CALIFORNIA
RADIOACTIVE MATERIALS
MANAGEMENT FORUM

Keith E. Asmussen, Ph.D., CHAIR
Dir., Licensing, Safety & Nuclear Compliance
General Atomics
Post Office Box 85608
San Diego, CA 92186-5608
(858) 455-2823, Fax (858) 455-2822
E-Mail: keith.asmussen@gat.com

TECHNICAL DIRECTOR
Alan Pasternak, Ph.D.
P.O. Box 1638, Lafayette, CA 94549-1638
(925) 283-5210, Fax (925) 283-5219
E-mail: APasConslt@aol.com

TREASURER
Gary Stimmell
GE Hitachi Nuclear Energy

SECRETARY
Vilmarie Rodriguez
Ligand Pharmaceuticals

PAST CHAIRMAN
Philip D. Rutherford
The Boeing Company

April 7, 2009

The Honorable Dale Klein, Chairman,
Gregory B. Jaczko, Peter B. Lyons,
and Kristine L. Svinicki, Commissioners,
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Commissioners,

I am writing on behalf of the Board of Directors of the California Radioactive Materials Management Forum (Cal Rad Forum) to provide our views and background information on issues that we hope will be discussed at the Commission briefing on low-level radioactive waste scheduled for April 17th. Cal Rad is an association of organizations, public and private, that use radioactive materials and generate low-level radioactive waste in the Southwestern Compact region. Our corporate and institutional membership covers the spectrum of organizations that use radioactive materials in research, medicine, power generation, and other industrial applications.

Cal Rad was founded in 1983 to assist and promote governmental responses to the requirements of the Low-Level Radioactive Waste Policy Act that will assure access to safe disposal facilities, under regulations consistent with sound science, for all classes of low-level waste generated by organizations that use radioactive materials. Cal Rad conducts legislative, regulatory, and public information programs in pursuit of these objectives.

Our current concerns focus on the lack of disposal capacity for LLRW waste classes B and C and for sealed sources and biological wastes. We will present these concerns and our proposed solutions to you in this and subsequent letters.

With respect to the current lack of access to disposal facilities for Class B and C waste generated in 36 states, we are, of course, pleased by the progress being made by Waste Control Specialists (WCS) toward the development of new disposal facilities in Texas. We are also encouraged by the statement of the WCS President in his paper prepared for the Waste Management '09 Symposium that that their facility

"…will also provide a partial solution to the nation's current lack of disposal options for Class B and C LLW."

Of course, we would like greater assurance than what can be provided by a single state (i.e., Texas) that disposal will be available. Cal Rad has long argued for a federal (U.S. Department of Energy) involvement in providing that assurance — not only for B and C wastes but also for sealed sources and biological wastes which are not accepted at Energy*Solutions'* Clive, Utah facility — and we continue to make that argument.

We would like to invite your attention to the revised Position Statement on Disposal of Low-Level Radioactive Wastes (Position Statement #11) and the associated Background Information document posted on the web site of the American Nuclear Society at http://www.ans.org/pi/ps/. (Cal Rad worked with committees of the ANS in the preparation of these documents.) The Position Statement proposes both a long-term and near-term solution for disposal of non-DOE (sometimes called "commercial") low-level wastes that otherwise lack disposal options. These proposed solutions are outside the framework of the Low-Level Waste Policy Act. Long-term: use of the Greater-than-Class C disposal facility that DOE is mandated to develop by the Energy Policy Act of 2005 for disposal of these wastes. Near-term: use of some existing disposal facilities presently operated by DOE for its own wastes. The Background Information document includes discussions of the history of the Policy Act and its implementation, effect of the loss of the Act's "Take Title" provision (by Court order), the seriousness of the inability to dispose of Class B and C wastes, statements by the NRC in commenting on a GAO report and by NRC Commissioners in speeches and hearings, and the DOE's Offsite Source Recovery Project (OSRP) as an example of how the federal government can use its resources to solve a national problem in radioactive waste management and disposal.

If you have any questions or comments about the information in this letter, please call our Chairman, Dr. Keith Asmussen at 858/455-2823 or me at 925/283-5210.

Sincerely,

Alan Pasternak

Attachments: ANS Position Statement
And Background Information

cc: NRC Staff
Cal Rad Forum Board of Directors

Disposal of Low-Level Radioactive Waste

Position Statement
Revised February 2009

The American Nuclear Society (ANS) recommends prompt actions to ensure that adequate low-level radioactive waste (LLRW) disposal capability continues to be maintained until a path for disposal is provided by the Low-Level Radioactive Waste Policy Act (LLRWPA) of 1980 (Public Law 96-573) and the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPA Amendments) or by other means. LLRW is waste produced from the use of radioactive materials in industrial activities, academic research and medical activities, nuclear power generation, and site decontamination. It does not include spent nuclear fuel or any other material considered to be high-level radioactive waste.

