

# **Review of Infrequently Performed High-Hazard Operations**

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# April 2004 Initiative

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- Realization by Y-12/Y-12 Site Office/Defense Nuclear Facilities Safety Board staff determined the risk level associated with infrequently performed potentially high-hazard activities was not clearly understood
- Needed a process that provided a critical review by senior management of these activities to ensure the level of risk is understood, mitigated, and controlled
- Established a joint task team to develop a process outside of the existing hazard analysis process

# Pilot Effort Initiated

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- Developed two-stage approach to ensure these activities received the proper level of work-start approval and notification
- Used existing Operational Safety Boards (OSBs) to review activities with a pre-determined set of potential hazards or activities
- Established a new Management Review Board (MRB) with a similar set of “triggers” that required senior management review and approval

# Sample OSB Triggers

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- Critical lifts requiring development of a lift plan
- Potential for exposure to short-term exposure limit (STEL) concentrations
- Potential for an immediately dangerous to life or health (IDLH) atmosphere
- Uncertainty with contents, materials, or hazards
- Field radiography
- Activities with the potential to create airborne beryllium
- Electrical “on or near” work at 600V or higher

# Sample MRB Triggers

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- Credible failure of a control that could result in an explosion or a fire
- Activities involving shock sensitive chemicals or materials
- Critical lift involving lifting of personnel
- Any bypass of a pollution control device or deviation from typical waste treatment

# MRB Membership

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- Vice President, Environment, Safety and Health (chairperson)
- Vice President, Production (co-chairperson)
- Vice President, Facilities, Infrastructure and Services
- Vice President, Safeguards, Security, and Emergency Services
- Division Manager, Applied Technologies
- Division Manager, Quality Assurance
- Vice President, Engineering
- Chief, Nuclear Safety Operations
- Program Manager, Integrated Safety Management

# Process Enhancements

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- Update triggers based on experience and effort to optimize the frequency of OSB meetings
- Place more importance on the hazard element and less on the frequency
- Removed 18-month maintenance frequency item from OSB criteria and added to job hazard analysis program that requires a systematic examination by a multidisciplinary team

# TSF-SNAP Reactor Disposition Project

Y-12 MRB Meeting

June 7, 2006

Steve Inman

National Security Programs  
HEU Disposition Program Office



# Tower Shielding Facility (TSF) Systems for Nuclear Auxiliary Power (SNAP) Reactor Disposition Project

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- Objective
  - Recover the highly enriched uranium (HEU) in the reactor and process it for use in commercial nuclear fuel
- Approach
  - Stage reactor onto loading dock
  - Load reactor onto trailer
  - Transfer to Oak Ridge National Laboratory (ORNL)
  - Drain and process NaK
  - Recover and package fuel elements
  - Dispose reactor components
  - Return fuel elements to Y-12

# Y-12 Scope of Work

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- Stage the reactor onto the loading dock
  - Y-12 Site Office approved: safety analysis report, safety evaluation report, and authorization agreement
  - Change request: approved by OSB
    - Unreviewed Safety Question Determination – negative
  - NaK hazards addressed, controls in place

# Additional Work at Y-12

- Hoist reactor onto trailer, tie down, and transport
- Under memorandum of agreement between Y-12 and ORNL
- Treatment/storage/removal approved by ORNL
- Safety evaluation report issued by Oak Ridge Operations
- Work package/job hazard analysis: approved
- Critical lift plan: approved by Y-12 hoisting and rigging committee



# MRB Trigger

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- OSB members deemed these hazards exist
  - A credible failure of a control that could result in an explosion/fire regardless of the initiating event
  - Activities involving peroxide-formed shock sensitive chemicals or materials
- Safety analysis report concluded an event that would create these hazards is of low consequence and extremely unlikely

# Hazard Controls

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- Storage and movement have been evaluated
- Mitigating controls
  - Limited quantity present (7.7 kg)
  - Double confinement (design feature)
  - Spotter used while handling
  - Dead man switch on handling equipment
  - Inspect handling equipment
  - Trained, qualified operators
  - Operations manager approval required for movement

# Summary

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- A review and approval process is now in place for infrequent activities with unique or high hazards
- Specific details are captured in Y-12 procedure Y15-636, *Integrated Safety Management Program*, and in the *Y-12 Management Review Board Charter*
- Level of MRB activities
  - 2007: 9 reviews
  - 2008: 4 reviews