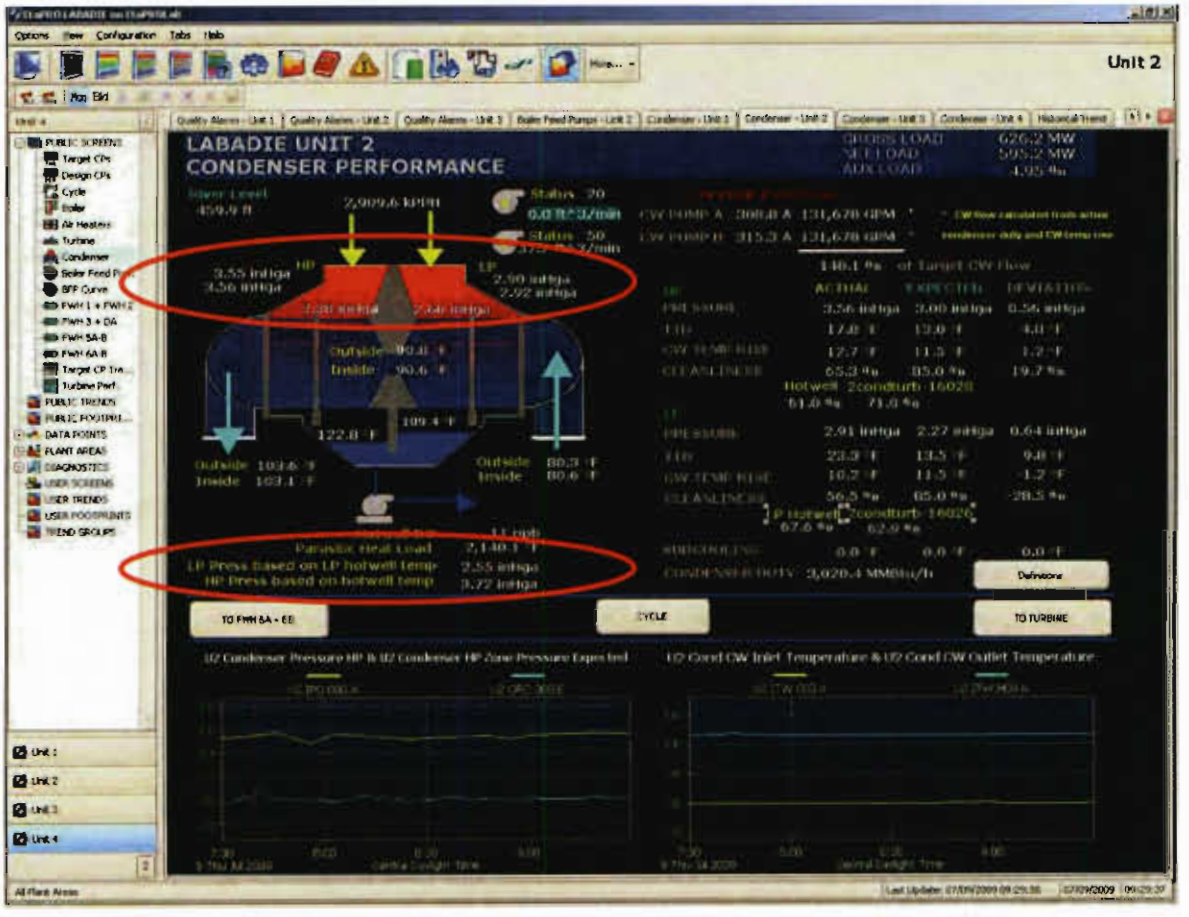
The following general observations were made:

- A review of condenser pressure indications was performed on all units. Each unit has four turbine exhaust pressure indications (two on the IP condenser side and two on the HP condenser side). In addition, each unit has an indication of pressure closer to the tube sheet. Finally, an estimate of pressure can be obtained by looking at the hotwell temperatures in the two condenser shells. The following observations were noted from reviewing these indications:
    - One would expect that the two LP condenser turbine exhaust tags to show good agreement with each other on each unit. This is also expected from the HP condenser turbine exhaust tags. These indications agree within 0.05 in HgA on all units except for the HP condenser turbine exhaust tags on Unit 3 and 4. On Unit 3, the difference between the tags is about 0.4 in HgA. Tag 3TURB-23965 is the one suspected to be in error due to being lower than 3CONDTURB-16028 (condenser pressure closer to the tube sheet). On Unit 4, the difference between the tags is about 0.6 in HgA. Tag 4TURB-23965 is the one suspected to be in error due to being lower than 4CONDTURB-16028 (condenser pressure closer to the tube sheet).
    - The next check was to compare the turbine exhaust tags to the pressure closer to the tube sheet. The exhaust pressure is expected to be equal to or higher than the pressure at the tube sheet. This is true on most units except for Unit 1 where the LP condenser turbine exhaust tags are about 0.2 in HgA lower than the corresponding 1condturb-16026. It is noted that on the other units, the turbine exhaust tags are about 0.2 in HgA higher than the corresponding condturb tags.
    - The next check was to compare the turbine exhaust and CONDTURB tags to the pressure estimated using the hotwell temperatures. The pressure estimated from the hotwell was expected to compare well with the CONDTURB tag pressures. For most condenser shells, agreement within 0.1 in HgA was observed. The indications that stood out were the LP condenser on Unit 1 and the HP side on Unit 2.
    - Mr. Balestreri forwarded two completed FUs that covered checking the calibration of the 6 pressure indications on Unit 3 and 4 during the recent spring outages. On Unit 3, FU083100 indicated no changes were required. On Unit 4, FU084726 just states the FU was completed. ***Were the sensing lines vented during this work?***
    - Recommendations:
        - The first step in verifying the condenser pressure indications would be to vent the sensing lines on all of the pressure indications. If this does not change any of the indications, then the following steps would be recommended:
        - Check all 6 pressure indications on Unit 1. Be sure to vent the sensing lines to remove any trapped moisture. In addition, the hotwell TCs

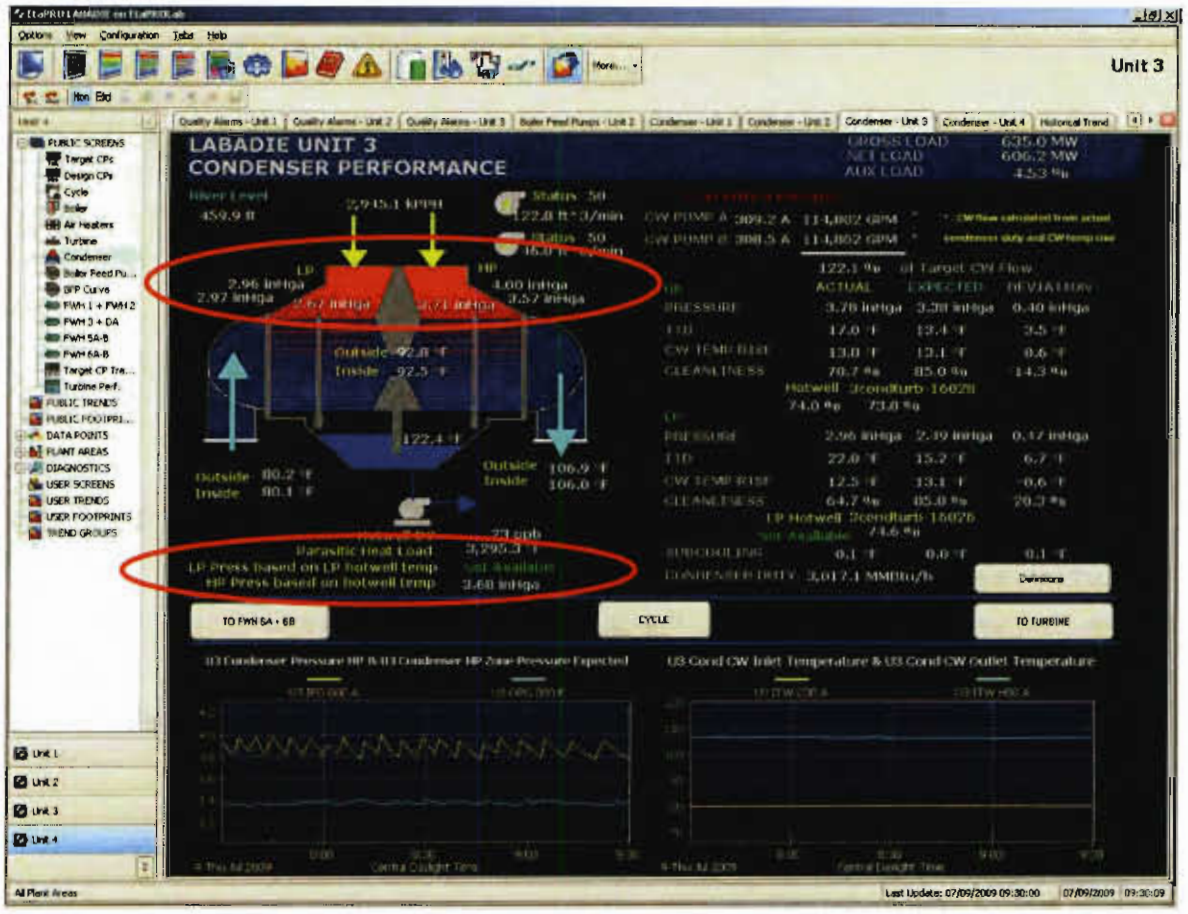
(both the LP false floor hotwell (1CONDTURB-16242) and the main hotwell (1COND-08168)) should also be checked.

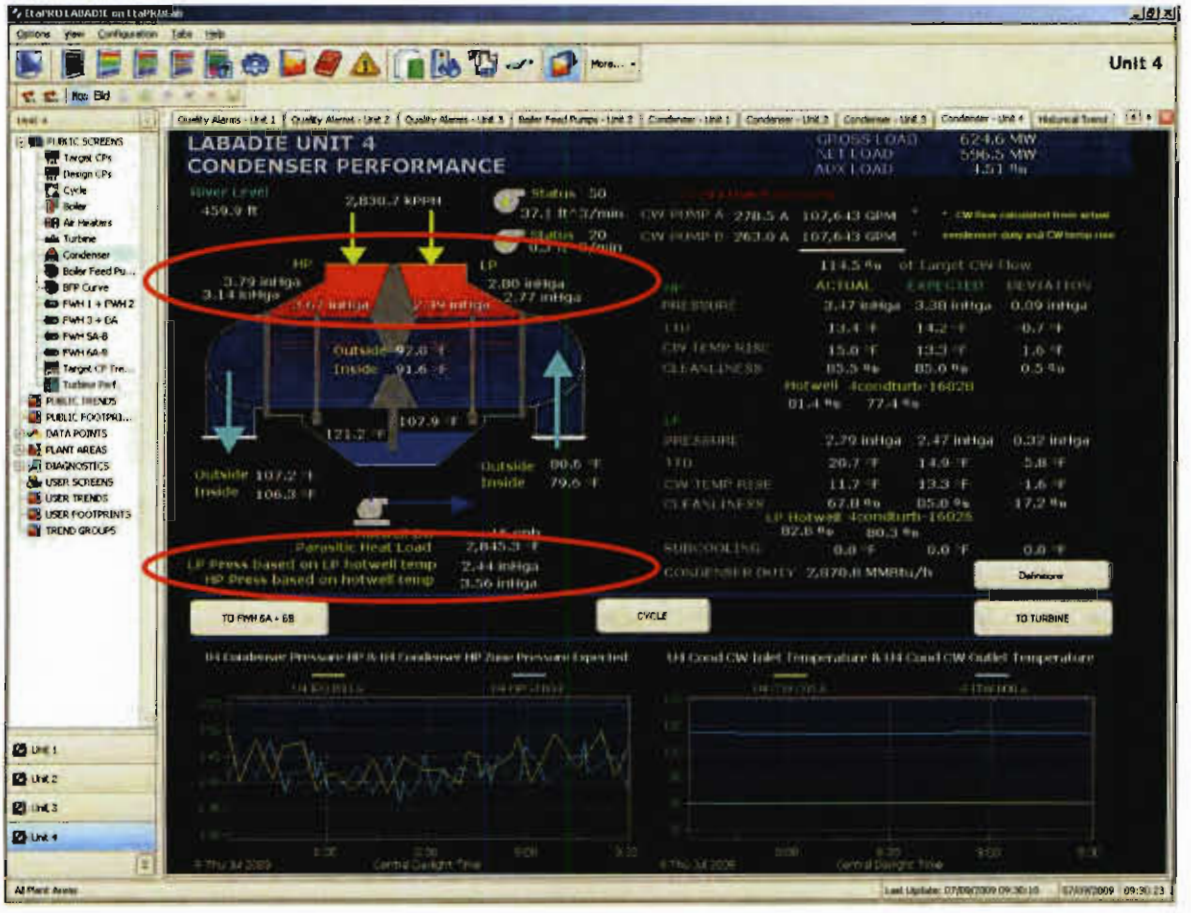
- Check the 3 pressure indications on the HP condenser (be sure to vent the sensing lines to remove any trapped moisture) on Unit 2 as well as the main hotwell temperature TC.
- Check the pressures associated with 3TURB-23965 and 4TURB-23965. Be sure to vent the sensing lines to remove any trapped moisture.



