

POLICY ISSUE

(Information)

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SECY-06-0193

FOR: The Commissioners

FROM: Luis A. Reyes
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SUBJECT: ANNUAL REVIEW OF THE NEED FOR RULEMAKING AND/OR
REGULATORY GUIDANCE ON LOW-LEVEL RADIOACTIVE
WASTE (LLRW) STORAGE

PURPOSE:

This paper responds to the Commission's staff requirements memorandum (SRM) dated January 29, 2004, addressing SECY-03-0223, "Rulemaking Plan: Assured Isolation Facilities," dated December 24, 2003. In the SRM, the Commission directs the staff to "defer rulemaking on assured isolation facilities at this time and to annually review the need for further action in this area. The annual review should include not only the need for potential rulemaking associated with assured isolation facilities but also the potential need for rulemaking and/or regulatory guidance for long term storage of low-level radioactive waste in general."

This paper informs the Commission of the results of the staff's annual review and of the staff's intent to initiate activities to update existing long-term LLRW storage guidance.

SUMMARY:

This paper provides the staff's basis for departing from the results of previous assessments that revision of guidance related to the long-term storage of LLRW was unnecessary.

SECY-05-0024, "Annual Review of Need for Rulemaking on Low-Level Waste Storage," dated January 31, 2005, foresaw no need for a rulemaking on assured isolation facilities and no immediate need for supplemental rulemaking/guidance associated with long-term LLRW storage. The staff still considers rulemaking to address long-term storage unnecessary. The

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current regulatory framework continues to provide an adequate basis for regulation of stored radioactive material including LLRW. However, for reasons outlined herein, the staff now considers reviewing and updating guidance for the long-term storage of LLRW to be a valuable endeavor particularly in light of the legislatively mandated (see below) closure of the Barnwell LLRW disposal facility in 2008.

The staff has identified no policy issues raised by this paper or the initiative described herein. If policy issues are identified in the implementation process, the staff will request guidance from the Commission.

BACKGROUND:

Current Status of Commercial LLRW Disposal:

The U.S. Nuclear Regulatory Commission (NRC) has stated, on numerous occasions, that permanent disposal is the preferred management option for LLRW. Over the past two decades, however, permanent disposal of LLRW at commercial facilities has become costly and sometimes problematic. In addition, access to the facilities could become more limited in the future.

As reported in SECY-05-0024, the future availability of disposal capacity is somewhat uncertain, particularly for Class B and C waste. SECY-05-0024 cites a June 2004 Government Accountability Office (GAO) report to the Senate Committee on Energy and Natural Resources (GAO-04-604, "Low-Level Radioactive Waste-Disposal Availability Adequate in the Short-Term, but Oversight Needed to Identify Any Future Shortfalls"). In that document, GAO reported that commercial disposal capacity is adequate for the short term, but that options for users of radioactive materials who generate Class B and C LLRW are likely to be limited after 2008. On July 1, 2008, South Carolina, pursuant to a requirement in the Atlantic Interstate Low-Level Radioactive Waste Compact Implementation Act (Title 48 SCC, Chapter 46), is expected to close the Barnwell facility to all but member States of the Atlantic Compact (South Carolina, Connecticut, and New Jersey). This circumstance will foreclose disposal of Class B and C LLRW to generators in 36 States, the District of Columbia and the Commonwealth of Puerto Rico. The commercial LLRW facility near Richland, Washington, is expected to continue to serve as the regional full service compact facility for the Northwest and Rocky Mountain Compacts. If Barnwell is unavailable to all but Atlantic Compact states, only the Clive, Utah, LLRW disposal facility will be open to the entire Nation. The Clive site is licensed to accept only Class A LLRW.

The Texas Commission on Environmental Quality is currently reviewing a license application for a commercial LLRW disposal site near Andrews, Texas. If licensed, the facility is earmarked to serve the commercial LLRW disposal needs of generators in the Texas Compact (i.e., Texas and Vermont).

The cost to dispose of LLRW has increased dramatically since the early 1980's, providing one incentive to store, rather than dispose of, LLRW. At the Barnwell LLRW facility, the price for disposal of some out-of-compact Class B and C waste exceeds \$2,600 per cubic foot, including taxes and surcharges. The Health Physics Society (HPS) has cited the high cost of LLRW disposal as an impediment to the beneficial use of some radioactive material. In background information for the HPS September 2005, position statement, "Low-Level Radioactive Waste

Management Needs a Complete and Coordinated Overhaul,” HPS reports that disposal of some bulk Class A LLRW under government contract at the Utah facility is as low as \$5 per cubic foot. Disposal of Class A waste at Barnwell or Richland can exceed \$200 per cubic foot.

