

ACNW MEETING WITH THE U.S. NUCLEAR REGULATORY COMMISSION

**George M. Hornberger
December 18, 2002**

RECENT ACHIEVEMENTS

- **Reviews of Priority High-Level Waste Issues**
 - **10 CFR Part 63 Amendments and Yucca Mountain Review Plan**
 - **Key Technical Issue Resolution**
 - **Waste-Related Research**
- **Public Outreach Meeting**

RECENT ACHIEVEMENTS

(CONT'D)

- **International Activities**
 - **Quadripartite Meeting in Europe**
 - **Swedish Waste Management Facilities Visit**

OTHER AREAS OF INTEREST

- **Spent Fuel Transportation**
- **Orphan Sources**

TODAY'S TOPICS

- **HLW Risk-Insights Initiative**
- **Yucca Mountain Review Plan**
- **Spent Fuel Transportation**
- **Igneous Activity**
- **Container Life and Source Term KTI Update**

HIGH-LEVEL WASTE RISK INSIGHTS INITIATIVE

B. John Garrick

WHAT ARE RISK INSIGHTS?

- **Commission White Paper**
“...Refers to the Results and Findings that Come From Risk Assessments.”

WHAT ARE RISK INSIGHTS?

(CONT'D)

- **Risk Insights Initiative**
“Information that is
 - (1) Based on DOE’s Safety Case,**
 - (2) Linked To Part 63 Requirements,**
and
 - (3) Based on Performance**
Assessments.”

REASONS FOR RISK INSIGHTS INITIATIVE

- **Document Risk Insights and the Tie to Resolution of the Agreements**
- **Reduce Regulatory Burden**
- **Improve Communication & Integration**
- **Implement Risk Insights Into Issue Resolution Process**

RISK INSIGHTS: OBSERVATIONS

- **Excellent Interaction between KTI and Performance Assessment Teams**
- **Absence of Visible “Risk Assessments” in the Results**

OBSERVATIONS

(CONT'D)

- **Not a Risk-Ranking Exercise**
- **Composite Rating Process Lacked Rigor - Qualitative Not Quantitative**

CONCLUSIONS

- **Successful for Internal Communication and Documentation**
- **Diminished the Role of Risk**

RECOMMENDATIONS

- **Repeat the Exercise Adopting the Interpretation of the White Paper on the Meaning of Risk Insights**
- **Results of the Performance Assessment Should be a Factor in Prioritizing Agreements**

YUCCA MOUNTAIN REVIEW PLAN

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REVIEW PROCESS

- **Began Interactions with Staff Early**
- **Informal Comments on the First Draft**
- **Iterative Sessions with Staff as YMRP Developed**

COMMENT 1

- ACNW:** YMRP is Risk-Informed, but Very Repetitive and Voluminous.
Use Tables, Charts, Graphics to Improve
- Staff:** *Will Look for Opportunities to Economize on Repetition and Length*

COMMENT 2

ACNW: **Use Appendix With a Review
Illustration To Ensure Risk-
Perspective**

Staff: ***An Example Would Be Useful,
But Must Avoid Impression
Staff Has Reached a
Licensing Decision***

COMMENT 3

ACNW: Depth of Review Should Be Based on Staff's Own Risk-Insights

Staff: Will Build Its Own Risk Insights

COMMENT 4

**ACNW: Review Guidance Carried
Over From Reactor
Reviews for Relevance
to Waste Disposal**

***Staff: Will Ensure Review Areas
are Appropriate for HLW***

FUTURE ACTIONS

- **Watch the Process as KTIs are Folded into the YMRP's Integrated Subissues**
- **Review the Integrated Issue Resolution Status Report**

FUTURE ACTIONS

(CONT'D)

- **Continued Focus on Select KTIs**
 - **Focus on Risk-Informed Resolution of KTIs**
 - **Total System Performance Assessment and Integration and CLST KTIs**

SPENT FUEL TRANSPORTATION

Milt Levenson

TRANSPORTATION WORKSHOP GOALS

- **Acquire Information on...**
 - **Performance of Spent Fuel Transportation Packages**
 - **Transportation Experience**