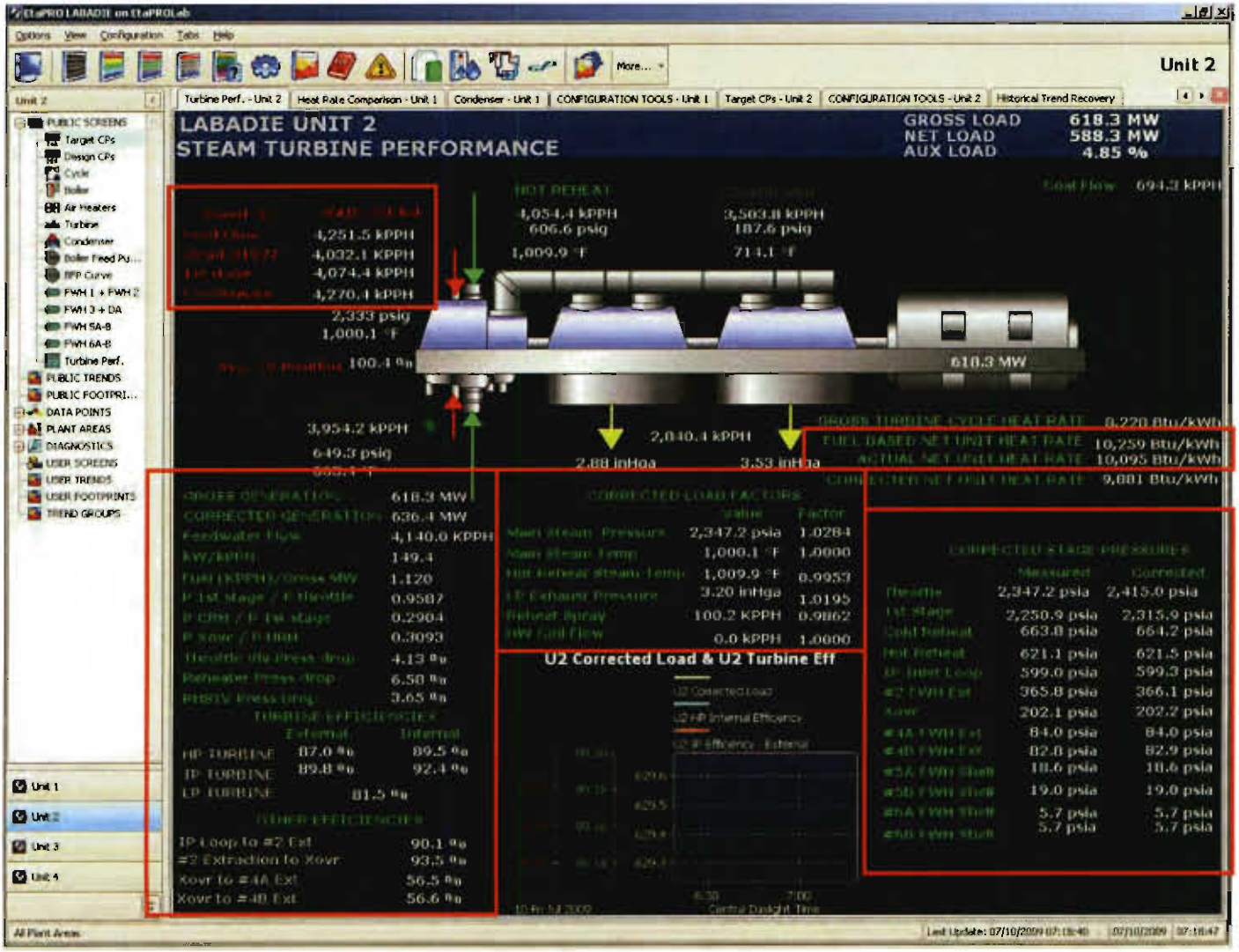


The screen shots on this and the next page show the various indications of condenser pressure for all four units (highlighted in red).


Unit 3
LABADIE UNIT 3
CONDENSER PERFORMANCE
GROSS LOAD 635.0 MW
NET LOAD 606.2 MW
AUX LOAD 4.53 %
2,915.1 kPPH
459.9 ft
LP
2.96 inHga
2.97 inHga
HP
4.00 inHga
3.57 inHga
Outside 92.8 °F
Inside 92.5 °F
122.4 °F
Outside 80.2 °F
Inside 80.1 °F
Outside 106.9 °F
Inside 106.0 °F
Parasitic Heat Load 3,295.3 °F
LP Press based on LP hotwell temp
HP Press based on hotwell temp 3.68 inHga
TO FWH 6A + 6B
CYCLE
TO TURBINE
U3 Condenser Pressure HP & U3 Condenser HP Zone Pressure Expected
U3 Cond CW Inlet Temperature & U3 Cond CW Outlet Temperature


Unit 4
LABADIE UNIT 4
CONDENSER PERFORMANCE
GROSS LOAD 624.6 MW
NET LOAD 596.5 MW
AUX LOAD 4.51 %
2,830.7 kPPH
459.9 ft
HP
3.79 inHga
3.14 inHga
LP
2.80 inHga
2.77 inHga
Outside 92.0 °F
Inside 91.6 °F
121.2 °F
107.9 °F
Outside 107.2 °F
Inside 106.3 °F
Outside 80.6 °F
Inside 79.6 °F
Parasitic Heat Load 2,845.3 °F
LP Press based on LP hotwell temp 2.44 inHga
HP Press based on hotwell temp 3.56 inHga
TO FWH 6A + 6B
CYCLE
TO TURBINE
U4 Condenser Pressure HP & U4 Condenser HP Zone Pressure Expected
U4 Cond CW Inlet Temperature & U4 Cond CW Outlet Temperature

- Performance Engineering would like to be allocated about 1000 Pi tags to better trend the performance of the Labadie units. The majority of these tags will be used to monitor turbine performance (additional efficiency calculations, stage pressure calculations, corrected load, etc – see screen shot below). These tags will allow us to trend the performance of the machines as well as identify potential issues more efficiently. In addition, these new tags will be used to replace some values currently being calculated by the old performance monitor, OPM, which will eventually be phased out. From a quick look through the current list of OPM tags, it is judged that Performance Engineering could give up at least 700 OPM tags that aren't or would not be used in the future. With close scrutiny, we could probably give up many more OPM tags that would not be needed in the future.
    - These new tags would all use the EtaPro format. In other words, the tags would start with either Lx.V. or Lx.Q (where x would be either 1, 2, 3, or 4 depending on the unit).
    - Performance Engineering can create the tags automatically from EtaPro.
    - Performance Engineering would also update any Processbook screens that would be impacted by any OPM tag deletions.



June 15, 2009

To: David Fox
From: Jeff Shelton
Cc: Bob Meiners, 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, Scott Hixson, Jim Barnett, Glenn Tiffin

Subject: Labadie May 2009 Performance Report

Executive Summary

The most notable items regarding Labadie unit performance were:

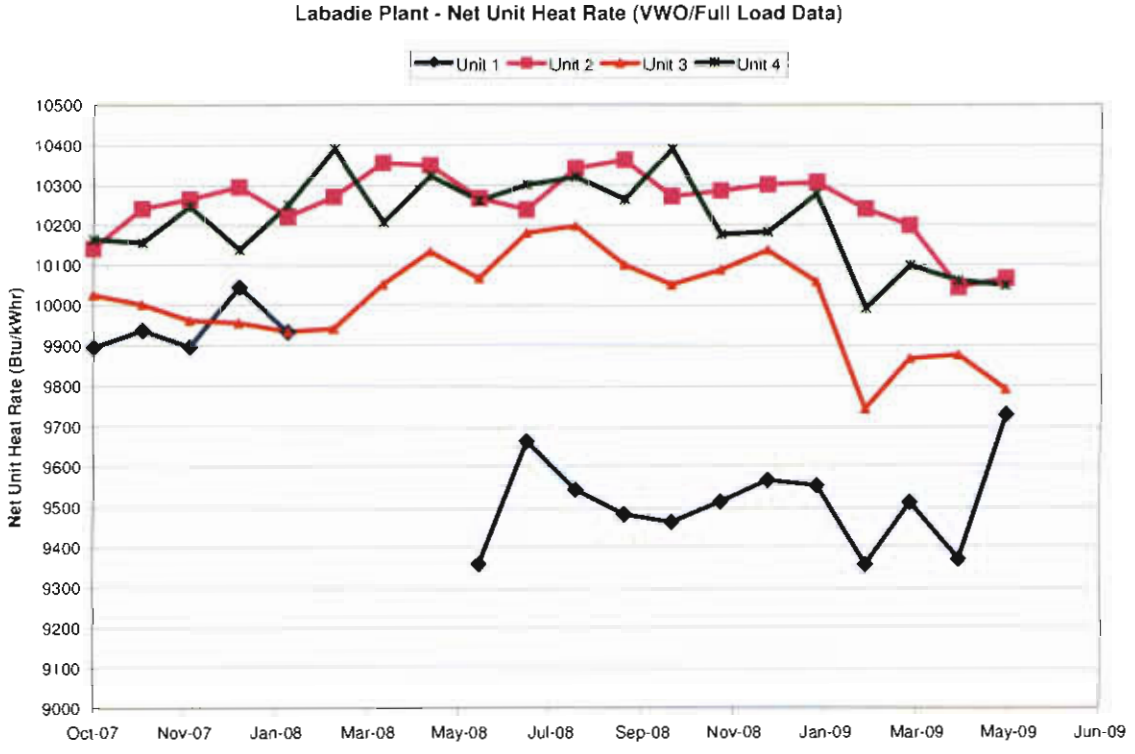
- Unit 3 returned from its spring outage with a higher corrected load and lower heat rate. An air in-leakage source was discovered on the normal drainer of the 3-5B feedwater heater and has corrected performance issues seen on the 3-6B heater since January 2007. The drainer positions on the 3-5A and 3-3 feedwater heaters have been increasing since startup and indicate potential tube leaks or some other drain issue (valve control problem or obstruction).
- Performance engineering is now monitoring the individual temperatures that feed into the condenser parasitic heat load determination. Elevated temperatures were found on each unit that should be investigated further.
- Superheat spray flow was elevated upon the return of Unit 4 from its spring outage. This same trend was observed on Unit 3 following its outage and declined over time. Superheat spray flow on Unit 4 is expected to drop-off as observed on Unit 3.
- Unit 1 operated the entire month with only one high pressure boiler feed pump.

The following table shows the instrument deficiencies for all four units.

Tag	Unit	Issue	Resolution	Carryover or New
3BFWSTM-08321, EXTRACT PRESS HTR 4B	3	Has only had valid data from Nov. 2003 to Jan. 2004	JR164407 to investigate and correct	Carryover
1BFWSTM-08318, EXTRACT PRESS HTR 4A	1	Flat-lined on 1/29	JR164611	Carryover
4STM-16195, PARASITIC HEAT LOAD	4	Went negative back in Oct. 08	JR167102	Fixed on 5/28/09
3TURB-23963, CROSSOVER WEST TEMP(B)	3	Has been bad since at least 1/1/2008		New

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

The most notable item is the increase in heat rate on Unit 1 since the loss of the 1B HPBFPT (note that this heat rate data is not full load but rather a high load with only one BFP available). Unit 3 also showed a slight decrease in heat rate following its spring outage.



Heat Rate KPI

A trend only heat rate KPI has been created for 2009 with the intent of having a pay heat rate KPI in 2010. Below is a table showing the actual performance of the plant through May.

Plant	2009 Actual	Threshold	Target	Stretch
Labadie	9860	9888	9807	9764

A separate e-mail was sent to the plant describing how the trend only KPI targets were derived for 2009. Performance engineering intends to do more work in this area and present the proposed methodology for the heat rate KPI at our quarterly heat rate meeting in the summer (scheduled for June 30 at 10 am).

