

Licensing Issues for the Development of New Uranium Recovery Projects

Prepared for the National Mining Association
(NMA)/Nuclear Regulatory Commission (NRC)
Conference

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Purpose of Presentation

- The Domestic Uranium Recovery Industry Has Returned to Viability
 - Uranium Prices Now Exceed \$45 Per Pound;
 - Utility Uranium Inventories Have Been Depleted;
 - Worldwide Focus on Development of Nuclear Power Reactors Has Intensified;
 - New Reactor Technologies Being Subsidized by Federal Government;
 - Contracts for Combined Construction & Operating License Applications (COLs) Awarded

Response to Demand for Uranium

- **Uranium Recovery Companies Already Have Begun to Acquire Known Uranium Resources and to Explore For More New Properties**
- **Development of New Uranium Recovery Projects Likely Will Commence in the Next 1-2 Years**
- **Uranium Recovery Regulations Undergoing Revision (i.e., Potential NRC Revisions to Part 40/41)**

Development of New Uranium Recovery Projects

- **New Uranium Recovery Projects Likely Will Be A Combination of Conventional (Title II) and In Situ Leach (ISL) (Solution) Uranium Recovery Projects**
- **Uranium Recovery License Applications Necessarily Will Have to Satisfy Components of NRC Regulations & Guidance:**
 - 10 CFR Part 40, Appendix A;
 - **NUREG-1569**: *Standard Review Plan for In Situ Leach Uranium Extraction License Applications*;
 - **NUREG-1748**: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*;
 - **NUREG-1620**: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act*
 - Prior to Receiving a License for a Conventional (Title II) Uranium Mill, NRC Likely Will Require an Approved Reclamation Plan So That Financial Assurance May Be Calculated

NRC Items Providing Insight to Licensing Issues

- Applicants/Licensees Should Be Aware of Issues That May Be Raised in:
 - Commission Policy Statements;
 - Probabilistic Techniques;
 - Risk-Informed, Performance-Based Licensing
 - National Mining Association (NMA) White Papers & Commission/NRC Staff Responses (Where Relevant);
 - NRC Staff Requests for Additional Information (RAIs);
 - Administrative Litigation
 - (1997-2006) Litigation Involving Hydro Resources, Inc. (HRI) Has Provided Continued Insight Into and Interpretation of ISL Licensing Requirements With Some Application to Conventional Uranium Mills

HRI Litigation Outlines Licensing Issues

- Development of New ISL or Conventional Uranium Recovery Projects Likely to Encounter the Following Issues in NRC Staff RAIs or Administrative Litigation:
 - Groundwater Restoration and Financial Assurance
 - Historic and Cultural Resource Preservation
 - Radiological Air Emissions
 - Environmental Impact Statement (EIS) Adequacy
 - Financial & Technical Qualifications
 - Environmental Justice
 - Liquid Waste Disposal
 - Surface Water Protection

Groundwater Restoration & Financial Assurance

- **Groundwater Restoration & Associated Financial Assurance is the Primary Issue Associated with ISL Uranium Recovery**
- **Dual Regulatory Programs for Groundwater Protection During ISL Uranium Recovery Operations & Restoration:**
 - **NRC (AEA)**
 - 10 CFR Part 40 Licensing
 - **Environmental Protection Agency (Safe Drinking Water Act, Underground Injection Control (UIC) Program)**
 - UIC Permit;
 - Aquifer Exemption

Groundwater Restoration & Financial Assurance

- Commission Requires Simplified Approach to Groundwater Restoration & Financial Assurance: Restoration Action Plans (RAPs) (CLI-00-08)
 - Provide NRC With Methods for Groundwater Restoration and Data to Justify Applicable Restoration Standards;
 - Provide Cost Breakdown for Various Aspects of Decommissioning:
 - Labor Costs
 - Equipment Decontamination
 - Groundwater Restoration

Groundwater Restoration & Financial Assurance

- HRI Litigation Also Creates New Interpretation of Financial Assurance Requirements:
 - Atomic Safety Licensing Board (LBP-04-03) Determines that 10 CFR Part 40, Appendix A, Criterion 9's "Independent Contractor" Requirement Did Not Permit Financial Assurance Calculations to Include:
 - Labor Costs Based on Employees Performing Decommissioning Wearing "Multiple Hats" (i.e., Perform Multiple Tasks)
 - Major Equipment Costs Assuming Use of Site Equipment During Decommissioning
 - **RESULT: LICENSEES COULD HAVE TO ASSUME PURCHASE OF MAJOR SITE EQUIPMENT TWICE—WHICH IS A FINANCIALLY INFEASIBLE REQUIREMENT**

