195.446 (e) Alarm Management API/AOPL Industry Issues

Gary Medley - BP US Pipelines and Logistics
2010 CRM Workshop

Topic Areas

- API 1167 Quick Update
- Industry Issues and Concerns
- BP – How we're doing it today

Mornings key points

- Fatigue Management – “You don’t have near enough SCADA personnel and should hire more”
- “We shouldn’t worry about how PHMSA is going to enforce the new regulatory compliance.”

API 1167 Status

- Second round of balloting successful.
- Unanimous approval, with one editorial comment.
- API working to have document available from IHS by mid December.

195.446 (e) Alarm Management

- Each operator using a SCADA system must have a written alarm management plan to provide for effective controller response to alarms. The plan must include provisions/processes to:
- Periodically:
  - Review SCADA safety related alarms to ensure alarms are accurate and support safe pipeline operations.
- Monthly:
  - identification of SCADA points affecting safety that have been off scan, generating false alarms, or put in manual for periods of time exceeding that required for associated maintenance or operating activities.
- Yearly or not exceeding 15 months:
  - Verification that safety related set-point values and alarm descriptions are correctly set.
  - Review of the alarm management plan to determine the effectiveness of the plan.
  - Evaluation of the content and volume of general activity being directed to and required of each controller to assure controllers have sufficient time to analyze and react to incoming alarms.
- Address deficiencies identified from the above.

195.446 (e) Requirements
Written alarm management plan

- *Each operator using a SCADA system must have a written alarm management plan to provide for effective controller response to alarms.*

- What criteria or audit protocol will be used to judge the effectiveness of the alarm management plan, and the Controller's response to alarms?
- Concern that PHMSA will apply Alarm Management plan to local HMIs and other alarm systems that should fall outside the purview of PHMSA.

195.446 (e)(1) Requirements
Safety-related alarm review

- *Review SCADA safety-related alarm operations using a process that ensures alarms are accurate and support safe pipeline operations*

- Concern that there is no clear definition of what constitutes a safety related alarm.
- Concern that PHMSA will apply Alarm Management to a broader segment of alarms/alerts than just safety related alarms.

195.446 (e)(2) Requirements
Monthly identification of certain modified SCADA points

- *Identify at least once each calendar month points affecting safety that have been taken off scan in the SCADA host, have had alarms inhibited, generated false alarms, or that have had forced or manual values for periods of time exceeding that required for associated maintenance or operating activities.*
- Is identification the only action expected of the operator?
- What are the documentation expectations of this activity?
- Assumption that SCADA systems have the functionality to provide this identification?
- Any definition of what constitutes a false alarm?

195.446 (e)(3) Requirements
Set-point values and description verification

- *Verify the correct safety-related alarm set-point values and alarm descriptions when associated field instruments are calibrated or changed and at least once each calendar year, but at intervals not to exceed 15 months*
- Can verification be done at other times, such as during OM&ER book reviews, station checks, etc.?
- What will be the acceptable criteria for the verification?
- What are the documentation expectations for this verification?

195.446 (e)(4) Requirements
Alarm management plan effectiveness review

- *Review the alarm management plan required by this paragraph at least once each calendar year, but at intervals not exceeding 15 months, to determine the effectiveness of the plan*
- What is the criteria that will be used to audit the effectiveness of the alarm management plan?
- What will very effective look like and not very effective look like?

195.446 (e)(5) Requirements
Monitoring of Controller activity

- *Monitor the content and volume of general activity being directed to and required of each controller at least once each calendar year, but at intervals not exceeding 15 months, that will assure controllers have sufficient time to analyze and react to incoming alarms*
- What is the criteria that will be used to determine acceptable monitoring?
- How much time is sufficient for Controllers to analyze and react to incoming alarms?
- What are the documentation requirements of this activity?

195.446 (e)(6) Requirements
Address deficiencies

- *Address deficiencies identified through the implementation of paragraphs (e)(1) through (e)(5) of this section.*
- What is the criteria that will be used to determine whether a deficiency exists?
- What is the criteria that will be used to determine if the Operator has addressed the deficiency properly?