While all types of licensees are concerned with cost escalation, such increases particularly impact some materials users in the medical and research communities. According to the HPS, some medical research has been curtailed because of the high cost of waste disposal. At a recent Advisory Committee on Nuclear Waste working group meeting on LLRW, Dr. Joseph Ring, of Harvard University, confirmed that the cost of LLRW disposal has negatively impacted some research programs. Recently, the cost to dispose of one drum of LLRW generated at a Harvard research facility was \$27,000.

In some cases, facility specific waste acceptance criteria also constrain LLRW disposal. For example, disposal of LLRW generated during one particular cleanup is complicated by the presence of both “traditional” byproduct material and radium in the waste stream. Such waste is excluded from Barnwell because of the radium and cannot be accepted at Richland due to Compact restrictions on byproduct material.

Overview of Currently Existing LLRW Storage Guidance:

NRC developed its existing guidance for the long-term storage of LLRW in the 1980’s and early 1990’s. The agency issued Generic Letter 81-38 “Storage of Low-Level Radioactive Wastes at Power Reactor Sites,” which provides much of the substantive guidance related to the long-term storage of LLRW generated at nuclear power plants, on November 10, 1981. Similarly, on February 5, 1990, NRC issued Information Notice 90-09, “Extended Interim Storage of Low-Level Radioactive Waste by Fuel Cycle and Materials Licensees.” While the governing concepts offered in the guidance are still valid, some of the implementing detail may not be. For instance, current guidance may contain information or suggestions that are inconsistent with or, at least, not reflective of current technology, since technology employed in the packaging, handling, and monitoring of stored LLRW has evolved over the past two decades.

Current NRC guidance exists in many forms (generic letters, information notices, NUREGs, inspection procedures, branch technical positions, the staff health physics position papers and others), some of which are redundant. Furthermore, some references, particularly to 10 CFR Part 20, “Standards for Protection Against Radiation,” are out of date.

Some Agreement States have also developed and implemented guidance and, in some cases, regulations related to the long-term storage of LLRW. Furthermore, some Agreement and Non-Agreement States may have developed storage guidance related to naturally occurring and accelerator produced radioactive material, including waste, that is now subject to NRC regulatory oversight as a result of the Energy Policy Act of 2005 (EPAct 2005).

The last major staff initiative to update LLRW long-term storage guidance occurred in 1994. At that time, the staff compiled all major guidance for both nuclear power plant and radioactive material facilities (SECY-94-198, “Review of Existing Guidance Concerning the Extended Storage of Low-Level radioactive Waste,” issued August 1, 1994). Much of the impetus for that effort came from the pending closure of the Barnwell LLRW disposal facility to the majority of the Nation’s LLRW generators. When Barnwell reopened after a brief closure, the urgency for updated and consolidated LLRW storage guidance diminished and the staff efforts were

redirected. Since then, the staff has reported to the Commission that significant efforts directed toward either rulemaking or updated guidance for the extended storage of LLRW were unnecessary.

DISCUSSION:

In late 2005, the staff of the Division of Waste Management and Environmental Protection conducted limited discussions with other NRC headquarters offices, NRC Regional staff, State radiation control personnel and cognizant industry personnel on the subject of LLRW storage guidance. The discussion in this paper reflects insights received from these limited consultations.

Status of LLRW Storage in the United States:

Licensees cite various reasons for storing LLRW, including to allow for decay of short-lived radioactive materials to innocuous levels to avoid the need for disposal in a LLRW facility, as well as economical benefits of storing radioactive waste before disposal, broker/processor backlog, the high cost of disposal, and concerns about the potential liability involved with sending waste to a disposal site. Since the mid-1990's, NRC and the Agreement States have allowed on-site storage of LLRW without a specified time limit as long as it is demonstrably safe. NRC and Agreement State inspection programs confirm safe storage. Since September 2001, security, as well as safety, of stored LLRW has assumed increased importance and regulatory scrutiny.

In GAO-04-0604, GAO has acknowledged that storage is presently safe, but has reiterated the NRC's concern about the future safety and security of the increasing volumes of LLRW stored by thousands of licensees who may not have disposal options for Class B and C wastes in the future.

Changes since the Development of LLRW Storage Guidance:

Since NRC promulgated its LLRW long-term storage guidance, NRC regulations have changed significantly. For example, in the 1990s, the agency substantially revised 10 CFR Part 20. Many of the new and updated portions directly impact LLRW storage. These include, but are not limited to, changes in technology, personnel dosimetry, monitoring, container labeling, posting, and security of stored radioactive material.

EPAct 2005 gives NRC increased regulatory responsibility for some naturally occurring radioactive material, such as discrete-source radium, as well as some accelerator produced radioactive material. Long-term storage of this material may introduce considerations for which additional guidance is appropriate.

