

**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

George M. Hornberger

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

George M. Hornberger

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

George M. Hornberger

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