



U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

**ACNW MEETING WITH
THE U. S. NUCLEAR
REGULATORY
COMMISSION**

December 14, 2006

OVERVIEW

Michael T. Ryan

Accomplishments

- **15 Letter Reports**
- **5 Working Group Meetings**
- **Low-Level Waste White Paper (NUREG-1853)**

Areas for Risk-Informing Nuclear Materials and Wastes Regulations

- **In-situ leach mining**
- **Recycle**
- **Institutional controls**
- **Decommissioning lessons learned**
- **Low-level waste**

ICRP Recommendations

- **No added value to current U.S. radiation protection programs**
- **ICRP “Recommendations for Protection of the Environment” are without foundation**
- **“Optimization” contains same requirements as current ALARA programs**

Revised Action Plan

- **Updated Plan based on Commission's Directions**
- **Working Groups**
 - **Decommissioning Lessons Learned**
 - **Modeling and Monitoring**
- **White Paper on Igneous Activity**
- **Review and Compare French Academy Study to BEIR VII Study (radiation effects)**

Future ACNW Activities

- **Yucca Mountain Pre-licensing**
- **Nuclear Fuel Recycle**
- **LLW Strategic Assessment**
- **Risk-Informing Institutional Controls**
- **West Valley Demonstration Project**
- **In-Situ Leach Mining**

**LOW-LEVEL
RADIOACTIVE WASTE**

MICHAEL T. RYAN

Recent ACNW Actions

- **May 2006 LLW Working Group Meeting**
- **August 16, 2006, Letter Report**
- **Final White Paper (NUREG-1853)**

August 16, 2006 Letter

- **Risk inform low-level waste management using**
 - **§61.58**
 - **§30.11**
 - **§40.14**
 - **§20.2002**
- **Assign performance credit for waste form, packaging, and site design**

Working Group Meeting

- **Revisions to 10 CFR Part 61 not needed at this time**
- **Guidance for management of emerging waste streams**
- **Evaluate unintended consequences of changes to existing regulations**

**FUTURE IGNEOUS
ACTIVITY AT YUCCA
MOUNTAIN**

William J. Hinze

Recent ACNW Activities

- **White Paper on igneous activity**
- **Two letter reports on igneous activity commenting on**
 - **Igneous intrusion scenario**
 - **NRC staff model for water driven redistribution of volcanic ash**

Igneous Activity at Yucca Mountain: Technical Basis for Decision Making

- **A review and analysis of views on igneous activity at Yucca Mountain pertaining to**
 - What could happen?**
 - How likely is it?**
 - What are the potential consequences?**

Igneous Intrusion Scenarios

- **Current DOE and NRC scenarios
– low viscosity magma**
- **Alternate scenario – high
viscosity and rapid quenching
magma**

Alternative Scenario Suggests:

- **Magma unlikely to flow a significant distance into tunnels**
- **Waste released from containers may be protected by quenched magma**
- **Magma unlikely to cause secondary (flank) vents from tunnel**
- **Lack of consideration may lead to conservative assessment**

Waterborne Redistribution

- **Sediment mass balance method is based on sound principles**
- **Work continues on incorporating wind with surface water redistribution**
- **Model neglects effects of large floods that could carry sediments beyond the compliance area**

Path Forward

- **White Paper on the range of views on igneous activity**
- **Working Group on igneous activity, February 2007**
- **Review and comment on new NMSS igneous activity reports**

**Waste Disposal
Technology Status and
NRC Standard Review
Plan for Waste
Determinations**

Allen G. Croff

Objectives

- **Waste Determination Standard Review Plan**
 - **Review draft SRP**
 - **Track relevant research and development**
- **Fuel recycle**
 - **Track technical and regulatory developments**
 - **Define important issues**

Standard Review Plan

- **Staff briefings and document reviews**
- **Letter issued in December 2006**

Standard Review Plan

- **Recommendations**
 - **Focus on materials left on-site**
 - **Rely on robust performance assessment**
 - **Risk inform concentration averaging**
 - **Risk inform greater-than-Class C disposal requirements**

Research & Development Reviews

- **Cement working group meeting and subsequent letter**
 - **Cement degrades and cracks**
 - **Uncertainties in predicting long-term performance**
 - **Analogs should be studied**
- **Hanford site visit**

Fuel Recycle Developments

- **Consultant briefing on historical approaches to fuel recycle**
- **Initial staff briefing on potentially applicable regulations**
- **Department of Energy Global Nuclear Energy Partnership**

Fuel Recycle White Paper

- **Contents**
 - **Historical recycle process and design approaches**
 - **Advanced recycle processes**
 - **Licensing regulations**
 - **Issue identification**
- **Stakeholder review**

Future Activities

- **Waste determinations**
 - **SRP comment resolution**
 - **Track retrieval, processing, and waste form technology**
- **Fuel recycle**
 - **ACNW review of staff paper on regulatory approach for recycle**
 - **Track technical developments**

DECOMMISSIONING - ACNW WHITE PAPER

James H. Clarke

Future White Paper

Integrate observations and recommendations from:

- **Performance of cementitious materials**
- **Prevention of legacy sites**
- **Monitoring to build model confidence**
- **Lessons learned from liquid radioactive releases**
- **Lessons learned from decommissioning activities**

**NRC WASTE SAFETY
AND TECHNICAL
ASSISTANCE
PROGRAMS**

Ruth F. Weiner

Review Activities

- **Office of Nuclear Regulatory Research**
 - **Accommodating uncertainty in conceptual models**
 - **Evaluating models of groundwater recharge**

Review Activities

- **Programs are responsive to NRC regulatory responsibilities**
- **Collaborative arrangements effectively leverage limited resources**

In-Situ Leach Mining of Uranium

- **Information gathering**
 - **Site visit to Crow Butte, Nebraska**
 - **National Mining Association Workshop**
 - **Public meeting on rulemaking**
- **Uranium mining applications**
 - **7 in-situ leach**
 - **2 milling**

Transportation

- **Pilot study of probabilistic risk assessment of dry cask storage of spent nuclear fuel**
- **Report on tunnel fire analyses**

ABBREVIATIONS

ACNW	Advisory Committee on Nuclear Waste
ALARA	as low as reasonably achievable
BEIR	Biological Effects of Ionizing Radiation, Committee on the
CFR	Code of Federal Regulations
DOE	Department of Energy, U.S.
ICRP	International Commission on Radiological Protection
LLW	low-level radioactive waste
NMSS	Nuclear Materials Safety and Safeguards, Office of (NRC)
NRC	Nuclear Regulatory Commission, U.S.
SRP	Standard Review Plan