Action Items:

- Performance Engineering will setup a separate meeting with the plant to discuss phasing out the OPM performance monitor and creating more PI tags related to EtaPro.
- Labadie plant should inspect the 3-5A and 3-3 FWHs for tube leaks at the next available opportunity.
- Labadie plant should investigate the elevated temperatures that feed into the condenser parasitic heat load determination as detailed in this report.
- Performance Engineering will review the condenser pressure indications on all four units and determine what indications may be in error.

Unit 1 Observations

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

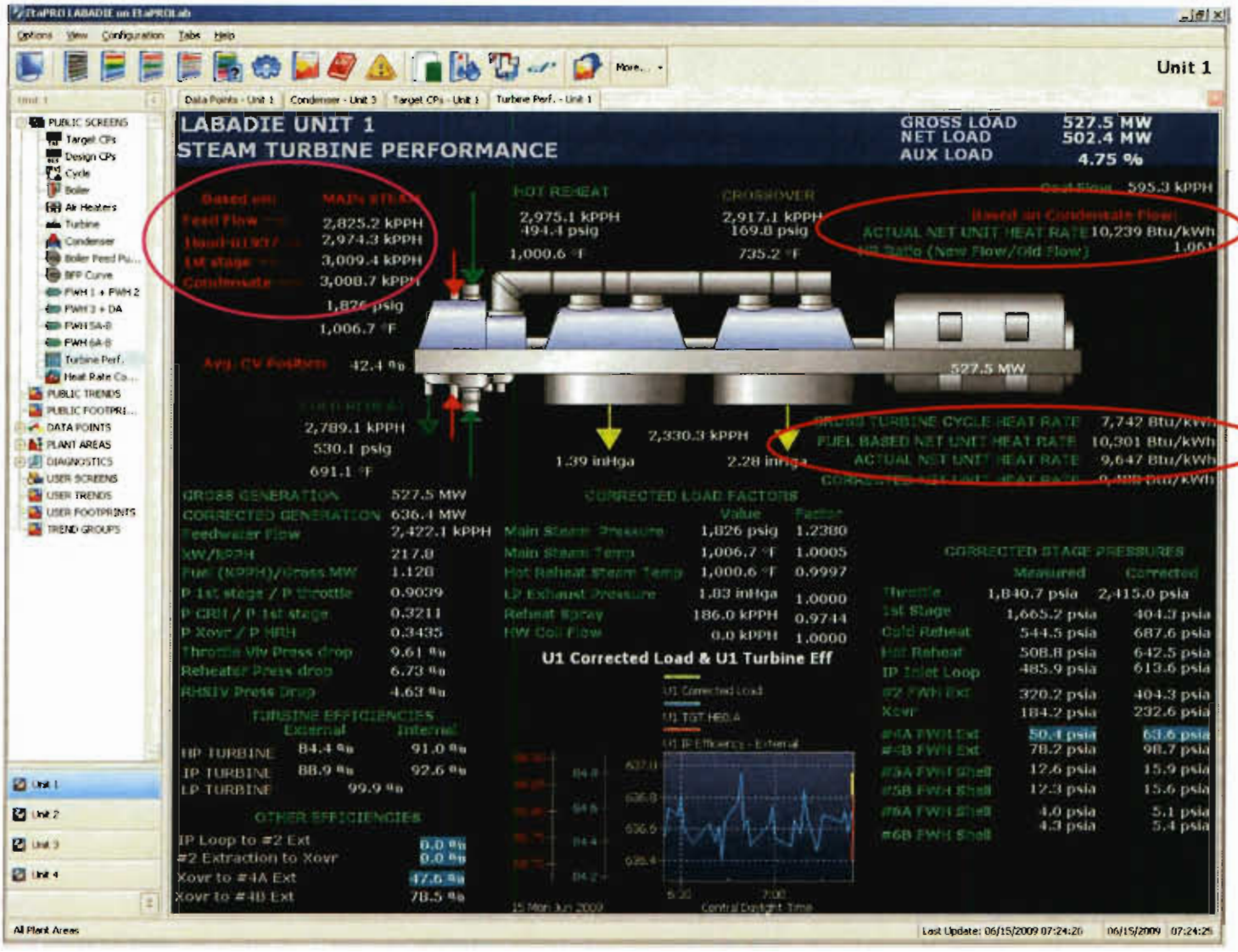
- No "full load" data existed in the month of May due to the 1B HPBFP being OOS. The data provided in the table below represents hours in which the average load was above 530 MWs.
- Note that even at this lower load, the calculated heat rate for Unit 1 is still better than the other three units. In addition, the heat rate on the unit at full load prior to the pump being out-of-service was at or better than the design value. Since neither of these conditions is credible, a review of the feedwater flow indications on the unit was performed. This review showed that the flow provided by 1BFW-13099-6minavg (currently used in EtaPro) is one of the lowest compared to other methods (e.g. using 1st stage pressure, using condensate flow and adding various heater extractions, etc). OPM currently estimates the feedwater flow from the measured condensate flow and accounts for feedwater heater extractions, spray flow, and hot water coil flow to come up with a feedwater flow rate. A heat rate calculation has been built into EtaPro using this same methodology. As shown on the screen shot below, this new calculation provides a more reasonable heat rate value and has better agreement with the heat rate estimated from fuel flow. Performance engineering is going to wait until the 1B HPBFP is back online before any official changes to the unit heat rate calculation is made. However, it is our intent to change the unit 1 heat rate calculation such that it is using the condensate flow.
- A condenser tube cleaning was performed in the beginning of June. This cleaning has improved condenser cleanliness. The LP and HP cleanliness factors are calculated to be between 70-75% (up from around 60%).
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. The temperatures associated with the A side main steam start-up bypass valves (MO-137A) are much higher on Unit 1 than on Unit 2..

Summary of Performance Report for:

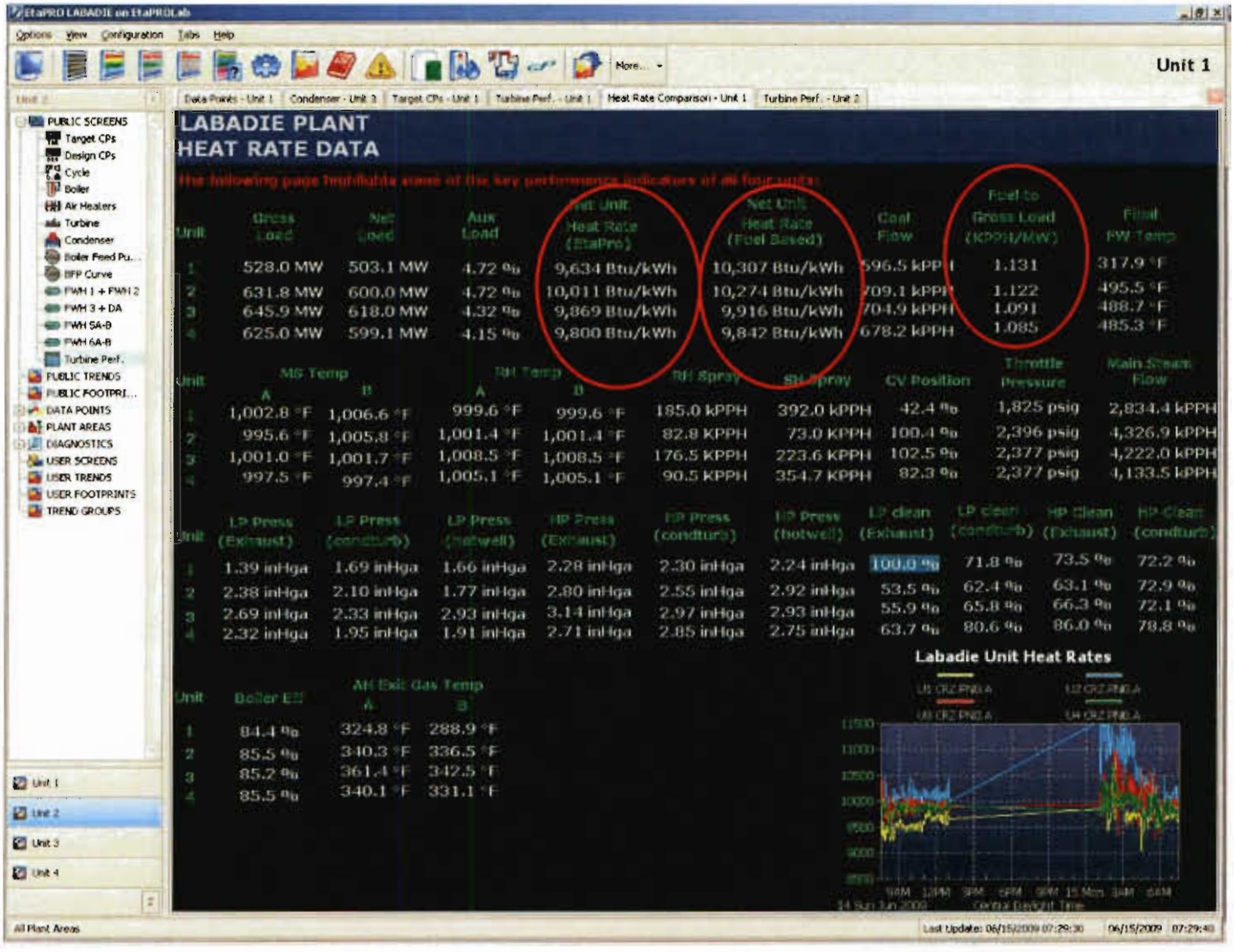
Plant	Labadie				
Unit	1				
Period	5/1/09	to	6/1/09		
			May-09	Apr-09	May-08
Full Load Performance					
Hours of Data (>90% Monthly Capability)			222	355	MBO
			Averages	**Averages**	
GENERATOR MEGAWATTS	MW		538.0	637.8	
AUX POWER	MW		25.4	27.9	
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		9729.6	9370 0	
Boiler Efficiency Actual	%		84.5	84.1	
CONTROL VALVE POSITION LVDT	%		80.9	88.1	
FEEDWATER TEMP TO ECON	degF		317.3	492.2	
FEEDWATER TEMP TO HTR 1	degF		317.8	437 6	
HP Turbine Efficiency Actual	%		86.9	87.3	
IP Turbine Efficiency Corrected	%		90.4	91.1	
Condenser Pressure HP	inHga		2.1	1.9	
Condenser Pressure LP	inHga		1.3	1.3	
AIRHTR-A GAS OUTLET TEMP	degF		311.1	335 6	
AIRHTR-B GAS OUTLET TEMP	degF		300.5	318.0	
AMBIENT AIR TEMP	degF		65.3	51.5	
CIRC WTR TEMP TO LP CONDB	degF		62.7	50.2	
CIRC WTR TEMP TO LP CONDB	degF		63.6	52.9	
CIRC WTR TEMP TO LP CONDB	degF		64.6	54.0	
CIRC WTR TEMP TO LP CONDB	degF		65.9	50.7	
Minimum River Temperature	degF		62.7	50.2	
FWH 1 Temperature Rise	degF		-0.5	54.6	
Net Load	MW		512.6	609.9	
Average Cond Press	inHga		1.7	1.6	
Average Exit Gas Temperature	degF		305.8	326.8	
Aux Power	%		4.7	4.4	
Gross Unit Heat Rate	BTU/KW-HR		9269.8	8960.6	
Gross Turbine Heat Rate	BTU/KW-HR		7831.3	7537.1	
Feedwater Flow	KPPH		2531.8	3874 7	

No data at >90% Monthly Capability - Used Data above 530 MWs

As stated above, the data for May is for all hours in which the average load was above 530 MWs.