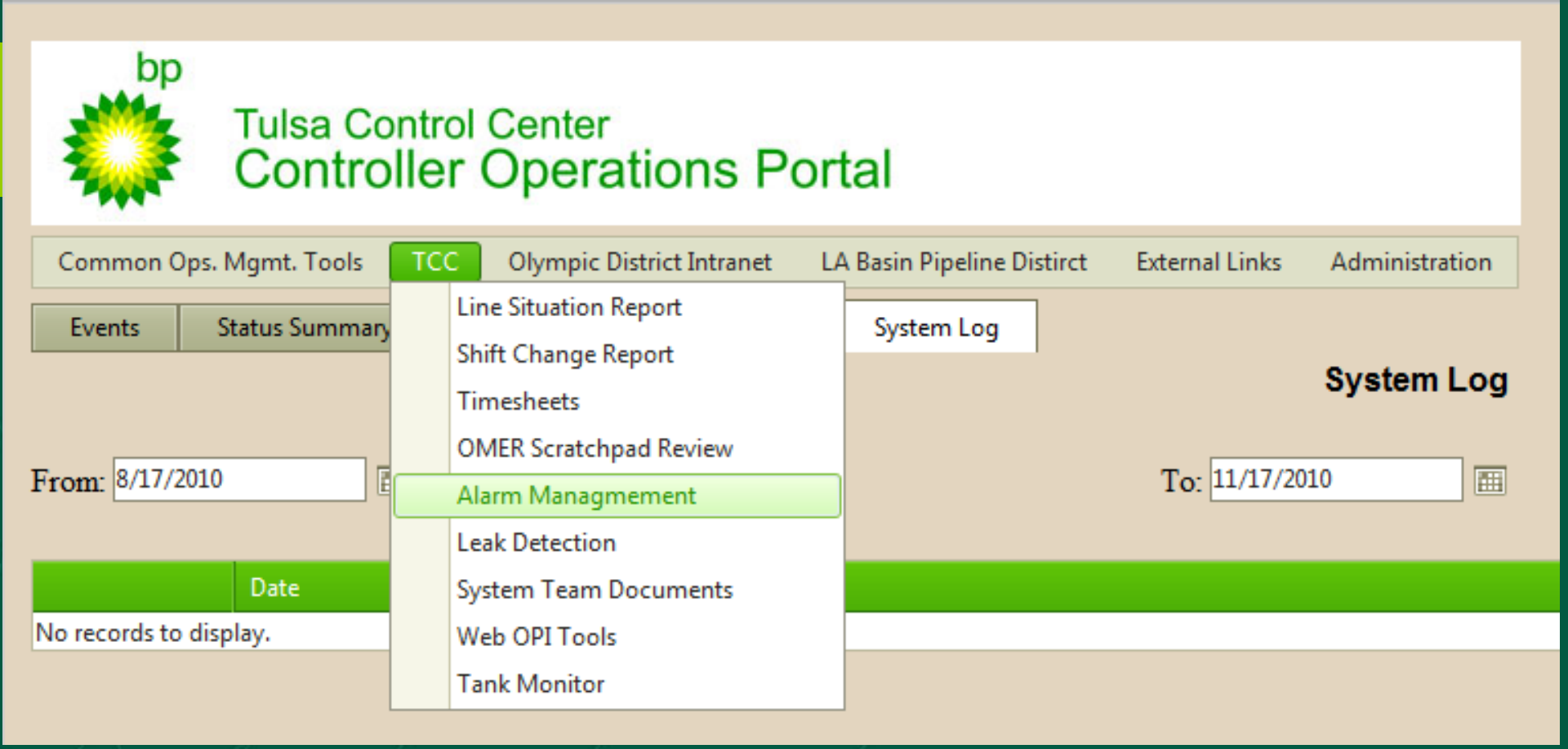
General concerns

- Concern that PHMSA will apply Alarm Management to local HMIs and other alarm systems that should fall outside of the purview of PHMSA.
- Concern that PHMSA will apply Alarm Management to a broader segment of alarms/alerts than just “safety related alarms”.
- Concern that PHMSA won’t allow pipeline operators to use existing risk-based assessment tools already in place when determining approach to Alarm Management.
- Concern that the audit protocols have not been finalized and that the industry has no idea of the documentation and proof requirements for the eventual audits.
- Concern that the document retention requirements are not specifically spelled out – what documentation is sufficient, how long do we have to keep it, where to we need to keep it?

