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Protecting People and the Environment

Region III Fire Protection Utilities Group Meeting

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Overview

- Inspection Findings
- Monticello Sprinkler Piping Blockage
- Flammable Gas Bottles
- Upcoming Inspections

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2011 Inspection Findings

- Monticello IR 2011008 & 2011408
  - Hydrogen Bottles
  - Maintenance of Air Intake Smoke Detector
  - B.5.b Finding
- Kewaunee IR 2011008
  - Hydrogen Bottles
- LaSalle IR 2011009
  - No Findings

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2011 Inspection Findings

- Dresden 2011008
  - Transient Combustibles
  - Inoperable Suppression System
  - Battery Corrosion
  - Operators and Safe Shutdown Procedures
  - Safe Shutdown Procedure Implementation (URI)

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2012 Inspection Findings

- Duane Arnold IR 2012007
  - Hydrogen Bottles
- Perry IR 2012008
  - Transient Combustibles
  - Spray Nozzle Design Density
  - Sprinkler Piping Slope
  - Sequential Timing on Fire Pumps
  - Inadequate Detection
- Prairie Island

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Monticello Sprinkler Piping Blockage

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System Description

- Intake Structure Dry-Pipe Pre-Action Sprinkler System
- Pressurized with Air
- Piping is Carbon Steel
- Installed per NFPA 13 - 1983 ed.

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Sprinkler Piping Blockage

- Blocked Inspector Test Valve
- Blockage Discovered Upstream of Valve
- Reported to NRC Under 10 CFR 50.72 – System Declared Non-Functional

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Monticello – Corrective Actions

- Flushed all sprinkler piping in the intake structure
- Replaced segments of pipe
- Replaced sprinklers
- Verification via video boroscope and radiography
- Extent of condition – EDG rooms

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Licensee's Root Cause

- Root Cause
  - Improper slope
- Contributing Causes
  - Less than adequate risk recongnition
  - Inadequate operating experience evaluation
  - Prioritization of fire protection system

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What Happened?

- Blockage
  - Pipe corrosion byproducts
- Causes
  - Inadequate draining
  - Periodic wetting and drying

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Prior Identification Opportunities

- 2007 – Sprinkler Blockage in EDG Room
  - Extent of condition for Intake Structure
- 2009 – Work on RHRSW System
  - Blockage in piping
- 2009 – Failed PMT Documented as Passed

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Testing Requirements

- NFPA 13 – 1983 ed.
  - Required hydrostatic test on new system
- NFPA 25 – 2011 ed.
  - Table 5.1.1.2 requires internal obstruction inspection every five years
  - Section 14.3.3 requires flushing if obstructions are found
  - Most licensees not committed to NFPA 25

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License Renewal Requirements

- Aging Management Program
  - OPEX reviews for fire water
  - Seven instances of OPEX
- Aging not Identified as Contributing Cause in Root Cause Evaluation
- Requirement to flow water out of inspector test valve added in 2010

Monticello SIT (IR 2011010) Findings

- NRC-Identified
  - Aging Management Program
- Licensee Identified
  - Inadequate slope
  - Failure to take corrective actions (flush)
  - Failure to follow procedure
  - Failure to document and evaluate PMT results

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Perry Sprinkler Pipe Corrosion

