December 1995

RECEIVED

FEB 23 1996

OSTI

**National Low-Level Waste Management
Program Final Summary Report of Key
Activities and Accomplishments for
Fiscal Year 1995**

Sonya Forman

Lockheed
Idaho Technologies Company

MASTER

National Low-Level Waste Management Program Final Summary Report of Key Activities and Accomplishments for Fiscal Year 1995

Sonya L. Forman

Published December 1995

**Idaho National Engineering Laboratory
Lockheed Idaho Technologies Company
Idaho Falls, Idaho 83415**

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

**Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-94ID13223**

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

Abstract

To assist the Department of Energy (DOE) in fulfilling its responsibilities under the Low-Level Radioactive Waste Policy Amendments Act of 1985, the National Low-Level Waste Management Program (NLLWMP) outlines the key activities that the NLLWMP will accomplish in the following fiscal year. Additional activities are added during the fiscal year as necessary to accomplish programmatic goals. This report summarizes the activities and accomplishments of the NLLWMP during fiscal year 1995.

CONTENTS

Abstract	iii
INTRODUCTION AND PURPOSE	1
NATIONAL PROGRAM	
SUMMARY OF ACCOMPLISHMENTS FOR FISCAL YEAR 1995	3
Technical Coordination	3
Technical Modules	4
Data Systems	6
DOE Support	7
Direct Technical Support	8
Program Support	11
GTCC LLW PROGRAM	
SUMMARY OF ACCOMPLISHMENTS FOR FISCAL YEAR 1995	13

National Low-Level Waste Management Program Final Summary Report of Key Activities and Accomplishments for Fiscal Year 1995

INTRODUCTION AND PURPOSE

The National Low-Level Waste Management Program (NLLWMP) supports the Department of Energy (DOE) by assisting the states and compact regions in their efforts to manage low-level radioactive waste (LLW). The states and compact regions were assigned this responsibility under the Low-Level Radioactive Waste Policy Amendments Act (LLRWPA) of 1985, Public Law 99-240.

The NLLWMP is the single organization within the DOE and commercial LLW systems that maintains the national perspective on low-level radioactive waste management. The NLLWMP is the repository for both the historical and current perspective on technical, institutional, regulatory, and political activities and issues related to national low-level radioactive waste management. This report summarizes the activities and accomplishments of the NLLWMP during fiscal year 1995 (FY 1995).

As a subset of the NLLWMP, the Greater-Than-Class C Low-Level Waste (GTCC LLW) Management Program supports the DOE in ensuring the safe and efficient management and disposal of GTCC LLW generated by Nuclear Regulatory Commission (NRC) and Agreement State licensees. The responsibility for ensuring the safe disposal of GTCC LLW was assigned to the Federal government by Public Law 99-240.

For FY 1995, activities of the NLLWMP were divided into six major categories: Technical Coordination, Technical Modules, Direct Technical Support, Data Systems, DOE Support, and Program Support.

There were five major accomplishments by the NLLWMP and the GTCC LLW Program in FY 1995, three from the NLLWMP and two from the GTCC LLW Program.

- The National Program organized and presented the 16th Annual DOE Low-Level Radioactive Waste Management Conference on December 13-15, 1994, in Phoenix, Arizona. Conference proceedings were distributed on computer diskette to the participants and also were placed on the Internet, providing international access to the proceedings.
- NLLWMP staff prepared an article entitled *Assured Storage Facilities: A New Perspective on Low-Level Radioactive Waste Management* that was featured as the cover article of *RADWASTE Magazine* in September 1995. The article

discusses the “assured storage concept” developed by the NLLWMP staff and a former Nuclear Waste Negotiator and Lieutenant Governor of Idaho.

- The *1994 State-by-State Assessment of Low-Level Radioactive Wastes Received at Commercial Disposal Sites* was issued. Both the 1993 and 1994 State-by-State reports have been loaded on the Internet. This provides national and international access to the report.
- The GTCC LLW Program held discussions with the DOE’s Office of Civilian Radioactive Waste Management (OCRWM) concerning potential co-disposal of GTCC LLW with spent fuel and high-level waste in a deep geologic repository.
- Stakeholder meetings were held on April 11, 1995, in Washington, DC, and on April 13, 1995, in Portland, Oregon for the GTCC LLW Program. Historical data was provided on the GTCC LLW issue and general discussions held.

Detailed summaries for each of these major accomplishments and other activities of the NLLWMP and the GTCC LLW Program can be found in the following sections of this report.