General Concerns

- No pipeline industry specific evidence on what good looks like – each operator will be different depending on their operating philosophy, overall Controller workload, Alarm system capability, pipeline configuration and protection schemes.
- No one approach to Alarm Management fits – which component(s) each operator tackles first is dependent on their current situation.
- Vendors and consultants may be at cross purposes with pipeline operators in relation to the alarm management approach, how much resource to apply and how quickly the resource should be supplied.
- Less is not necessarily better in terms of numbers of alarms.
- Don’t drive the wrong behaviors which could result in a less safe or efficient response by the pipeline Controller.

Examples (if time permits)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Tulsa Control Center
Controller Operations Portal
Common Ops. Mgmt. Tools
TCC
Olympic District Intranet
LA Basin Pipeline Distirct
External Links
Administration
Line Situation Report
Shift Change Report
Timesheets
OMER Scratchpad Review
Alarm Managmement
Leak Detection
System Team Documents
Web OPI Tools
Tank Monitor
Events
Status Summary
System Log
System Log
From: 8/17/2010
To: 11/17/2010
Date
No records to display.

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Medley, Gary

Logout

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Events | Globals | High Pressure | Point Events | RTU Comms | Criticals | Alarm Summary | Unavailable | PCHEM top 20 | Pchem Criticals | Pchem Summary | Pchem Comms

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SCADA Weekly Event Alarms

From: 11/11/2010 12:00 AM To: 11/17/2010 7:41 AM Submit

Open Actions All

Alarm Logged All

	Timestamp	Tower	Point Name	Site Description	Point Description	Event Description	Event	Count	Comments	Maximo	MOC
Edit	11/15/2010 7:15:03 AM	Gulf Coast	4A0A	MC 127 BPPLDS03	[DSOF27]	RTU-COMM-ERR	*ALARM*	84			
Edit	11/15/2010 7:15:03 AM	Texas City	SJTCTCSPDB01	TEXAS CITY 26"	TEXAS CITY 26 DBU CNTRL	ALARM PV=0. CV=0.	*ALARM*	80			
Edit	11/15/2010 7:15:03 AM	Gulf Coast	DSONPPAIPR03	DESTIN PROC PLANT	STATIC PRESSURE #1	SW-HIGH CV=1050.0 AV=1050.0	*ALARM*	66			
Edit	11/15/2010 7:15:03 AM	Freeman	CHCPSBSPDB01	SIBLEY STATION	DIAL BACKUP	ALARM PV=0. CV=0.	*ALARM*	63			
Edit	11/15/2010 7:15:03 AM	Gulf Coast	CAES32DIDF08	SS-332B	RUN 1 DENSITOMETER FAIL	UNAV-TIMEOUT	*ALARM*	61			
Edit	11/15/2010 7:15:03 AM	Texas City	TRBRBRDIZZ06	BRADLEY RD.	FLATS LINE BALANCE	ALARM	*ALARM*	44			
Edit	11/15/2010 7:15:03 AM	Gulf Coast	DSOF60VAQB05	MAIN PASS 260	VALVE 8210	OPEN	*ALARM*	42			
Edit	11/15/2010 7:15:03 AM	Gulf Coast	DSOF60VAQB05	MAIN PASS 260	VALVE 8210	TRAVEL	*ALARM*	41			
Edit	11/15/2010 7:15:03 AM	Whiting	WOCOWOBGZZ01	WHITE OAK STATION	BATCH GROUP	NEED GRV/MF	*ALARM*	36			
Edit	11/15/2010 7:15:03 AM	Gulf Coast	DSOF00DIDF03	VK900 PLATFORM	BUYBACK TRAN FAILURE	ALARM	*ALARM*	35			
Edit	11/15/2010 7:15:03 AM	Texas City	460B	TET BAYTOWN BPPNMA14	[TETBET]	RTU-COMM-ERR	*ALARM*	34			
Edit	11/15/2010 7:15:03 AM	Whiting	WHDQROTKSN04	ROCHELLE TERMINAL	TK04 FMUL	HW-LOW	*ALARM*	31			
Edit	11/15/2010 7:15:03 AM	Gulf Coast	DSOF60VAQB05	MAIN PASS 260	VALVE 8210	UNAV-TIMEOUT	*ALARM*	30			
Edit	11/15/2010 7:15:03 AM	Gulf Coast	MAPA81DIZZ03	MAIN PASS 281	MP281 LACT UNIT #1 ON	ALARM	*ALARM*	29			
Edit	11/15/2010 7:15:03 AM	Dubuque	DQTCSVVASB0E	SPRING VALLEY TERM.	SPRING VALLEY HEADGATE	TRAVEL	*ALARM*	29			
Edit	11/15/2010 7:15:03 AM	BP South	LICLCLDIMC03	COL BP/SUN(WILSON RD.)	TANK 4 GAUGE COMM FAIL	ALARM	*ALARM*	28			
Edit	11/15/2010 7:15:03 AM	BP South	LD12DABGM101	DAYTON STATION	DELIVERY TO BP	NEW BATCH	*ALARM*	28			

