U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

CRM Inspection Issues

A Federal Perspective

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What is Covered in this Presentation

- Federal Perspective
  - State and Intrastate Facilities
  - Objectives of the Federal Rule
- Federal Resources
- General Overview of Inspections
- Detailed Summary of Inspections from 2011/2012/2013 and CRM Pilot Exit Interviews 2011
  - Federal and State
  - Gas and Liquid
  - Distribution and Transmission

Reminder

- States can and may have adopted more stringent requirements than the existing federal regulations,

  » As a result

- If you have intrastate facilities, gathering only within the state, or storage facilities that are not connected to interstate facilities, please make sure that you have knowledge of these requirements.
  - State requirements will not be presented or discussed in this presentation

Objectives of the Rule

- Create an environment to help assure controllers will be successful in maintaining pipeline safety and integrity
  - Assure pipeline operators are addressing fatigue risks in the control room
- Verify that procedures, systems and equipment are well thought out, and function as designed.

PHMSA CRM WEBSITE
http://primis.phmsa.dot.gov/crm/

- Lots of Information
- Reference Materials
- Background Documents and PPTs
- Frequently Asked Questions
  - Several FAQs Currently in Development
- Inspection Guidance
  - Version Number 3, Date is 3/1/2012
- Accident/Incident Question Assistance

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Resources

http://phmsa.dot.gov/pipeline

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- 5 Headaches You'll Avoid by Calling 811 Before You Dig
- Corrective Action Order Issued to Chevron Pipe Line Company for March 18, 2013 Failure
- PHMSA March 14 One Call Exemption Meeting
- Pipeline Replacement Updates
- PHMSA Pipeline Data Public Meeting

Find PHMSA Offices

Headquarters

Regional Offices

Federal & State Partners

Promoting Safety

Pipeline Safety Awareness | Call Before You Dig | Stakeholder Communications | Pipeline Informed Planning Alliance

PHMSA Resources

Regulations
Regulations & interpretations, proposed rules, approvals & permits, and bulletins for pipeline and hazmat safety.

Data & Reports
PHMSA tracks data on the frequency of failures, incidents and accidents.

Inspection & Enforcement
Incident forms, regional office contacts, and general information on PHMSA enforcement programs.

NTSB Recommendations
Get information and updates for PHMSA responses to National Transportation Safety Board recommendations.

Online Services
Access forms for the Operator Registration System, hazmat registration, incident reporting and more.

Preparedness & Response

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Resources

http://primis.phmsa.dot.gov/comm/Index.htm

PHMSA: Stakeholder Com...

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U.S. Department of Transportation | Pipeline & Hazardous Materials Safety Administration

Pipeline Safety Stakeholder Communications
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- Safety Programs
- Public Outreach

State Pipeline Profiles:
Print

Community Toolbox

Pipeline Safety Connects Us All

The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety (OPS) is the federal safety authority for ensuring the safe, reliable, and environmentally sound operations of our nation's pipeline transportation system. An important component of OPS's mission is to promote pipeline safety communication and education.

Pipeline safety is a responsibility shared by all stakeholders. Community and pipeline safety is improved through active stakeholder participation, especially with regard to public awareness, damage prevention, risk-informed land use planning, and emergency management efforts.

Click on a puzzle piece below to learn how you can impact pipeline safety.

What's New

811 For Kids

US DOT npms national pipeline mapping system

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http://primis.phmsa.dot.gov/crm/index.htm?nocache=5660

PHMSA: Stakeholder Commun... | Control Room Managemen...

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Pipeline Technical Resources

Return to Pipeline Safety Community

Home | Alternative MAOP | Cased Crossings and GWUT | Class Location | CRM | DIMP | Gas IM

HL IM | High Volume EFV | Low Strength Pipe | OQ | Pipeline Construction | R&D | Public Meetings

Control Room Management

CRM Menu

- Home
- Key Documents
- FAQs
- Inspection Guidance
- Public Workshops
- Fatigue Mitigation
- Contacts
- What's New
- Feedback

- Regulations
- Advisory Bulletins
- Interpretations

Welcome. This site is administered by the Pipeline and Hazardous Materials Safety Administration (PHMSA), and provides information concerning regulations for Control Room Management (CRM) for gas and hazardous liquid pipelines regulated under 49 CFR Parts 192 and 195, respectively.