Escalation of costs results from the need to maintain safe and secure storage when LLRW accumulates at the many sites licensed to possess radioactive material. Currently, disposal capability is limited (more for some LLRWs than others) because no new facilities have been licensed to dispose of Class A, B, and C LLRW,[a] in accordance with the compact system established by the LLRWPA of 1980. As of July 1, 2008, no disposal sites have been available for the Class B and C LLRW produced in 36 states, and only one site is available for Class A LLRW produced in these states,[b] although there is a site under licensing review in Texas. Biological LLRW produced in these states also has no clear disposal path. Actions need to be taken soon to provide for adequate LLRW disposal capability. Capability must include both access and capacity. Provisions are available under Public Law 96-573 and 10 CFR 61 (Ref. 1) for emergency access to disposal capacity, but the lack of permanent disposal capability could stop or impede various research, medical, and industrial activities.

Accordingly, the ANS supports the following:

1. Prompt State and Federal government actions to resolve issues regarding state and federal responsibility and control over LLRW disposal, including transportation to disposal sites and facilitating development of such sites. One interim approach may be to make some current U.S. Department of Energy (DOE)–managed LLRW disposal sites available for commercial (i.e., non-DOE) LLRW. Until adequate disposal capability is developed (according to the LLRWPA of 1980 and the LLRWPA Amendments or otherwise), the ANS supports the following:

- *Long-term*: The Greater-than-Class C (GTCC) disposal facility that the DOE is mandated to provide for non-DOE ("commercial") GTCC and DOE "GTCC-like" LLRW should also be made available for disposal of other non-DOE LLRWs that have no other disposal option.

- *Near-term*: Until the GTCC disposal facility is provided, some existing DOE disposal facilities should be made available for disposal of non-DOE Class B and C LLRW. Existing compacts with operating disposal facilities should be allowed

to continue to function within the framework established by the LLRWPA of 1980 and the LLRWPA Amendments or otherwise. That framework should continue to be available for compacts or states in the future.

2. Continued minimization of LLRW generation and assurance that LLRW is packaged, handled, and temporarily stored in a safe manner.

3. Federal government actions to investigate reclassification of some Class B and C LLRWs and to communicate changes in the classification scheme of 10 CFR 61 (Ref. 1).

---

[a]See companion document: "Disposal of Low-Level Radioactive Waste: Background Information," American Nuclear Society (Feb. 2009).

[b]The Barnwell, South Carolina, site was closed July 1, 2008, to LLRW generated outside the Atlantic Compact. EnergySolutions's Clive, Utah, disposal site is now the only site available to LLRW generators in 36 states. This site is not licensed for biological waste, sealed sources, or Class B and C LLRW. States in the Northwest and Rocky Mountain Compact regions have access to a compact-operated site (Richland, Washington).

Reference

1. Title 10, "Energy," Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," *Code of Federal Regulations.*

Disposal of Low-Level Radioactive Waste

Background Information
February 2009

INTRODUCTION

In 1980 and 1985, Congress enacted the Low-Level Radioactive Waste Policy Act (LLRWPA) of 1980 (Public Law 96-573) and the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPA Amendments) (Public Law 99-240), which encouraged states to form regional compacts for the disposal of low-level radioactive waste (LLRW) and contained both positive and negative incentives. The positive incentive was a provision that allowed compacts to restrict access to their regional LLRW disposal facility to member states beginning in 1993, thus limiting the amount of LLRW disposed of in any state hosting a regional disposal facility. The negative incentive required states that failed to provide access to LLRW disposal facilities to take title and possession of LLRWs generated within their borders—the so-called "Take Title" provision. In 1992, in a lawsuit brought by New York State, the U.S. Supreme Court struck down the "Take Title" provision thus removing a major incentive for states to develop new disposal facilities.

