Pilot Audit Overview by Section

The Pipeline and Hazardous Materials Safety Administration (PHMSA) and state regulators conducted a series of pilot audits beginning in February 2011 and ending in May 2011 to gain a better understanding of how operators were planning to implement control room management regulations to address their unique pipeline systems and operating conditions. The information included in this document is from the perspective of a natural gas operator who participated in a pilot audit in May 2011. This document indicates commentary and suggestions that were provided by the state and federal regulators in attendance at this operator's pilot audit.All pilot audits were completed while state and federal regulators were working to finalize compliance guidance documents. The focus topics of the pilot audit discussions do not necessarily represent the audit discussions that will take place following the August 2011 regulatory deadline. In addition, the recommendations provided by state and federal regulators during the pilot audits do not necessarily represent the recommendations that will be provided by regulators during audits that take place following the August 2011 regulatory deadline. Operators who would like to review the finalized documents that have been released by PHMSA should visit the following website: http://primis.phmsa.dot.gov/crm/index.htm.

General Comments:

- Program objective: Controller success in maintaining pipeline safety and integrity
- Underlying theme: make sure system and procedures are well thought out, function as designed, and function as controllers should expect
- Type of audit: to refine inspection forms, guidance, and process, and to benefit pilot operators
- Better for operators to identify, document, justify, and address deviations (as allowed by rule), rather than inspector discover them
- Overall: processes and procedures (including documentation) need to be more fully developed and make explicit reference to detailed O & M procedures (use more forms)
- Consider changing record retention to something greater than 3 years. We changed to 5 years for most and lifetime of controller for OQ and training.
- E-mail and memos may not be adequate documentation (may not be an actual record of implementation in all cases)

Section A – Applicability and Definitions:

- Consider more detailed documentation review on which facilities are/are not control rooms (storage fields, propane plants, etc.)

Section B – Roles and Responsibilities:

- Order of notification in O & M procedures, controllers should not be last or end of list
- Clarify if controllers are responsible and authorized to shut down system
- Login and logout of SCADA system is a good practice
- Add more explicit provisions to prohibit individuals (including SCADA techs) from attempting to assume control at a console or desk for which they are not qualified

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- Provide more specific requirements to invoke DR manual and not just reference it
- Actually spell out that shift change procedure is required at each shift change and at "impromptu times"
- Suggested updating our procedure to clarify that control commands are "completed and verified" any time before leaving the console, not just at end of shift
- Clarify procedure to explicitly specify that controller is responsible to know MAOP and is responsible for keeping operating pressure below MAOP
- Our Corporate O & M for Emergency should reflect the R & R in CRM
- Procedures should specify that part of controller's responsibilities is to invoke DR plan (when required) in event control room must be evacuated
- Procedures should specify controllers responsibility in event of SCADA system or communications failure (activation of DR or going to manual operations, including return to normal operations)
- Procedures to address how to deal with schedule impacts. Currently, controller on duty is responsible for finding replacement. Due to fatigue issues, tracking HOS status of other controllers, a supervisor should have that responsibility (a controller should not be responsible to track HOS)

<u>Section C – Provide Adequate Information</u>

- Consider expanding shift handover documentation form to include other types of issues (from API 1168 and other industry reference material, include copies of the forms used in CRM manual)
- Non-mandatory review of API 1165 was very good, but encourages to promptly address inconsistencies between displays and alarms
- Very good and thorough Point-to-Point procedure
- When conducting point-to-point, document actual values that was checked, including scaling and alarming (more than just point name and "OK" – consider what in the process would give an inspector confirmation that something was checked all the way through)
- In internal communications plan, clarify who is responsible for deciding when to invoke manual operations and when to return to normal (define fail/open, fail/close on devices at critical stations during outages)

<u>Section D – Fatigue:</u>

- Don't have a corporate FRMS, but have a good risk-management program, we have a subject matter expert and fatigue education/training is underway, HOS and time-off limits are in place.
- Write a policy and procedures requiring that the potential contribution of controller fatigue to incidents and accidents be quantified during investigations (see white paper dated June 2011 on PHMSA site)
- Specify an authorized fatigue risk manager responsible and accountable for managing fatigue risk and fatigue countermeasures and who is authorized to review and approve HOS emergency deviations
- Proactive measures (tactics) to address failure of full recovery for average individual who works four successive night shifts (even with minimum 35 hours off)

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- Specify menus of specific fatigue countermeasures to be used during:
    a) Any and all shift hours worked after the first 8 hours
    b) Any and all hours worked between 2:00 am and 6:00 am
    c) Any and all night shifts immediately following three successive nights
    d) Item noted immediately above
- Good education and training program (emphasize risks of driving home from work fatigued – encourage pre-drive naps)

Section E – Alarm Management:

- Process to identify inaccurate or malfunctioning alarms and to correct them should be improved to better document corrective actions
- Ensure/verify that controller OQ training explicitly informs controllers that diverse indications of alarms (besides color) are provided and that controllers understand those diverse indications
- Create a mechanism to identify stale, forced, or unreliable data; the data should be indicated by unique display object characteristics
- Address stale or forced values at the RTU level
- Process documentation for verifying alarm descriptors could be improved to better describe how controllers provide input into alarm descriptors and that alarm descriptors are clearly understood by controllers
- Improve process documentation to clearly address how and to what degree controllers can change alarm limits or set-points (master alarm database should identify safety related alarms and include an annual summary of as-found/as-left points)
- Establish more specific criteria for determining alarm management plan effectiveness
- Very good alarm management metrics
- Enhance degree of formality and documentation for analyzing level of activity directed to controllers. Start by development of task list

Section F – Change Management:

- O & M Procedures, contact with gas control may need to be "must" in most cases (since this is a regulatory requirement)
- Communication with gas control on field changes "if the system is monitored", this should be expanded to reflect if field changes "could affect" operations
- Procedure specifies that employees doing construction must contact gas control, this should include contractors
- Communication and Management of Change in general is to ensure controller involvement, obtain controller input, reflected in controller training, and that changes are to support safe pipeline control
- Records of change management should document control room contact (when/how at field level, and when/how at gas control level)

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- Procedures should address requirements to notify the control room when entering and leaving facilities that are normally unattended
- Concerning letter to pipeline: consider addressing common corridors, crossings, and parallel new construction

Section G – Operating Experience:

- Consider improving procedures to better address near misses and other non-reportable incidents
- Consider building on your corporate "root cause analysis" program in evaluating incidents
- Procedures could be improved to specifically address and evaluate potential contribution of erroneous training to incident cause
- Improve procedures to specifically incorporate lessons learned from operating experience into controller training program

Section H – Training:

- Update procedures to address specific training content required by CRM rule (review alarm log history and incident history to identify potential AOCs that are likely to occur simultaneously or in sequence for which controllers should be trained)
- Field personnel should be trained to call gas control when making field changes that have the potential to affect control room operations, or when significant releases are identified
- Look for patterns in event summaries, what things happen at the same time
- Identify, evaluate, and train on operational setups that are periodically but infrequently used

Section I – Compliance Validation:

- Designate a point of contact that is responsible for responding to requests for submittal of CRM plans

Section J – Compliance and Deviation:

- Upgrade procedures to address deviations necessary for safe operations
- Institute version control (avoid over-writing electronic records)