Department of Energy
Waste Isolation Pilot Plant
Nuclear Waste Partnership, LLC

How VPP is Helping to Sustain Process Improvements Resulting from the Recovery of WIPP from Fire and Radiation Release Events
This workshop tells the story of the remarkable recovery of WIPP from their significant 2014 events from the perspectives of management, the bargaining unit, safety staff and long time workers. VPP pride helped motivate workers during the overwhelming task of wave after wave of corrective actions. In addition, as an outgrowth of a corrective action to develop a unique Leadership Academy, a transformed VPP committee emerged that is helping to sustain innovative ideas and continuous improvements in safety. Attendees will find useful tools to use from the Recovery Lessons Learned and the VPP committee revitalization actions.

Speakers are all Waste Isolation Pilot Plant (WIPP) Nuclear Waste Partnership (NWP) employees: BP Shagula, ES&H Manager; Kevin Miller, Radiological Control Technician and Union Steward; Barbara Hill Deputy ES&H; Javier Leyva, Union Safety Representative & VPP Committee Union Co-Chair; Valerie Dorr, Management Coordinator/ Contractor Assurance & Vice-Co-Chair VPP Committee; Brenda Kirkes, Quality Analyst & VPP Committee Co-Chair
Overview

• WIPP Facility Background
• Underground Salt Haul Truck Fire 02/05/2014
• Lessons Learned Enhancements
• Radiological Release 02/14/2014
• How did WIPP get Past this Point?
• Core Values & Expectations
• Leadership and Change
• Road to Recovery
• Restart
• Moving Forward
• VPP Champions Committee Mission & Activities
• Questions?
WIPP Facility Background

• The WIPP facility mission is to provide a safe and permanent disposal location for the government-owned TRU and TRU mixed wastes. Disposal operations began in 1999.

• WIPP is categorized as a Hazard Category 2 Nonreactor Nuclear Facility for surface and underground operations.

• WIPP is the only permanent disposal location for the nation’s nuclear waste.
Underground Salt Haul Truck Fire

- February 5, 2014, an underground mine fire involving a salt haul truck occurred.
- There were 86 workers in the mine when the fire began.
- All workers were safely evacuated from the mine; however, six workers were transported to the Carlsbad Medical Center for treatment for smoke inhalation and an additional seven workers were treated on-site.
Underground Salt Haul Truck Fire

• What this meant to WIPP employees.
  – U/G – WIPP became the first DOE site to achieve VPP Star Status in 1994.
    • Leadership
    • Worksite Analysis
    • MSHA assessment of situation predicted expectation of multiple fatalities
  – Surface
    • Emergency Response Team/Mine Rescue Team Activation
    • Staged at the Waste Hoist for Triage
• The Bargaining Unit alongside with Management in VPP Commitment was instrumental to successful evacuation.
U/G Salt Haul Truck Fire

Event locations more than 2,300 feet apart

Salt Haul Truck Fire Location (North part of mine)

Continuous Air Monitor Alarm Location (Panel 7 Exhaust Drift)

Location operator saw orange glow.

SAFELY DISPOSING OF THE NATION’S TRANSURANIC WASTE
## Lessons Learned Enhancements

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<th>2014</th>
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<th>2017</th>
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<td>2 Firefighters on Duty</td>
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<td>5 Firefighters on Duty</td>
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<td>Brass Only</td>
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<td>Sentinel U/G Communication System Locator</td>
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<td>SCBA Caches</td>
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<td>Site EOC</td>
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<td>State-of-the-Art EOC &amp; Alternate EOC</td>
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<td>Disabled Equipment Auto Fire Suppression</td>
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<td>Auto Fire Suppression Systems on Equipment</td>
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<td>Differentiate Maintenance on WH and non-WH equipment</td>
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<td>All equipment maintained equally</td>
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Lessons Learned Enhancements
Radiological Release

- February 14, 2014, an exothermic reaction involving the mixture of organic materials and nitrate salts occurred inside drum 68660.
- Exothermic reaction resulted in pressurization of the drum, failure of the drum locking ring, and displacement of the drum lid. The energetic release propelled TRU waste from the drum up into polypropylene magnesium oxide (MgO) super sacks on top of the containers and onto adjacent waste containers.
- A CAM monitoring airflow in Panel 7 exhaust drift detected this TRU waste release and generated an alarm that was received in the CMR on the WIPP surface. The alarm automatically initiated a shift to filtration of the underground ventilation system.
- While the majority of the release was directed through high efficiency particulate air filters, a small portion bypassed the HEPAs via leakage around the ventilation system dampers and exhausted directly to the atmosphere.
Radiological Release

• No personnel in the underground since the salt haul truck fire / limited personnel on-site at the time of occurrence
• Plant Access Limited to Essential Personnel
• Dosimetry – 13 non-reportable intakes.
  – On-shift personnel
  – Responding Radiological Control personnel
• Health Care Advocates – VPP Representatives
Radiological Release

- Miner Mentality vs. Nuclear Mentality
- We are WIPP – *Start Clean Stay Clean!*
  - Unique Facility
    - Only nuclear waste disposal site
    - Only nuclear facility operating in a mine
  - Outside Experts
    - Ways of conducting operations – Nuclear Safety Culture
    - Lack of mining experience
Radiological Release

• Worker Protection a Priority
  – Radiological Monitoring Equipment First to enter the mine.
  – Radiological Team explored once conditions were deemed safe with PPE.
  – REACH Project developed with management, union, experts and workforce input.
Radiological Release
How did WIPP get Past this Point?

