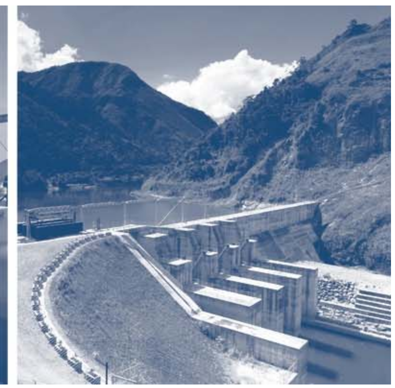
Control Room Management



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Control Room Management Program

- C1.0 General
  - C 1.10 Program History
  - C 1.20 Statement of Management Commitment and Support
  - C 1.30 Reference Documents
  - C 1.40 Regulatory Code Cross-Reference
  - C 1.50 Definitions
  - C 1.60 Abbreviations and Acronyms

- C10.0 Roles and Responsibilities
  - C10.0 Roles and Responsibilities

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Control Room Management Program

- C20.0 Program Maintenance and Change Management

  C 20.10 Program Maintenance

  C 20.20 Program Reviews

  C 20.30 Change Management

  C 20.40 Change Procedure

  C 20.50 Documentation and Retention

- C30.0 Quality Control

  C30.10 Quality Control

Control Room Management Program

- C40.0 Records Documentation and Retention
  - C40.10 Records Documentation and Retention
- C50.0 Communications Plan
  - C 50.10 Communications Plan
- C60.0 Training and Qualification
  - C60.10 Purpose and Scope
  - C60.20 Training Curricula
  - C60.30 Additional Controller Training
  - C60.40 Training Program Review

Control Room Management Program

- C70.0 Alarm Management Plan
  - C70.10 Purpose and Scope
  - C70.20 Definitions
  - C70.30 Roles and Responsibilities
  - C70.40 Alarm System and Alarms
  - C70.50 Alarm System Development
  - C70.60 Alarm System Implementation
  - C70.70 Alarm System Performance
  - C70.80 Alarm Audits and Rationalization
  - C70.90 Alarm Management
  - C70.100 Management of Change
  - C70.110 Compliance and Recordkeeping

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Control Room Management Program

- C80.0 Control Room Procedures
  - C80.10 Procedure Compliance and Deviations
  - C80.20 Point-to-Point Verification
  - C80.30 SCADA Backup System Testing
  - C80.40 Internal Communications Plan
  - C80.50 Controller Shift Change
  - C80.60 Operating Experience

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Control Room Management Program

- C90.0 Fatigue Risk Management System
  - C90.10 Purpose, Scope and Requirements
  - C90.20 Fatigue Management – Supervisors/Controllers
  - C90.30 Hours of Service
  - C90.40 Fatigue Mitigation Techniques and Options
  - C90.50 Incident Investigations
  - C90.60 Education and Training
  - C90.70 Reserved
  - C90.80 Compliance Documentation

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Control Room Management
Audit Preparation

- Performed internal audit prior to state audit
- Used PHMSA inspection form extensively
  - Created links to either a section of our plan or to a gas control procedure that met the requirement of the question
- Used PHMSA FAQs and other resources

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Control Room Management Audit Results

- Overall, MidAmerican Energy Company was pleased with the results of the audit and made a few revisions to the Plan
  - Installed speakers in break room area
  - Created a <u>list</u> to identify procedures of infrequently used setups
  - Clarified procedure to notify emergency responders
  - Clarified Plan language to demonstrate screen development is performed outside the SCADA production environment
  - Expanded form for testing backup SCADA system to include greater documentation

Control Room Management Audit - Lessons Learned

- Keep good records. Perform point-to-point verification on everything. When in doubt, fill it out!
- Use a compliance database or similar program to trigger action
- Use outside resources to train controllers and families on fatigue management (monthly newsletter)

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Control Room Management Audit – Final Thought

"This audit was an audit of intent – next one will be an audit of practices!"

Control Room Management Practices

- Control room management – overview of SCADA operations and <u>effect</u> of new rules.
  - Point-to-point verification
    - Ensures SCADA accuracy of any new points by comparing field values to SCADA values
  - Fatigue training
  - Alarm management practices
    - Developed an alarm management database to efficiently and accurately manage alarms metrics
    - Periodic review of alarm metrics

Control Room Management Practices (cont.)