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Events | Globals | High Pressure | Point Events | RTU Comms | Criticals | Alarm Summary | Unavailable | PCHEM top 20 | Pchem Criticals | Pchem Summary | Pchem

Black Lake Summary | TriStates Summary

SCADA Weekly Event Alarms

From: 11/11/2010 12:00 AM To: 11/17/2010 7:52 AM Submit Open Actions All

Alarm Logged All

1 2 3 4

	Timestamp	Tower	Point Name	Site Description	Point Description	Event Description	Event	Count
Edit	11/15/2010 7:15:03 AM	Texas City	LOGXLODIMC03	LOGAN	COMMON XMTR FAULT (STA)	ALARM	*LOGGD*	1227
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	INACTIVE PV=262144. CV=262144.	*LOGGD*	527
Edit	11/15/2010 7:15:03 AM	Freeman	MNW2GFDILV01	GRIFFITH STA (LAKEHEAD)	GAS FRACTION HIGH	ALARM	*LOGGD*	363
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	INACTIVE PV=327680. CV=327680.	*LOGGD*	294
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	ACTIVE PV=262144. CV=131072.	*LOGGD*	293
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	INACTIVE PV=131072. CV=131072.	*LOGGD*	234
Edit	11/15/2010 7:15:03 AM	Whiting	WOCOOHTKMN02	O'HARE TERMINAL	TANK 8 TCJN	HW-LOW	*LOGGD*	220
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	INACTIVE PV=393216. CV=393216.	*LOGGD*	212
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	ACTIVE PV=262144. CV=327680.	*LOGGD*	204
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	INACTIVE PV=65536. CV=65536.	*LOGGD*	160
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	ACTIVE PV=327680. CV=262144.	*LOGGD*	156
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	ACTIVE PV=393216. CV=327680.	*LOGGD*	151
Edit	11/15/2010 7:15:03 AM	Texas City	LOGXLODISI0D	LOGAN	U2 START PERMISSIVE	ALARM	*LOGGD*	147
Edit	11/15/2010 7:15:03 AM	Texas City	LOGXLODISI02	LOGAN	U1 START PERMISSIVE	ALARM	*LOGGD*	146
Edit	11/15/2010 7:15:03 AM	Texas City	PACROTMTUN01	OIL TANKING	OTI BATCH GROSS	INACTIVE PV=589824. CV=589824.	*LOGGD*	139

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Events | Globals | High Pressure | Point Events | RTU Comms | Criticals | Alarm Summary | Unavailable | PCHEM top 20 | P