- Worksite Analysis – Conservative approach to protect employees by developing and implementing the REACH Project.
  - Built robotic arm to investigate waste drum problem
  - Brought in expertise from across the country
- HPI
  - Mindset-People focused more on goals to accomplish rather than problems to be avoided.
    - Pollyanna mindset – all is well and normal
    - Bald Tire mindset – “I’ve made it 60,000 miles on these tires and haven’t had a flat yet” History of success -> complacency and overconfidence.
  - Groupthink Consensus, commitment, reluctance to disturb harmony with problems
    - Illusion of invulnerability – can result in risk taking
    - Collective rationalization – discount warnings that affect assumptions
Core Values and Expectations

- Developed in joint effort by management, union, workforce, and contractors.
- Used to make decisions, set goals, communicate and to hold each other accountable.
Road to Recovery

• In response to the February 2014 fire and radiological events, NWP developed a WIPP Recovery Plan in conjunction with DOE.

• The plan included strengthening safety management programs, regulatory compliance, decontamination of the underground, increasing ventilation, addressing mine stability and underground habitability, development of safety metrics and additional workforce retraining.

• Lessons Learned
  – Enhancement and implementation of WIPP’s Safety Management Programs as a result of independent assessments and AIB corrective actions. Emphasis placed on Conduct of Operations, Emergency Preparedness/Management, Radiological Controls, Training, Maintenance/Work Planning and Control and Fire Protection
  – Numerous facility and equipment modifications and upgrades and the interim closure of Panel 6 and Panel 7, Room 7, and enhanced mine habitability with emphasis on combustible loading and control
Leadership and Change

VPP pride helped motivate workers during the overwhelming task of wave after wave of corrective actions. In addition, NWP independently recognized the need to implement a safety culture at WIPP. In support of that, NWP developed a Leadership Academy that cultivated a stronger safety culture, particularly in the nuclear safety area.

• Events led to training workforce during shutdown of waste handling operations

• Recognizing the need for stronger leadership among:
  – Managers, Unions, Workforce and the Community
  – Partnership with NMSU-C in community outreach
Leadership and Change

Cultural Change, Strengthening Safety Culture Leadership

• Academy graduates:
  – outpace the employee population in improvement of their personal employee ratings
  – outpace employee population in percentage of promotions
  – routinely display higher levels of accountability and responsibility

• Academy cadres identify and implement continuous change projects
  – Displays Grass roots approach to continuous improvements
Leadership and Change
Cadre 10 - TRUStars

New Mexico State University Carlsbad
Continuous Improvement

• NWP implemented and conducts regular Leaders Forums to maintain and enhance change initiated through core values and expectations

• Leadership Academy and Leaders Forums are tightly integrated features of a larger overall cultural change strategy
Restart

• Following an in-depth DOE operational readiness review that included all 17 Core Requirements as defined in DOE O 425.1D, the WIPP was deemed ready to resume waste operations.

• January 4, 2017, WIPP downloaded waste for the first time in almost three years.

• April 8, 2017, a WIPP truck carrying two loaded TRUPACT-IIIs from Idaho National Laboratory arrived at WIPP. More than three years since a truck carrying nuclear waste had entered the gates.
Moving Forward

“The WIPP that emerged from the recovery period is stronger and safer than it ever was.” ~ Carlsbad, NM Mayor Dale Janway

“The job that you all are involved with may be one of the most important in the country.” ~ Energy Secretary Rick Perry
VPP Champions Committee Mission

• To be the premier worker-driven voluntary program designed to provide a comprehensive safety and health system that integrates strong worker and management involvement, committed to ensuring a robust safety culture demonstrated by the continuous application of NWP’s Core Values and Expectations.

• The primary value of the WIPP VPP Champions Committee is the ongoing partnership between workers and management committed to enhance WIPP safety culture one step at a time.
VPP Champions Committee Mission

• Most VPP initiatives center on greater worker involvement in safety and health issues as well as the utilization of worker knowledge and expertise.

• Three Co-Chairperson positions representing the exempt workforce and both unions present at WIPP.

• Executive Sponsor is the NWP President

• Sponsor – ES&H Manager
VPP Champions Committee Activities

Safety Slogan Handout
VPP Champions Committee Activities

I ❤️ Safety Pancake Breakfast
VPP Champions Committee Activities

Community Outreach – Relay for Life
VPP Champions Committee Activities
Community Outreach - Farmer’s Market
Heat Stress Awareness
VPP Champions Committee Activities

Community Outreach – Company Spring Fling
Family Photos “Why I Work Safely”
Questions?
Thank you for attending!

Please remember to submit an evaluation on the mobile app.