The Defense Nuclear Facilities Safety Board role in oversight of Department of Energy Defense Nuclear Facilities and actions related to confinement ventilation systems.

David Grover, Andrew Martin, and Alex Velazquez-Lozada
Defense Nuclear Facilities Safety Board
Washington, DC USA

"***The views expressed herein are solely those of the author (speaker), and no official support or endorsement by the Defense Nuclear Facilities Safety Board or the U.S. Government is intended or should be inferred***"

Board Overview

- **The DNFSB, an independent executive-branch agency, was established by Act of Congress in 1988.**
- **Composed of five Presidentially-appointed and Senate-confirmed members (including a Chairman & Vice-Chairman).**

•Current Board Members

Bruce Hamilton
Vice Chairman

Jessie Roberson

Joyce Connery

Daniel Santos

Board's Enabling Statute

- Oversight framework that addresses several competing Congressional concerns:
  - Preserve the Secretary's power and authority to meet the annual **nuclear weapons stockpile requirements**
  - DOE's **status** as a **self-regulating** agency
  - DOE's need to account for **budgetary constraints**
  - Enhancement in operational safety of DOE's defense nuclear facilities
  - Assurance of public confidence that DOE nuclear facilities are operated without undue risk to the public health and safety

Board's Enabling Statute

- Enabling Legislation
- Mission
  - Provide independent analysis, advise, and recommendations to the Secretary of Energy to inform the Secretary, in the role of the operator and regulator, in providing adequate of public health and safety at defense nuclear facilities.

Enabling Statute Functions

- Review and Evaluation of Standards related to Design, Construction, Operation, and Decommissioning of Defense Nuclear Facilities
  - Content
  - Implementation
- Recommend specific measures to ensure adequate protection.
  - Content
  - Implementation
  - Additional Data or Research is needed

Enabling Statute Functions

- Investigate any event of practice at DNFs which the Board determines has or may adversely affect public health and safety.
  - Determine if standards are adequately implemented
  - Ascertain if circumstances of event or practice has implications for standards
  - Determine if event is related to other event or practices at other DNFs
  - Provide Secretary with Recommendations

Enabling Statute Functions

- Analyze design and operational data, including safety analysis reports
- Review Facility Design and Construction
  - Recommend design modifications Board considers necessary to ensure adequate protection
  - Recommendations related to construction within a reasonable time to ensure adequate protection
  - An action, or failure to Act by the Board may not delay or prevent the Secretary of Energy from carrying out construction

Enabling Statute Functions

- Recommendations
  - Consider and specifically access risk (when sufficient data exists)
  - Consider technical and economic feasibility
  - Process
    - Transmit Draft to Secretary of Energy
    - Receive Comments
    - Transmit Final (notification in Federal Register)
    - Secretary of Energy Response (accept or reject)
    - Secretary of Energy Implementation Plan