Black Lake Summary | TriStates Summary

SCADA Global Alarms

From: 11/11/2010 12:00 AM To: 11/17/2010 7:47 AM Submit

Open Actions All

Alarm Logged All

	Timestamp	Tower	Point Name	Site Description	Point Description	Event	Count
Edit	11/15/2010 7:15:04 AM	Gulf Coast	PRENTHCPFT01	THUNDER HORSE	FLOW TOTAL	*ALARM*	1600
Edit	11/15/2010 7:15:04 AM	Gulf Coast	PRENCLCPFT02	CLOVELLY	FLOW TOTAL	*ALARM*	390
Edit	11/15/2010 7:15:04 AM	BP South	LICLUNAIGP01	COL UNION	LINE PRESSURE	*ALARM*	137
Edit	11/15/2010 7:15:04 AM	Gulf Coast	CAESNEAIGP01	NEPTUNE	OIL DEPARTING PSI 2601 G	*ALARM*	133
Edit	11/15/2010 7:15:04 AM	Whiting	WHRRRRAIFL01	RVR ROUGE TERMINAL	FLOW RATE	*ALARM*	121
Edit	11/15/2010 7:15:04 AM	Whiting	WHDL16AIFL01	16" PIPELINE LOCATION	16 PIPELINE GROSS FLOW	*ALARM*	120
Edit	11/15/2010 7:15:04 AM	BP South	FSLILIAIFL01	LIMA SHELL (NL10)	FLOW RATE (METER 46)	*ALARM*	117
Edit	11/15/2010 7:15:04 AM	BP South	FSLIRAAIFL02	RAWSON STATION	FLOW RATE (NL10)	*ALARM*	107
Edit	11/15/2010 7:15:04 AM	Whiting	WHINWHAIFL01	WHITING STATION (INDY.)	FLOW RATE	*ALARM*	107
Edit	11/15/2010 7:15:04 AM	BP South	LICLSHAIGP01	COL SHELL	LINE PRESSURE	*ALARM*	103

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Events | Globals | High Pressure | Point Events | RTU Comms | Criticals | Alarm Summary | Unavailable | PCHEM top 20 | P

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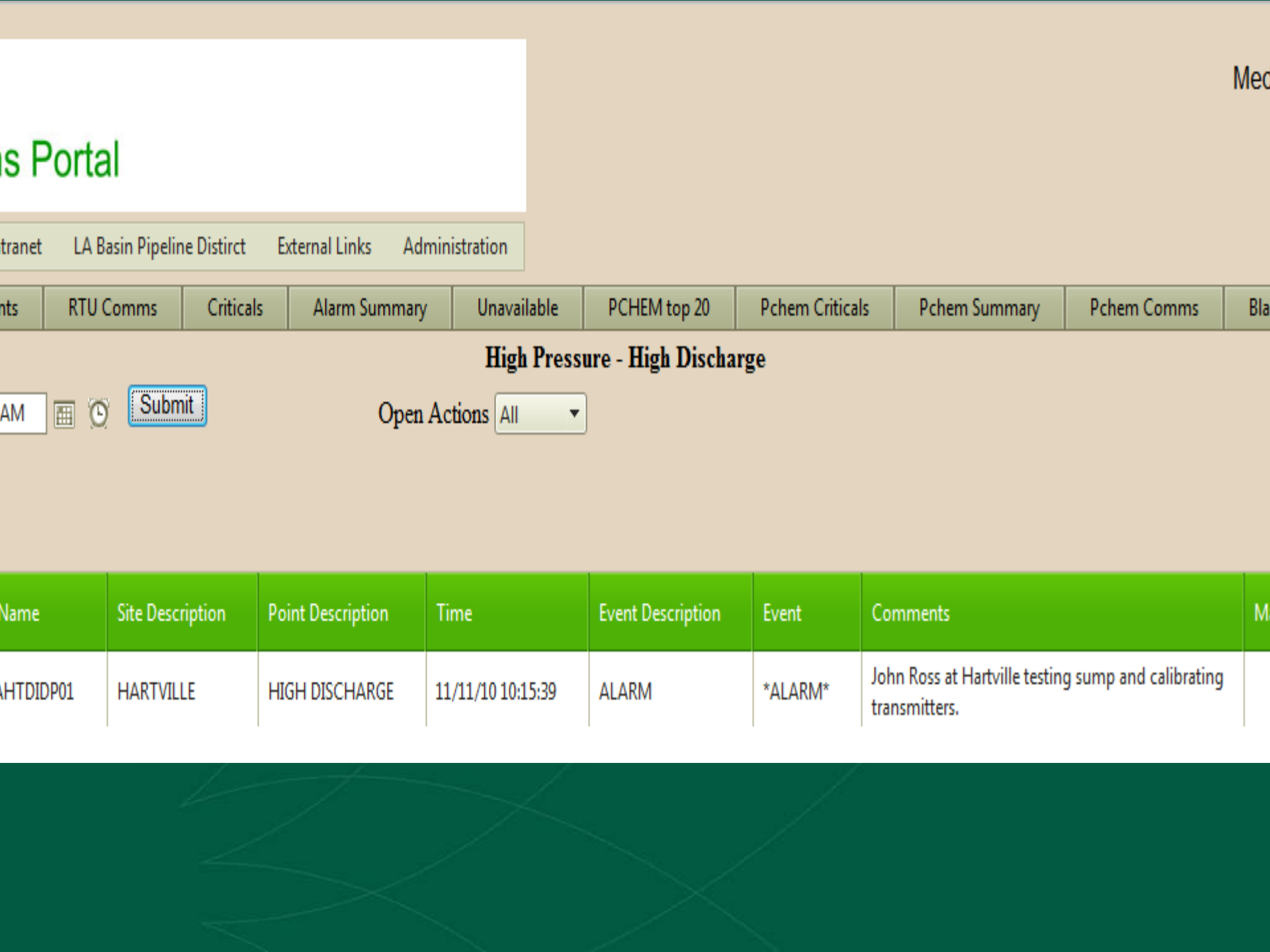
SCADA Global Alarms