Groundwater Restoration & Financial Assurance

- Commission Reverses Licensing Board's Decision and Criterion 9 Requirements Are Clarified (CLI-04-33):
 - Independent Contractor Requirement Not Rigidly Applied in a Vacuum;
 - Licensee Can Rely on Standard Industry Practices;
 - ISL Uranium Recovery Operations Are Geared to Allow Employees to Perform Multiple Tasks During Restoration

Groundwater Restoration & Financial Assurance: CLI-04- Continued

- Major Site Equipment Is Necessary to Proper Restoration:
 - Wellfields;
 - Wellfield Piping;
 - Brine Concentrators or Reverse Osmosis Equipment;
 - IX Columns
- Annual Surety Updates As Required By Criterion 9 and NUREG-1569 Provide Adequate Safeguards for Revising Financial Assurance
- CONCLUSION: THESE ISSUES APPEAR UNIFORMLY RELEVANT TO ASSESSING SURETY FOR URANIUM RECOVERY OPERATIONS

Historic and Cultural Resource Preservation

- All New Uranium Recovery Projects (ISL & Conventional) Require Historic & Cultural Resource Surveys in Compliance With:
 - National Historic Preservation Act of 1966 (NHPA)
 - Native American Graves Protection & Repatriation Act of 1990 (NAGPRA) (If Applicable)

Historic and Cultural Resource Preservation

- Section 106 of NHPA and Implementing Regulations is Primary Focus of Surveys:
 - NUREG-1569 at Appendix A: Focus on Following Consultation Requirements for Historic and Cultural Resources:
 - National Register of Historic Places;
 - State Historic Preservation Officer (SHPO);
 - Tribal Historic Preservation Officer (THPO) (If Applicable);
 - Phased Compliance & Identification

Historic and Cultural Resource Preservation

- Potential Intervenors Attacked HRI on Basis of:
 - Viability of Consultation and Survey with Officials;
 - Pre-2001 NHPA Regulations v. 2001 NHPA Regulatory Amendments for Allegedly Prohibiting “Phased” Identification & Compliance;
 - HRI Litigation (LBP-05-26 & CLI-06-11 *denying review*) This Critical Decision Determined That “Phased” Identification & Compliance is Permissible (e.g., Where Multiple Sites and/or Stages of Development are Part of the Overall Project)

Radiological Air Emissions

- **ISL Uranium Recovery Licensees Are Required to Satisfy NRC Regulations for Public & Occupational Dose:**
 - 10 CFR § 20.1301 of 100 mrem/y (Public Dose);
 - 10 CFR § 20.1201 of 5 rem/y (5,000 mrem/y) (Occupational Dose)
- **Calculation of Public & Occupational Dose Addresses an Incremental Dose Above Background Radiation Exposure:**
 - $(\text{Total Dose}) - (\text{Dose from Background}) = \underline{\text{Total Effective Dose Equivalent (TEDE)}}$

Radiological Air Emissions

- Intervenors in HRI Litigation Focused on Materials (Mining Spoils) Left Behind at Section 17 Site and Argued:
 - Radiation from Such Material Was Not Part of “Background Radiation”.....Therefore;
 - Resulting TEDE from Section 17 Exceeded Regulatory Limits

Radiological Air Emissions

- HRI and NRC Staff Disagreed with Intervenors' Argument:
 - Section 17 Material Resulted from *Mining* Activities Which NRC Does Not Regulate;
 - Section 17 Material Was Not Atomic Energy Act (AEA) Material (i.e., Source/Byproduct Material) But Was Technologically Enhanced Naturally Occurring Radioactive Material (TENORM);
 - “Background Radiation” Can Be From Natural or *Anthropogenic* Sources

Radiological Air Emissions

- Both Licensing Board (LBP-06-01) and Commission (CLI-06-07 Granting Review & CLI-06-14) Concur with HRI & NRC Staff Position:
 - Mining Spoils Are Outside of NRC's AEA Jurisdiction;
 - Radiation from Such Materials is "Background Radiation" With Scope of 10 CFR §§ 20.1003 & 20.1301;
 - Radiation from Such Materials is Not Part of Site TEDE Calculations
- CONCLUSION: THE DECISION IS RELEVANT TO PROPOSED SITES NEAR OLD MINING SITES INCLUDING:
 - DRILL HOLE RESIDUE;
 - ORE DUST;
 - MINING WASTE PILES

