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Current Commission Issues

Commissioner George Apostolakis

CmrApostolakis@nrc.gov

U. S. Nuclear Regulatory Commission

Reactor Technology Course for Utility Executives

Massachusetts Institute of Technology

June 23, 2010

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Issue Overview

- **Waste Confidence Policy**
- **Spent Fuel Management**
  - **Integrated Spent Fuel Management Plan**
- **Low Level Waste Policy (Blending)**
- **Safety Culture Policy**
- **Fire Protection**
- **Buried Piping Issues**
  - **Tritium Task Force Report**

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Issue Overview

- **Security (Part 73)**
- **GSI-191**
- **Transition Break Size (50.46a)**
- **Containment Accident Pressure (CAP)**
- **Mandatory Hearings**

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Waste Confidence (1990)

The Commission finds reasonable assurance that:

1. safe disposal of HLW and SNF in a mined geologic repository is technically feasible
2. at least one mined geologic repository will be available by 2025
3. HLW and SNF will be safely managed until a repository is available
4. spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life
5. onsite or offsite spent fuel storage will be made available if needed

Proposed changes to Findings 2 and 4 (73 FR 59551, October 9, 2008), before the Commission…

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Waste Confidence (Proposed Update & Rule)

- The proposed update would amend findings 2 and 4 to increase the time for availability of a repository and safe storage
- The proposed rule would remove timeframes
- A question was posed for public comment: should the time frame be removed from finding 2?
- Continued to assume Yucca wouldn't be built

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Spent Fuel Management

- **DOE established a Blue Ribbon Commission to review policies for managing spent nuclear fuel**
- **DOE notified NRC of its intent to withdraw its Yucca Mountain High-Level Waste (HLW) Repository license application**
- **NRC shifting effort to address strategy for managing spent nuclear fuel**
  - **Integrated Spent Fuel Management Plan focuses on extended storage of spent nuclear fuel, reprocessing, and alternatives to disposal of high-level waste at Yucca Mountain**

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Low Level Waste Policy (Blending)

- Industry is exploring blending to reduce concentration below the Class A limits
- NEI and EPRI have been conducting studies on risk informing waste classification, as well as blending
- Expanded use of blending would enable some Class B/C wastes to be disposed of as Class A, rather than being stored onsite
- Commission evaluating options for addressing Blending of Low Level Waste (LLW)

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Safety Culture: Why do we care?

Nuclear Materials

- **A Medical Facility failed to report 97 medical errors out of 116 prostate cancer treatment procedures performed between 2002 and 2008**
- **Overall root cause included elements of safety culture**
  - **Inadequate management oversight**
  - **Poor decisions were not challenged and employees assumed the responsibility for a safe and adequate program belonged elsewhere**
  - **Failure to communicate concerns about the implants**
  - **Overall system did not demonstrate a commitment to safety**