HIGHLIGHTS FROM WORKSHOP

- **No In-service Failures of Spent Fuel Transportation Packages**
- **Designers and Analysts are Confident That Current Analysis and Testing Methods Are Sufficient**
- **Designers and Analysts Prefer Multiple Scale Model Tests to a Single Full Scale Model Test**

DRAFT TEST PROTOCOLS

- **After Reviewing the PPS, the ACNW Recommended Use of Realistic Testing Protocol**
- **Following the Workshop, We Believe that the Technical Basis for this Recommendation is Even Stronger**

IGNEOUS ACTIVITY

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BACKGROUND

- **Igneous Activity**
 - **Low-Probability, High-Consequence Event**
- **Issues**
 - **Probability of Disruption**
 - **Magma Interaction with Canisters**

PROBABILITY

- **Current DOE Probability Estimates**
 - **Based on Expert Elicitation**
 - **Probabilistic Volcanic Hazards Analysis**
- **New USGS Data May Influence DOE Estimates**
 - **Previously Undetected Aeromagnetic Anomalies**
 - **Different Scientific Interpretations Concerning New Data**

CONSEQUENCES

- **Potential Effects of Volcanism on Repository**
 - **Complex Physical Phenomena**
 - **Shock-Wave Theory Introduced**

CONSEQUENCES

(CONT'D)

- **NWTRB Review in 2002**
 - **Critical of Shock-Wave Model**
 - **Overly Conservative**

ACNW ACTIONS

- **Responding to March 2002 Commission Request**
- **June 2002 ACNW Working Group**
 - **Invited NWTRB Experts**
 - **Independent ACNW Experts**
 - **Consequence Issues**

ACNW WORKING GROUP FINDINGS

- **Probability**
 - **Probability Estimates Not Likely to Change Significantly**
 - **Still Incumbent on DOE to Examine New USGS Data in Context of PVHA**

ACNW WORKING GROUP FINDINGS (CONT'D)

- **Consequences**
 - **Volcanic System in Southern Nevada Not Capable of Producing Shock-Wave Effects**
 - **Improved Consequence Models Needed**

ACNW REPORT

- **Range of DOE-Estimated Probabilities Reasonable**
- **Shock-Wave Analysis Too Idealized to be of Direct Use**
- **KTI Agreements Provide Reasonable Basis for Evaluation of License Application**

CONTAINER LIFE AND SOURCE-TERM KTI UPDATE

Raymond G. Wymer

ISSUES

- **Quantity & Chemistry of Water Contacting Waste Packages**
- **Corrosion & Mechanical Disruption of Waste Packages**
- **Radionuclide Release Rates & Solubility Limits**

PERFORMANCE CONFIRMATION

- **Continued Long-Term Tests of Waste Package Materials Can Provide Additional Confidence in the Technical Basis for Decisionmaking**

OBSERVATIONS

- **New DOE Performance Confirmation Program is Expected to Address CLST Issues**
- **Underground Drifts for Performance Confirmation Will Probably Include Testing of Waste Package Materials**

RECOMMENDATIONS

- **CLST Agreements Should be Prioritized Based on Importance to Risk**
- **Continue to Incorporate Simplified Models Wherever Practical to Enhance Risk Communication**

SUMMARY

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NEAR-TERM ACTIVITIES

- **Continue to Focus on Priority Issues Identified in Action Plan**
- **Working Groups**
 - **Performance Assessment**
 - **Performance Confirmation**

LONG-TERM ACTIVITIES

- **Support Commission With Independent Review of DOE License Application**
- **Undertake Other Review Activities Consistent With the Action Plan**

ABBREVIATIONS

| | |
|--------------|--|
| CLST | Container Life and Source Term KTI |
| DOE | U.S. Department of Energy |
| HLW | High-Level Radioactive Waste |
| KTI | Key Technical Issue |
| NWTRB | U.S. Nuclear Waste Technical Review Board |

ABBREVIATIONS

(CONT'D)

| | |
|-------------|---|
| PPS | Package Performance Study |
| PVHA | Probabilistic Volcanic Hazards Analysis Report |
| USGS | U.S. Geological Survey |
| YMRP | Yucca Mountain Review Plan |