Pipeline and Hazardous Materials Safety Administration (PHMSA)

Control Room Management (CRM)
Citizens Advisory Committee on Pipeline Safety

November 19, 2012
Presentation Objectives

> Overview of Northwest Pipeline System

> Elements of “new” control room management rule

> Overview of Northwest’s Pipeline Control Room Plan
Northwest Pipeline System Overview

- 55 years of continuous, reliable service
  - Bi-directional Pipeline
  - 3,900-miles of pipeline
  - 3.7 Bcf/d peak design capacity
  - 13.0 Bcf storage capacity (NWP)
  - 2.4 – 3.2 Bcf Line pack
  - 41 Compressor Stations / 464,668 Horsepower
    - 385 active receipt/delivery meter stations
  - 112 Compressors (61 Turbines & 51 Recips)

- Prolific supply sources
  - Northwest bi-directional system allows access to British Columbia, Alberta, Rocky Mountain, San Juan

- Storage Facilities
  - Jackson Prairie (Total - 25 Bcf Capacity)
  - Plymouth LNG (Total - 2.4 Bcf Capacity)
  - Clay Basin (Total – 51.25 Bcf Capacity)
> Important elements for determining if rule applies:
  • Alarm
  • Controller
  • Control Room
  • Supervisory Control and Data Acquisition System

> Summary of the final rule:
  • Roles and Responsibilities
  • Provide adequate Information
  • Fatigue Mitigation
  • Alarm Management
  • Change Management
  • Operating Experience
  • Training
  • Compliance Validation
  • Compliance and Deviations
Define Controllers Roles & Responsibilities
- Normal, abnormal, and emergencies operations
- Authority to make decisions and take actions
- Method of recording shift-changes and hand over of responsibilities

Provide adequate Information
- Conduct Point to Point verification
- Test and verify internal communication plan for manual operation of pipeline
- Test backup SCADA system

Fatigue Mitigation
- Establish shift lengths & schedule rotations that provide controller to achieve 8 hours of continuous sleep
- Establish a maximum limit on controller hours of service
- Educate Controllers in fatigue mitigating strategies & how off-duty activities contribute to fatigue
NWP CRM Plan - continued

> “Change Management”
  – Establish communications between control room representatives, management, and field personnel when planning and implementing changes.
    • Document your plans and practices
  – Require field personnel to contact control room during emergency conditions or when making field changes.

> “Operating Experience”
  – Incorporate lessons learned from operating experience into procedures and training
  – Review incidents that meet reporting requirements for contributions/deficiencies:
    • Controller fatigue
    • Field equipment
    • Operation of any safety device
    • Procedures
    • SCADA system configuration and performance
  – Test backup SCADA system
NWP CRM Plan - continued

Training
– Establish and review annually
– Use of simulator or tabletop method for training controllers

“NWP Alarm Management Plan”
– Review SCADA safety-related alarms to ensure accuracy
– Monthly identification
  • Alarms taken off-scan, inhibited, false
– Review alarm management plan annually
Control Room Management Program

> NWP Gas Control Room Operations

- 25,114 - Total number SCADA Points
- 8,034 – Total number of SCADA Washington Points
  - Total number of Washington remote devices = 216
  - System total safety related = 2,517
  - Washington safety related = 765

- Remote Control Operations in Washington State
  - 13 Compressor Stations, 39 compressor units, 70 Meter Stations, 16 Gas Quality
    - Compressor Stations - Start & Stop capabilities
      - Adjust compressor speeds and/or flow control
    - Valve Operations - Open & Close capabilities
      - Monitor and Flow control
    - Gas Quality
      - Monitor
NWP Gas Control Operations continued

Examples of Safety-related Points

- High & Low Pressures
- High & Low Temperatures
- Hazard
  - Gas LEL, Smoke, Fire, H2S
- Intrusion
- Rate of Change
- Emergency
  - ESD, SSD
- Gas Quality
  - H2O, H2S, Sulfur
- Level
  - High-High tank levels, Separator High-High
First time Audit for NWP

> **Audit Scope**
  - PHMSA Control Room Management inspection Form (55 pages)

> **Participants**
  - Gas Control
  - Operations support
  - Pipeline Safety
  - SCADA

> **Audit Preparation**
  - Compiled records and supporting documents for PHMSA Auditors

> **Auditors**
  - Kuang Chu (WUTC) and Brent Brown (PHMSA – Western Region)

> **Auditor Feedback**
  - Kuang and Brent were very complimentary of our efforts
  - Continue with improvements
  - Continue with our record keeping to demonstrate compliance
  - Very positive audit - extremely well prepared for the audit and led the inspectors through each section of the CRM Inspection Form very precisely and accurately

> **Results**
  - No Unsatisfactory items noted
Questions?