From: 11/11/2010 12:00 AM To: 11/17/2010 7:54 AM Submit

Open Actions All

Alarm Logged All

	Timestamp	Tower	Point Name	Site Description	Point Description	Event	Count
Edit	11/15/2010 7:15:04 AM	Gulf Coast	PRENTHAIFL01	THUNDER HORSE	RUN 1 FLOW	*LOGGD*	2632
Edit	11/15/2010 7:15:04 AM	Gulf Coast	PRENTHAIFL02	THUNDER HORSE	RUN 2 FLOW	*LOGGD*	2384
Edit	11/15/2010 7:15:04 AM	Gulf Coast	PRENCLCPFT01	CLOVELLY	FLOW IN	*LOGGD*	2069
Edit	11/15/2010 7:15:04 AM	Gulf Coast	PRENCLAIFL01	CLOVELLY	RUN A FLOW	*LOGGD*	1191
Edit	11/15/2010 7:15:04 AM	Gulf Coast	PRENTHAIFL03	THUNDER HORSE	RUN 3 FLOW	*LOGGD*	724
Edit	11/15/2010 7:15:04 AM	Freeman	MKLELEAIFL02	MOKENA LEMONT @ LEMONT	METER 9 FLOW	*LOGGD*	186
Edit	11/15/2010 7:15:04 AM	Freeman	MKLELEAIFL01	MOKENA LEMONT @ LEMONT	METER 8 FLOW	*LOGGD*	153
Edit	11/15/2010 7:15:04 AM	Freeman	MKLELEAIFL03	MOKENA LEMONT @ LEMONT	METER 12 FLOW	*LOGGD*	126
Edit	11/15/2010 7:15:04 AM	Texas City	TCGXTCAIFL0B	TEXAS CITY STATION	TC METER #3 FLOW	*LOGGD*	123
Edit	11/15/2010 7:15:04 AM	Freeman	MNW2GFAIFL02	GRIFFITH STA (LAKEHEAD)	METER #2 FLOW RATE	*LOGGD*	121
Edit	11/15/2010 7:15:04 AM	Texas City	TCGXTCAIFL0A	TEXAS CITY STATION	TC METER #2 FLOW	*LOGGD*	118
Edit	11/15/2010 7:15:04 AM	Freeman	MNW2GFAIFL01	GRIFFITH STA (LAKEHEAD)	METER #1 FLOW RATE	*LOGGD*	117
Edit	11/15/2010 7:15:04 AM	Freeman	MNW2GFAIFL03	GRIFFITH STA (LAKEHEAD)	METER #3 FLOW RATE	*LOGGD*	108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External Links
Administration
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RTU Comms
Criticals
Alarm Summary
Unavailable
PCHEM top 20
Pchem Criticals
Pchem Summary
Pchem Comms
High Pressure - High Discharge
AM
Submit
Open Actions
All
Name
Site Description
Point Description
Time
Event Description
Event
Comments
AHTDIDP01
HARTVILLE
HIGH DISCHARGE
11/11/10 10:15:39
ALARM
ALARM
John Ross at Hartville testing sump and calibrating transmitters.