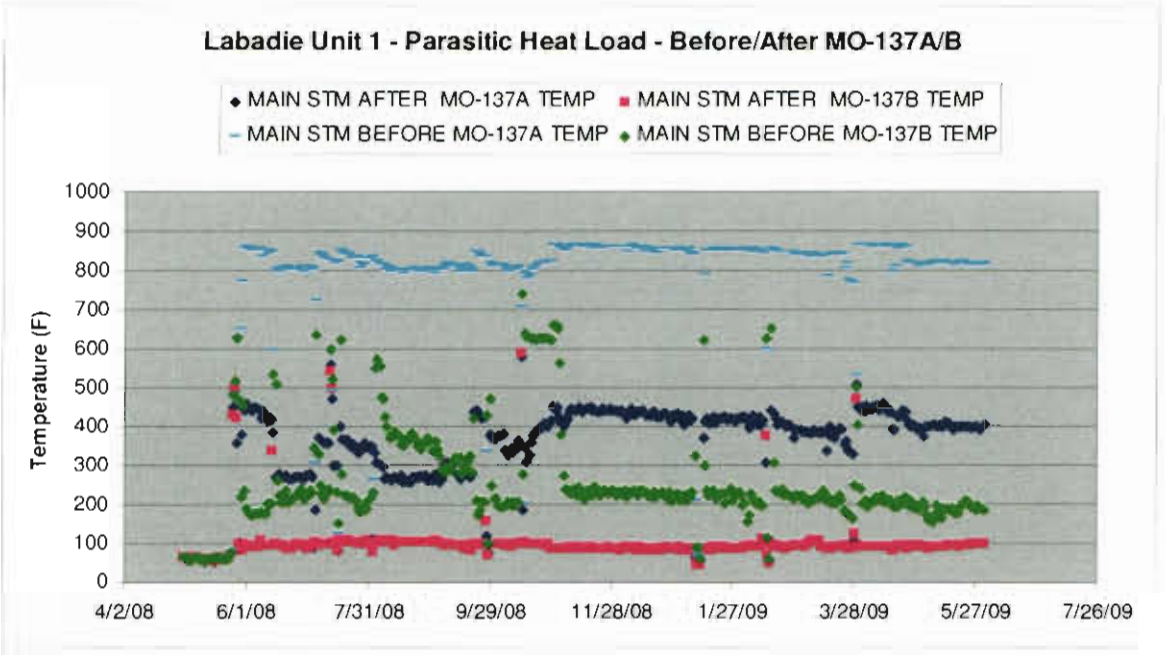
The above screen shot shows various data related to flow and heat rate on Unit 1. The data circled in pink shows four different estimates of steam flow (the top based on measured feedwater, the second based on measured steam flow, the third based on 1st stage pressure, and the bottom based on the measured condensate flow). Note that the feedwater flow based value is about 6% lower than the other three indications. The data highlighted in red shows three different calculations of heat rate. The top red circle shows the heat rate based on the condensate flow. In the bottom circle, the top value is a heat rate based on measured fuel flow while the bottom value is that based on the feedwater flow rate. The heat rate calculated using condensate flow agrees much closer with the fuel based heat rate.

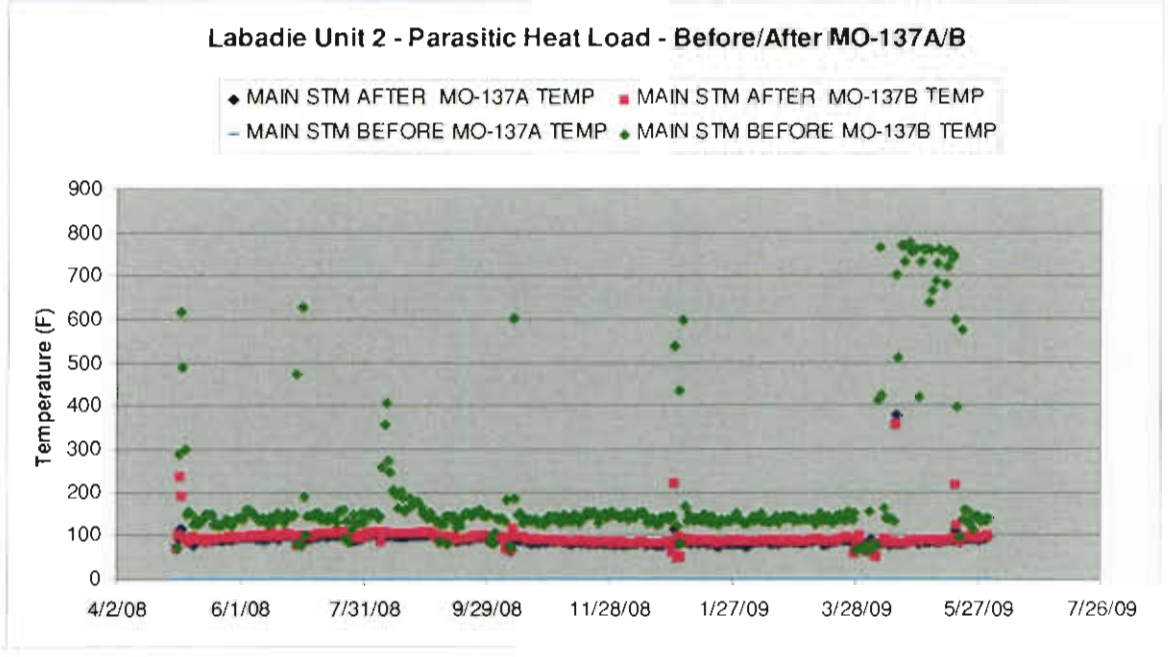


The above screen shot is from a heat rate comparison page in EtaPro. The left highlighted area shows the current EtaPro estimate of heat rate. The middle highlighted data shows the heat rate as estimated using measured coal flow. The right highlighted data shows the ratio of fuel flow (in KPPH) to gross load (MW). Note that the two heat rate values on units 3&4 agree fairly well. The heat rates on unit 2 in this screen shot is about 2.5% different and unit 1 has about a 6% difference. As mentioned on the previous page, Performance Engineering intends to make a change to the unit 1 heat rate calculation which should make its value more reasonable and in line with the fuel based heat rate. Performance Engineering will review the Unit 2 calculation to see if a change is also warranted on this unit. Note that the fuel based heat rate is based on an assumed heating value of 8694 Btu/lbm and is constant. Therefore, the fuel based heat rate is used as a check on the EtaPro turbine cycle input based heat rate and not as the primary indicator of heat rate on the unit.

The above plot shows the condenser pressures and cleanliness factors before and after the condenser cleaning performed 6/6 to 6/8. On the HP condenser, the pressure (pink line) dropped about 0.3 in Hga and the cleanliness (yellow line) improved about 10% to 75%. On the LP condenser, the pressure (green line) dropped about 0.4 in HgA. The cleanliness factor on the LP side (blue line) is currently above 100%. The condenser cleanliness calculation in EtaPro is currently based on LP turbine exhaust pressures. On the low pressure condenser side, these pressures are reading very low and thus the condenser cleanliness value for the LP condenser is greater than 100%. However, using the other indications of condenser pressure (pressure tap near the tube sheet and LP false floor hotwell temp), the cleanliness of the LP condenser is about 75%.

Performance Engineering has action to review the condenser pressure indications and provide the plant with a list of instruments that should be investigated due to potential issues. For example, the LP turbine exhaust pressures are expected to be slightly higher than the pressure indicated near the top of the condenser tube bundle. For the most part, this is observed on units 2, 3, and 4. On unit 1 however, the LP turbine exhaust pressures read about 0.3 in HgA lower than the pressure at the top of the tubes on the low pressure condenser side and about the same as the pressure at the top of the tubes on the high pressure condenser side.





The top plot shows the temperature data from the main steam start-up bypass valves from Unit 1 while the bottom plot shows the corresponding data from Unit 2. As shown, the temperatures from MO-137A on unit 1 are much higher than those from MO-137A on unit 2. Performance engineering recommends that the valve lineups and thermocouples on Unit 1 be checked. Valve inspection/repair may be necessary if no problems are found.

Unit 2 Observations

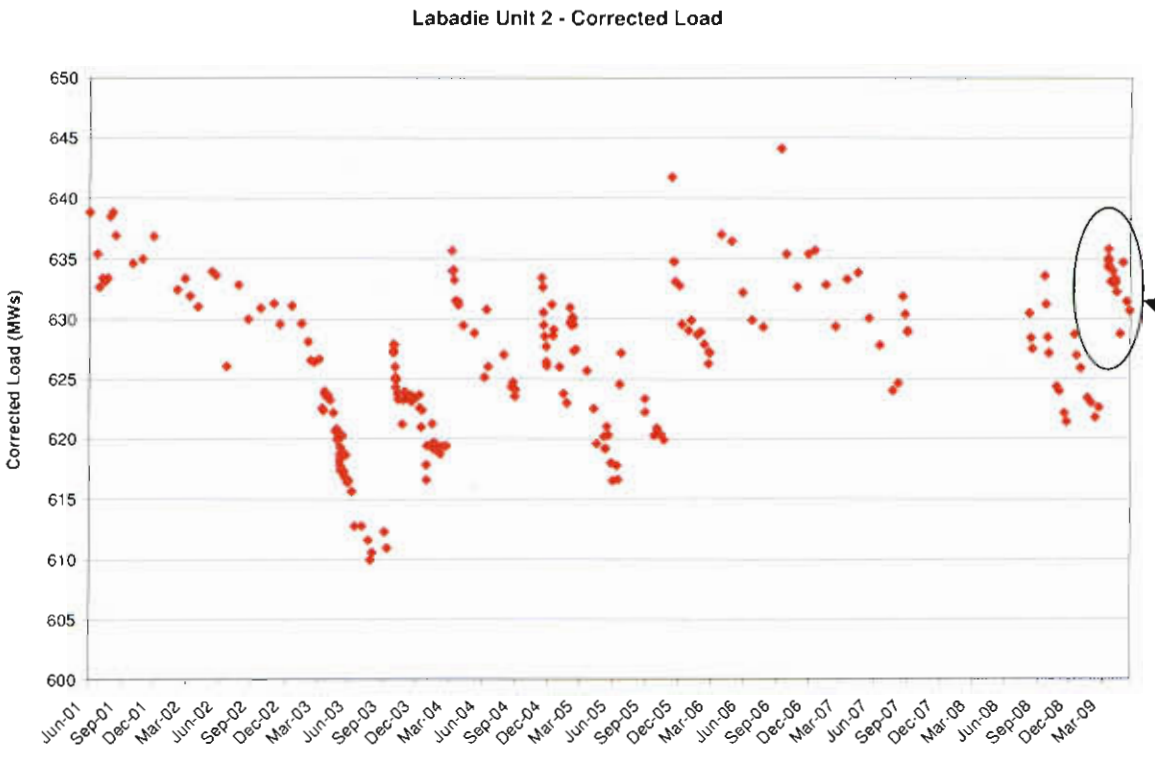
The following observations were made regarding Unit 2 operation and performance:

- Since 5/10, the unit has been operated VWO at full load. Great job!
- Most performance parameters remained similar to April values with the exception of condenser backpressure going up about 0.3 in HgA due to increased river temperatures.
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. One elevated temperature was noted in this review as detailed below (gland steam spillover to the condenser).
- The unit continues to see a decline in corrected load and turbine efficiencies during continuous online runs. The load and efficiencies recover during SBOs. This will continue to be monitored.

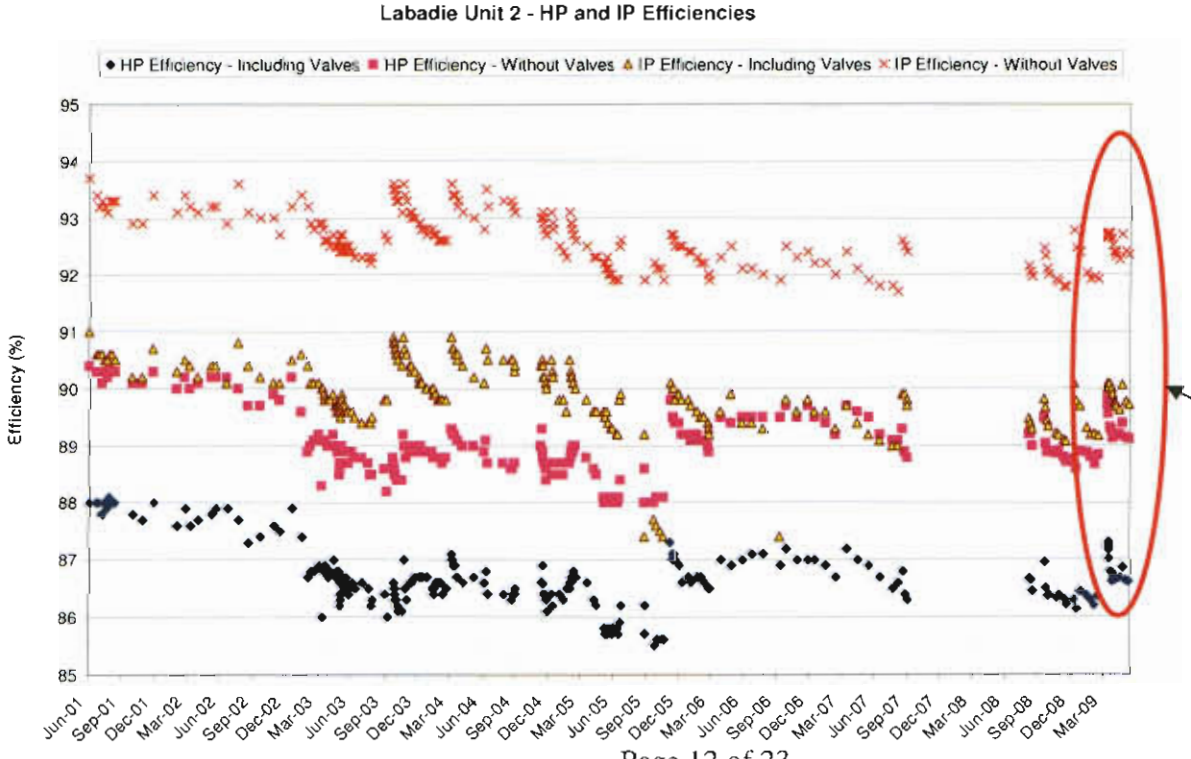
Summary of Performance Report for:

Plant	Labadie					
Unit	2					
Period	5/1/09	to	6/1/09			
Full Load Performance			May-09		Apr-09	May-08
Hours of Data (>90% Monthly Capability)			530		395	123
			Averages		Averages	Averages
GENERATOR MEGAWATTS	MW		619.7		613.5	621.5
AUX POWER	MW		29.2		28.6	30.0
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10068.7		10045.8	10350.1
Boiler Efficiency Actual	%		85.4		85.3	85.3
CONTROL VALVE POSITION LVDT	%		82.4		68.1	99.9
FEEDWATER TEMP TO ECON	degF		493.2		491.7	491.3
FEEDWATER TEMP TO HTR 1	degF		443.8		442.1	443.4
HP Turbine Efficiency Actual	%		85.9		85.3	87.1
IP Turbine Efficiency Corrected	%		90.9		90.8	91.0
Condenser Pressure HP	inHga		2.4		2.1	2.5
Condenser Pressure LP	inHga		2.1		1.8	2.1
AIRHTR-A GAS OUTLET TEMP	degF		335.0		335.9	331.6
AIRHTR-B GAS OUTLET TEMP	degF		335.9		327.5	341.9
AMBIENT AIR TEMP	degF		69.2		60.6	71.6
CIRC WTR TEMP TO LP CONDB	degF		64.9		55.1	66.8
CIRC WTR TEMP TO LP CONDB	degF		65.6		55.7	65.5
CIRC WTR TEMP TO LP CONDB	degF		66.1		62.2	65.3
CIRC WTR TEMP TO LP CONDB	degF		68.4		55.6	64.8
Minimum River Temperature	degF		64.9		55.1	64.8
FWH 1 Temperature Rise	degF		49.5		49.6	47.9
Net Load	MW		590.5		584.8	591.5
Average Cond Press	inHga		2.3		1.9	2.3
Average Exit Gas Temperature	degF		335.4		331.7	336.7
Aux Power	%		4.7		4.7	4.8
Gross Unit Heat Rate	BTU/KW-HR		9594.9		9576.8	9851.0
Gross Turbine Heat Rate	BTU/KW-HR		8193.8		8170.5	8407.6
Feedwater Flow	KPPH		4081.3		3996.9	

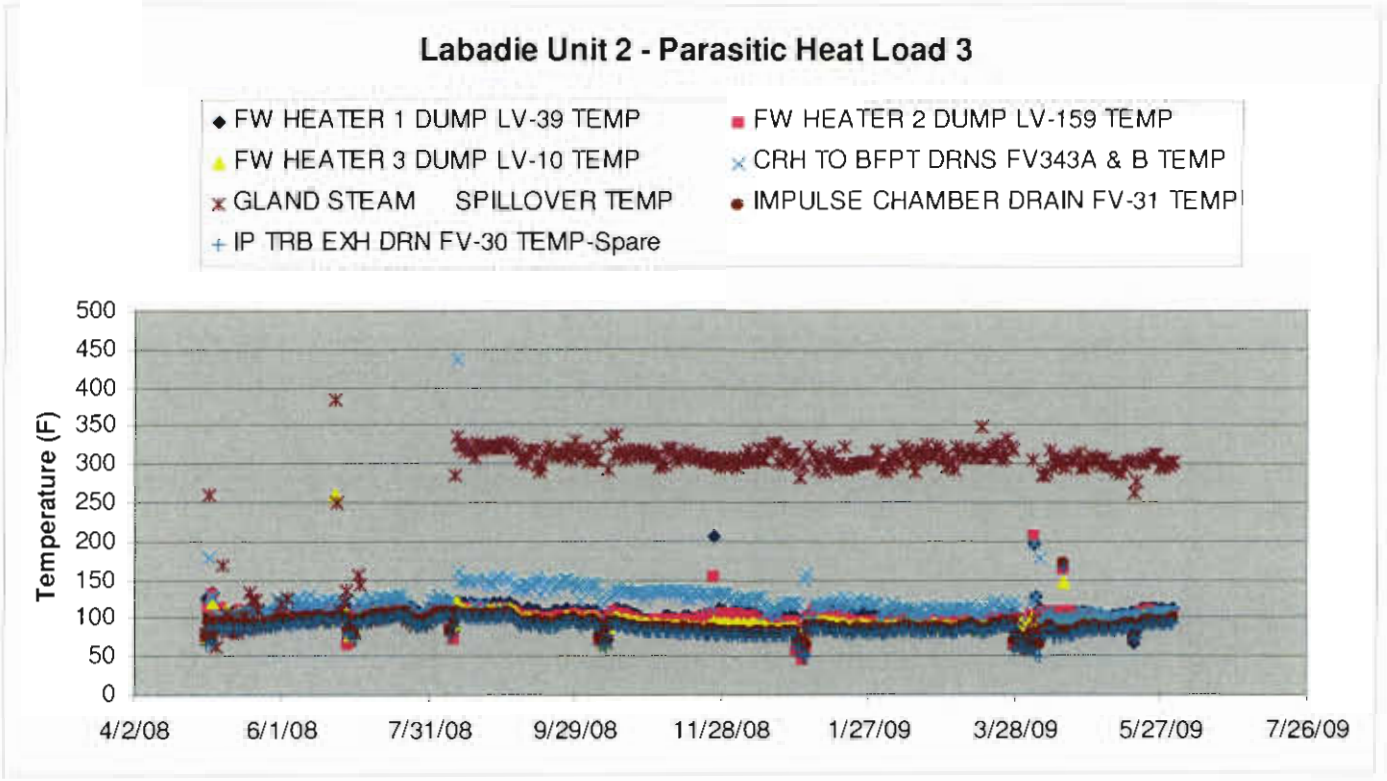
Most parameters did not change considerably from April to May. Condenser pressure was up by 0.3 in HgA. HP efficiency was up due to the control valves being more open.



Note that corrected load took a step change up following the outage. Since then, the corrected load has started to drop off as seen during previous continuous runs. Note the step change back up following the SBO that ended on 5/17.



Note the increase in turbine efficiency following this past spring outage followed by a continuous decrease since then.



Starting with this report, Performance Engineering will begin to monitor all of the tags that feed into the parasitic heat load calculation. During this review on Unit 2, it was noticed that the gland steam spillover temp (Pi tag 2turb-16216) has been elevated since last August (went from 100F up to 300F during the startup from an SBO). This same temperature on Unit 1 is reading 100F as Unit 2 did before last August. It appears that the temperature increased during several cycles of MO-42 (GS Spillover Bypass Vlv) during the startup from the SBO. MO-42 appeared to go back to the same state but the temperature remained elevated. The gland steam spillover valve (PV-32) appears to be closed (and has been for most of the last year – it did not change position during the above noted timeframe). It also appears that the MO-42 has been cycled several times since last August but the temperature has remained elevated. It is noted that following this last outage, MO-42 was cycled open. The valve state then showed the valve was in travel (going closed). The valve state never showed the valve closed and it remains in this state. Performance Engineering requests that the plant review the status and operation of MO-42 on unit 2.

Unit 3 Observations

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

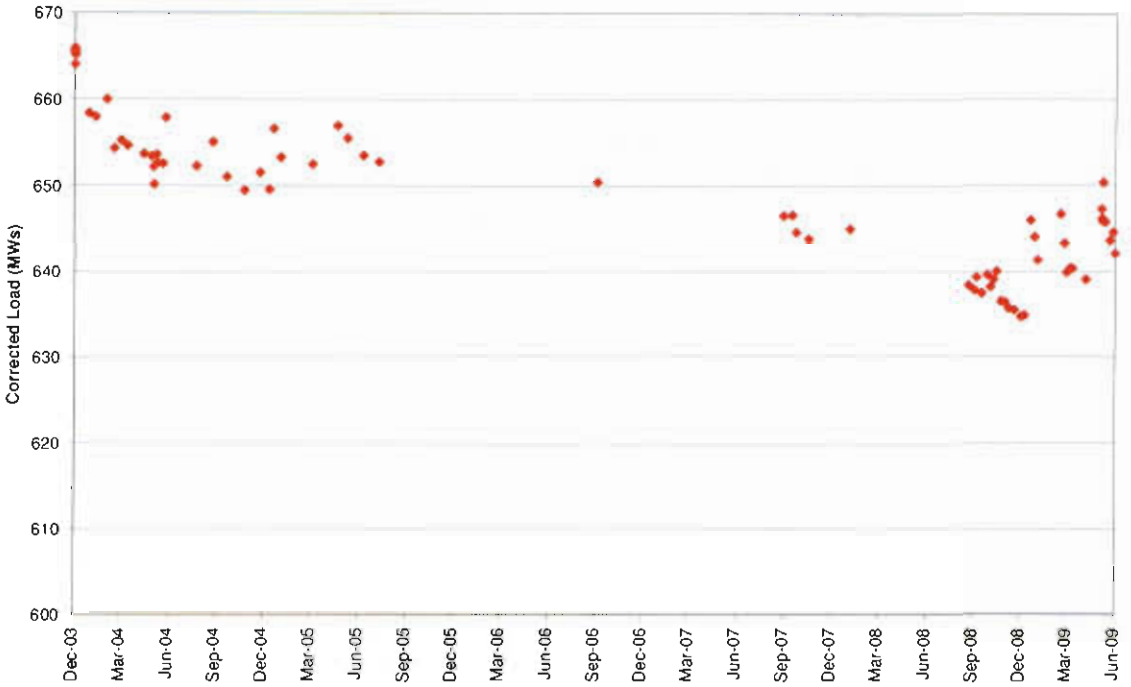
- Heat rate did improve following the outage this spring. The average heat rate in May was down about 1% compared to the pre-outage average in April.
- Since the startup from the outage, the unit has been operated VWO at full load. Greta job!
- Corrected load following the outage was up about 7 MWs (to 647 MWs) from prior to the outage. The HP efficiencies are up about 0.4% and the IP efficiencies are up about 0.7%. Note that the HP and IP efficiencies are as high as they have been in quite some time.
- The unit continues to see a decline in corrected load and turbine efficiencies during continuous online runs. The load and efficiencies recover during SBOs. This will continue to be monitored.
- The condenser cleaning improved the cleanliness factor by about 15% (LP) and 20% (HP). In addition, an air in-leakage source was found on the 5B drain line to the number 6B heater which appears to be the source of performance problems the 6B heater has seen for some time. A plot below shows the temperature rise of the 6B FWH is now consistent with the 6A FWH.
- The gas side pressure across the air heater has decreased from about 14 and 11 inches to about 5 inches on both sides.
- The 3-5A FWH appears to have tube leaks as indicated by the normal drain valve position and should be leak checked at the next available opportunity. In addition, the normal drainer position on the 3-3 FWH has been increasing. It is recommended that the cause of this be investigated further (drainer valve control issue, obstruction in the drain line, potential tube leak).
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. Two elevated temperature were noted in this review as detailed below.