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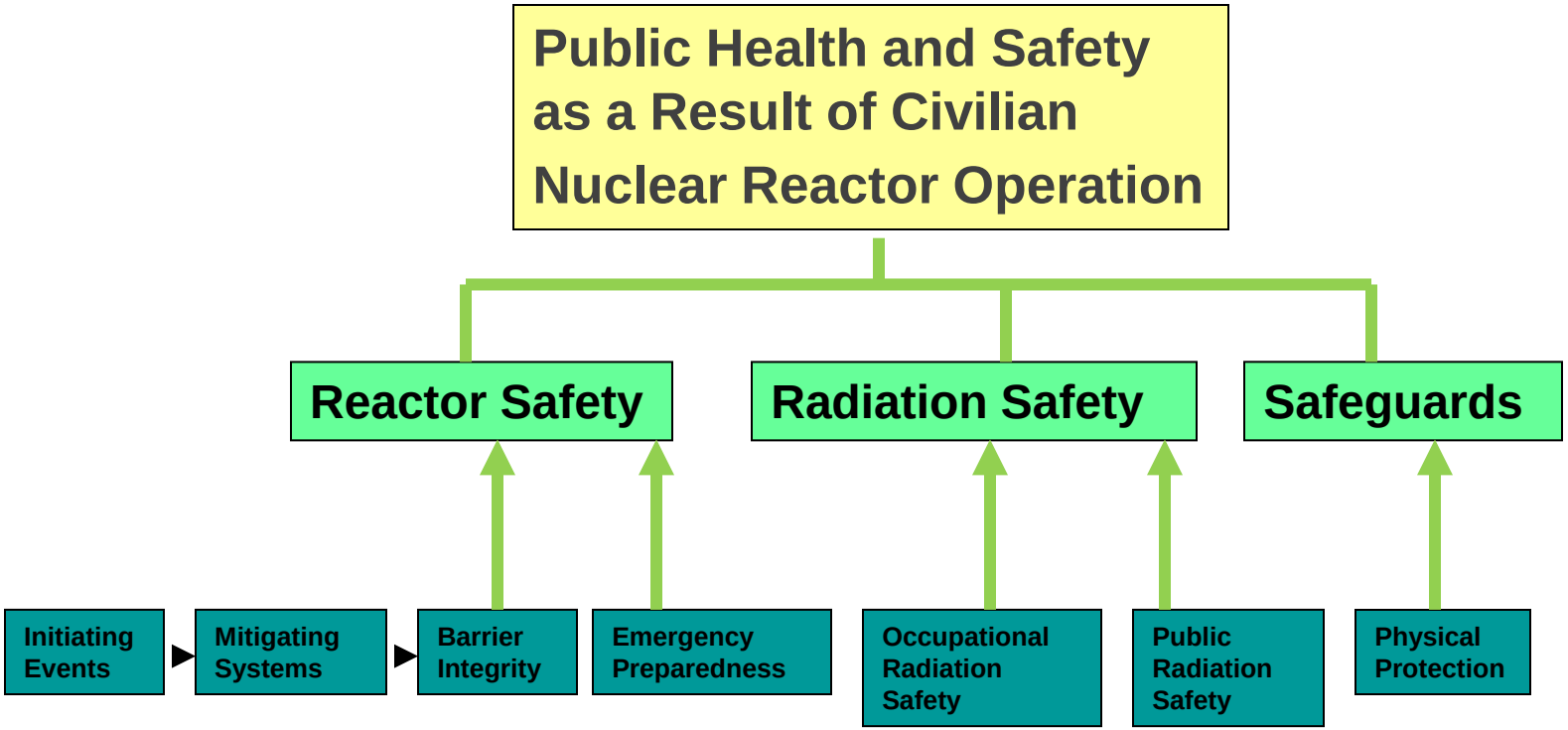
Safety Culture: Why do we care? (2)

Fuel Process Facilities

- **Numerous violations of NRC requirements, some of which were characterized as willful**
  - **In addition to corrective actions, the licensee conducted an independent safety culture assessment via a third-party**
  - **Implemented a plan to address the findings and recommendations, including independent assessment of the implementation plan**

Reactor Oversight Process



Human Performance

Safety Conscious Work Environment

Problem Identification and Resolution

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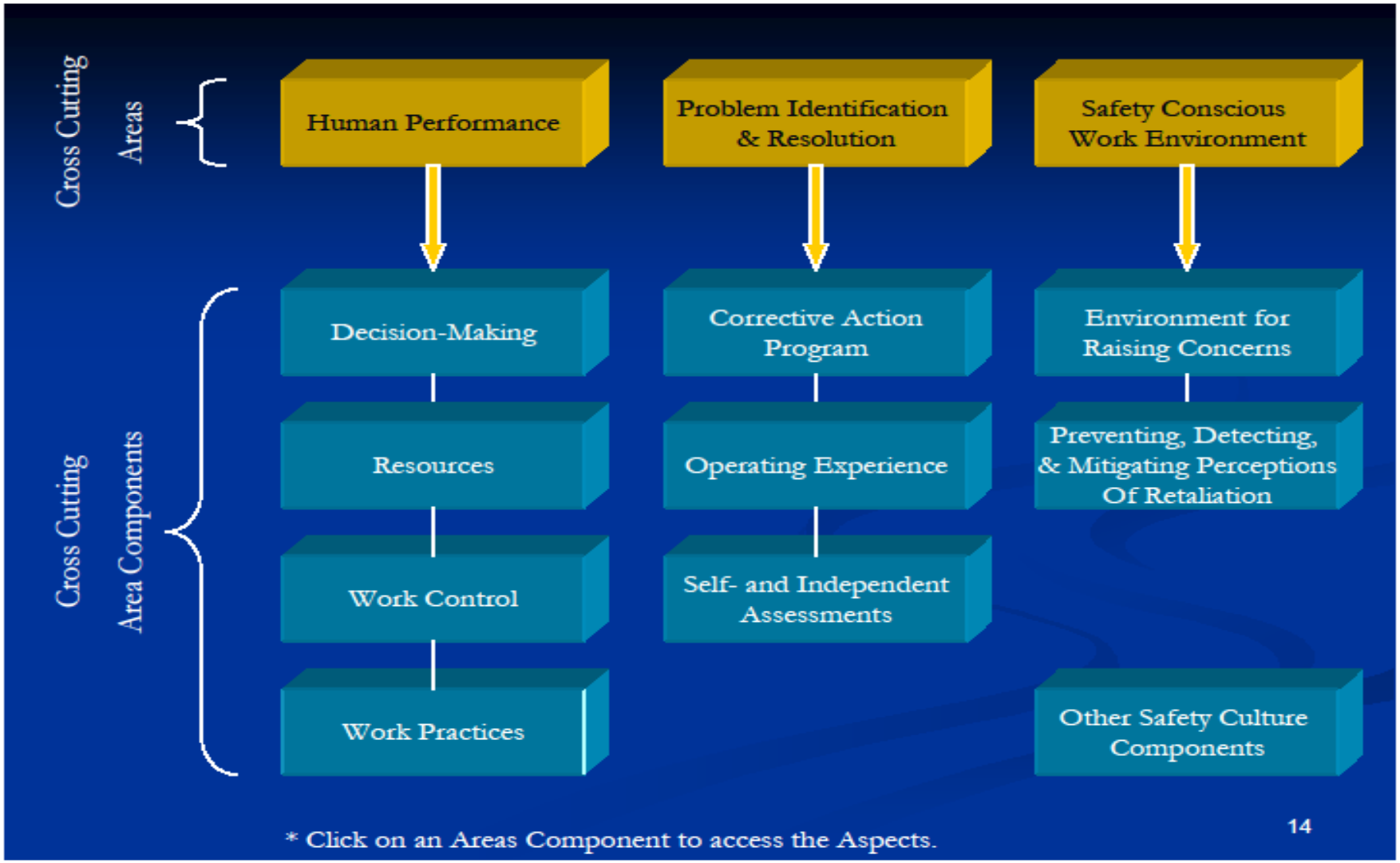
ROP Safety Culture Components