PHMSA has amended the pipeline safety regulations to prescribe safety requirements for controllers, control rooms, and SCADA systems used to remotely monitor and control pipeline operations. The regulations address human factors engineering and management solutions for the purpose of enhancing the performance reliability of operator personnel that control pipeline operations. This rule will generate significant public benefits by reducing the number and consequences of shortfalls in control room management practices and operator errors when remotely monitoring and controlling pipelines and responding to abnormal and emergency conditions. This site provides information about PHMSA's implementation of Control Room Management oversight, and links to other educational information on human factors and human operational performance. For more information on the history of this important rulemaking, visit PHMSA docket number PHMSA-2007-27954 at www.regulations.gov or visit Key Documents on this website.

DOT Home | PHMSA Home | Regulations | Advisory Bulletins | Interpretations | Glossary | Privacy Policy | FOIA

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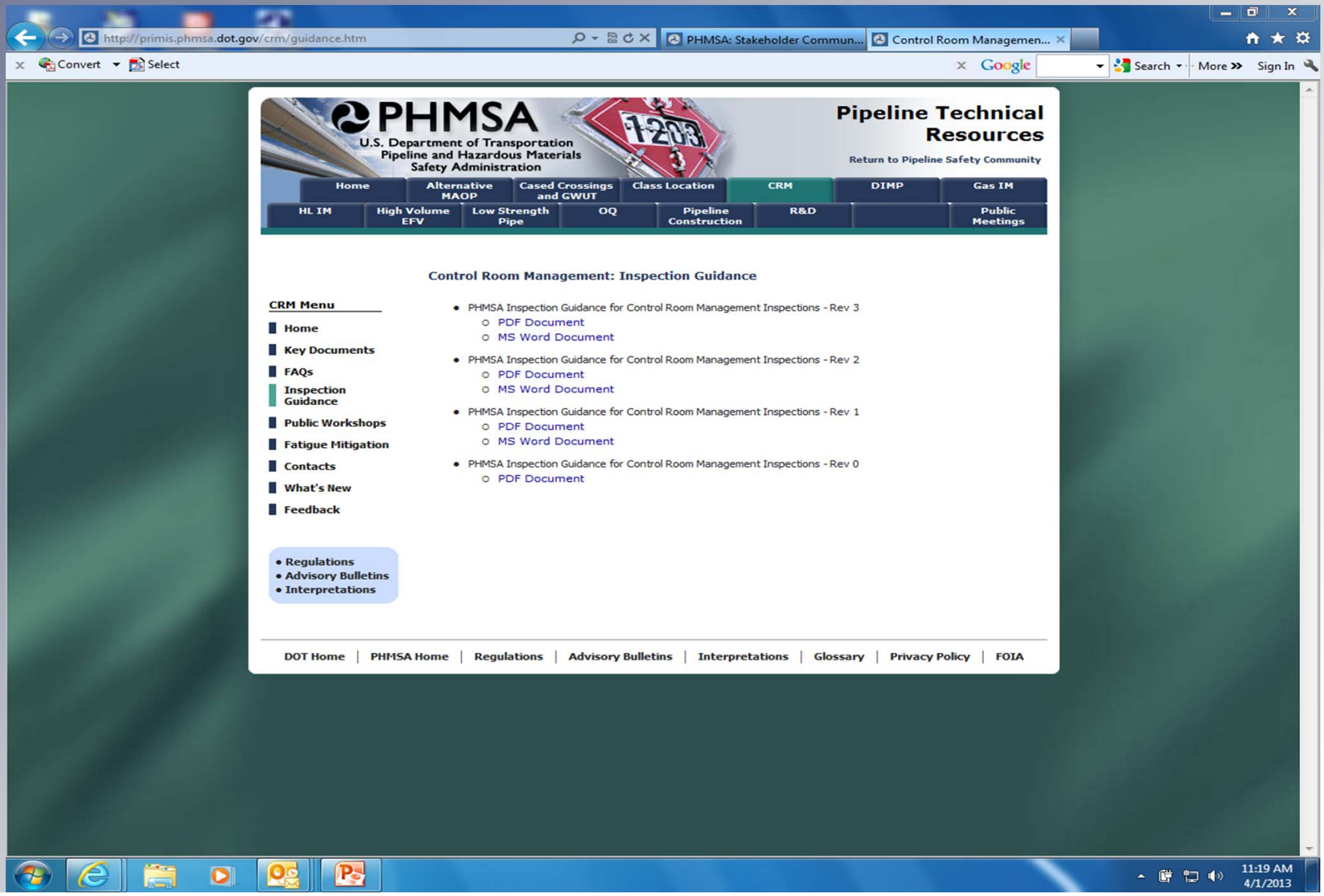
Resources



