



# Defense Nuclear Facilities Safety Board Mission & Operations

Charles J. March

Department of Energy Fire Protection Workshop

Oak Ridge, Tennessee

April 2010

# Background

- Timeframe: late 1980's
- Erosion of Congressional confidence in DOE's ability to ensure the safety of operations in the nuclear weapons complex through self-regulation alone
- Congressional reluctance to subject national security interests to external regulation
- Balance was found in independent oversight

# Overview

- Independent federal agency established by Congress in 1989
- Enabling Statute - 42 U.S.C. § 2286
- Executive Branch agency dedicated to providing independent nuclear safety oversight of DOE Defense Nuclear Facilities

## Overview (con't)

- “DOE Defense Nuclear Facility” means:
  - A production facility or utilization facility under the control or jurisdiction of the Secretary of Energy and operated for national security purposes
  - A nuclear waste storage facility under the control or jurisdiction of the Secretary of Energy

## Overview (con't)

- Exclusions:
  - Naval Nuclear Propulsion Program.
  - Transportation of nuclear explosives or material (Dept. of Transportation)
  - Any facility owned by the United States Enrichment Corporation
  - Any facility developed pursuant to the Nuclear Waste Policy Act of 1982 and licensed by the Nuclear Regulatory Commission

# Overview (con't)

- Composed of five Presidentially-appointed members (including a Chairman & Vice-Chairman)
  - Required by law to be respected experts in the field of nuclear safety with a demonstrated competence and knowledge relevant to the independent investigative and oversight functions of the Board
- Five Current Board Members



**Peter Winokur**  
**Chairman**



**John Mansfield**  
**Vice Chairman**



**Joseph Bader**



**Larry Brown**



**Jessie Roberson**

## Overview (con't)

- The Board is supported by a technical staff of 71 full-time engineers and scientists with assistance from outside experts
- Staff members' expertise covers all major aspects of nuclear safety: nuclear, mechanical, electrical, chemical, fire protection and structural engineering, physics, and metallurgy
- Currently, 88 percent of the staff hold advanced degrees, of which 22 percent are at the Ph.D. level

# Functions

- Review and evaluate standards
  - Content and implementation
  - Areas requiring additional data or research
- Investigate any event or practice that adversely affects public health & safety
- Analyze design and operational data
- Review facility design and construction
- Make recommendations to the Secretary of Energy that the Board determines are necessary to ensure adequate protection of public health and safety
- Address imminent or severe threats to public health and safety

# Powers

The Board can (partial listing):

- Hold public meetings and public hearings
- Conduct investigations
- Issue subpoenas
- Make recommendations
- Establish binding reporting requirements
- Station staff (site representatives) at DOE facilities

# How We Work - Interactions

- Staff operational reviews, document reviews, briefings, and discussions with DOE site offices, DOE headquarters, and/or DOE contractors
- Site Representative interactions with DOE site offices and/or DOE contractors
- Site visits by Board members
- Board briefings and discussions with DOE site office, DOE HQ, and/or DOE contractors
- Board and staff presentations at workshops, conferences, technical societies, etc.
- Public hearings

# How We Work - Communications

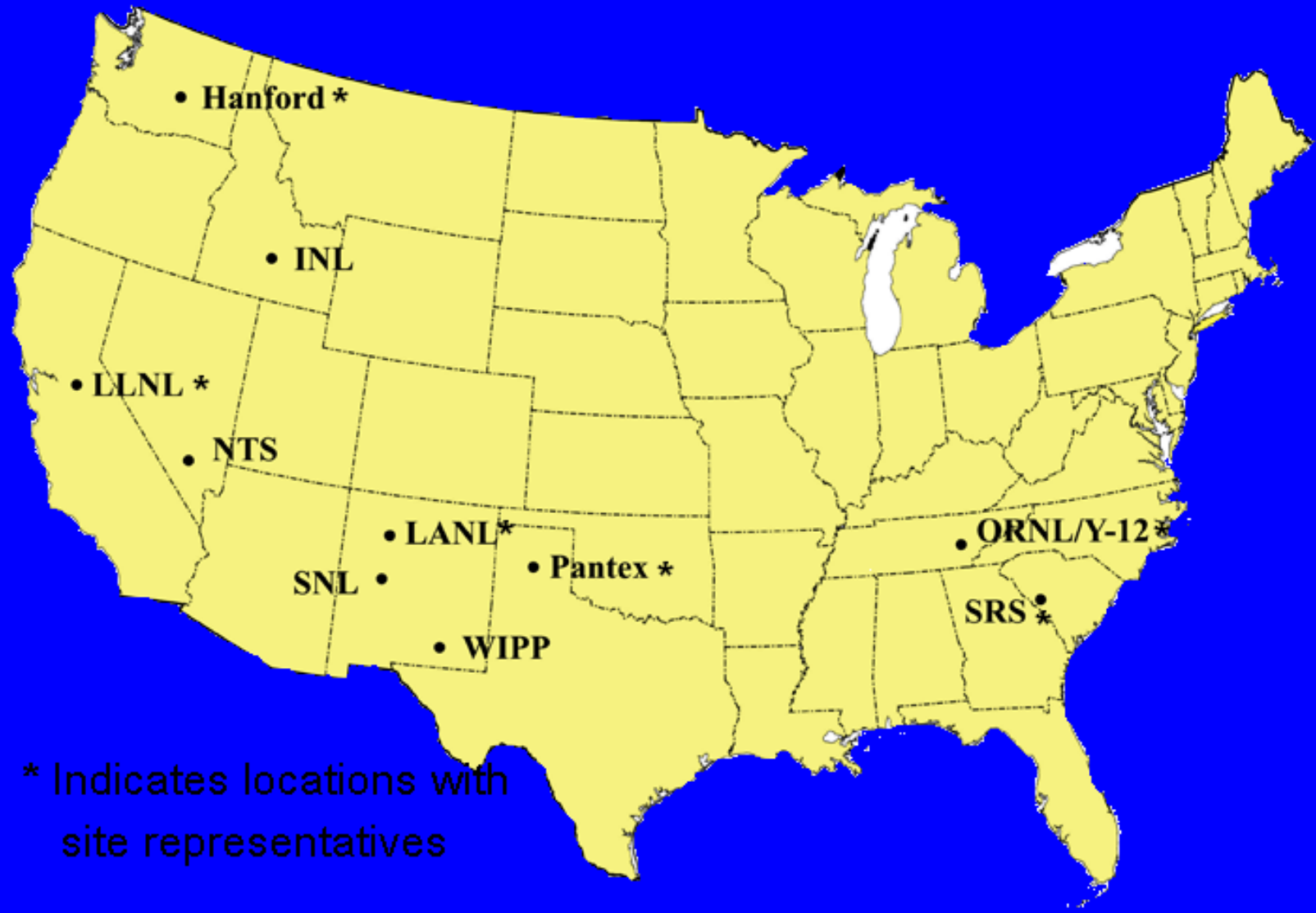
- Site Representative weekly reports
- Letters
- Letters with reporting requirements
- Staff Issue Reports
- Technical Reports
- Board Special Reports
  - Annual Report (required by statute)
  - Periodic Report to Congress (i.e. Quarterly Report)
  - Topical Reports (i.e. CMRR certification, KAMS )
- Board Recommendations