- Monthly review of Key Performance Indicators (KPI)
  - Review and develop action plans for Top 10 most frequent alarm points with metering and regulation
  - Verify false alarms with SCADA system analyst
  - Verify stale alarms with SCADA system analyst
  - Verify points that are inhibited, off-scan or manual with SCADA system analyst
  - See examples

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Alarm Management – KPI Example

Alarm System Performance

Key Performance Indicators

Report Period
1/1/2013 Through 1/31/2013

Review Date: ______________ T#: ______________

Overall Alarm Metric	Acceptable Target	Manageable Target	Value	Exceeds Target
Total Number of Annunciated Alarms			10,416	
Total Days in Report Period			31	
Total Hours in Report Period			744	
Annunciated Alarms / Day / Operating Position	150	300	336	Y
Annunciated Alarms / Hour / Operating Position	6	12	14	Y

Alarm Flooding Metric	Target	Value	Exceeds Target
Total Number of Hours with More than 30 Alarms		39	
% of Hours with More Than 30 Alarms	< 1%	5.2%	Y
Total Number of 10-Minute Periods		4,464	
Total Number of 10-Minute Periods with More than 10 Alarms		70	
% of 10-Minute Periods with More than 10 Alarms	< 1%	1.6%	Y
Maximum Number of Alarms in a 10-Minute Period	< = 10	228	Y
Total Number of Alarms During a Flood Condition (>10 alarms in 10 Minutes)		1,286	
% of Alarms During a Flood Condition	< 1%	12.3%	Y

Alarm Priority Metric

	High	Medium	Low	Total
Number of Alarms	112	1,091	9,213	10,416
Target Distribution %	< = 5%	< = 15%	> = 80%	
Actual Distribution %	1%	10%	88%	
Exceeds Target	N	N	N	

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Alarm Management – Top Ten Alarms

KPI - Top Ten Alarms

Report Period
1/1/2013 Through 1/31/2013

Total Alarms: 10,416 **Avg Alarms / Day:** 336 **Avg Alarms / Hr:** 14 **5% Target Threshold:** 521

Point Name / Alarm Type	Total Alarms	Actual % Contribution	Exceeds Target	Action / Reason
ANKENY-DM MEC CONTROL VALVE	**555**	**5%**	Y	
Alarm Communications	289			
Alarm RTUComm	266			
IOWA CITY NORTH BORDER (RIVERSIDE)	**533**	**5%**	Y	
Alarm Communications	217			
Alarm ConnTime	274			
Alarm RTUComm	42			
SIOUX CITY 1A NNG TBS	**296**	**3%**	N	
Alarm Communications	65			
Alarm ConnTime	231			
QC MOLINE 1 (COOPER) NGPL TBS	**261**	**3%**	N	
Alarm Communications	94			
Alarm RTUComm	167			
CEDAR RAPIDS ADM COGEN	**224**	**2%**	N	
Alarm Communications	159			
Alarm Connect Timeout	1			
Alarm ConnTime	3			
Alarm RTUComm	61			
ROCKWELL CITY NNG TBS	**219**	**2%**	N	
Alarm Communications	207			
Alarm ConnTime	12			
INDIANOLA NGPL TBS	**192**	**2%**	N	
Alarm Communications	77			
Alarm RTUComm	115			
PLATINUM ETHANOL PLANT ARTHUR	**179**	**2%**	N	
Alarm Communications	176			
Alarm RTUComm	3			
Fisher ROC Modem Bank	**172**	**2%**	N	
Alarm Other	172			
TEA NNG TBS	**157**	**2%**	N	
Alarm Communications	33			
Alarm ConnTime	124			

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Alarm Management – Stale Alarms

KPI - Stale Alarms

Report Period
1/1/2013 Through 1/31/2013

Jan 21, 2013	Target Alarms : < 5	Total Alarms: 1	Exceeds Target: N	
Point Name / Message	**Telvent Point**	**Alarm Timestamp**	**Normal Timestamp**	**Days**
QC 45th ST & 2nd AVE (Moline) 21445S2A status - line failure	11445S2A	1/21/2013 10:43:13 AM	1/22/2013 1:38:00 PM	1.1

Action / Reason: ______________________

Jan 22, 2013	Target Alarms : < 5	Total Alarms: 1	Exceeds Target: N	
Point Name / Message	**Telvent Point**	**Alarm Timestamp**	**Normal Timestamp**	**Days**
DES MOINES NGPL TAP YZ ODORIZER 214DSMTP status - line failure	114DSMTP	1/22/2013 1:40:11 AM	1/23/2013 2:10:45 PM	1.5

Action / Reason: ______________________

Jan 28, 2013	Target Alarms : < 5	Total Alarms: 5	Exceeds Target: Y	
Point Name / Message	**Telvent Point**	**Alarm Timestamp**	**Normal Timestamp**	**Days**
OSKALOOSA TAP (OTTUMWA 1&3) NGPL TBS 241OSKAT - unavailable for > 3602 seconds	141OSKAT	1/28/2013 3:06:56 AM	1/29/2013 5:19:55 PM	1.6
OSKALOOSA TAP (OTTUMWA 1&3) NGPL TBS 241OSKAT status - line failure	141OSKAT	1/28/2013 3:26:46 AM	1/29/2013 5:19:55 PM	1.6
OSKALOOSA TAP (OTTUMWA 1&3) NGPL TBS 241OSKAT - unavailable for > 7208 seconds	141OSKAT	1/28/2013 4:07:02 AM	1/29/2013 5:19:55 PM	1.6
OSKALOOSA TAP (OTTUMWA 1&3) NGPL TBS 241OSKAT status - line failure	141OSKAT	1/28/2013 10:36:32 AM	1/29/2013 5:19:55 PM	1.3
OSKALOOSA TAP (OTTUMWA 1&3) NGPL TBS 241OSKAT - unavailable for > 30853 seconds	141OSKAT	1/28/2013 10:41:07 AM	1/29/2013 5:19:55 PM	1.3

