# Streamlining information for improved control room management

## Executive summary

Traditionally pipeline controllers have recorded key information in logs or on spreadsheets. Information management solutions help streamline the massive documentation and logging traditionally done manually by controllers. This paper discusses how an automated system helps pipeline operators comply with new federal regulations by safely reducing demands placed on controllers and the fatigue often associated with their tasks.

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# Summary

# Executive summary

U.S.-regulated pipelines are required to meet amended U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) pipeline safety requirements for control room personnel who remotely monitor and control pipelines and respond to abnormal and emergency conditions. These duties, in addition to multiple other responsibilities associated with the control room, often impose non-stop demands on controllers who can be overwhelmed by long hours dealing with huge numbers of application screens and tasks. The latest regulations require pipeline operators to implement measures that prevent controller fatigue, assure adequate off-duty time, and provide proper training to recognize and mitigate fatigue.

Information management solutions help streamline the massive documentation and logging traditionally done manually by controllers. This type of solution captures and verifies CRM information and automates the communication of that information with other controllers during shift changes and with control room supervisors. Using this type of CRM support solution allows complete and accurate documentation and transfer of information, during routine operation and abnormal or emergency situations. It helps the pipeline operator comply with regulations by safely reducing demands on controllers and the fatigue often associated with their tasks. It provides real-world operations information highly valuable for controller training and procedures evaluation. As a result, it helps improve overall process efficiency and operations safety.

## Improving control room safety and efficiency through information management solutions

# Introduction

The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) has amended its pipeline safety regulations to prescribe safety requirements for controllers, control rooms, and SCADA systems used to remotely monitor and control pipeline operations.

Its goal is to enhance the performance reliability of personnel who control pipeline operations through the reduction of errors — particularly when remotely monitoring and controlling pipelines, as well as responding to abnormal and emergency conditions. Key points include…

- Pipeline operators must implement measures to prevent fatigue that could influence a controller's ability to perform as needed

- Operators will need to schedule their shifts in a manner that allows each controller enough off-duty time to achieve eight hours of continuous sleep

- Operators must train controllers and their supervisors to recognize the effects of fatigue and in fatigue mitigation strategies

- Each operator's procedures must establish a maximum limit on the number of hours that a controller can work

The deadline to meet PHMSA's requirements has been accelerated to August 1, 2012.

## PHMSA Control Room Management (CRM) Rule Update

All U.S.-regulated pipelines are working toward an accelerated compliance date to meet the new CRM rule requirements.

PHMSA's revised compliance deadline is now August 1, 2012, (formerly February 1, 2013) with written plans completed and available for regulatory audit.

More information can be found at: primis.phmsa.dot.gov/crm/

# Supporting control room safety, efficiency, and standards compliance

# The demand on controllers

Controllers work in the moment; holistically monitoring their areas of responsibility, managing normal operations, and taking corrective action when abnormal situations arise to prevent or mitigate an operational upset. In addition, controllers are also involved in many other aspects of the operation including:

- Maintaining qualification for the pipelines and tasks for which they are responsible

- Providing dispatching and logistics management for maintenance and third-party pipeline activities, including inspections, testing and calibration

- Managing the business aspects of daily pipeline operation, such as nominations and delivery management, batch scheduling and tracking, measurement validation etc.

- Monitoring leak detection applications with detailed procedures to verify, then initiate an emergency response when a leak or possible leak is detected

- Control room tours where interested parties are invited to see the control room in its function and the technologies used to manage it

- Providing security surveillance of remote assets as well as granting secure system access to SCADA vendors when necessary

- Keeping current on changes to the pipeline and procedures

- Assisting with alarm management programs and safety reviews

# Solutions to support

Companies are busy creating and updating existing procedures to meet PHMSA safety regulations CFR 192.631 and 195.443, which require pipeline operators to create and implement a performance-based CRM written plan addressing all elements of the regulation.