Summary of Performance Report for:

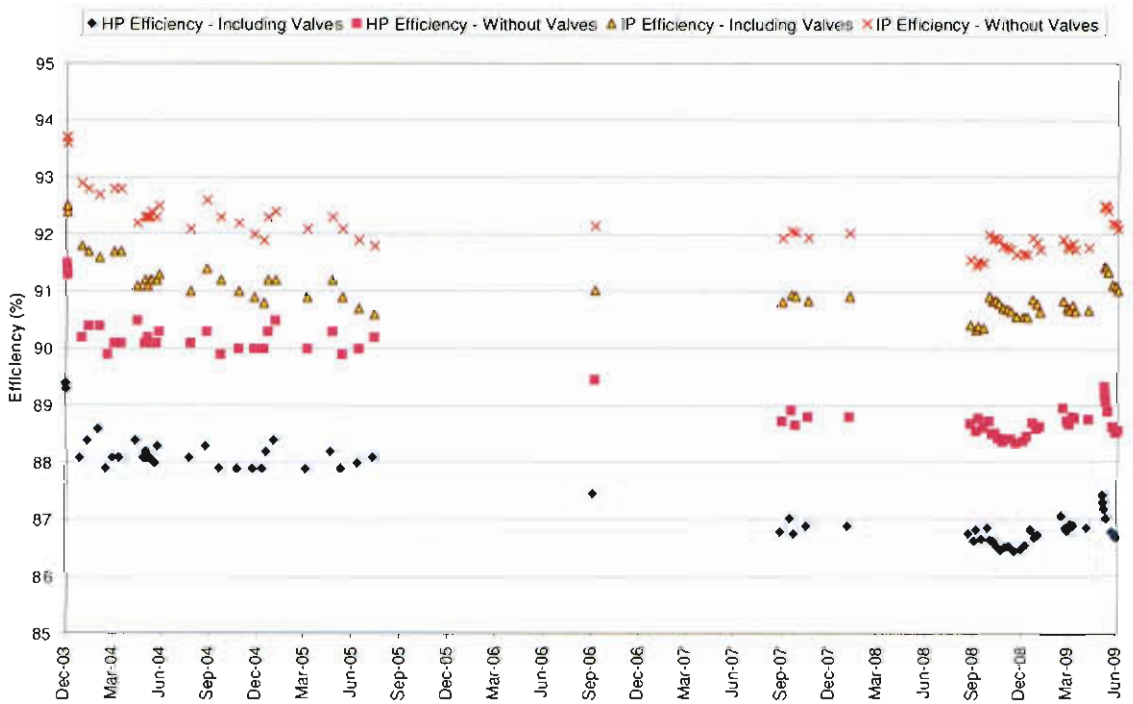
Plant	Labadie				
Unit	3				
Period	5/1/09	to	6/1/09		
Full Load Performance			May-09	Apr-09	May-08
Hours of Data			306	275	465
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		633.3	591.1	633.5
AUX POWER	MW		28.8	28.9	30.8
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		9793.4	9877.9	10135.5
Boiler Efficiency Actual	%		85.1	85.4	85.3
CONTROL VALVE POSITION LVDT	%		101.1	94.0	104.4
FEEDWATER TEMP TO ECON	degF		485.9	479.2	486.5
FEEDWATER TEMP TO HTR 1	degF		435.4	430.0	438.2
HP Turbine Efficiency Actual	%		86.6	83.7	87.3
IP Turbine Efficiency Corrected	%		95.4	94.9	93.9
Condenser Pressure HP	inHga		2.7	2.4	3.5
Condenser Pressure LP	inHga		2.3	2.1	2.8
AIRHTR-A GAS OUTLET TEMP	degF		363.5	325.1	334.9
AIRHTR-B GAS OUTLET TEMP	degF		339.8	321.7	325.4
AMBIENT AIR TEMP	degF		71.6	49.7	65.9
CIRC WTR TEMP TO LP CONDB	degF		67.5	49.0	64.4
CIRC WTR TEMP TO LP CONDB	degF		68.2	52.2	64.1
CIRC WTR TEMP TO LP CONDB	degF		68.0	49.3	63.5
CIRC WTR TEMP TO LP CONDB	degF		70.2	48.9	63.8
Minimum River Temperature	degF		67.5	48.9	63.5
FWH 1 Temperature Rise	degF		50.5	49.2	48.3
Net Load	MW		604.6	562.2	602.7
Average Cond Press	inHga		2.5	2.3	3.1
Average Exit Gas Temperature	degF		351.6	323.4	330.2
Aux Power	%		4.5	4.9	4.9
Gross Unit Heat Rate	BTU/KW-HR		9348.6	9394.6	9643.4
Gross Turbine Heat Rate	BTU/KW-HR		7959.8	8023.1	8230.0
Feedwater Flow	KPPH		3809.7	3660.2	

Average gross load on the unit is now consistent with full load from June 2008. Other observations are that aux. load is down as compared to a year ago and air heater gas outlet temperatures are higher (by 30F and 15F) as compared to a year ago. Condenser pressure was down from last May (a tube cleaning was not performed until 5-16-08 through 5-19-08).

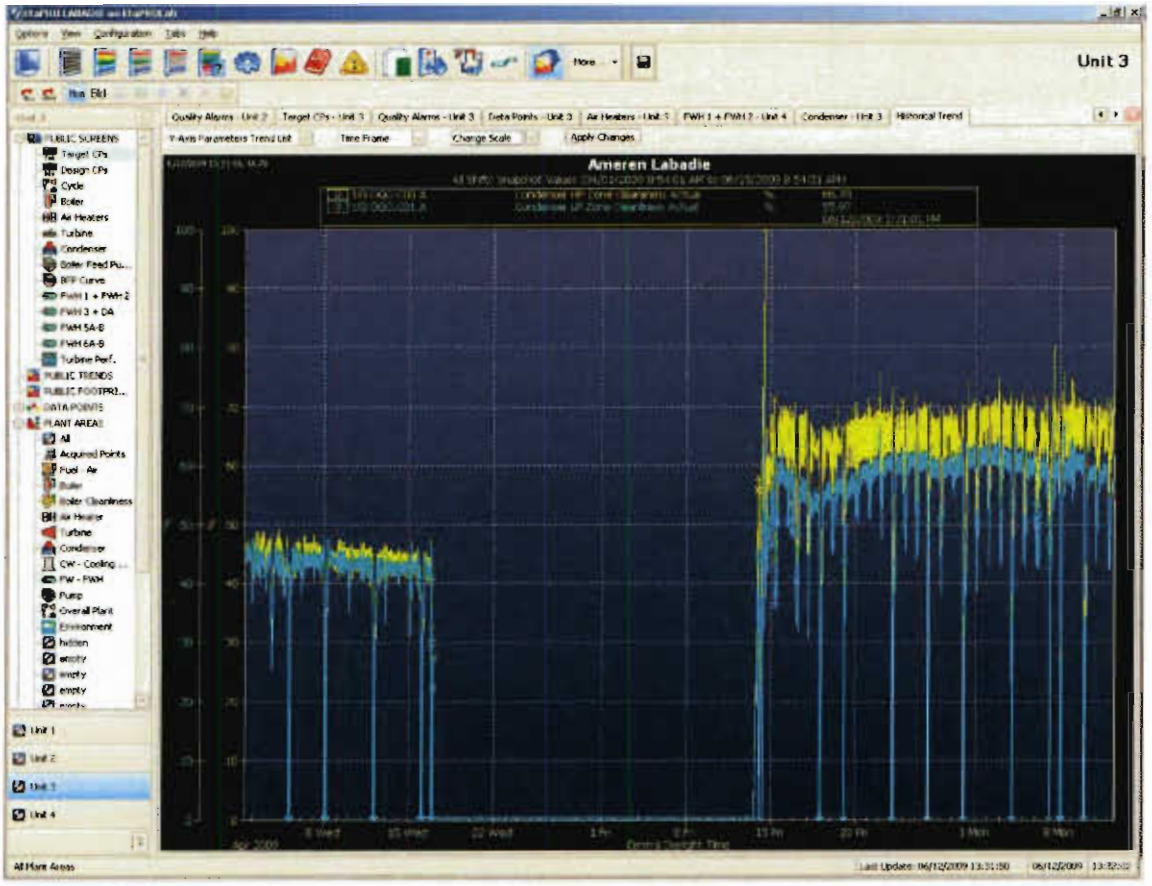
Labadie Unit 3 - Corrected Load



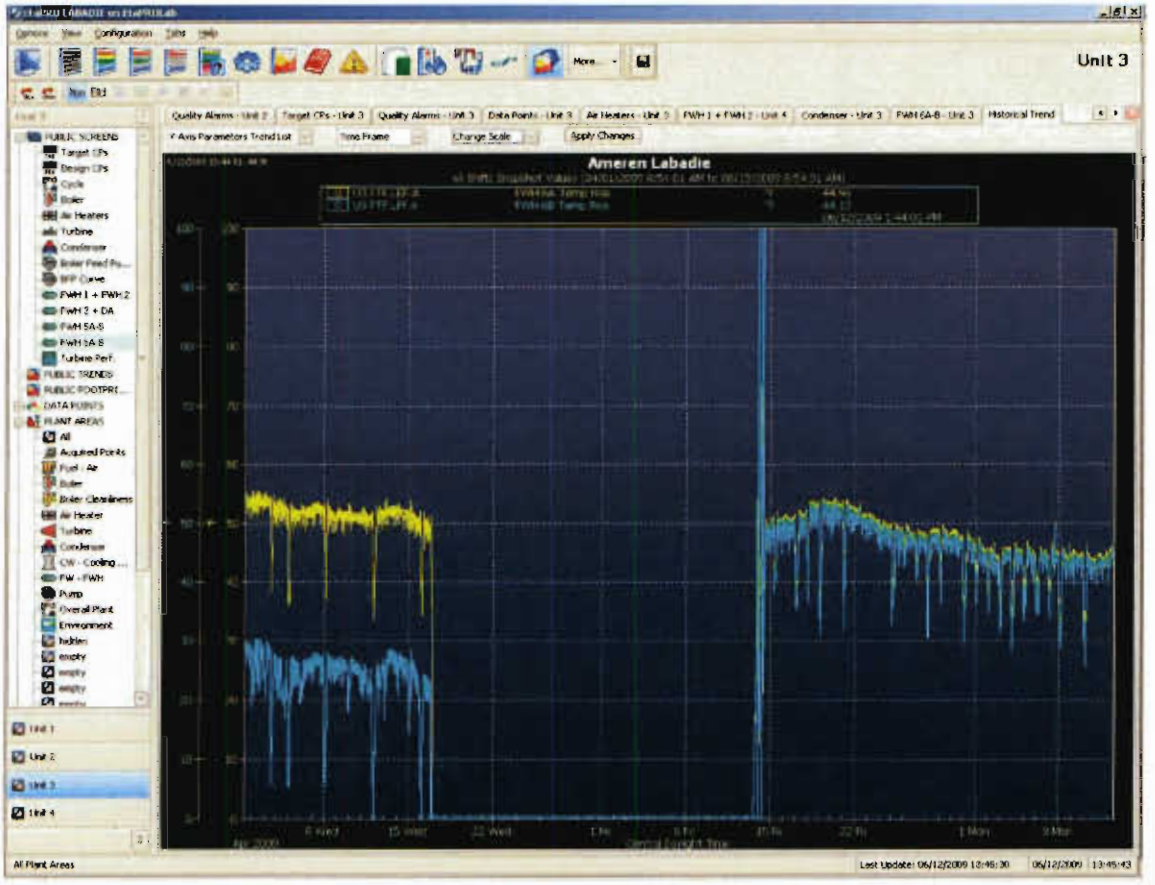
Labadie Unit 3 - HP and IP Efficiencies



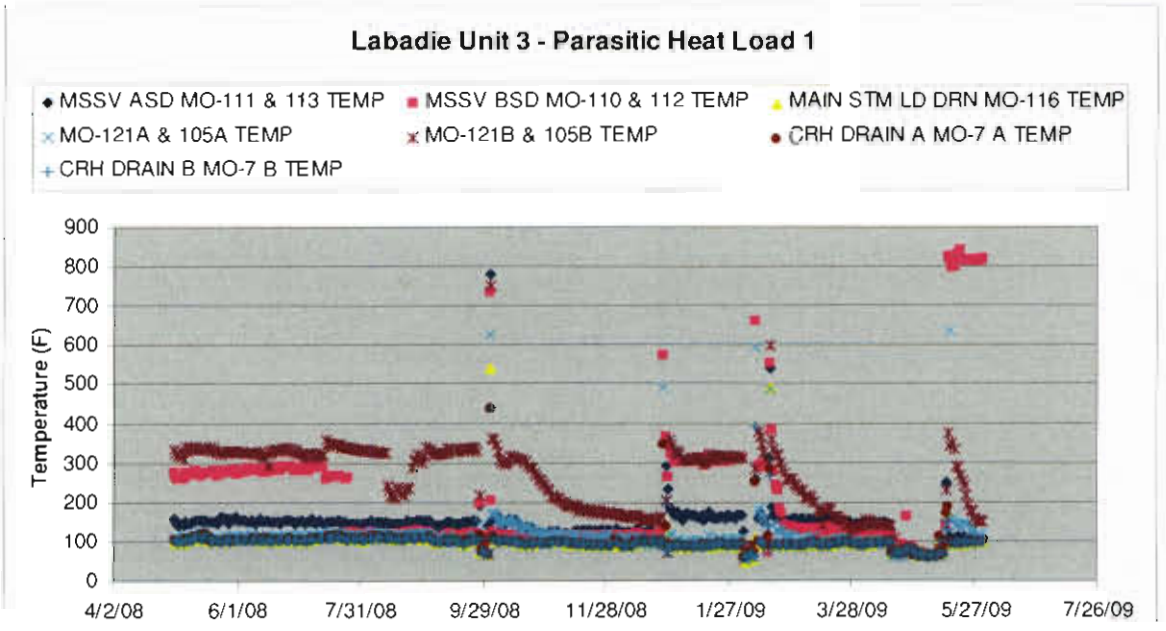
As seen on Unit 2, corrected load and turbine efficiencies decline during long runs and recover following SBOs.