Since September 11, 2001, the security aspects of stored LLRW have received increased regulatory attention. Waste stored at licensed facilities is secure at present. However, some licensees may not be fully prepared for storing and securing increased volumes of LLRW for the long-term. NRC has promulgated increased controls and implementing guidance for licensees that possess radioactive material in quantities of concern. It may be appropriate for the agency to incorporate this guidance by reference, or by reporting relevant portions, in updated guidance for LLRW storage.

It is also likely that changes in technology have occurred over the past several decades that may, at least, impact guidance implementation. These may include changes in waste characteristics, waste form and packaging, and aspects of storage venues, as well as methods and mechanisms for monitoring and moving stored waste.

Staff Plans to Address Gaps/Shortcomings:

NRC staff believes that a review of current long-term LLRW storage guidance with respect to statutory, regulatory, technology and policy changes, discussed briefly above, is likely to identify some gaps and shortcomings. Therefore, staff intends to begin work in Fall 2006 reviewing and annotating primary (e.g. NUREG 1556, Inspection Procedure 84900) and source documents (e.g. Information Notice 90-09, Policy and Guidance Directive 94-05) providing guidance related to long-term storage of LLRW. This review will focus on changes in NRC policy and practice related to radioactive waste safety and security since LLRW storage guidance was originally promulgated. Analyses will include consolidation with NRC regional personnel with licensing and inspection expertise related to long-term storage of LLRW. Staff also intends to consult with radiation control professionals in Agreement States both individually and, as appropriate, collectively through the Organization of Agreement States and the Conference of Radiation Control Program Directors. To the extent that one or more states may have already developed and deployed guidance that is responsive to needs identified in this effort, LLRW staff will, to the extent practicable, adopt and incorporate such guidance. Staff further intends to inform its analysis with the results of a gap analysis specific to the dispositioning of radioactive material of greatest security concern with respect to radiological dispersal devices prepared by the DOE/NRC Interagency Working Group on Radiological Dispersal Devices (May 2003).

Staff believes that some of the gaps identified in this effort, particularly those related to storage of Class B and C waste at nuclear materials facilities, may represent a more immediate need for mitigation given the likely closure of the Barnwell LLRW disposal facility in 2008. Industry and State representatives have noted that nuclear utilities and fuel cycle facilities are better prepared to deal with the safety and security aspects of long-term LLRW storage than many materials licensees. They have both the infrastructure and experience to ensure adequate long-term storage based on current guidance. Further, the Electric Power Research Institute is in the process of developing detailed implementation guidance for storage of LLRW at nuclear power plants. For this reason, the staff will focus on the needs of materials licensees in the development of updated or supplemental guidance. Consultation and coordination with other NRC headquarters offices, NRC regional offices, State radiation control personnel and industry representatives will continue as noted above. No additional resources other than those already allocated (see below) are currently foreseen. Staff will align any follow-on effort to update and consolidate all LLRW long-term storage guidance, if deemed appropriate, in accordance with priorities established via its LLRW Strategic Assessment.

COMMITMENTS:

The staff has committed to the following actions in this paper:

- Beginning in the fall of 2006, perform a gap analysis of existing LLRW long-term storage guidance necessary to develop updated or supplemental guidance for materials licensees to address the loss of disposal capacity for many Class B and C waste

generators as a result of the likely closure of the Barnwell LLRW disposal facility scheduled for July 2008.

RESOURCES:

The staff commitment to implement the activities summarized herein does not pose any known resource implications. Resources for fiscal years (FY) 2006-2007 budgeted 0.2 full-time equivalent (FTE) for FY06 and 0.3 FTE for FY07. If during implementation, the staff identifies the need for additional resources beyond those already budgeted, then this will be addressed via the agency's Planning, Budgeting, and Performance Management process.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections. In preparing this paper, the staff has considered the insights and experience of a selected sampling of regional licensing and inspection personnel, state radiation control program officers, waste brokers, and radioactive materials users.

CONCLUSION:

Staff intends to begin, in the fall of 2006, a gap analysis of existing guidance related to long-term storage of LLRW and to develop updated or supplemental guidance. This initiative will focus on the needs of radioactive materials manufacturers, distributors and users (including industrial, academic, medical, and research facilities) who generate, and will no longer have the ability to dispose of, Class B and C LLRW after the closure of the Barnwell LLRW disposal facility. The staff plans to consult with other NRC headquarters offices, regional personnel, State radiation control personnel and industry representatives throughout this effort. The staff intends to make any updated or supplemental guidance available to NRC end users, State radiation control personnel and materials licensees before access to the Barnwell facility is restricted to Atlantic Compact States in mid-2008.

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