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Events | Globals | High Pressure | Point Events | RTU Comms | Criticals | Alarm Summary | Unavailable | PCHEM top 20 | Pchem Crit

Black Lake Summary | TriStates Summary

Point Events

From: 11/11/2010 12:00 AM To: 11/17/2010 7:55 AM Submit

Open Actions All

◉ Alarm ○ Logged ○ All

1 2 3

	Timestamp	Tower	Point Name	Site Description	Point Description	Event	Count
Edit	11/15/2010 7:15:04 AM	Gulf Coast	DSOF60VAQB05	MAIN PASS 260	VALVE 8210	*ALARM*	113
Edit	11/15/2010 7:15:04 AM	Gulf Coast	4A0A	MC 127 BPPLDS03	[DSOF27]	*ALARM*	90
Edit	11/15/2010 7:15:04 AM	Texas City	SJTCTCSPDB01	TEXAS CITY 26"	TEXAS CITY 26 DBU CNTRL	*ALARM*	80
Edit	11/15/2010 7:15:04 AM	Gulf Coast	DSONPPAIPR03	DESTIN PROC PLANT	STATIC PRESSURE #1	*ALARM*	66
Edit	11/15/2010 7:15:04 AM	Freeman	CHCPSBSPDB01	SIBLEY STATION	DIAL BACKUP	*ALARM*	63

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Controller Operations Portal

Common Ops. Mgmt. Tools | TCC | Olympic District Intranet | LA Basin Pipeline Distirct | External Links | Administration

Events | Globals | High Pressure | Point Events | RTU Comms | Criticals | Alarm Summary | Unavailable | PCHEM top 20 | Pchem Criticals | Pchem Summary

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SCADA RTU Communications

om: 11/11/2010 12:00 AM To: 11/17/2010 7:56 AM Submit Open Actions All

Over 30 Minutes All Outages

1 2 3 4 5

	Owner	Tower Name	Site	Description	Name	Satellite	Alarm Time	Alarm Clear	Minute Outage	C
dit	CRUD	Texas City	26" EARLY WARNING	26" E.W. BPPNSO09	4510	BPPNSO09	11/8/2010 11:35:56 PM	11/9/2010 10:23:29 AM	647.55	
dit	PROD	Whiting	M.P. 64 W-D (AMO:1019),1	M.P. 64 W-D BPPNMA07	1108	BPPNMA07	11/12/2010 11:18:25 AM	11/12/2010 4:37:34 PM	319.15	
dit	PROD	Whiting	WHITING STA. (RR)	WHITING RR BPPLMI17	1503	BPPLMI17	11/10/2010 7:55:30 AM	11/10/2010 12:38:53 PM	283.38	

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s | RTU Comms | Criticals | Alarm Summary | Unavailable | PCHEM top 20 | Pchem Criticals | Pchem Summary | Pchem Comms

SCADA Weekly Criticals

M Submit

Open Action All

Page 1 of 2, items 1 to 20 of 23.

	Site Description	Point Description	Event	Optional Comments
	CARROLLTON STA. (#1/#2)	TOWER LIGHT FAILURE	**CR-ACK**	Tower Light Failure alarm at Carrollton Station- contacted D Mills- he visually confirmed that the light is ON and flashing J Jorden reports that the alarms are due to power flickers at the station. The alarm switch now has a 5 minute delay.