General Information

- Each inspection is based on a Control Room, not operator ID, or inspection unit
- Some paper-based inspections still happening
- More electronic use during II Inspections in 2013
- 10-25% of a Region's Inspections in 2013
- Typical duration: 3.5 days to 2 weeks
- Controller Interviews Can Be Part of the Process

General Information

- Can be a significant commitment of resources with many functions present depending on how the control room is organized
  - Gas and Liquid
  - Transmission and Distribution
  - Laterals
  - Field Locations also

General Information

- **Don't Wing It:**

➢ Have people there that know the control room & those that perform support functions

- ✓ Provide SCADA or IT programming support
- ✓ Training
- ✓ Controllers that really know
- ✓ Supervisors that are relevant
- ✓ Those responsible for hours of service
- ✓ Those who wrote and use the plans:

CRM, Alarm management, MOC, Fatigue, etc.

General Observations

- Procedures and connections not fully developed
  - Emergency Procedure Crosslink
  - O&M Procedure Crosslink
    - Abnormal, Normal, Specific
    - Enhanced Level of Detail
    - More than Generic Company Wide Procedures

General Observations

- Procedures and connections not fully developed (continued)
  - •OQ Ties
  - •Forms to Procedure Connections
  - •Control of Approved Versions of Plan and Procedures
  - •Try to eliminate terms in procedures with vague or conditional meaning
    - –Examples: “understanding”; “competency”; “communication guidance”
- Procedures not available to the Controllers

General Observations

- Training
  - Field
  - Controller
  - OQ Ties
    - Task Specific AOC
    - Generic AOC
  - Table Tops or Simulations
  - Cross Training Complications – Consistency
  - Who Reviews Effectiveness
  - How will effectiveness be measured so training can be done associated with these measures

General Observations

- Make sure:
  - –Define who would have final authority for certain aspects of the Control Room Management plan
  - –Some operators had not specifically identified in the roles and responsibility documents if the controller could shut down the pipeline
- Remember the supervisor functions
  - Emergency?
  - Shutdown?

General Observations

- Records need to be available for investigators to review to substantiate that the rule requirements have been met and procedures have been followed
  - In some cases, 3 years may not be sufficient
  - Check other record requirements with internal procedures to the operator as well.

- When writing procedures, annual or yearly is not the same as “calendar year not to exceed 15 months”. These are not synonymous.

General Observations

- Emails may not be adequate documentation as this may not confirm implementation
- Owners and operators are covered by the regulations
- Controller should have access to the applicable pressure limits, including the MOP or MAOP and any reduced operations pressure restrictions

General Observations

- Setpoint limitations should be set at any reduced operating pressure value so that confusion is prevented on behalf of the controller
  - If not, some notification should be provided to the controller when setpoints were implemented above the current reduced operating pressure restrictions
  - Remember special permit restrictions is applicable

Section A – Applicability

Section A – General Applicability

Where are your Control Rooms?

- Many operators have not done a detailed review
- Procedures should exist to determine where a control room is located.
  - Should match other sources
    - O&M
    - Mapping for example
    - Facilities manuals
- All regulated assets should be addressed by detailed review

Section A – General Applicability

Where are your Control Rooms?

- Are you seeking out control room locations or assuming you know where they are?
  - Laterals
  - Storage Fields
  - Gathering
  - Field Locations
  - LNG that operate pipelines
  - Offshore

Section A – General Applicability

If you are gas operator, are you assuming Fatigue only?