Solutions exist on the market that involve the controller in these new CRM processes and procedures. Using them, controllers can easily capture key CRM information relevant to their CRM program, as well as automate the communication of this information with other controllers and control room supervisors. Such solutions meet many requirements of CRM, such as:

- Shift change relevant events

- Display verification and accuracy

- Alarm management

  - Identifying false or problematic alarms

  - Identifying nuisance alarms

  - Important feedback regarding on-going changes to alarm behavior

- Near miss and abnormal operating conditions (AOCs)

  - Identifying a beginning and an end of an AOC for operational review

- Flagging reportable events as designated by the operator's CRM program

- Any event where controllers can capture cause and effect information and add corrective action or procedural information to be used to enhance operations

- Documenting phone calls and other non-SCADA work events

"Traditionally, controllers have been overwhelmed by so many application screens and tasks, that efficiencies suffer. Now, there are solutions and procedures to reduce documentation demands. These solutions streamline efforts, improve performance, and help meet the new U.S. law around CRM."

Kelly Doran
Liquids Solution Manager
Schneider Electric

# The need to streamline

Traditionally controllers have maintained logs or journals recording key information. Typically these are paper based or in e-log formats such as Microsoft® Excel®. The main challenge is the actual recording of this critical information as it relies on the discipline of the controller. Even the most conscientious controller can be interrupted by the event-driven nature of his or her job.

In order to streamline the capture of the essential CRM information, solutions are available to quickly and easily attach information deemed relevant by controllers. This can be done with a simple click of the mouse and selecting the headline that describes the information to be shared. No need to look for a pen, or have to open another application. Every alarm and action performed on the SCADA system can be captured in a historical event log.

By selecting an event, it is presented with the time stamp and message logged. The operator can simply select a pre-configured instance and save. Pre-configured categories can include:

- Shift change relevant

- Maintenance

- Emergency

Additional CRM activities, such as phone calls not associated with a SCADA event, can also be captured using the same tool.
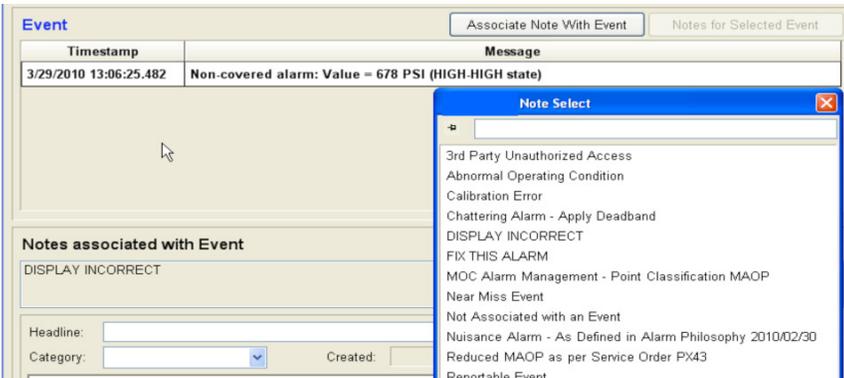


Figure 1
CRM Notes Select
(User Defined)

# Support for continuous improvement

At this point, the most important step is complete—the information has been captured, freeing the controller to continue his or her tasks. If he or she does not have to immediately focus on other duties, additional information can be added to further describe the issue. This provides a richer source of information, facilitating continual improvement of your CRM program and overall operations.

For example, a shift change report could be automated and scheduled just prior to shift change, extracting all documentation flagged as "shift change relevant" to print for the controllers as part of the formal shift hand-over.

Control room supervisors can use the summary display to identify and monitor areas requiring additional training, lesson-learned experiences, and maintenance activities.

For information about Schneider Electric solutions designed to help pipeline operators meet the new PHMSA CRM requirements, please call +1 866 338 7586.



**Figure 2**
**CRM Notes Summary**

# Conclusion

## Schneider Electric supports control room management because:

- The functions associated with pipeline control room responsibilities seldom let up once the controller starts his or her shift.

- The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) CRM regulations address the impact these demands can have on controllers' performance reliability, by requiring CRM practices that prevent controller fatigue and the performance errors they cause.

- Information management solutions designed specifically to support controller tasks and CRM information reliability help the pipeline operator meet these new requirements and identify CRM improvements for more efficient and safer operation.

## Supporting standards compliance, efficiency and safety

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