- Pipe could not be drained
- Piping was galvanized

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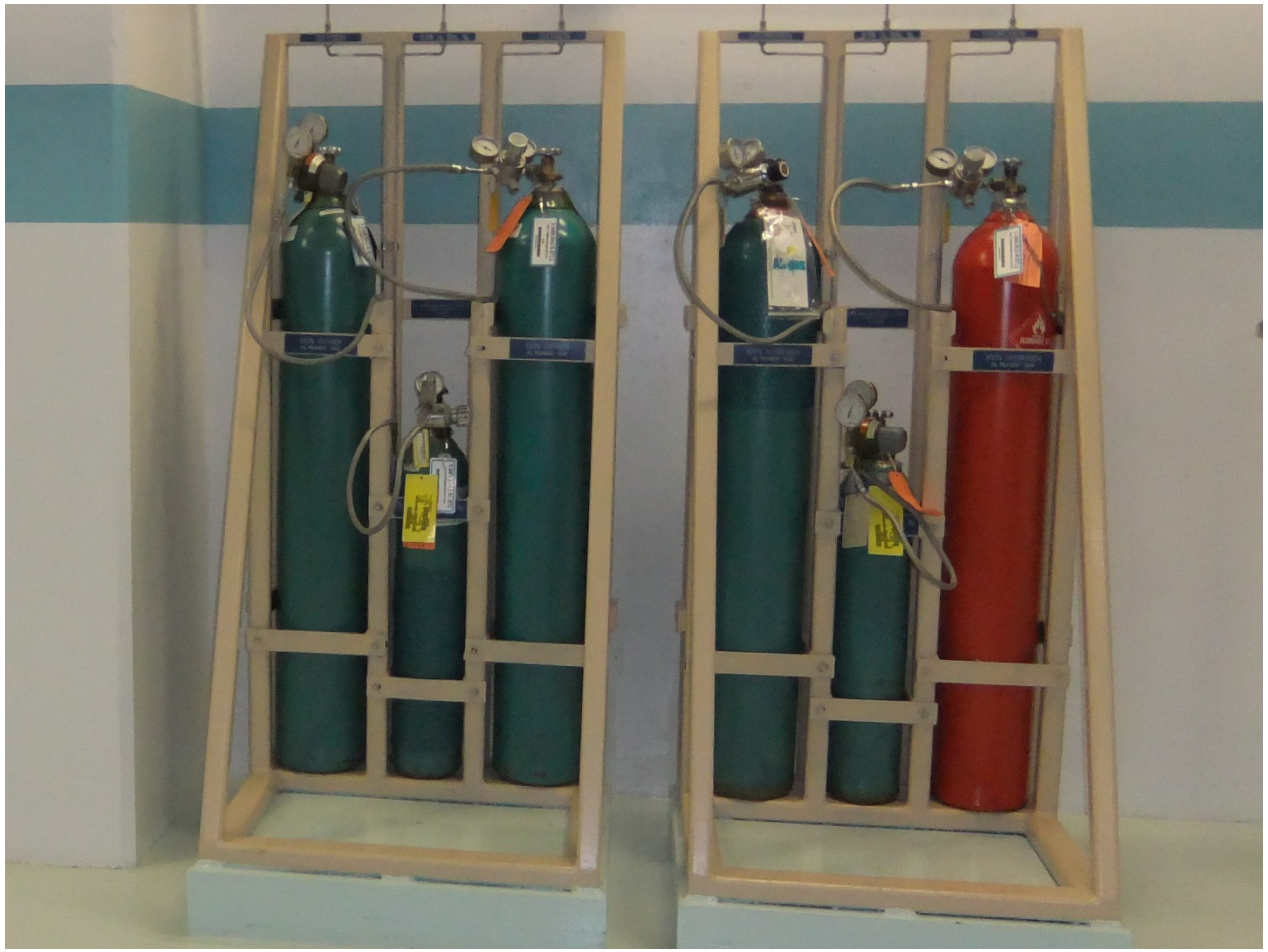
Flammable Gas Bottles



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Hydrogen Bottles – Safety Info

- **Material Safety Data Sheet (MSDS)**
  - Poses immediate fire and explosive hazard when concentration exceed 4%
  - Burns with invisible flame
  - Separate from oxygen cylinders by a minimum of 20 feet
  - Never insert an object (wrench) into valve cap openings
- **Plant Safety Handbooks**
  - Separate from oxygen cylinders by a minimum of 20 feet
  - Cylinder valves shall be closed when work is finished
  - A wrench shall not be used to open cylinder valves
- **NFPA 50A (Standard for Gaseous Hydrogen Systems at Consumer Sites)**
- **Cylinder Tags**

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Closure of Unresolved Items

- Dresden, LaSalle, Quad Cities
- Clinton
- Palisades

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Upcoming Inspections

- 2012
  - Braidwood
  - Quad Cities
  - Palisades
- 2013
  - Byron
  - Davis-Besse
  - DC Cook
  - Point Beach

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THANK YOU