- Based on what detailed review?
- Information available to support Fatigue only?
- What about Compliance and Deviations also?

Substantiation is required and State Partners are the decisive regulatory agency in various cases

Section A – General Applicability

- Operators will be asked to fill out the asset form in Section A

  -Should know which console or control room

  cover what Op ID

- Procedures should address how new assets will be reviewed

Section B – Roles and Responsibilities

Section B – Roles and Responsibilities

- Operators were not reviewing the O&M and Emergency Procedure requirements when developing controller Roles and Responsibilities
  - Abnormal Operations

    versus

  - Abnormal Operating Conditions
- Information about what positions equipment fails in (power off) had not been provided to controllers
- Procedures did not address how alarms are handled when there is a need to step away or sudden illness

Section B – Roles and Responsibilities

- Clarify if a Controller can shut down the pipeline
- If duplicative consoles exist– procedures did not define who does what, where, when
- Does one Controller remain in the Control Room at all times if high traffic areas?
  - Only qualified individuals assume control per console and how this was achieved was not identified
  - Whether or not Supervisors were qualified was not clear
    - If not, cannot perform certain tasks
    - Periodically on the console for back-up

Section B – Roles and Responsibilities

- Procedures did not define if a Controller can leave console before completing and observing result of command actions?
  - Remember during Normal as well as Emergency
- Different authority and responsibility on various systems existed but not defined
- Authority and responsibility to change certain alarm setpoints was unclear
- Responsibility was not addressed when other Companies or parties require interaction
  - Such as valve closures at a delivery by other operating company personnel

Section B – Roles and Responsibilities

- Shift Change
  - –Controller should not be responsible for finding replacement
  - –Controller outgoing specific requirement to turn over to someone that is fit for duty
    - If controller coming in for shift exchange is not fit for duty, procedures did not address actions to be taken
  - –Controllers did not Log out and Log in so control is established in timely fashion and responsibility clearly established in documentation

Section B – Roles and Responsibilities

- Shift Change did not:
  - Identify who is responsible when
    - Date and time
    - Names regarding exchange
      - Remember trainees
  - Forms were not adjusted per console
    - Unique per console in most cases
  - Consider Cross-Training implications

Section B – Roles and Responsibilities

- Training on shift change form did not occur (explaining what goes where)
  - Example: Pig run listed under notes, maintenance, or ongoing activities, etc.

Section B – Roles and Responsibilities

- Shift Change
  - –Going out and coming back in not documented
  - –Short breaks not defined
  - –Process did not define what should be covered
    - Example: DRA concerns?
  - –Leak Detection Alarms were not addressed even if cleared on previous shift
  - –Field activities that could impact controller such as stopples were not considered

Section B – Roles and Responsibilities

- Emergencies
  - –Procedures did not clarify what controllers do versus field personnel
  - –Communications between controllers and field personnel issuing commands was not documented
    - Good idea to test during drills
  - –Controllers should not be the last notified
  - –Who invokes disaster recovery moves not defined
  - –To back-up or other location, When to return

Section B – Roles and Responsibilities

- Emergency Procedures –
  - –Confirm that controllers roles and responsibilities include expectations and requirements for emergencies (who calls local responders?)
  - –In one example, procedures required texting supervisors but roles and responsibilities did not include provision
- Responsibilities should cover expectations during loss of communication, SCADA failure, transferring to manual operational control and return to normal

Section B – Roles and Responsibilities

- Manual operations
  - May need to include manual data collection of operational data
- Responsibility was not specifically identified and allocated that controller is to keep operating pressures below MAOP, MOP or other pressure restrictions
- Did not allow only qualified controllers to log into the console

Section B – Roles and Responsibilities

- When multiple roles existed in the control room, frequently roles and responsibilities were not clear.
- Did not identify role of 911 notifications versus local emergency responders and that of the controller

Section C – Adequate Information

Section C – Adequate Information

- Safety Related Point List
  - Process to determine
  - All point list versus safety related point list
  - Defined as those that can affect pipeline integrity
  - Can be more than the FAQ
  - All safety related points are not required to have alarms