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Other Safety Culture Components

- Accountability
- Continuous Learning Environment
- Organizational Change Management
- Safety Policies

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Example of Findings

- **In a 2008 regulatory inspection, it was discovered that during the replacement of a safety-related 125 VDC station battery breaker in 2004, electrical connection integrity was not adequate to ensure that the equipment would be able to perform its safety function (thus the condition existed for four years)**

- **The resources component in the *human performance area* was assessed to contribute to this performance deficiency because the licensee failed to establish adequate procedures and programs related to electrical connection integrity**

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Draft Safety Culture Policy Statement

- **NRC's draft definition of safety culture:**
  - **"That assembly of characteristics, attitudes, and behaviors in organizations and individuals which establishes that as an overriding priority, nuclear safety and security issues receive the attention warranted by their significance."**
- **Safety and security are equally important in a positive safety culture**
- **Licensees and certificate holders are responsible for developing and maintaining a positive safety culture**

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Fire Protection

- **Large number of licensees rely on compensatory measures to comply with their approved program**
- **Licensees planning to transition to a new regulatory approach using NFPA 805**
- **Pilots appear to be generating overly conservative results in their fire PRA models**

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Buried Piping Issues

- **Tritium releases**
  - **No public health and safety issue**
- **NRC's regulatory structure is not consistent with external stakeholders' views on environmental protection**
- **Groundwater Task Force**

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Security (Part 73)

- **NRC revised 10 CFR 73 (Power Reactor Security Requirements) in March 2009**
- **Includes cyber security (10 CFR 73.54)**
- **Challenge to implement from resource standpoint (March 31, 2010).**

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GSI - 191

- **Debris blockage of the sumps during loss-of-coolant accidents could impede long-term core cooling**
- **Very complex issue that has many variables and requires plant specific resolution**
- **Staff is developing options paper to assist in closure**