Action / Reason: ______________________

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Alarm Management – Inhibited, Off-Scan and Manual

Inhibited, Off-Scan and Manual Report

Report Period
1/1/2013 Through 1/31/2013

Review Date: ____________ **T#:** ____________

Telvent Point	Description	Timestamp	Action / Reason
OFFSCAN			
112LNGDM	LNG PLANT DES MOINES	1/16/2013 2:30:28 PM	
114EJACK	403 E JACKSON St (Shell Rock)	1/29/2013 4:27:11 PM	
114HARBG	600 S CLIFF AV (HARRISBURG SCH) (Harrisburg)	1/29/2013 4:27:49 PM	
114HARTF	305 W SOUTH ST (Fire & Rescue) (Hartford)	1/29/2013 2:00:14 PM	
114LNCTY	ZIESER LN & CENTER PT (Linn Cnty)	1/29/2013 4:29:11 PM	
114SE20P	DES MOINES SE 20TH & PARK AVE DRS 0306	1/17/2013 11:54:19 AM	
114SOBOA	HALSEY ST (SBRIDGE) & OGDEN Ave (Sioux City)	1/31/2013 1:05:17 PM	
114TEASD	469TH AVE AND 271 ST (Tea)	1/29/2013 1:54:16 PM	
114W14MR	W 14 & MARION RD DRS 32 (Sioux Falls)	1/29/2013 4:28:25 PM	
114WAS14	WILSON AV SW & 14 ST SW (Cdr Rpds)	1/29/2013 4:26:36 PM	
MIWIRELESS	MERCURY WIRELESS WAKEUP	1/23/2013 3:37:52 PM	
MIWIRELESS	MERC WIRELESS WAKEUP (LEAVE ON)	1/23/2013 3:37:32 PM	

Alarm Management – False Alarms

False Alarms Report

Report Period
1/1/2013 Through 1/31/2013

Review Date: ____________________ **T#:** ____________________

Timestamp	Point Description	Alarm Description	Created By
1/2/2013 3:07:24 AM	DM North Ave and East 17th - Norwalk	Outlet pressure 0.58; cleared next scan.	T30458
Action / Reason:			
1/3/2013 8:12:54 PM	QC 24th Street - Rock Island	Outlet pressure 1.57. Cleared to 111.7 next scan.	T30458
Action / Reason:			
1/8/2013 4:10:08 PM	Sergeant Bluff NNG TBS	Darrell is working at Sgt. Bluff and will create an alarm. Ignore the alarm.	T30458
Action / Reason:			
1/13/2013 2:51:58 AM	DM North Ave and East 17th - Norwalk	Outlet 0.58. Returned to 22.7 next scan.	T30458
Action / Reason:			
1/15/2013 5:24:45 PM	Altoona NNG TBS	Alarmed at 127.6. Scanned and pressure increase to 128.1. Les will send someone to check on. Also notified NNG	T32050
Action / Reason:			
1/17/2013 9:00:54 AM	DM 56th Ct and Oakwood	Inlet 24.96 (low-low limit 75). Returned to normal of 99.2 next scan.	T30458
Action / Reason:			
1/18/2013 2:10:03 PM	DM Park and Valley	False reading, cleared next scan.	T19391
Action / Reason:			

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Alarm Management – Monthly Summary

Monthly Alarm Summary

Report Period
1/1/2012 Through 1/31/2013

Month	Year	High	Medium	Low	Total Alarms	Daily Avg	Hourly Avg
Jan	2012	451	258	20,878	21,587	696	29
Feb	2012	397	229	10,853	11,479	396	16
Mar	2012	465	257	9,687	10,409	336	14
Apr	2012	508	321	8,411	9,240	308	13
May	2012	357	356	10,475	11,188	361	15
Jun	2012	303	256	11,802	12,361	412	17
Jul	2012	310	642	28,695	29,647	956	40
Aug	2012	100	408	12,179	12,687	409	17
Sep	2012	77	433	9,056	9,566	319	13
Oct	2012	84	393	8,297	8,774	283	12
Nov	2012	141	564	5,511	6,216	207	9
Dec	2012	50	705	8,364	9,119	294	12
Jan	2013	112	1,091	9,213	10,416	336	14
	Total	3,355	5,913	153,421	162,689		
	Min	50	229	5,511	6,216	207	9
	Max	508	1,091	28,695	29,647	956	40
	Avg	258	455	11,802	12,515	409	17

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