

The 2002 Davis Besse Event and Safety Culture Policy at the U.S. Nuclear Regulatory Commission

**Brazil – U.S. Workshop on Strengthening the Culture of Nuclear Safety and Security
August 25-27, 2014**

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Outline

- Overview of NRC
- Davis Besse Event and Safety Culture Lessons
- Safety Culture in the Reactor Oversight Process
- Safety Culture Policy Statement
- Summary

Nuclear Regulatory Commission



- Established as independent agency in 1974
- Mission to ensure safe use of radioactive materials for civilian purposes, including nuclear power
 - Protect public health and safety
 - Promote the common defense and security
 - Protect the environment
- Accomplished through licensing, inspection and enforcement



2002 Davis Besse Event



- Davis Besse Nuclear Power Station
- Oak Harbor, Ohio
- Babcock and Wilcox pressurized water reactor
- History of boric acid leakage

Reactor Vessel Head Degradation

- March 6, 2002
- Cavity discovered in the reactor pressure vessel head adjacent to a control rod drive mechanism (CRDM) nozzle penetration
- Corrosion caused by boric acid leakage from CRDM nozzle cracks
- Cavity extended through the base metal of the vessel head to the 3/8-inch stainless steel cladding on the inside of the head
- Stainless steel cladding was not designed to maintain reactor coolant pressure boundary



Safety Culture Lessons from Davis Besse Event

- **Leadership Safety Values and Actions:** Prioritizing production over safety
- **Questioning Attitude:** Shift in focus to justifying minimum standards
- **Decisionmaking:** Lack of conservative decisionmaking or systematic safety analysis of decisions
- **Problem Identification and Resolution:** Corrective actions addressed symptoms rather than causes
- **Continuous Learning:** Failure to integrate and apply operating experience to plant conditions

Safety Culture in the Reactor Oversight Process (ROP)

- 2006 revision to the ROP to more fully address safety culture
 - More opportunities for NRC staff to consider safety culture weaknesses before significant performance degradation occurs
 - Process to determine the need to evaluate a licensee's safety culture in the degraded cornerstone column of the ROP Action Matrix
 - Process to evaluate a licensee's safety culture assessment and independently conduct an assessment in the multiple/repetitive cornerstone column of the ROP Action Matrix
- Safety culture common language initiative
 - Joint effort with U.S. nuclear industry from 2011 to 2013
 - Developed common terms for describing safety culture
 - Terms have been incorporated under the ROP cross-cutting areas

2011 Safety Culture Policy Statement

Sets forth the Commission's **expectation** that individuals and organizations performing regulated activities establish and maintain a positive safety culture commensurate with the safety and security significance of their actions and the nature and complexity of their organizations and functions

Safety Culture Definition

Nuclear Safety Culture is the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment

Safety Culture Traits*

Leadership Safety Values and Actions	Problem Identification and Resolution	Personal Accountability
Leaders demonstrate a commitment to safety in their decisions and behaviors	Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance	All individuals take personal responsibility for safety
Work Processes	Continuous Learning	Environment for Raising Concerns
The process of planning and controlling work activities is implemented so that safety is maintained	Opportunities to learn about ways to ensure safety are sought out and implemented	A safety conscious work environment is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment or discrimination
Effective Safety Communications	Respectful Work Environment	Questioning Attitude
Communications maintain a focus on safety	Trust and respect permeate the organization	Individuals avoid complacency and continually challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action

***Decisionmaking is also included as a trait in the safety culture common language for nuclear power reactors.**

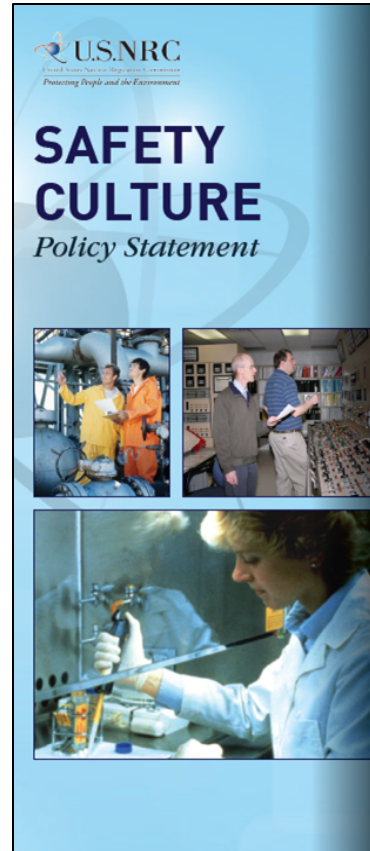
Safety and Security

- Safety and security activities are closely intertwined
- Licensees should emphasize the need for integration and balance to achieve both safety and security in their activities
- Safety and security are important in an overall culture of safety

Outreach and Education Efforts

- Interactions with Licensees and External Stakeholders
- International Involvement
- Conferences and Training
- Educational Tools
 - Brochures
 - Case Studies
 - Trait Talk
 - Posters and support materials
- Safety Culture Website

<http://www.nrc.gov/about-nrc/safety-culture.html>



Summary

- Lessons learned from Davis Besse event highlight the importance of safety culture
- NRC considers safety culture in its Reactor Oversight Process
- NRC communicates safety culture expectations through the Safety Culture Policy Statement
- The Safety Culture Policy Statement acknowledges the importance of safety and security within an overarching culture of safety
- Outreach and education fosters understanding of safety culture and helps disseminate good practices