Lessons Learned

Activities of the Illinois LLRW Siting Commission

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Scope of the Project

- Review Report Issued by the Commission
- Identify Major Issues
- Summarize Approach/Conclusions of Commission
- Critique Approach re: State of the Art/Practice
- Identify Applicable Lessons Learned
The Management Act

- No LLWR waste disposal facility shall be located in or within 1 1/2 miles of the boundaries of any municipality unless approval is given by the governing body of that municipality.

- The site shall be located so as to consider the distance necessary for the transportation of LLWs so that the impact on existing traffic flows is minimized.

- The site shall be located outside the boundary of the 100 year flood plain as determined by the Department of Transportation.

The Management Act

- The site shall be located so as to minimize the possibility of radioactive releases into groundwaters utilized as public water supplies.

- The site shall be located in a suitable geological and hydrological medium.

- The site shall be located so that the public health, safety, and welfare will be protected.
COMMISSION APPROACH TO EACH ISSUE:

• Establish standard as required

• Compile evidence to compare MAS against standard

• Determine compliance

In Search of ... a Safety Criterion

• Existing regulatory standards considered 'helpful guideposts'

• No conclusive statement of 'safe' levels of exposure

• No standard on how 'low' is safe

• Adopted essentially zero release criterion
**MAJOR ISSUE CATEGORIES**

- Calculation of Source Term
- Facility Durability
- Quality Assurance
- Seismicity
- Use of Models
- Strategy for Site Characterization

**Calculation of Source Term**

- Three independent PA's provided
- Uncertainty in Source Term was major issue

◆ **Conclusion:** Uncertainties "robbed the analyses of credibility"

- **Lesson:** Better data and/or probabilistic assessment approach
QUALITY ASSURANCE

- Review and verification of data
- QA procedures not followed
- **Conclusion:** "...failures of the project's quality assurance and control seriously detracted from the proponents case..."
- **Lesson:** ANY perceived flaw in QA program / procedures undermines credibility of entire technical process.

FACILITY DURABILITY

- Long term durability/viability of concrete
- No one could "prove" "leak-tight" for 500 years
- **Conclusion:** "..unlikely facility could provide adequate protection against long-lived radionuclides."
- **Lesson:** Pre-establish standard of performance
SEISMICITY

• Application of conservatism

• Over long facility life, EQ's may accelerate cracking of concrete

◆ Conclusion: EQ risk increases likelihood of cracking of concrete and/or liners and may provide pathways for water and contaminants.

◆ Lesson: Communications of principles of conservatism

USE OF MODELS

• Groundwater flow model extensively discussed. Validity of each portion of model questioned.

◆ Conclusion: "..magnitude of potential errors was large." "Site has not been adequately modeled or characterized, and burden of proof was not met that MAS is in suitable geological and hydrological medium."

◆ Lesson: pre-establish standards
STRATEGY FOR SITE CHARACTERIZATION

• Some programs lacked overall strategy
• Perceived lack of interdiscipline coordination
• Undermined credibility and adequacy of technical programs

◆ **Conclusion:** ".. the study produced only limited hydrogeologic data inadequate to resolve critical issues about the site..."

■ **Lesson:** Groundwater and PA models must be integral to characterization process; reduction in uncertainty is paramount.

GENERAL OBSERVATIONS

• Hearings preceded license application
• Credibility of witnesses critical to decision
• Management Act allowed wide latitude in judgement
• Commission not necessarily held to existing performance standards
• Standard of "Burden of Proof" may not be achievable