



ACNW&M MEETING WITH
THE U. S. NUCLEAR
REGULATORY COMMISSION

November 14, 2007

OVERVIEW

Michael T. Ryan

Accomplishments

- 17 Letter Reports
- 4 Working Group Meetings
- Issued:
 - Low-Level Waste NUREG
 - Igneous Activity White Paper
 - Reprocessing White Paper

Accomplishments (cont'd)

- In development
 - White Paper on Seismic issues (Yucca Mountain)
 - White Paper on Decommissioning

ACNW&M Charter

- Expanded Charter to include Materials Safety
- The Committee will continue to study:
 - *In-situ* Leach Mining
 - Enrichment Facilities
 - Transportation
 - Storage and Disposal Facilities
 - Waste Determinations

ACNW&M Charter (cont'd)

- Health Effects
- Decommissioning
- Materials Safety
- Application of Risk-Informed,
Performance-Based Regulations

2007/2008 Action Plan

- Joint ACRS/ACNW&M Subcommittees
- Review of Regulatory Guides and SRP Chapters

Future Activities

- Working Group Meetings
 - Low Activity Radioactive Waste
 - Modeling Landscape Evolution for Performance Assessment
 - Low Dose Radiation Effects

ICRP's RECOMMENDATIONS

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ICRP's Recommendations

- The Committee has reviewed previous drafts of the ICRP recommendations
- The Committee continues to closely follow ICRP's work

ACNW&M Conclusion

- The Committee concurs with the NRC staff that “there may be no compelling public health and safety argument to change NRC regulations”
- ICRP publication 103 is expected soon

CURRENT ISSUES - LOW-LEVEL WASTE

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Status of LLW Disposal

- Barnwell will likely close to out-of-Compact waste in June 2008
- Northwest and Rocky Mountain Compacts are unchanged
- Energy Solutions will continue to receive Class A LLW
- Storage of LLW will increase

IGNEOUS ACTIVITY AT THE PROPOSED YUCCA MOUNTAIN REPOSITORY

William J. Hinze

Recent Activities

- Working Group on Igneous Activity
- Published White Paper on Igneous Activity – June 2007
- Monitored DOE expert elicitation update on volcanism probability and NRC staff's reports

Technical Basis for Decisionmaking

- Review and analysis of views
 - What could happen?
 - How likely is it?
 - What are the potential consequences?
- Evaluation of hypothetical extrusive and intrusive scenarios

Extrusive Scenario

- Inhalation of dispersed respirable ash ejected from molten rock erupting through the repository
- Maximum effect during first thousand years after closure
- Current analysis indicates risk is a small fraction of proposed standard

Intrusive Scenario

- Waste from canisters destroyed by intruding molten rock is carried by ground water to nearby aquifers
- Maximum effect not anticipated for tens of thousands of years due to slow groundwater movement
- Current analysis indicates risk is a small fraction of proposed standard

Evaluation of Scenarios

- Considers:
 - Nature
 - Likelihood
 - Consequences
- White Paper presents range of credible views

Nature of Possible Igneous Event

- Characteristics similar to most recent volcano in region – Lathrop Wells
 - Small volume, single episode eruptive event that disperses ash over surrounding region
 - General agreement

Likelihood of Igneous Event

- Forecasting from previous events
- Volcanism is waning
- 1 chance in a billion to 1 chance in ten million per year of an event intersecting the repository
- Ongoing DOE expert elicitation will update probability estimates in 2008

Source Term Resulting From an Extrusive Event

- Number of waste packages involved
- Quantity of radioactive material released
- Fraction of material that is respirable
- Wide range of views

Consequences of an Extrusive Event

- Relatively mature models
- Evolving consideration of
 - Range of waste particle size
 - Fraction of waste in ash vs. lava flows
 - Preferential remobilization of respirable ash by water and wind

Consequences of an Intrusive Event

- Less well understood and no natural analogs lead to differing views
- Range of views on
 - Interaction of molten rock with waste packages and repository
 - Governing molten rock properties
 - Number of waste canisters affected and potential for secondary vents from repository

Consequences of an Igneous Event

- Continuing analysis will reduce uncertainties, but credible alternative views are likely to remain with regard to:
 - Source term in extrusive scenario
 - Interaction of molten rock, waste packages, and the repository in the intrusive scenario
- Current analysis indicates risk is a small fraction of proposed standard

TRANSPORTATION

Ruth F. Weiner

Transportation

- Met with staff and stakeholders
 - Moderator Exclusion
 - Burnup Credit
 - Commercial spent fuel
- Moderator exclusion and burnup credit are related

Burnup Credit

- Burnup credit is not precluded by regulation
- Full burnup credit would allow fewer shipments of spent fuel
- NRC has approved one application for actinide burnup credit and partial credit for fission product poisoning

Moderator Exclusion

- Moderator exclusion is regulated by Part 71 and staff guidance
- NRC has not yet approved shipments that rely on moderator exclusion – applications are expected

Moderator Exclusion

- 10 CFR 71.55
 - (c) provides basis for moderator exclusion
 - (e) and Interim Staff Guidance 19 provide for moderator exclusion under accident conditions

Recommendations

- Use existing regulations for moderator exclusion
- Risk-inform regulatory guidance on burnup credit and moderator exclusion

In-Situ Leach Uranium
Recovery Activities

Ruth F. Weiner

OBJECTIVES

- Advise the Commission on Rulemaking
 - Environmental protection issues
 - Resolution of issues associated with *in-situ* leach mining and groundwater contamination

Proposed Rulemaking Recommendations

- Rule should be risk informed and provide:
 - Location of the point of compliance
 - Groundwater monitoring requirements
 - Methods of demonstrating compliance
 - Financial surety

Proposed Rulemaking Recommendations (Cont'd)

- Rule should provide:
 - Measures to reduce the likelihood of contaminant release
 - Groundwater remediation
 - Establishing pre-mining background or baseline groundwater quality

Proposed Rulemaking Recommendations (Cont'd)

- Rule should consider:
 - Groundwater use
 - Onsite effluent disposal
 - Decommissioning and license termination requirements

Next Steps

- Review staff progress regarding Rulemaking
- Evaluate NRC staff resolution of public comments on the draft rule

ABBREVIATIONS

ACNW&M	Advisory Committee on Nuclear Waste and Materials
ACRS	Advisory Committee on Reactor Safeguards
CFR	Code of Federal Regulations
DOE	Department of Energy, U.S.
ICRP	International Commission on Radiological Protection
LLW	Low-Level Waste
NRC	Nuclear Regulatory Commission, U.S.
NUREG	NRC Technical Report Designation (<u>N</u> uclear <u>R</u> egulatory Commission)
SRP	Standard Review Plan