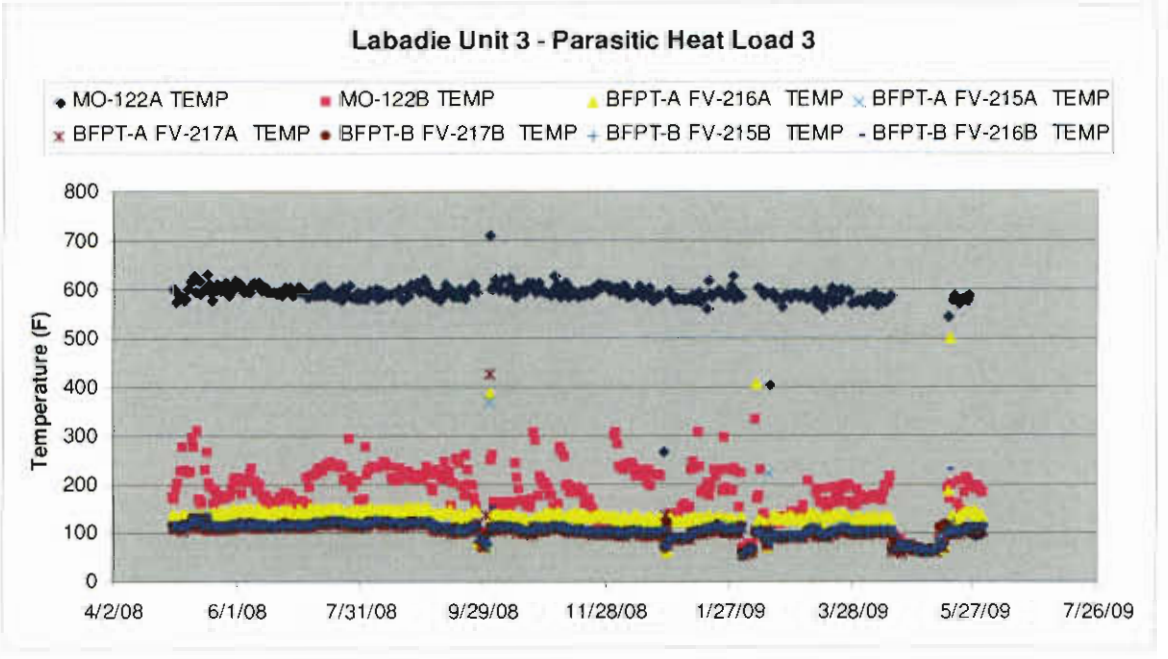


The top plot shows the condenser cleanliness factors on Unit 3 from before and after the outage. As shown, the cleanliness factors improved about 15% on the LP side (blue line) and about 20% on the HP side (yellow line).



The bottom plot shows the temperature rise across the 6A and 6B feedwater heaters. Before the outage, the 6B heater provided only about ½ of the temperature rise of the 6A heater. Air inleakage was suspected as the issue with the 6B heater and has caused performance issues since January 2007. An air in-leakage source on the 5B normal drainer was found during the outage that appears to have been the cause of the performance issues.





The top plot shows that the temperature from MO-110 & MO-112 (Before Seat Drains on Main Stop Valves) has been elevated since the unit came back online from its outage this spring. The bottom plot shows that the temperature from MO-122A (HPBFP Turbine HP Stop Valve Below Seat Drain Valve) has been elevated for quite some time but dropped from 580F down to 100F in about 5 hours (at full load) on 5/24/2009. No change was noted in the valve status at the time. Performance Engineering recommends that the valve lineups and thermocouples be checked for these two temperature indications.

Unit 4 Observations

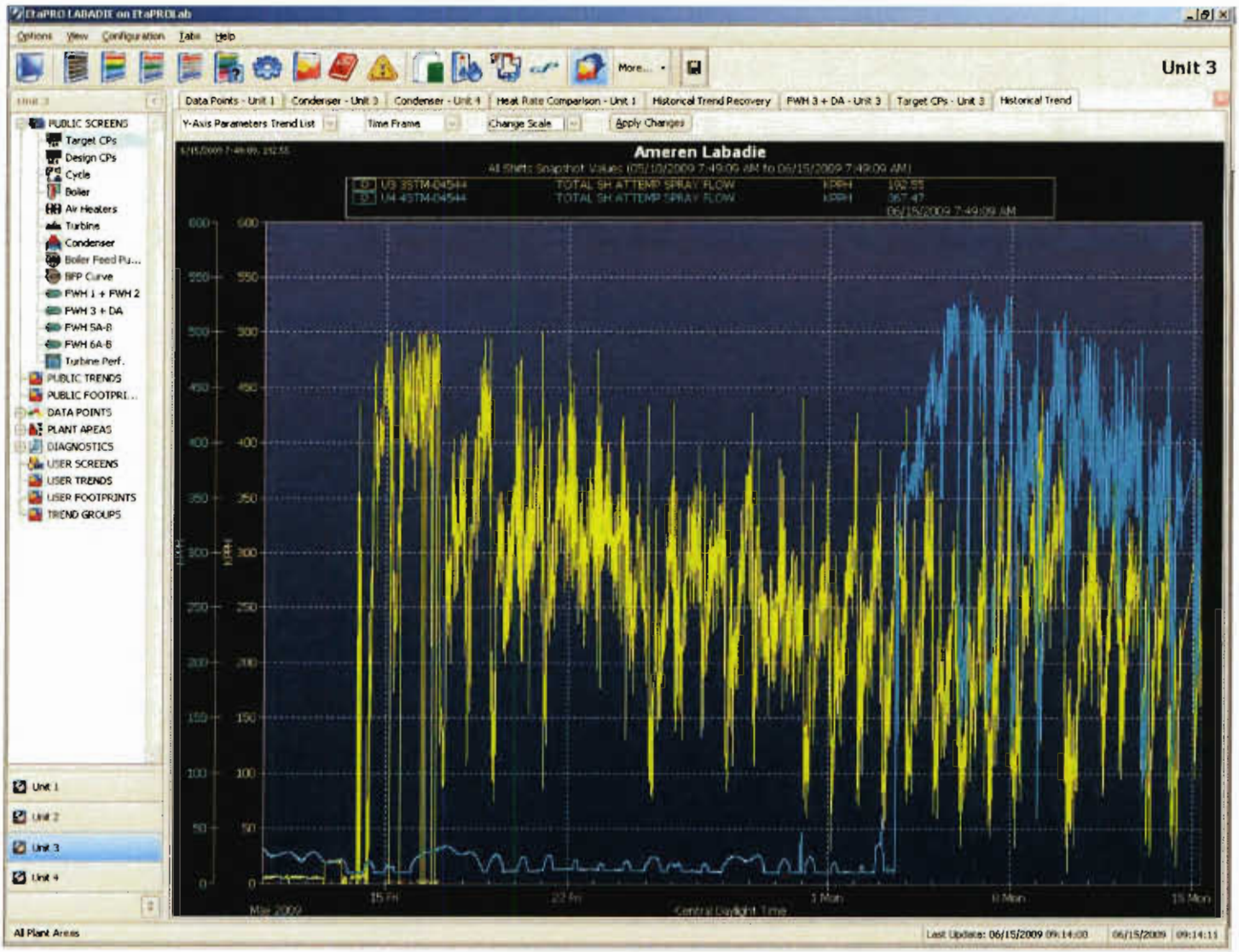
The following observations were made regarding Unit 4 operation and performance:

- The Unit was in an outage except for the first week of May.
- Following the startup of the unit in the first week of June, an excessive amount of superheat spray was indicated. Performance Engineering was asked to review the data and provide any observations on high spray flows. The review indicated that the superheat spray flow was a valid indication. A review of data from Unit 3s startup this spring indicated that it had excessive spray flows following its outage that eventually decreased with runtime. It is anticipated that Unit 4 will follow this trend and the required superheat spray flow will decrease. It is noted that the superheat spray valve trims were replaced on both units during the outage. Both units appear capable of more spray flow for the same valve position as compared to prior to the outage. The stem and plug on the B side of Unit 3 was replaced with a modified stem and plug from Units 1&2. The flow characteristic of this valve looks different from the other valves on Units 3&4 in that more flow is available in the first 20% of the valve stroke.
- Performance engineering is now monitoring the individual temperatures feeding the condenser parasitic heat load calculation. Several elevated temperature were noted in this review as detailed below.
- A detailed review of performance will be completed once the LP FWH tube leaks have been fixed and the unit is back at full load. The LP FWH leaks require flow to be bypassed around the #5 and #6 FWHs. This bypass flow requires a load reduction per the turbine vendor.

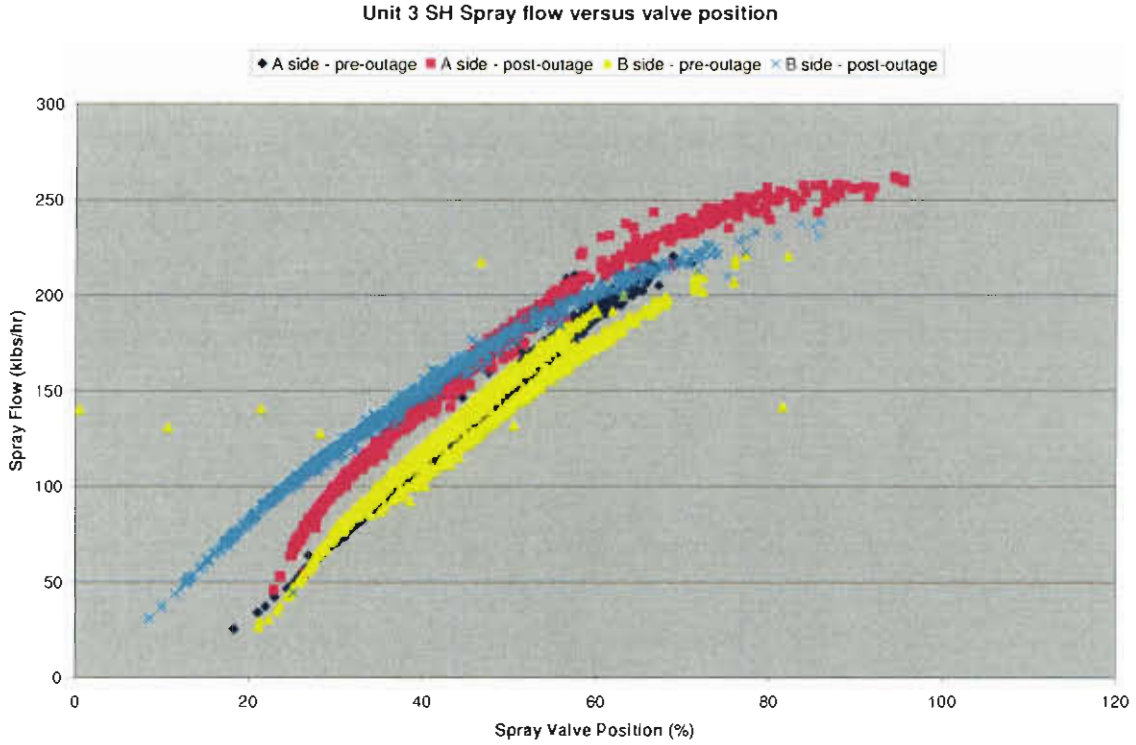
Summary of Performance Report for:

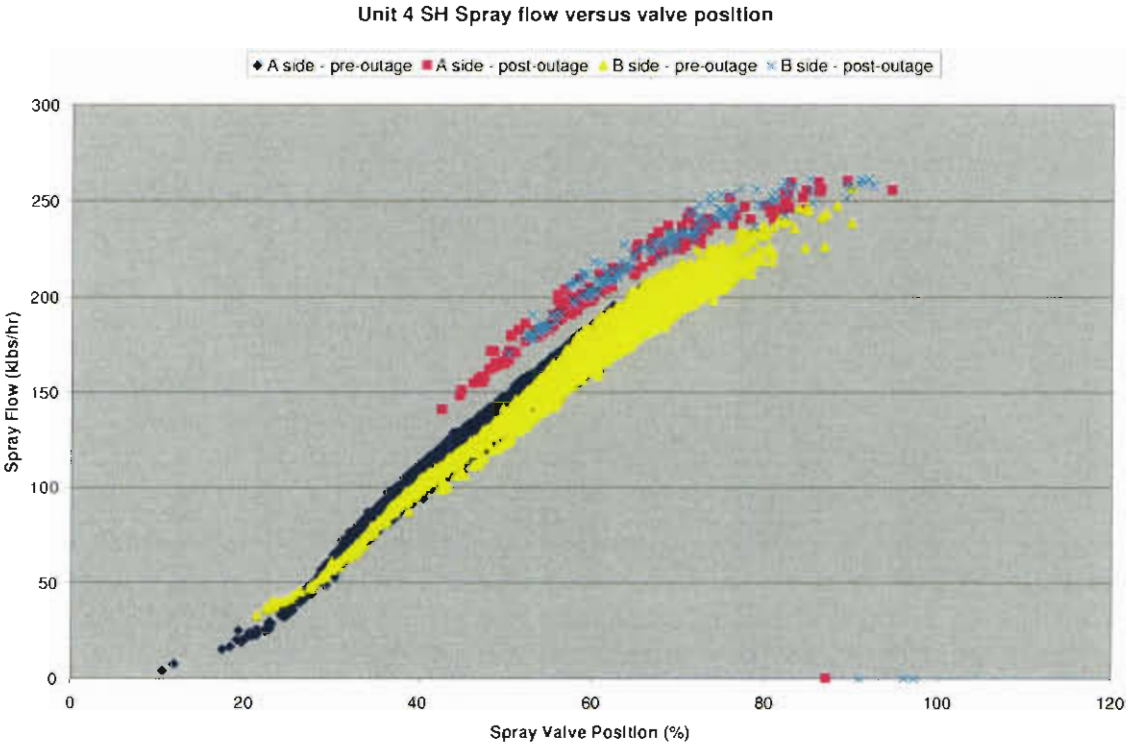
Plant	Labadie				
Unit	4				
Period	5/1/09	to	6/1/09		
Full Load Performance			May-09	Apr-09	May-08
Hours of Data (>90% Monthly Capability)			89	510	36
			Averages	Averages	Averages
GENERATOR MEGAWATTS	MW		612.0	601.2	627.2
AUX POWER	MW		30.7	29.2	29.6
Net Unit Heat Rate Actual (GPHI)	BTU/KW-HR		10050.8	10063.5	10324.4
Boiler Efficiency Actual	%		85.3	85.2	85.0
CONTROL VALVE POSITION LVDT	%		75.1	74.5	98.5
FEEDWATER TEMP TO ECON	degF		432.6	431.3	454.2
FEEDWATER TEMP TO HTR 1	degF		433.7	432.3	432.8
HP Turbine Efficiency Actual	%		82.2	81.9	87.4
IP Turbine Efficiency Corrected	%		94.8	95.0	93.6
Condenser Pressure HP	inHga		2.4	2.6	2.7
Condenser Pressure LP	inHga		2.3	2.3	2.2
AIRHTR-A GAS OUTLET TEMP	degF		334.6	337.1	335.5
AIRHTR-B GAS OUTLET TEMP	degF		320.0	324.8	323.5
AMBIENT AIR TEMP	degF		62.5	59.7	63.3
CIRC WTR TEMP TO LP CONDB	degF		60.4	53.2	62.3
CIRC WTR TEMP TO LP CONDB	degF		61.3	55.4	61.0
CIRC WTR TEMP TO LP CONDB	degF		61.6	58.0	60.7
CIRC WTR TEMP TO LP CONDB	degF		60.7	53.2	60.4
Minimum River Temperature	degF		60.4	53.2	60.4
FWH 1 Temperature Rise	degF		-1.1	-1.0	21.5
Net Load	MW		581.2	572.0	597.6
Average Cond Press	inHga		2.3	2.4	2.4
Average Exit Gas Temperature	degF		327.3	331.0	329.5
Aux Power	%		5.0	4.9	4.7
Gross Unit Heat Rate	BTU/KW-HR		9546.4	9574.5	9837.2
Gross Turbine Heat Rate	BTU/KW-HR		8141.9	8161.1	8365.7
Feedwater Flow	KPPH		3551.145	3489.1	

The data shown for May was prior to the outage. A detailed review of performance since the unit startup will be provided once the LP FWHs leaks are corrected and the unit is back at full load.

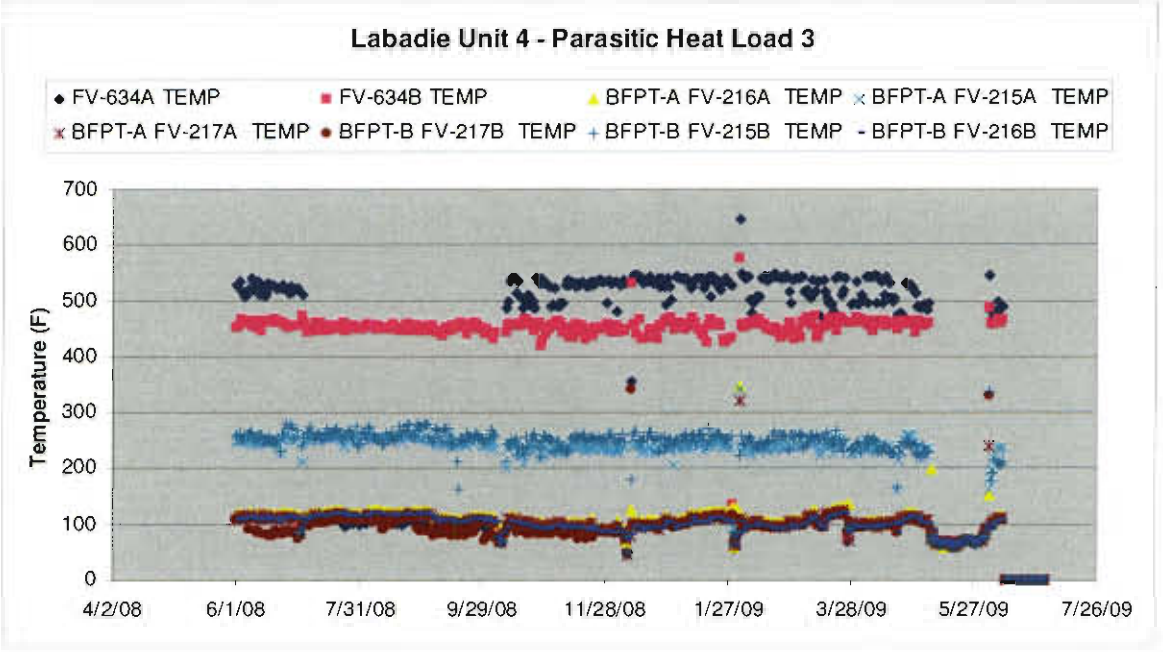


The above plot shows the superheat spray flows on Unit 3 (yellow line) and Unit 4 (blue line) following their respective outages. As shown, superheat spray flow on both units was elevated at the beginning of operation after the outages. The unit 3 superheat spray flow dropped off for the first two weeks of runtime and has leveled off. Unit 4 is expected to show the same trend and has fact dropped off from the peak flow seen just after startup.

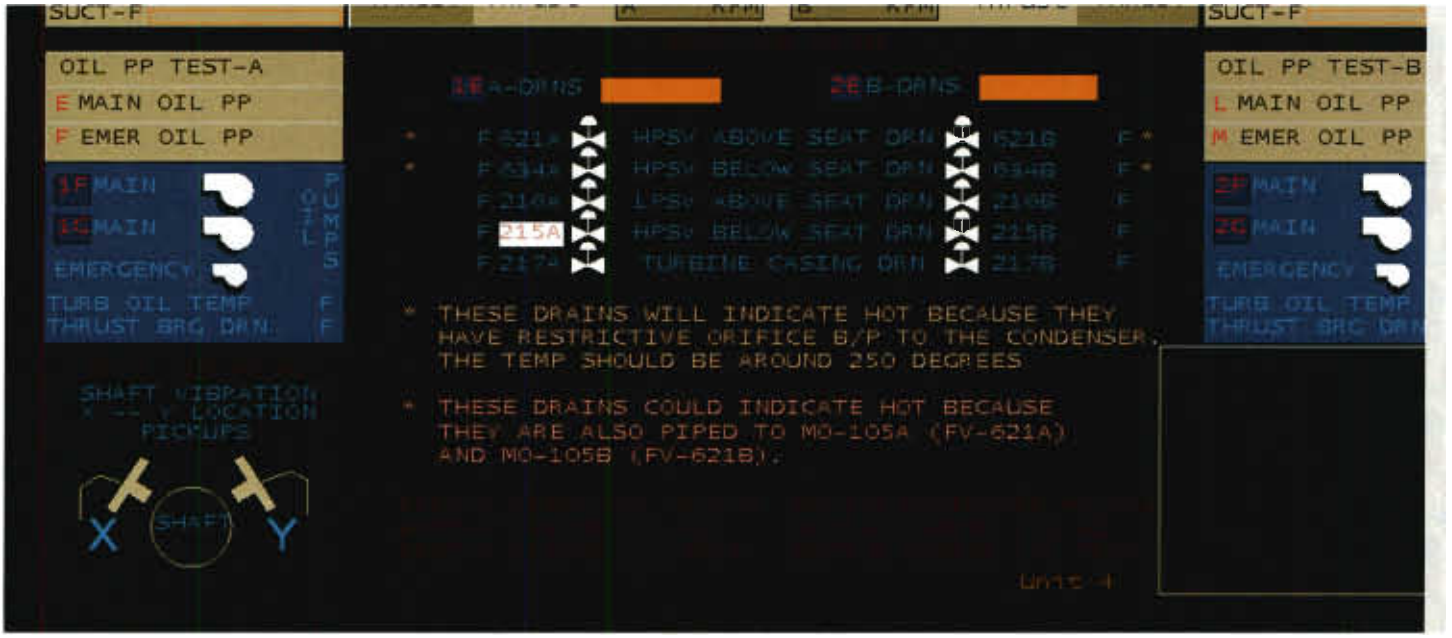




These plots show the flow characteristic of the superheat spray valves on Units 3 and 4 before and after the spring 2009 outages. As shown, the spray flow of all four valves has gone up. In addition, the flow characteristic of the 3B valve differs from the other three due to a different plug/stem used.



FV-634A/B are stop valve below seat drains on the HPBPT. A note in the DCS DB Doc on Scholar (see screen shot below) states that these drains will indicate hot because they have restrictive orifices back to the condenser and that they should indicate around 250F. Both indications are much higher than 250F. In addition, the temperatures from FV-215A and B are higher than the corresponding temperatures on Unit 2 (250F versus 100F). Performance Engineering recommends the valve lineups for these valves be checked and to verify that the note found in the DCS DB document is accurate.



May 8, 2009

To: David Fox
From: Jeff Shelton
Cc: Bob Meiners, 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, Scott Hixson, Jim Barnett, Glenn Tiffin

Subject: Labadie April 2009 Performance Report

Executive Summary

The most notable items regarding Labadie unit performance were:

- Unit 2's performance has improved following the spring outage. The load limitations are no longer present and the heat rate is down about 1.5% following the outage.
- Operating without the top heater in service on Unit 4 was costing about $50,000/month in fuel related costs.

The following table shows the instrument deficiencies for all four units. 4STM-16195 is not an instrument issue but rather an indication of the heat load (in terms of temperatures) on the condenser. It has been bad since October 2008.

Tag	Unit	Issue	Resolution	Carryover or New
3BFWSTM-08321, EXTRACT PRESS HTR 4B	3	Has only had valid data from Nov. 2003 to Jan. 2004	JR164407 to investigate and correct	Carryover
1BFWSTM-08318, EXTRACT PRESS HTR 4A	1	Flat-lined on 1/29	JR164611	Carryover
4STM-16195	4	Went negative back in Oct. 08	JR167102	New

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

The most notable item is the decrease in heat rate on Unit 2 following the spring outage. Unit 1 also showed a decrease in heat rate due to having both circulating water pumps available and operating with control valves more open.