

**NRC /NEI / Stakeholder Meeting**

**on**

**Risk From Spent Fuel Pools at Decommissioning Reactors**

**November 19, 1999**

**Richard J. Barrett  
NRC/NRR/DSSA/SPSB**

01/21

## **Human Reliability Analysis**

- **June analysis identified human errors related to identification of abnormal conditions, restoration of failed functions, and initiation of mitigating actions.**
- **Human error probabilities for these events were based on generic values taking little credit for the long durations.**
- **This approach identified the important operator activities.**
- **In August, revised staff approach highlighted design and operational features that could result in high operator reliability in responding to upset conditions.**
- **This report was reviewed and endorsed by two HRA experts, and has been revised to take into account the comments.**
- **Implementation of NEI commitments would significantly reduce the risk contribution of loss of decay heat removal or loss of inventory events.**

## **Attributes of Revised Approach**

- **Based on analysis of conditions needed to accomplish three functions:**
  - **detection and recognition of deterioration of fuel pool cooling function**
  - **interpretation of the indications and formulation of a response strategy**
  - **execution of the strategy**
  
- **Acknowledges the unique conditions for decommissioning fuel pool**
  - **slow developing scenarios**
  - **in principle, simple systems and mitigating actions**
  - **little competition for operator attention**
  
- **Features addressed include:**
  - **alarms and indications**
  - **walkdown practices**
  - **response procedures / contingency plans**
  - **equipment availability**

## **Requantification of HRA**

- The revised staff approach is being applied to a revised PRA model, and will be used to demonstrate the value of adopting the NEI commitments.**
- Preliminary results support qualitative conclusions from the August draft**
- Staff has not reviewed preliminary requantification results.**

## **Risk Informed Decision Making**

- **Risk criteria of Reg Guide 1.174**
  - **ACRS suggestion of defining fuel uncoverly as LERF**
  - **Base level of LERF < 1E-5**

**Risk results tend to support this conclusion**

- **Delta LERF < 1E-6**

**EP exemptions do not change LERF**

- **Margins of safety**
  - **Low temperature, low pressure, thermal inertia**
  - **Source term without Iodines**

## **Risk Informed Decision Making (Continued)**

- **Defense in depth**

- **Rationalist approach: DID compensates for uncertainties**

**Seismic hazard curves**

- **Defense in depth commensurate with safety margins**

**Time available for response**

- **Recognize compatibility with operating reactor situation**

- **Performance monitoring**

- **Risk analysis determines performance measures important to controlling risk**

- **Licensee monitoring and NRC inspection**