Section C – Adequate Information

- Point to Point
  - Did not define what added, moved, and other changes affecting pipeline safety means by procedure and types of activities
  - Procedures for Point to Point not being followed

Section C – Adequate Information

- Procedures require point-to-point verification through entire loop
  - Timing in FAQ
  - Calibrations for liquid including range/scale, display range, engineering units, alarm settings, final value
    - As found, as left documentation
  - Like-kind replacement

Section C – Adequate Information

- Communications plan has specifics about who is the decision maker to transfer to (and from) back-up location

  Please note: If an operator assumes one hour of communication loss before manning is required, how is this substantiated

- Test and verify adequate means for manual operation plan

  – Re-routing data communications to backup SCADA server while still running from primary control center is not considered an adequate test of back-up communications

Section C – Adequate Information

- Test specifics should include:
  - Procedures that define a process which tests performance
  - Documentation that describes the actual test and performance experienced
  - Documentation that identifies any needed corrections and implementation.
- Identify which locations are manned

Section C – Adequate Information

- Test back-up once each calendar year not to exceed 15 months.
- If an operator has a requirement in a contract with the OEM/Vendor that the equipment received is required to comply with API 1165, the operator is to assure compliance
  - An internal process/procedure by which this aspect of the specification is confirmed
  - Compliance is validated
- If you as an operator have reviewed existing displays against API 1165, take credit for it and identify how you plan to implement any noted discrepancies

Section C – Adequate Information

- Consistency
  - Software
  - Color choices
    - Cross-training
    - Review for conflicting color use
    - Back-up supports similar processes and systems
  - Review for symbol use, and symbol with color use

Section C – Adequate Information

- If Color for Alarms Only
  - Verify Controller can distinguish colors used
  - Cross-training
    - Are other colors or priorities introduced
  - Reviewed over time as color recognition can change with age

Section C – Adequate Information

- If Audible for Alarms Only
  - Verify Controller can detect and distinguish correctly
  - Cross-training
    - Are other frequencies used on other console?
  - Reviewed over time
    - Hearing can change over time

Section C – Adequate Information

- Short break access
  - How does the controller assigned received alarms while away – someone else responsible?
- Point poll time considerations were not evident in all operators programs.

Section D – Fatigue

Section D – Fatigue

- Occasionally a formal fatigue plan did not exist
- Hours of Service not documented well
  - Timesheets not capturing shift exchange
  - Shift exchange signature not accounting for time or being done first
  - Did not match log-in information
- Plans to confirm Hours of Service were not in place
  - Who is responsible for reviewing and making changes to schedule was in question
- Procedures did not mention when fatigue will be investigated as contributory to accidents/incidents and how this investigation would be performed

Section D – Fatigue

- No mention of heightened risk and specific mitigation measures
  - 2-6 am
  - 9-12th hours of the shift
  - 3rd consecutive night
  - Single controller operation
- Exceeded the recommendations of maximums per week
- Did not realize a sliding 7 day scale
- Did not have adequate staffing (absentees not considered)
- Did not have confirmation of shift turnover time requirements

Section D – Fatigue

- Did not include commute time in review of 8 hours of sleep
- Plan did not include measures, elements or methods used to reduce the risk of fatigue
- Total hours did not include all worked for the controller, including other duty assignments and training
- Allowed maximum hours to be exceeded for reasons other than safety
- Did not schedule controllers with 8 hours of sleep planned
- Schedule upsets & Domino effect not considered

Section D – Fatigue

- Future fatigue training mentioned but not employed or determined how it would be employed
- No mention of fatigue mitigation effectiveness review
- Procedures need to mention all shift lengths
  - If have relief controllers and they only work 8 hours, this should be identified in your plan
  - Back-up controllers and hour tracking not thought out nor on-call considered
- If using forms to help track fatigue information, review the form against procedures
- Operators should include what happens if a controller self reports

Section E – Alarm Management

Section E – Alarm Management

- Key Issues
  - Definition of Control
  - Alarms versus Alerts, Events, Notifications

    Alerts are alarms if a controller response is expected

    Operators had alerts, notifications, informational indications, interim alarms, cautions, warnings, emergency alarms and alarms.