NATIONAL PROGRAM SUMMARY OF ACCOMPLISHMENTS FOR FISCAL YEAR 1995

Technical Coordination

The NLLWMP provides a mechanism to exchange pertinent information among states, compact regions, Federal agencies, LLW generators and brokers, and legislators on the development of new LLW disposal capacity and management techniques. Individual tasks in this group (with the associated accomplishments during FY 1995) are as follows:

- Annual DOE Conference on Low-Level Radioactive Waste Management

The NLLWMP organized and presented the 16th Annual DOE Low-Level Radioactive Waste Management Conference on December 13-15, 1994, in Phoenix, Arizona. The conference was attended by over 250 individuals representing DOE-HQ, management and operations contractors, state and regional compacts, special interest groups, universities, nuclear utilities, and low-level radioactive waste consultants. The conference provided an opportunity for professionals involved in managing both commercial and DOE LLW to discuss items of mutual concern. Topics included performance assessment, GTCC LLW, public acceptance considerations, waste treatment, licensing, emerging technologies, waste minimization, mixed waste, tracking and transportation, storage, and regulatory changes.

The conference was co-sponsored by the University of Idaho for the first time. This partnership between the DOE-ID, INEL, and the University of Idaho enhances the conference and reduced overall cost to DOE. Evaluation results indicate that state and DOE participants believe this is the most cost effective forum to meet the range of technical and institutional needs for the national LLW management mission.

The proceedings were distributed on computer diskette providing a cost savings for the NLLWMP. The proceedings were also put on the Internet via a home screen accessible through Mosaic, providing international access to the proceedings.

- Host State Technical Coordinating Committee

The Host State Technical Coordinating Committee (TCC) provides an opportunity for technical representatives from states developing new LLW

management facilities to coordinate and promote the exchange of information among states, address technical issues of mutual interest to states, and focus and suggest priorities on research and development activities. The NLLWMP supports the TCC and moderates three meetings held each year. This fiscal year the TCC addressed the following topics and issues: Low-Track computer software and interface with decay software, the National Academy of Science panel report on Ward Valley, assured storage facilities, volume reduction of large components, 3R-STAT computer code review, Council of Radiation Control Program Directors E-5 report on environmental monitoring, and a tour of the Wake county site. Meetings were held December 12, 1994, in Phoenix, Arizona, with the Annual Conference, on May 3-4, 1995, in Raleigh, North Carolina, and on August 16-17, 1995, in Boston, Massachusetts.

- National Conference of State Legislatures

The NLLWMP sponsored two meetings with the National Conference of State Legislatures (NCSL) providing a forum for legislators to discuss current issues. Both meetings were held with NCSL National meetings to involve as many legislators as possible. The second meeting allowed a discussion of options for states to meet their responsibilities for LLW disposal. NCSL has requested additional meetings in the future to continue information exchange and dialogue.

- Conference of Radiation Control Program Directors

The NLLWMP sponsored two workshops with the Conference of Radiation Control Program Directors (CRCPD). These workshops allow regulators from host states to meet and exchange information relative to licensing and regulation of LLW disposal facilities. Meetings were held in April and August. Several break-out sessions were held to allow discussion on specific topics.

- Volunteer Siting Plan Working Group

The Volunteer Siting Plan Working Group brings together those states and compact regions that are pursuing a voluntary process and facilitates exchange of information about the successes and failures of their efforts. States participating in this working group include Connecticut, New Jersey, Massachusetts, New York, Pennsylvania, and Michigan.

Technical Modules

The NLLWMP develops printed information that addresses topics of general interest to states and compact regions in establishing new LLW management systems. The Program develops, compiles, organizes, and documents related research and industry data into information

modules. Such modules may be in the form of reports, handbooks, plans, or bulletins. During FY 1995, the NLLWMP issued eight technical documents summarized below:

- *Introduction to Radiological Performance Assessment*, DOE/LLW-187. This document serves as an introduction to radiological performance assessment. It was written primarily for managers and lay persons who may be interested in the performance assessment process and have little prior experience in this area.
- *Mixed Waste Management Options: 1995 Update*, DOE/LLW-219. This report updates information contained in the Mixed Waste Management Options report prepared in 1991. It provides better understanding of the volume of mixed waste that remains mixed waste after treatment operations and that will need to be disposed under joint NRC/EPA regulations. Data from the *National Profile on Commercially Generated Low-Level Radioactive Mixed Waste* prepared by the U.S. Environmental Protection Agency and the U.S. Nuclear Regulatory Commission in 1992 was used as the basis for the volumes of commercial mixed waste that will require treatment and disposal.
- *Model Training Curriculum for the Training of Low-Level Radioactive Waste Operations Personnel*, DOE/LLW-220. This document includes an example of suggested contents for proposed training programs for facility personnel. Although the license application includes a description of the training programs, these descriptions are not comprehensive enough to develop and implement training programs at a facility. A comprehensive training curriculum for facility employees makes up a large portion of this document.
- *Low-Level Radioactive Waste Radionuclide Reports*, DOE/LLW-126 through 131. These six reports provide a radiological, chemical, and physical overview of the radionuclides commonly found in commercial LLW. Topics discussed include the radiological, chemical, and physical characteristics of the radionuclide, waste types and forms in which the radionuclide is present, and the behavior of the radionuclide in the environment. The six radionuclides addressed during FY 1995 were nickel-63, niobium-94, cobalt-60, curium-242, americium-241, and uranium-238. Prior reports in this series address eight other radionuclides.
- Published *National Institutes of Health: Mixed Waste Minimization and Treatment*, DOE/LLW-218. This report identifies possible waste minimization and treatment options for the low-level radioactive mixed waste generated by the biomedical community identified in DOE/LLW-208. Waste minimization options considered include: reagent substitution, procedural changes, volume reduction, education, recycling, and improved waste classification processes.

- *Answers to the Most Frequently Asked Questions About Low-Level Radioactive Waste Disposal.* This brochure was updated and distributed in January 1995. This brochure is a public information brochure that gives answers to questions that the public may have about low-level radioactive waste disposal.

Data Systems

The NLLWMP maintains a comprehensive LLW data base system that states, compact regions, DOE, and other Federal agencies may use to conduct analyses, make decisions, and apply in other special situations.

- **Data Acquisition**

Manifest records for 1994 LLW shipments for disposal have been obtained from commercial LLW disposal site operators and incorporated into the Manifest Information Management System. As of October 1, 1995, the system includes disposal information from 1986 through September 1995.

- **Customer Support**

Program staff responded to approximately one hundred individual requests for information from the Manifest Information Management System in the past year. The information was used as supporting data in states' annual reports, for answers to queries from the public, and in several newspaper articles. Information was developed and transmitted to the Integrated Data Base (IDB) program detailing the commercial LLW disposed in 1994. The IDB is published for the U.S. DOE Office of Environmental Restoration and Waste Management. Data were also supplied for the Annual DOE Report to Congress.

- **Low-Track**

The Low-Track, PC based software, developed by the NLLWMP, is capable of providing inventory management and tracking functions. This software has been field tested by three states and compact regions during fiscal year 1995. The software has been moved to a Windows environment in response to field test comments and the change in priorities with Barnwell re-opening. The Nuclear Regulatory Commission has funded a study of Low-Track by Argonne National Laboratory for the purposes of endorsing the use of Low-Track for the generation of the uniform manifest for radioactive waste shipments.

- Report Publication

The *1994 State-by-State Assessment of Low-Level Radioactive Wastes Received at Commercial Disposal Sites* (DOE/LLW-224) was prepared and distributed. This report provides information about LLW disposed of by states at commercial LLW disposal facilities, and also provides summary data from 1986 through 1994. This report is an important planning tool for states and compact regions for future LLW disposal. The 1993 and 1994 reports are available on the Internet.

- Document Information System

A Document Information System was developed by the NLLWMP. This data base program includes information about documents from all the states and compact regions and the documents produced since 1979 by the NLLWMP. The document catalog is a tool for identifying documents related to low-level radioactive waste management and disposal facility siting, regulation, performance, etc. Documents from the Nuclear Regulatory Commission are being included in the system.

DOE Support

The NLLWMP provides support, on request, to DOE on LLW issues throughout the fiscal year. During FY 1995, the NLLWMP performed the following supporting tasks:

- The NLLWMP helped DOE manage the surcharge rebate process by providing assistance in four areas: notifying generators, evaluating rebate requests and obtaining additional information, matching accounts with requests, and answering questions and providing information requested. About \$4M from over 475 accounts has been identified for disbursement through December 1995, to more than 230 generators.
- The report *Summary of Expenditures of Rebates from the Low-Level Radioactive Waste Surcharge Escrow Account for Calendar Year 1994* was published in March 1995.
- Prepared the *1994 Annual Report to Congress on Low-Level Radioactive Waste Management Progress*. This document summarizes national LLW management practices and progress toward development of new disposal capacity. This report, required by the LLRWPA, is submitted annually to Congress. The 1994 report was drafted and transmitted to DOE-HQ in March 1995.
- Distributed over 16,500 documents in response to special requests and over 3,000 documents to a standard distribution list for new NLLWMP documents.