# How We Work - Site Representatives

## Responsibilities

- Observe nuclear operations
- Conduct frequent facility walkthroughs
- Provide first-hand information regarding operations, designs, proposals, etc.
- Onsite coverage during events, emergencies, etc.
- Facilitate communications
- Interact with local public and officials

# Sites



\* Indicates locations with  
site representatives

# Strategic Safety Goals

- Safe Nuclear Weapons Operations
- Effective Nuclear Safety Programs and Analysis
- Safe Processing and Stabilization of Nuclear Material
- Safety in Nuclear Facilities Design and Infrastructure

# Strategic Initiatives

- Safety in Design
- Integrated Safety Management
- Technical Competence
- Nuclear Safety Research and Development
- Standards
- Formality of Operations

Current strategic plan is on the Board's website:  
[www.dnfsb.gov](http://www.dnfsb.gov)

# Fire Protection

DNFSB/Tech-27, *Fire Protection at Defense Nuclear Facilities*, issued June 2000

- From the Board's cover letter to the Secretary:  
“The Defense Nuclear Facilities Safety Board (Board) has closely monitored development and implementation of DOE’s fire protection standards and requirements at new or existing facilities. While DOE has had a good record on fire safety, the Board notes instances during the past several years in which fire protection standards and practices at defense nuclear facilities have fallen below acceptable levels. The enclosed report prepared by the Board’s staff reviews technical concepts and principles important to maintaining the quality of DOE’s fire protection program.”

# Fire Protection (con't)

## Tech-27 Topics:

- Safety Requirements and Standards
- Safety Analysis and Fire Hazards Analysis
- Safety Controls
- Safety System Classification and Defense in Depth
- Fire Protection and Emergency Planning
- Fire Protection and Criticality
- Configuration Management
- Performance Criteria and Reporting
- Resolution of Assessment and Inspection Findings
- Fire Protection Staff
- Support for Fire Departments
- Funding of Research on Fire Phenomena

## Fire Protection (con't)

Recommendation 2000-2, *Vital Safety Systems*,  
issued March 8, 2000:

- “Most of the facilities of interest to the Board were constructed many years ago, and are undergoing the deterioration attached to aging. It is important that their protective features be maintained serviceable and effective. In the following, the Board recommends measures necessary to ensure reliable performance of the safety systems of both the older facilities and the ones that are relatively new, and in particular stresses the actions required to ensure viability of confinement ventilation systems.”
- Implementation plan eventually included fire protection systems.

## Fire Protection (con't)

- Recommendation 2008-1, *Safety Classification of Fire Protection Systems*, issued January 29, 2008.
- This Recommendation identifies the need for standards applicable to the design and operation of fire protection systems being relied upon as a primary means of protecting the public and workers from radiological hazards at the Department of Energy's defense nuclear facilities.
- Multiple projects in the past eight years have used safety related fire suppression systems.

# Fire Protection (con't)

## Four specific items recommended:

- Develop design and operational criteria for safety-class and safety-significant fire protection systems
- Identify design codes and standards for safety related fire protection systems and incorporate them into DOE Guide 420.1-1
- Modify other DOE directives and standards to ensure consistency with the new guidance
- Use the pending revision of DOE-STD-1066-99 to provide suitable guidance for safety related fire protection systems

Questions ?