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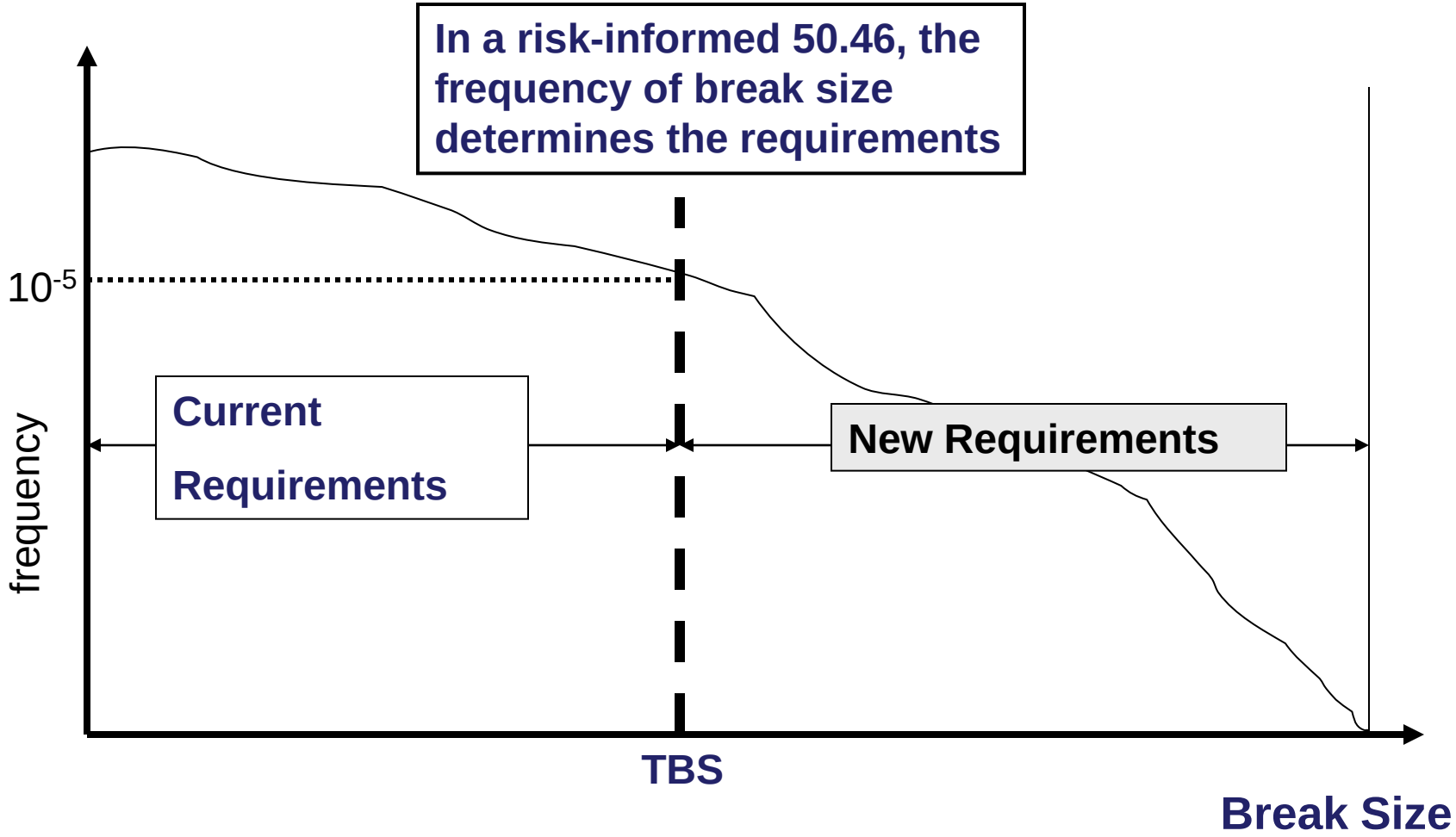
50.46a: Alternative Acceptance Criteria for Emergency Core Cooling Systems for LWR

- **Draft final risk-informed alternative to ECCS requirements**
- **Expert elicitation supported a transition break size**
- **ECCS would be optimized for more likely breaks**

Proposal for Risk-Informing 50.46



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Transition Break Size (50.46a)

- **A break of area equal to the cross-sectional area of the inside diameter of specified piping of a specific reactor**
- **PWRs**
  - **Expert judgment: 4 to 7 inches**
  - **The largest piping attached to the reactor coolant system (10 to 13 inches)**
- **BWRs**
  - **Expert judgment: 6 to 14 inches**
  - **The larger of the feed water line inside containment or the residual heat removal line inside containment (about 20 inches)**

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Containment Accident Pressure

- **ACRS has expressed concerns with the staff's practice to credit containment accident pressure**
- **The staff has developed draft guidance to determine the acceptability of CAP credit**
- **Staff believes ACRS has raised potential policy issues**
  - **seeking risk information for CAP applications**
  - **demonstration that plant modifications are impractical**

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Mandatory Hearings

- ***The Commission*** **has said it will conduct itself the mandatory "uncontested" hearings for** ***COLs***
- **Efficient and timely completion of the uncontested hearing, while assuring that the safety and environmental review has been adequate, is an important component of the licensing process**
- **There is high interest in having schedules for timely review of new reactor applications, including Commission schedules for its mandatory hearing review, which is expected to be the last general step in the decision-making on the issuance of a COL**
- **Licensing boards traditionally conduct both contested and uncontested hearing and have recently conducted the uncontested hearings for ESPs and uranium enrichment facilities**
- **Concerns have been raised about the value added by mandatory hearings and the resources required**