Section E – Alarm Management

- Key Issues (cont)
  - Alarm priority specifics not well described
    - Color, tone, both?
    - Are all alarms, even those of different priority, the same color? A concern!
  - Definition of Safety Related
    - Other points than FAQ can be safety related alarms
  - Safety Related parameters versus points

Section E – Alarm Management

- Key Issues (continued)
  - Definition of False, Stale, Manual, Forced, Off scan, Inhibit
  - Operators need a process for reporting alarms that do not work as intended.
  - All tags (or points) had seldom been reviewed
  - Remember modes of control:
    - Flow and Pressure discussion

Section E – Alarm Management

- Key Issues (cont)
  - Manual" can mean multiple things:
    - Equipment positions (such as engine control panel is in manual and only allows local start commands) or
    - Override or manually entered values (such as a "manual" valve status), etc.

Section E – Alarm Management

- Key Issues (cont.)
  - Still being developed in some cases
  - Procedures needed further development in several cases
  - Many operators included metrics similar to ISA 18.2
  - Alarm database for the entire system was not available for review in several cases
    - Will be asked for
  - Effectiveness of program missed
    - More specifics on this later

Section E – Alarm Management

- Key Issues (cont.)
  - Safety related alarms that have been taken off-scan should be documented
    - If the operator considers this an appropriate action, include training around specific conditions and documentation
  - Safety related alarm setpoints and descriptors not verified once each calendar year not to exceed 15 months
  - Alarm management plan not required to be reviewed once each calendar year not to exceed 15 months

Section E – Alarm Management

- Controllers should have input into alarm descriptors
- Controllers could not tell where auto-close valves were located on the pipeline
- Effective controller response to alarms was not defined.
- All procedures were not reviewed for consistency with the alarm management plan and conflicts existed
- Role of specific individuals in the plans were not well defined.

Key Definition Concerns

- Control – either by directly sending SCADA commands to field equipment, or **prompting others to action**
- Safety related – any operational factor that is necessary to maintain pipeline integrity or that could lead to the recognition of a condition that could impact the integrity of the pipeline, or a developing abnormal or emergency situation (FAQ A.16). -

Definition Concerns

- Safety Related parameters are NOT the same as Safety Related points.
  - Parameters can exist on any point in the system and are items such as:
    - Hi-Hi, Hi, Lo-Lo, Lo, Deviation, ROC
    - Deadbands, etc.
- Regarding alarms, safety related points can include items beyond those identified in FAQ C.01.
  - Examples: Rectifier status, Server load status or server or software function operational notification alarms.

Section E – Alarm Management

- Not all operators included inhibited alarms
- Forced values can occur at the RTU/PLC level or within the SCADA system

  Not addressed by all operators
- False, stale, off-scan, and forced values were not included in the plan by all operators
- Inhibited, Off-scan, Forced, Manual, Stale values were not all noted on displays in a unique manner and could not be distinguished
- Operators had not included education for controllers on soft or calculated points

Section E – Alarm Management

- Operators had not yet established documentation to track points taken off-scan
  - Point tag and description
  - When taken off-scan
  - Duration of outage
  - Why (may need to be documented)

Section E – Alarm Management

- Which alarm limits controllers can change when and under what circumstances was not well defined in most cases
- LoLo and HiHi limitations and settings on pressures not being changed by controllers was discussed with a few operators
- Master alarm database or alarm setpoint review documentation including as found as left requested
- Program effectiveness was not tied to the results of alarm reviews
  - How will the operator evaluate effectiveness?

Section E – Alarm Management

- Metric tracking has not yet had an opportunity to be reviewed
- Effectiveness does not mean a consistent reduction in the number of alarms per console
- Alarm screen should be available
- Suggest just reviewing displays for the obvious from time to time
- Gas and Liquid plans and the same control room
- LAUF and/or Leak Detection should be addressed

Section E – Alarm Management

- Documentation regarding deficiency identification during alarm reviews (nuisance, maintenance, false) should include the date discovered, tracking of response including the recording of activities to correct the deficiency and correction date or correction plan if has not yet occurred
  - Documentation did not prove addressed or planned to address (implementation)
- Remember chronic issues should also be looked for

Section E – Alarm Management

- Rationalization really has not been done extensively
  - Systems and District differences
- Remember: Maintenance not being completed at certain locations on the pipeline can cause more work for the controllers.
  - This could impact the Work Load studies and task reviews and complexity of a console
- Controller should have access to the applicable pressure limits, including the MOP or MAOP and any reduced operations pressure restrictions
  - If Supervisor changes alarm limits/setpoint, how are controllers notified of this change?