- Responded to 52 ad hoc requests from DOE and others, including the following:
 - Made arrangements for a visit from personnel from Saudi Arabia and Korea to tour waste management facilities in the United States
 - Prepared a briefing sheet on compact status for use by DOE-RW on a Scandinavian trip
 - Prepared summary information on the court decision in the Appalachian Compact Commission vs. DOE over surcharge rebates and other surcharge rebate litigation.
 - Presented programmatic information to the Defense Nuclear Facility Safety Board (DNFSB). Information included a Program overview and specific accomplishments as well as staff capabilities. The DNFSB focused on how information developed for the states and compact regions is transferred and used for the benefit of the DOE system.
 - Presented overview of the Program to a delegation of regulatory personnel from Indonesia on October 25, 1994. Indonesia is considering building an advanced light water reactor and will require assistance with technical and licensing issues, including issues in LLW.

Direct Technical Support

Under this activity, the NLLWMP provides support to states and compact regions that is targeted to meet their specific needs and requests.

- **Workshops**

The NLLWMP conducted 26 workshops during FY 1995. Many of these workshops were developed to meet special state and compact region needs. The workshops and the states they were conducted in are:

- Conflict Resolution (Texas, Connecticut)
- LLW, Mixed Waste, and Biomedical Mixed Waste (Florida, California (2), New Jersey, Connecticut)
- LLW Minimization (California (2), New Jersey, New York (2))
- LLW Transportation (Texas)

- Risk Communication (Nebraska)
- Team Building (Texas)
- Performance Assessment (Pennsylvania)
- Volunteer Siting (Pennsylvania, Connecticut (4), New Jersey)
- Radiation Fundamentals and LLW Management (Idaho, New Jersey)
- Providing Testimony (Washington)
- Public Meeting Skills (Pennsylvania)

At the request of the University of Florida and the Southeast compact region, the Program conducted a two-and-one half day workshop on Low-Level Radioactive Waste, Mixed Low-Level Radioactive Waste, and Biomedical Mixed Waste on October 17-19, 1994, in Gainesville, Florida. Approximately 100 representatives of small generators in the Southeast compact region, other eastern seaboard states, national laboratories, and the DOE attended. The objective of the workshop was to offer generators a better understanding of issues associated with the disposal of these wastes, and emphasize the importance of waste minimization and waste avoidance.

A workshop on the NRC's Draft Branch Technical Position on Performance Assessment, jointly sponsored by the NRC, TCC, NLLWMP, and the Conference of Radiation Control Program Directors E-5 Committee, was conducted on November 16-17, 1994, in Rockville, Maryland. Topics included the test case using the NRC's proposed methodology and extensive discussions on sensitivity and uncertainty analyses.

The value of these workshops to the states and compact regions is measured in part by numerical scores that evaluate the workshops, and from comments received from attendees and agency staff. The NLLWMP has received a score of greater than 8.5 (out of 10) on all workshops provided.

NLLWM Program Technical Assistance

- State-Specific Requests

The NLLWMP supports states and compact regions in their efforts to resolve specific technical and institutional issues. Program resources are directed to specific requests from states or compact regions. The following state-specific requests were initiated and finalized in FY 1995:

- Review of site stabilization and closure plan for U.S. Ecology LLW facility
- "Cancer Patients Perspective on LLW Policy--Why We Care" video requested by Southwestern LLW Commission
- Preparation of California fact sheets on LLW legislative, regulatory, public health, and safety issues
- Arrangements for scientific experts for the National Academy of Science hearings on California's Ward Valley Site.

- Program Liaison

The NLLWMP provides technical expertise to assist states and compact regions in conducting and reviewing LLW management activities, and provides information to Congress, states, compact regions, Federal agencies, the public, and other interested parties as requested. Other objectives include maintaining contact with state and compact region representatives in order to identify technical assistance

needs and monitor progress of new LLW management system development. Accomplishments in this area include the following:

- Liaisons attended 28 compact and advisory committee meetings and provided information on request
- Liaisons developed and coordinated specialized training for staff personnel
- Liaisons developed special research materials, such as comparisons of host state siting criteria, and distributed Program materials to states and compact region officials. Activities were particularly heavy for the Southwestern compact, the Southeast compact, and Texas.

