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INTEGRATED COMPLIANCE SOLUTIONS

Control Room Management

Robert E. Miller

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Objectives were to introduce additional requirements with respect to control room management and human factors

- CRM Final Rule issued on December 3, 2009
- Only Parts 192 and 195 changed
- Effective date is February 1, 2010, Clock starts

- Program implementation Deadline February 1, 2013

Control rooms and controllers are critical to the safe operation of pipeline system

Control rooms often serve as the hub or command center for decisions such as adjusting commodity flow or facilitating an operator's initial response to an emergency

Controllers are low risk as cause of events, but the impact on consequence of involvement can be very high

SCADA Definition Breakdown

- A computer-based system or systems,
- used by a controller,
- in a control room,
- that collects and displays information about a pipeline facility, and
- may have the ability to send commands back to the pipeline facility

Controller Definition

A qualified individual who remotely monitors and controls the safety-related operations of a pipeline facility via a SCADA system from a control room, and who has operational authority and accountability for the remote operational functions of the pipeline facility.

Controller Definition Breakdown

- A qualified individual,
- who remotely monitors and controls,
- the safety-related operations of a pipeline facility,
- via a SCADA system,
- from a control room, and
- who has operational authority and accountability,
- for the remote operational functions of the pipeline facility.

To provide for a controller's prompt and appropriate response, an operator must define each of the following:

(1) Normal Operating Conditions

(2) Abnormal Operating Conditions

–Even if the controller is not the first to detect

–Controller's responsibility to take specific actions

–Communication with others

•A.03 If the owner of a pipeline contracts for the operation of the pipeline by another party, who is the responsible party for compliance with the CRM rule?

The CRM regulations apply to all “operators” of the pipeline. The term operator is defined in 49 CFR 192.3

•A.04 If controllers are located in a control room that monitors and controls an intrastate pipeline, but the control room is located in a different state than the actual pipeline, do the CRM regulations apply?

Yes. The state or location of the control room operating regulated pipeline facilities does not determine the applicability of the CRM regulation.

A.07 If a person in a control room monitors a Supervisory Control and Data Acquisition (SCADA) system and directs a technician in the field to manipulate a valve, is that person in the control room considered to be a controller?

–Yes, a person that has responsibility to monitor a SCADA system and contacts others to initiate corrective actions is considered a controller.

–Also, a person that has responsibility to monitor a SCADA system and personally initiates corrective action via the SCADA system is also a controller.

If the operator's activities meet these exceptions

- (i) Distribution with less than 250,000 services
- (ii) Transmission without a "SCADA-enabled" compressor station

Then the operator must only have paragraphs

D-Fatigue management

I-Compliance validation

J-Compliance and deviation

ROLES AND RESPONSIBILITIES

Each operator must define the roles and responsibilities of a Controller during normal, abnormal, and emergency operating conditions.

- A Controller's authority and responsibility to make decisions and take actions during normal operations;
- A Controller's role when an abnormal operating condition is detected, even if the Controller is not the first to detect the condition, including the Controller's responsibility to take specific actions and to communicate with others;
- A Controller's role during an emergency, even if the Controller is not the first to detect the emergency, including the Controller's responsibility to take specific actions and to communicate with others; and
- A method of recording Controller shift-changes and any hand-over of responsibility between Controllers.

ADEQUATE INFORMATION

Each operator must provide its Controllers with the information, tools, processes and procedures necessary for the Controllers to carry out the roles and responsibilities the operator has defined by performing each of the following:

- Implement sections 1, 4, 8, 9, 11.1 and 11.3 of API RP 1165 (incorporated by reference, see § 192.7) whenever a SCADA system is added, expanded or replaced, unless the operator demonstrates that certain provisions of sections 1, 4, 8, 9, 11.1, and 11.3 of API RP 1165 are not practical for the SCADA system used.
- Conduct a point-to-point verification between SCADA displays and related field equipment when field equipment is added or moved and when other changes that affect pipeline safety are made to field equipment or SCADA displays.

ADEQUATE INFORMATION cont.

- Test and verify an internal communication plan to provide adequate means for manual operation of the pipeline safely, at least once each calendar year, but at intervals not to exceed 15 months.
- Test any backup SCADA system at least once each calendar year but not to exceed 15 months.
- Establish and implement procedures for when a different controller assumes responsibility, including the content of information to be exchanged.

FATIGUE MITIGATION

Each operator must implement the following methods to reduce the risk associated with Controller fatigue that could inhibit a Controller's ability to carry out the roles and responsibilities the operator has defined:

- Establish shift lengths and schedule rotations that provide Controllers off-duty time sufficient to achieve eight hours of continuous sleep.
- Educate Controllers and supervisors in fatigue mitigation strategies and how off-duty activities contribute to fatigue.
- Train Controllers and supervisor to recognize the effects of fatigue.
- Establish a maximum limit on Controller hours-of-service, which may provide for an emergency deviation from the maximum limit if necessary for the safe operation of a pipeline facility.