Section E – Alarm Management

- Safety related alarm limit changes should be approved and documented
  - Procedures exist for how these will be reviewed
  - Training or notification completed and documented when changes implemented
  - Safety related alarm parameters defined
  - Imp changes to setpoints?

Section E – Alarm Management

- Console Work Load studies and reviews were just starting
  - Detailed task reviews were being discussed
  - Moments or averages in time sampling would not capture all assigned tasks but may help with time allocations
  - Were not able to illustrate workload specifics per console
  - Controllers were not always provided enough time to respond adequately

Section E – Alarm Management

- Procedures needed to clearly define a process of monitoring the volume and content of general activity directed at the controller
  - Night versus day
  - Seasonal
  - Console specific
- As a reminder:
  - Leak Detection and Shutdown Pipelines

Section F – Change Management

Lessons Learned
Bellingham, WA 1999

Section F – Change Management

- Remember: People - Process – Pipeline
  - All components can have changes that impact the control room
  - If the operator has an MOC committee, define the members
- Operators did not have procedures explaining when to contact the control room
- Documentation did not exist that the control room had been contacted (field personnel, IT, SCADA support, major projects or engineering)
- The control room contact should be timely.
  - For example, regulatory was notified of a leak by field personnel before the control room by procedure

Section F – Change Management

- Key functions were not included in MOC process:
  - How a MOC was initiated not defined
  - How the MOC documentation was tracked
    - Unique electronic file names did not exist, so key documents supporting MOC progress were destroyed when one copy was saved over top of another with the same file name
  - What it takes for final approval was not defined
  - What training had occurred or should be occur as a result of the MOC was not available
  - The implementation date of the MOC was not available.
  - What was actually implemented associated with a MOC was not available.

Section F – Management of Change

– GAS:

- Appeared to lack consistent consideration for control room requirements for training when placing new facilities on line.
- Seems to be a radical departure from their previous business practice
  - Appear to routinely implement changes without training first being implemented
- Timing should also allow for training

Section F – Management of Change

- Almost all departments can influence the control room operations
  - Maintenance, Operation Management, IT, Asset Management, Reliability/Integrity, Business Development, Scada, Scheduling, etc.
  - More than one MOC procedure
    - Must be careful to identify how this will stay coordinated
- Documentation lacking for Control Room Representation in meetings discussing significant hydraulic or configuration changes

Section F – Management of Change

- Procedures did not all require advance planning in time for training
- Development system used to test changes associated with instrumentation or displays
  - If do not have development system,
    - Strong procedural controls, formal reviews, oversight of changes as go into production, careful monitoring of system performance after changes go into production, immediate QC verification of changes

Section F – Management of Change

- Procedure needed to include point of contact for control room involvement in design or maintenance activities and sharing
- Should remember to include control room when field work occurs (placing in local control as example), data communications infrastructure is impacted, and when leaving/entering monitored facilities that may have security requirements
- Contractors may need to contact the control room if their activities can affect the controllers as well.
  - Training should reflect this

Section F – Management of Change

- Procedure define significant hydraulic changes (49CFR192 gas)
  - Purpose of this is to obtain controller input so that changes support safe pipeline control
- Should have a formal change management form
  - Make sure the process and various steps can be followed in documentation

Section F – Management of Change

- Procedures cover unusual and emergency circumstances as well as changes required due to new equipment
  - Mergers and acquisitions
- Consistency of training on process or procedure across the operator's departments

Section G – Operating Experience

Section G – Operating Experience

- Operators appear to have focused on reportable events initially
  - Called Operating Experience for a reason
- More than several operators were not verifying that the lessons learned from accidents/incidents or other items such as “near miss”, “close-calls” or system problem response actions were shared with all controllers.
- Don’t forget what can be learned from NRC reports or SRCR