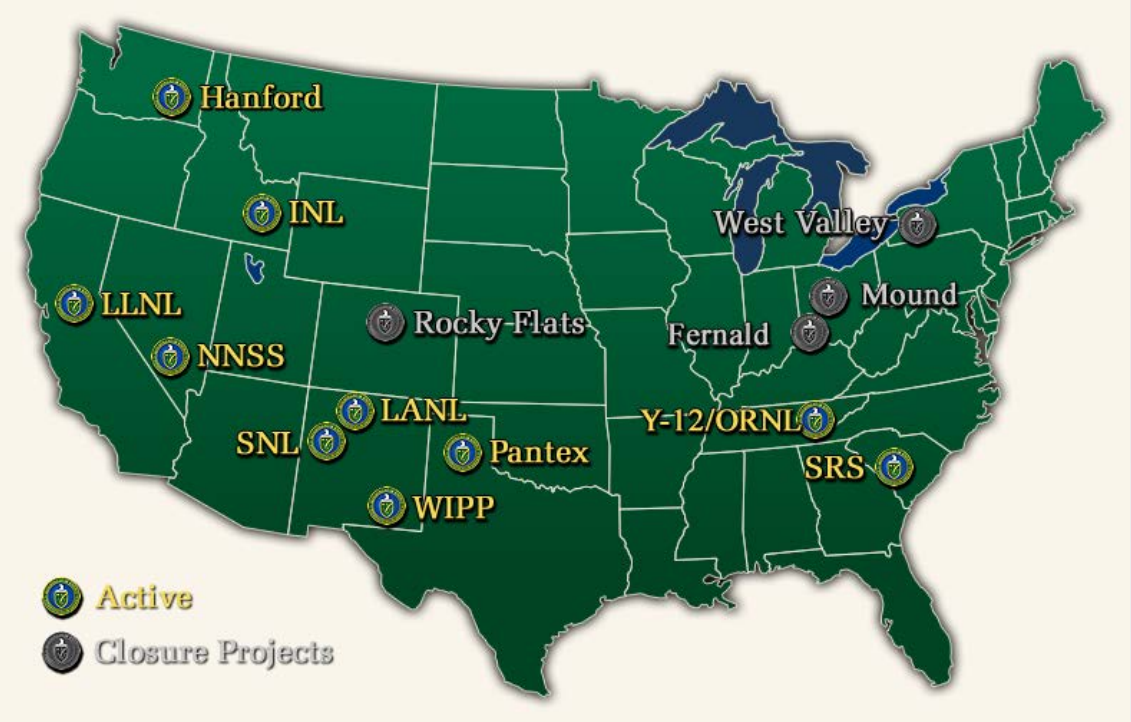
Board's Powers

•To accomplish functions, the Board is authorized to:

- Conduct public or closed hearings and subpoena witnesses
- Establish reporting requirements for the Secretary of Energy
- Send letters to DOE on issues from ongoing reviews
- Conduct special studies
- Station Resident Inspectors at DOE DNFs
- Ready Access to facilities, personnel and information the Board considers necessary to carry out responsibilities

Department of Energy Sites

- **10 Active Sites**
- Hanford Site
- Savannah River Site
- Idaho National Laboratory
- Sandia National Laboratory
- Lawrence Livermore National Laboratory
- Los Alamos National Laboratory
- Y-12 National Security Complex
- Pantex Nuclear Plant
- Waste Isolation Pilot Plant
- Nevada National Security Site



Recommendations

- 59 Recommendations
- Facility Specific Recommendations
  - 1994-3 Rocky Flats Seismic and Systems Safety
  - 2009-2 Los Alamos National Laboratory Plutonium Facility Seismic Safety
  - 2012-1 Savannah River Site Building 235-F Safety
  - 2012-2 Hanford Tank Farms Flammable Gas Safety Strategy

Programmatic Recommendations

- 2000-2 Configuration Management, Vital Safety Systems
  - Concern with Aging Infrastructure
  - Review of operational data on ventilation systems revealed deficiencies
    - Test and surveillance
    - Quality Assurance
    - Maintenance
    - Configuration Management
    - Training Qualification
    - Conduct of Operations

    (DNFSB Tech 26 - Improving Operation and Performance of Confinement Ventilation Systems at Hazardous Facilities of the DOE)

Programmatic Recommendations

- 2000-2 Recommendations
  - Establish a team of experts to survey status and reliability of confinement ventilation systems
  - Amend directives to require for confinement and other major safety systems
    - Development and maintenance of key system documentation
    - Designation of system engineer with knowledge of safety design basis and operating limits to have lead responsibility for configuration management of the system
  - DOE identify and establish qualified subject matter experts for safety systems to oversee the system health

Programmatic Recommendations

- 2004-2 Active Confinement Systems
  - Concern with less prescriptive confinement requirements in revisions for DOE Facility Safety Orders
  - Concern with increasing reliance on passive confinement for facilities
    - Reliance on calculations that do not account for large uncertainties
    - Potential for workers and emergency responders to affect the passive boundary
    - (DNFSB Tech 34 – Confinement of Radioactive Materials at Defense Nuclear Facilities)

Programmatic Recommendations

- 2004-2 Recommendations
  - Require active confinement ventilation system for all new and existing Hazard Category 2 and 3 DNFs with the potential for radiological release
  - Revise applicable DOE directives in accordance with the above. Include guidance for determining when a facility would not benefit from an active confinement ventilation system
  - Assess existing facilities and new design and construction projects to ensure this strategy is implemented

Current Activities

- Evaluating the continuing implementation of the standards addressing these Recommendations
- Review the design and construction of confinement ventilation systems at DOE projects
- Evaluate HEPA filter testing and management across DOE complex
- Follow continuing efforts by DOE on Filter testing and quality assurance.

Questions?

“*The views expressed are solely those of the author (speaker), and no official support or endorsement by the Defense Nuclear Facilities Safety Board or the U.S. Government is intended or should be inferred*”