ALARM MANAGEMENT

Each operator using a SCADA system must have a written alarm management plan to provide for effective Controller response to alarms. An operator's plan must include provisions to:

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

ALARM MANAGEMENT cont.

- Verify the correct safety-related alarm set-point values and alarm descriptions at least once each calendar year, but at intervals not to exceed 15 months.
- 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.
- 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 to exceed 15 months, that will assure Controllers have sufficient time to analyze and react to incoming alarms.
- Address deficiencies identified through the implementation of paragraphs (e) (1) through (e) (5) of this section.

CHANGE MANAGEMENT

Each operator must assure that changes that could affect Control Center operations are coordinated with the Control Center personnel by performing each of the following:

- Establish communications between control room representatives, operator's management, and associated field personnel when planning and implementing physical changes to pipeline equipment or configuration.
- Require its field personnel to contact the Control Center when emergency conditions exist and when making field changes that affect Control Center operations
- Seek control room or control room management participation in planning prior to implementation of significant pipeline hydraulic or configuration changes.

OPERATING EXPERIENCE

Each operator must assure that lessons learned from its operating experience are incorporated, as appropriate, into its control room management procedures by performing each of the following:

- Review accidents that must be reported pursuant to 49 CFR Part 191 to determine if Control Room actions contributed to the event and, if so, correct, where necessary, deficiencies related to:
  - Controller fatigue
  - Field equipment
  - The operation of any relief device
  - Procedures
  - SCADA system configuration
  - SCADA system performance
  - Include lessons learned from the operator's experience in the training program required by this section.

TRAINING

Each operator must establish a Controller training program and review the training program content to identify potential improvements at least once each calendar year, but at intervals not to exceed 15 months. An operator's program must provide for training each Controller to carry out the roles and responsibilities defined by the operator. In addition, the training program must include the following elements:

- Responding to abnormal operating conditions likely to occur simultaneously or in sequence.
- Use of a computerized simulator or non-computerized (tabletop) method for training Controllers to recognize abnormal operating conditions.

TRAINING cont.

- Training Gas Controllers on their responsibilities for communication under the operator's emergency response procedures.
- Training that will provide a Controller a working knowledge of the pipeline system, especially during the development of abnormal operating conditions.
- For pipeline operating setups that are periodically, but infrequently used, providing an opportunity for Controllers to review relevant procedures in advance of their application.

COMPLIANCE VALIDATION

Upon request, operators must submit their procedures to PHMSA or, in the case of an intrastate pipeline facility regulated by a State, to the appropriate State agency.

COMPLIANCE AND DEVIATIONS

An operator must maintain for review during inspection:

- Records that demonstrate compliance with the requirements of this section.
- Documentation to demonstrate that any deviation from the procedures required by this section was necessary for the safe operation of a pipeline facility.

PHMSA FINAL RULE; PIPELINE SAFETY: OPERATOR QUALIFICATION, COST RECOVERY, ACCIDENT AND INCIDENT NOTIFICATION, and OTHER PIPELINE SAFETY CHANGES.

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199-27]

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§ 192.631 Control room management.

New

192.631(b)(5) requires the operator to define the responsibility and qualification of others with the ability to override decisions of the controller.

New

192.631(h)(6) requires additional control room team training for additional personnel who would be reasonably expected to collaborate with control room personnel.

PHMSA NOPV CRM

During the inspection of the Company's CRM program, PHMSA found the Company's procedures for records retention to be between three to five years.

The Company was able to provide some records for 2011 and a few for 2014 but no records provided for the period between 2012 and 2013. PHMSA reviewed these records and found them insufficient to demonstrate compliance with the requirements of §192.631(c), (d) and (e).

PHMSA NOA – CRM

Control Room Procedures did not adequately address the responsibilities of the current controller and/or management to address the issue of an incoming controller that arrives late for the work shift or fails to report for duty.

Provisions defining the actions the on-duty controller or management would take when an incoming controller does not notify the on-duty controller or management of his/her tardiness or inability to report for duty, were not included in the Control Room Procedures.

PHMSA NOPV - CRM

Section 195.446(a) required the controller training program to be implemented by August 1, 2012.

The training program did not clearly define controller roles and responsibilities and did not include training for responding to abnormal operating conditions likely to occur simultaneously or in sequence.

The training program did not identify setups that are periodically, but infrequently used, and did not indicate how the controllers were trained on the procedures used for such setups.

QUESTIONS