Program Support

The program support task provides information, planning, project management, and technical support for the day-to-day operation of the NLLWMP. Key accomplishments under this task include the following:

- *Assured Storage Facilities: A New Perspective on Low-Level Radioactive Waste Management.* This article was featured as the cover article of *RADWASTE Magazine* for the September 1995 special edition on low-level radioactive waste. The article discusses the “assured storage concept” developed and authored by NLLWMP staff and a former Nuclear Waste Negotiator and Lieutenant Governor of Idaho. The assured storage concept builds on many of the advances made in disposal technology, but instead of being site dependent and anticipating ultimate abandonment, it seeks to preserve management options through continued inspection and monitoring combined with planned preventive maintenance.
- *Assistance Available Through the National Low-Level Waste Management Program*, DOE/LLW-68T, Revision 4. This report is a reference for state and compact region representatives to use in understanding the various technical services and projects available through the National Low-Level Waste Management Program. The report includes updates to workshops the NLLWMP has developed and briefs describing the latest technical modules distributed by the NLLWMP.

GTCC LLW PROGRAM

SUMMARY OF ACCOMPLISHMENTS FOR FISCAL YEAR 1995

Significant FY 1995 accomplishments in the GTCC LLW Program are discussed below.

- **Stakeholder Meetings**

Two stakeholder meetings were held on April 11, 1995, in Washington, DC, and on April 13, 1995, in Portland, Oregon. The meetings provided a historical summary of the greater-than-Class C low-level radioactive waste issue to date, a presentation by utility representatives that are in the decommissioning phase, and then provided for general discussion. The public was represented at each of the meetings as were the utilities, the Nuclear Regulatory Commission, the Environmental Protection Agency, and contractors to utilities. The input received from the stakeholder meetings has been an important element for the formulation of a strategy for addressing the greater-than-Class C low-level radioactive waste issue.

- **Office of Civilian Radioactive Waste Management**

The GTCC LLW Program has continued discussions with the DOE's Office of Civilian Radioactive Waste Management (OCRWM) concerning the potential co-disposal of GTCC LLW with spent fuel and high-level waste in a deep geologic repository. GTCC LLW Program background information was discussed with OCRWM personnel at an interface meeting held in Washington, DC, on February 8, 1995. The information discussed included legislative and regulatory requirements, GTCC LLW characterization and projections data, strategic options for GTCC LLW management and disposal, and potential issues associated with co-disposal options. The major issues associated with this co-disposal scenario were discussed, and near-term actions leading toward resolving these issues were identified. Subsequent meetings were held with OCRWM personnel on March 1, 1995, and March 28, 1995.

- **Sealed Source Recovery Program**

Phase I of the program was established in February 1995, providing storage for selected sealed sources deemed to pose health and safety risk to the public. This provision utilizes existing Idaho National Engineering Laboratory (INEL) infrastructure and storage facilities that would be capable of receiving and storing up to 50 problematic sealed sources.

Phase II of the program has moved forward toward providing long-term storage for sealed sources that pose health and safety risk to the public. An INEL building was selected and modification began to upgrade the building to accommodate storage of sealed sources. Procedures were established, SAR documentation completed, and NEPA action completed. The facility is scheduled for operation in February 1996. Discussions concerning the program have been held with the State of Idaho.

- GTCC Management Plan

A GTCC Management Plan was completed in September 1995 by a team consisting of DOE-EM, DOE-ID, the INEL, and consultants. The plan addresses the management of all GTCC LLW to protect the public and pursue the DOE mandate to provide for disposal of GTCC LLW waste. The plan calls for storage of GTCC LLW at the licensee site until disposal options become available. DOE will provide storage only for cases where sealed sources are determined to pose health and safety risk to the public. In the latter case, the sources will be recovered and stored within the DOE complex.

- General Program Support

A draft report to Congress was prepared for the GTCC LLW Program. The report was provided to DOE for review and comment in September 1995.

A summary of current legal considerations concerning GTCC LLW disposal was prepared for DOE-EM and DOE-RW in July 1995. The summary was provided to assist formulation of a plan to develop disposal options for GTCC LLW.