

LOW LEVEL RADIOACTIVE WASTE DISPOSAL

THE STATE OF LLRW DISPOSAL IN
THE UNITED STATES

Presented by:

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Presentation Overview

A Brief History of LLRW Disposal in the U.S.

A Detailed Look at North Carolina

Current LLRW Activities (LLRW Forum Updates)

Sealed Sources

A Brief History of LLRW Disposal in the U.S.

Pre-1980

Earliest Years of Nuclear Technology – AEC

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1950s – At Sea Disposal

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Earliest Years of Nuclear Technology – AEC

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1960s – Development of Regional Land Disposal Sites

A Brief History of LLRW Disposal in the U.S.

1960s – Development of Regional Land Disposal Sites

- Beatty, Nevada
- Maxey Flats, Kentucky
- West Valley, New York
- Hanford, Washington
- Sheffield, Illinois
- Barnwell, South Carolina

A Brief History of LLRW Disposal in the U.S.

Late 1970s – Options Reduced to Three Operating Sites

- Beatty, Nevada
- Hanford, Washington
- Barnwell, South Carolina

A Brief History of LLRW Disposal in the U.S.

1980 And Beyond

- 10 CFR 61
- Low Level Waste Policy Act of 1980
- Low Level Waste Policy Amendments Act of 1985
- Implementation of the Acts
- Along the Way

A Brief History of LLRW Disposal in the U.S.

10 CFR 61 – Licensing Requirements for Land Disposal of Radioactive Waste

- License Process
- Performance Objectives (releases, intrusions, etc.)
- Technical Requirements (suitability, closure, waste classification, etc.)
- Financial Assurances

A Brief History of LLRW Disposal in the U.S.

Low Level Waste Policy Act of 1980

Re-establish Regional Approach to Disposal (States or
Compacts)

Empower States to Exclude Waste Generated Outside
the Borders of the State or Compact (Exception to
the Commerce Clause of the U.S. Constitution)

A Brief History of LLRW Disposal in the U.S.

Commerce Clause - Article 1, Section 8

“The Congress shall have Power ... To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes”

A Brief History of LLRW Disposal in the U.S.

Low Level Waste Policy Amendments Act of 1985

Existing Facilities Agree to Remain Open for Seven
More Years - in Exchange for the Right to Impose
Surcharges on Import

Established a Series of Milestones

Listed Exclusions

A Brief History of LLRW Disposal in the U.S.

- ❑ July 1, 1986 – Failure to enact Compact Legislation or Indicate Intent to Develop a Facility - \$20/ft³
- ❑ July 1, 1987 – Denial of Access
- ❑ Jan 1, 1988 – Site Plan Implementation - \$40 to \$80/ft³
- ❑ Jan 1, 1989 – Denial of Access
- ❑ Jan 1, 1990 – License Application Submitted – Denial of Access – or Governor Certify that the State Would Provide Disposal
- ❑ Jan 1, 1992 – File Completed License Application - \$120/ft³
- ❑ Jan 1, 1993 – Compacts can Exclude OOC Waste
- ❑ Jan 1, 1993 – Generators Could Require States to Take Title to the Waste (the teeth of the law)

A Brief History of LLRW Disposal in the U.S.

Exclusions

DOE Waste

USN Waste from Nuclear Vessel Decommissioning

FUSRAP Waste

A Brief History of LLRW Disposal in the U.S.

Implementation of the Acts

1986 – 1992

Surcharges and Penalties Enforced

Access Denied

Beatty Site Closed

Take Title Provision Struck Down

A Brief History of LLRW Disposal in the U.S.

Implementation of the Acts

Jan 1, 1993 – Northwest Compact Limits Hanford Site
Access to Member States and the RMC

July 1, 1994 – Southeast Compact Closes to OOC
Waste

July 1, 1995

- South Carolina Withdraws from SEC
- SC Opens Access to Barnwell Site to All States
Except NC
- SC Imposes Large Surcharges on Waste Disposal

A Brief History of LLRW Disposal in the U.S.

Along the Way

Various NORM/NARM/Exempt/Alternative Waste Disposal Options Arose

Waste Processing for Volume Reduction Became a Viable Commercial Enterprise

Envirocare of Utah Emerged as a Workable Solution for Most Class A Waste Disposal

SC Joined the Atlantic Compact and Legislated Future OOC Access to Barnwell

North Carolina LLRW Disposal

Wake County Disposal Site

1995 – 2000 LLRW Storage Lessons Learned

Compact Issues

Path Forward

North Carolina LLRW Disposal

Wake County Disposal Site

Original Estimate to Develop the Site \$40M

1995 Revised Estimate - \$112M for Licensing, \$65M for Construction – Completion by 1997-1998

After a Significant Expenditure in Funds and Geology Issues – NC Halts the Process and Withdraws from the SEC

North Carolina LLRW Disposal

1995 – 2000 LLRW Storage Lessons Learned

Waste Class A Disposal Options are Adequate for NC

The Four Generators of Class B and C Waste in NC

Were able to Manage On-site Storage

The Six Licensees Seeking License Termination Were

Able to Wait out the Period of No Access or

Restricted Access

Generator Consensus – Abandon the Compact System

North Carolina LLRW Disposal

Compact Issues

2002/2003 – SEC Imposes Sanctions Against NC -
\$90M (\$80M in Funds - \$10M in Penalties)