EIS Adequacy

- **NRC Performs an EIS for New Uranium Recovery Projects Under Certain Circumstances:**
 - Likely Necessary for a New Conventional (Title II) Mill Site;
 - Not Always Necessary for ISL Projects in the Past But Perhaps May Be Required in Light of HRI Litigation
- **Final EIS for the HRI Crownpoint Uranium Project (NUREG-1508):**
 - Addressed All Aspects of Potential Site-Specific Impacts at Four Crownpoint Uranium Project (CUP) Sites;
 - Performed With Cooperating Agencies;
 - Bureau of Indian Affairs (BIA) Requires EIS When Indian Lands Involved;
 - Bureau of Land Management (BLM)
 - Environmental Protection Agency (EPA)

EIS Adequacy

- Intervenors May Attack Adequacy of NRC Analyses For:
 - Strict Compliance with Council on Environmental Quality (CEQ) Regulations;
 - Cumulative Impacts;
 - Quality of Analytical & Technical Data;
 - Potential Site-Specific Impacts;
 - Alternatives to Proposed Licensing Action
- Intervenors Also May Raise EIS Supplementation Issues:
 - Allege New Circumstances That Warrant Additional Analysis;
 - HOWEVER: Such Allegations Must Survive Scrutiny Under NRC Standard of “Significant New Circumstance”

EIS Adequacy

- HRI Litigation Decision from Licensing Board on EIS Adequacy Issues Still Pending;
- Decision from Licensing Board on Supplementation Issue Finalized in One Phase;
 - Development of Housing Project Which Has Not Proceeded Past a **Conceptual Stage** Does Not Warrant FEIS Supplementation (LBP-04-23 & CLI-04-39 *Denying Review*);
 - Decision on Section 8 Finalized Regarding:
 - NRC Not Bound By CEQ Regulations (See 10 CFR Part 51/Federal Register);
 - Large Body of Decisions on EIS Adequacy

Financial & Technical Qualifications

- NRC Requires that Applicants for Uranium Recovery Project Licensing Demonstrate:
 - Adequate Corporate & Management Structures (NUREG-1569 at 5-1-5-9);
 - Sufficient Financial Assets to Engage in Licensed Activities & Radiation Protection;
 - Adequate Qualifications for Site Personnel & Radiation Safety (NUREG-1569 at 5-11-5-14)

Financial & Technical Qualifications

- In HRI Litigation, Intervenors Conceded Financial & Technical Qualifications for Purposes of Three of Four Sites
- However, Intervenors May Attack on the Following Grounds:
 - Need for Additional Uranium Production;
 - Inadequate Radiation Safety Training & Personnel;
 - Inadequate Financial Assets for Ongoing Licensed Operations

Environmental Justice

- **Executive Order 12898** Entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*:
 - NRC Admits Environmental Justice Contentions as Part of NEPA Process
 - Focuses on Analyses That Have Direct Relationship to the Environment or Cost-Benefit Analyses: See e.g., *One Thousand Friends of Iowa v. Mineta*, 250 F. Supp. 2d 1064, 1072 (S.D. Iowa 2002)

Environmental Justice

- Intervenors Attacked HRI on Environmental Justice Grounds and Licensing Board Determined:
 - Presiding Officer Found That Executive Order 12898, By Its Own Language, Is Not a Binding Regulatory Requirement;
 - No Environmental Justice Issue If No Significant Impacts Are implicated by the Proposed Action;
 - The Uranium Ore Body's Location Determines Location of the Proposed Project

Liquid Waste Disposal

- ISL Uranium Recovery Projects
Generate Liquid Wastes that Must Be
Disposed of Properly:
 - Production “Bleed” Fluids and Sludges Are 11e.(2) Byproduct Material;
 - Restoration Fluids and Sludges Also Now Are 11e.(2) Byproduct Material

Liquid Waste Disposal

- Other Liquid Waste Disposal Issues That May Be Raised by Potential Intervenors Include:

- Disposal in Injection Wells;
- Adequacy of Liquid Reduction Through Reverse Osmosis & Brine Concentration for Disposal at Conventional (Title II) Mill Sites;
- Land Farming/Evaporation;

Summary and Conclusions

- **Given the Re-Emergence of the Domestic Uranium Market and the Viability of ISL Uranium Recovery, New Projects Need to Be Licensed;**
- **NRC Has Developed Guidance for Preparation of License Applications;**
- **Intervenors Almost Certainly Will Challenge Some Aspects of Some License Applications;**
- **CONCLUSION: Applicants Must Be Thoroughly Prepared to Address These Issues in License Applications and Potential Litigation or Be Faced With Significant Delays and/or Failure to Receive a License**