Section G – Operating Experience

- Some operators accident/incident investigation procedures had not been revised to incorporate CRM
- Operators had not included in procedures how deficiencies that are identified in RCFA investigations relative to the control room will be communicated
- Procedures should identify and explicitly address the contribution of erroneous training
- Fatigue was not being reviewed

Section G – Operating Experience

- Procedures and documentation did not identify how training is impacted by lessons learned, close calls or near miss events
- Remember a contributory factor may provide training and procedure revision insights
- Documentation was lacking on how deficiencies found in accident/incident investigations have been corrected
- Documentation did not exist to support how lessons learned are shared with all controllers

Section G (G.03) Operating Experience

FAQ:

Does “include lessons learned from the operator’s experience in the training program required by this section” apply only to accidents/incidents/events in which the controller caused or contributed to the event? Applicable to Gas and Liquid

- Answer: No. Applicable to all accidents, incidents, events, and circumstances that could better inform and train controllers to:
    - Safely Control the pipeline
    - Recognize and Correctly Respond to
        - Abnormal, Unusual, Emergency conditions.

Proper controller reaction is the outcome desired

Section H – Training

Simulators & Table Tops

- Key Takeaway:
  - If the operator implements simulators or table tops, are these modified to incorporate learning from:
    - RCFA after an accident
    - Controller input as the result of accident/incidents, near miss, or controller concerns
  - Does documentation exist to support that these modifications have occurred and training or involvement has been changed for the controller as a result?
  - Operators did not clarify which consoles used which technique – simulator, table top or both

Section H – Training

- Procedures did not identify how training improvements were found and implemented (lesson learns, etc)
- "Periodic and infrequently" used was not addressed or defined
- Procedures to address infrequent setups initially appeared to be lacking
- Reverse Flow, Slack line or low flow conditions, and cross training considerations were missing
- Manual Operations training was not found
- Loss of Power at facilities and equipment status was not addressed

Section H – Training

- Training records were not always available:
  - Procedures
  - Course material
  - Test material and Passing test criteria
  - Attendance records
  - Content of OJT and associated records
- Procedures did not define how the training program review would be documented and implemented

Section H – Training

- Verification did not exist that individuals dictating how the system is configured, operated, or shutdown during emergencies are qualified to do so
- Alarm log history had not been reviewed along with incidents/accidents to identify potential abnormal operating conditions that are likely to occur simultaneously or in sequence for which controllers should be trained

Section H – Training

- Liquid and Gas differences were not accounted when control room covered both
- Procedures did not define how effectiveness of the training program would be determined
- Training programs did not cover back-up center activities or transfer requirements
- Controllers that are considered “back-up” or “day” controllers were not specifically considered in the training program and yet were absent from the console for extended periods

Section I – Compliance

Section I – Compliance

- Procedures to document compliance with requests for information from PHMSA or State regulatory agencies were missing
- Point of contact responsible for providing response to request was not defined
- No reference to O&M or Emergency procedures that may be linked

Section J – Deviation

Section J – Deviation

- Procedures did not address documentation of deviations from CRM procedures
  - Storage of documents and integrity of these documents was not found
  - Retention time was in question
  - What forms can be found in what repository location needed clarification
  - Who is responsible for record retention was not defined
  - Version control did not exist

    (avoid over-writing electronic records)

Section J – Deviation

- Deviations were not documented
- Deviations were not justified as being necessary for safe operation
- Deviations had not been reviewed for cyclical behavior and frequency
  - If found, work to eliminate

Objectives of the Rule

- Create an environment to help assure controllers will be successful in maintaining pipeline safety and integrity
  - Assure pipeline operators are addressing fatigue risks in the control room
- Verify that procedures, systems and equipment are well thought out, and function as designed.

Objectives of the Rule

- **Ask:**
  - CAN THE CONTROLLER SUCCEED AT THE ROLES AND RESPONSIBILITIES ASSIGNED IN CURRENT ENVIRONMENT?
  - WILL THIS AFFECT THE CONTROLLERS OPPORTUNITY TO SUCCEED?
- **Don't Know:**
  - Ask a controller, we will.

QUESTIONS?