Discovery and Cross Motions

North Carolina LLRW Disposal

Path Forward

2006 Waste Management Report

Recommendations – NCRCP to NCGA

NRC – Strategic Assessment of LLRW Program

North Carolina LLRW Disposal

Path Forward 2006 Waste Management Report

Calendar Year 1995 <i>Barnwell an Option</i>	Calendar Year 1999 <i>Barnwell Not an Option</i>	Calendar Year 2006 <i>Barnwell an Option</i>
<u>Total Disposal A,B,C waste</u> 25,244 ft ³ with 3,311 Curies <i>Barnwell received >99%. Envirocare was beginning to accept Class A waste.</i>	<u>Total Disposal A waste</u> 30,174 ft ³ with 112 Curies <i>Barnwell received 0%. Envirocare received >99%.</i>	<u>Total Disposal A,B,C waste</u> 220,945 ft ³ with 97,045 Curies <i>Barnwell received <1 % of ft³ and >99% of Curies. Envirocare received >99% ft³</i>
<u>Class B & C Disposal</u> 569 ft ³ with 3,210 Curies	<u>Class B & C Disposal</u> 0	<u>Class B & C Disposal</u> 1,500 ft ³ with 96,500 Curies
<u>Class B & C in Storage</u> 152 ft ³ with 42 Curies	<u>Class B & C in Storage</u> 1,257 ft ³ with 1,311 Curies	<u>Class B & C in Storage</u> 58 ft ³ with 2 Curies

North Carolina LLRW Disposal

Path Forward

Recommendations – NCRCP to NCGA

- Develop Long-term On-site Storage Contingency Plans
- Administrative License Amendments

North Carolina LLRW Disposal

Path Forward

NRC – Strategic Assessment of LLRW Program –
SECY 07-10180, November 2, 2007

- Confirms Adequacy of Current Regulations
- Sets Three High Priority Tasks:
 - 1) Update Guidance for Extended LLRW Storage
 - 2) Develop New Guidance for Alternative Disposal of LLRW
 - 3) Develop New Guidance for Classifying LLW wrt Public H&S

Low Level Radioactive Waste Forum Updates

The LLRW Forum

- ❑ Created upon passage of the 1985 LLRWPAA as technical assistance from DOE.
- ❑ Purpose is to facilitate implementation of act & promote state and compact objectives.
- ❑ Incorporated in 2001 as an independent, non-profit entity and expanded membership to include all stakeholders – federal agencies, generators, facility operators, associations.
- ❑ Activities include meetings, publications, liaison services, working groups/committees

Low Level Radioactive Waste Forum Updates

The Atlantic Compact (SC, NJ and CT)

- ❑ Under current legislation, only in-region waste may be disposed at Barnwell post 6/08.
- ❑ The State is struggling with funding the site operations with in compact access only.
- ❑ Regional operations expected to continue for the foreseeable future.

Low Level Radioactive Waste Forum Updates

The Central Compact (AR, KS, LA,OK)

- ❑ In 9/02, district court ruled against Nebraska in suit challenging the state's actions in review of US Ecology's license application, finding process was "politically tainted."
- ❑ In 8/05, Nebraska paid the Central Compact \$145.8 million to settle the suit.
- ❑ Nebraska withdrew from the Central Compact effective July 17, 2004.
- ❑ In 4/06, generators sued compact in federal district court to preserve interest in \$5 million in remaining, undisbursed settlement funds.
- ❑ In 5/06, compact transferred land previously designated for facility to Village of Butte.

Low Level Radioactive Waste Forum Updates

The Northwest Compact (AK, HI, WA, OR, ID, MT, UT, WY)

- ▣ Utah political wrangling in 2007
 - E-care license amendments no longer require legislature and governor approval
 - No expansion of capacity
 - No B&C waste
- ▣ EnergySolutions became a publically traded company at the end of 2007.

Low Level Radioactive Waste Forum Updates

The Rocky Mountain Compact (CO, NV, NM)

- ▣ Uranium and Radium Removal from Drinking Water – Uranium Mill Feed
- ▣ Deer Trail versus Adams County

Low Level Radioactive Waste Forum Updates

The Southeast Compact (AL, FL, GA, MS, TN, VA)

SEC & Member States vs North Carolina

- Summary Motions Filed
- Court Ruling Expected Fall 2008 or Early 2009

Low Level Radioactive Waste Forum Updates

The Texas Compact (TX, VT)

- ▣ WCS Draft LLRW Disposal License - Review and Comment Phase
- ▣ WCS/Studsvik - B and C Processing and Storage Initiative

Low Level Radioactive Waste Forum Updates

Position Statements

- American Nuclear Society: In 11/04, ANS issued a revised LLW disposal position statement that supports the LLWPA and the compact system, but recommends facilitation of development of new sites including the possibility of making DOE sites available for commercial disposal and allowing commercial companies to establish sites on federal land under NRC authority.
- Health Physics Society: In 9/05, HPS issued a new position statement that asserts the federal act should be amended to allow non-DOE waste generators access to existing disposal facilities and to facilities owned & operated by DOE and to provide new disposal capacity for all LLW at a facility operated by DOE or by private industry on federal land

Low Level Radioactive Waste Forum Updates

Position Statements

- ▣ Low-Level Radioactive Waste Forum, Inc.: The LLW Forum's 9/22/05 statement provides that :
 - (1) commercial LLW is well regulated & managed safely;
 - (2) the current system is flexible & there is no immediate crisis;
 - (3) when evaluating alternatives, it is important to consider political realities, economic consequences, & regulatory concerns; and
 - (4) the federal government provides appropriate assistance to states and compacts related to commercial LLW management.

Sealed Sources and Devices

Beating the Barnwell Clock

Various Government Sponsored Programs

Commercial Solutions

Summary

- ❑ LLRW Disposal used to be cheap and available – now it's expensive and not quite as available.
- ❑ NC has adequate outlets for disposal of most of the LLRW generated by the majority of licensees.
- ❑ NC generators of B and C waste are faced with the prospect of safe extended storage.
- ❑ The overwhelming majority of waste generators has lost faith in the compact system and strongly desire alternative solutions from the government and/or private sectors.

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