Since 1980, Congress has granted consent to ten interstate compacts, but no new disposal facilities meeting the requirements of the LLRWPA of 1980 and the LLRWPA Amendments—i.e., ability to dispose of Class A, B, and C LLRWs—have been developed.[a] Texas is now the only state actively developing a new LLRW disposal facility in accordance with the compact provision of the LLRWPA of 1980 and the LLRWPA Amendments. In 1993, the Northwest Compact and Washington State restricted access to the Richland (Hanford) LLRW disposal facility to the 11 states of the Northwest and Rocky Mountain Compacts. For many years, the

[a]LLRW Classes A, B, and C are defined in U.S. Nuclear Regulatory Commission (NRC) regulations in 10 CFR 61.55 (Ref. 1) and 10 CFR 61.56 (Ref. 2). The classes of LLRW are defined as follows (quoted in part):
(i) Class A waste is waste that is usually segregated from other waste classes at the disposal site. The physical form and characteristics of Class A waste must meet the minimum requirements set forth in 10 CFR 61.56(a). If Class A waste also meets the stability requirements set forth in 10 CFR 61.56(b), it is not necessary to segregate the wastes for disposal.
(ii) Class B waste is waste that must meet more rigorous requirements on waste form to ensure stability after disposal. The physical form and characteristics of Class B waste must meet both the minimum and stability requirements set forth in 10 CFR 61.56 (Ref. 2).
(iii) Class C waste is waste that not only must meet more rigorous requirements on waste form to ensure stability but also requires additional measures at the disposal facility to protect against inadvertent intrusion. The physical form and characteristics of Class C waste must meet both the minimum and stability requirements set forth in 10 CFR 61.56 (Ref. 2).

Atlantic Compact and South Carolina accepted LLRWs at the Barnwell disposal facility from the 36 states not members of the Northwest, Rocky Mountain, or Atlantic Compact. This was the only disposal outlet for Class B and C LLRWs generated in these 36 states. But, as of July 1, 2008, access to Barnwell has been restricted to the three states of the Atlantic Compact.

Position Statement 11 proposes both near-term and long-term solutions for disposal of Class B and C LLRWs generated by non–U.S. Department of Energy (DOE) organizations in the 36 states that lost access to the Barnwell, South Carolina, disposal facility on July 1, 2008. The solutions proposed here call for the federal government, specifically the DOE, to play a key role and are outside the existing interstate compact framework established by the LLRWPA of 1980 and the LLRWPA Amendments and subsequent state ratification and Congressional consent statutes.

BACKGROUND

South Carolina law and Atlantic Compact policies provide that access to Atlantic Compact's regional disposal facility at Barnwell be restricted to the three Compact states (South Carolina, Connecticut, and New Jersey) as of July 1, 2008. This date was fixed several years prior to the July 1, 2008, deadline.

How serious is the situation? Since July 1, 2008, public and private institutions and corporations and all federal and state government agencies, except the DOE, that use radioactive materials in 36 states, the District of Columbia, and Puerto Rico have had no place to dispose of their Class B and C LLRWs. These are the states not in the Northwest, Rocky Mountain, and Atlantic Compacts. The regional disposal facilities in Richland, Washington (Northwest and Rocky Mountain Compacts), and Barnwell, South Carolina (Atlantic Compact), are the only facilities licensed to dispose of Class B and C LLRWs. As noted, access to the Richland disposal facility has been restricted to the Northwest and Rocky Mountain Compacts since 1993. Utah statute (2005) (Ref. 3) limits the Energy*Solutions* disposal facility at Clive, Utah, to Class A LLRW. This facility is not a regional disposal facility and is open to all states except those in the Northwest and Rocky Mountain Compacts. As of July 1, 2008, it is the only facility to which organizations in states and territories not belonging to the Atlantic, Northwest, and Rocky Mountain Compacts can send their Class A LLRW—not including biological wastes and sealed sources, which are excluded. According to data from the DOE's Manifest Information Management System, in 2006, the activity (curies) in Class B and C LLRWs disposed of at Barnwell by the non-DOE users in these 36 states accounted for 95% of the activity disposed of at all three disposal facilities (Barnwell, South Carolina; Richland, Washington; and Clive, Utah) by all non-DOE generators. The phrase "non-DOE" more accurately describes those users of radioactive materials of concern here than the often-used description "commercial." The concern is with institutional users such as universities; medical and research centers; agencies of state and federal governments, except for the DOE; and commercial users such as utilities with nuclear power plants and industries including pharmaceutical and biotech companies.

A more definitive, long-term solution for Class B and C LLRWs and biological LLRW and sealed sources other than indefinite, on-site, or other storage is needed. On-site storage is not an option for facilities completing decommissioning.

ACTION IS NEEDED FOR LLRW DISPOSAL

As noted, since passage of the LLRWPA of 1980 and the LLRWPA Amendments, Congress has approved ten interstate disposal compacts, but no new disposal facilities meeting the requirements for disposal of Class A, B, and C LLRWs have been developed under state oversight as called for in the LLRWPA of 1980 and the LLRWPA Amendments. Only one proposed facility received a conditional license: the proposed Ward Valley disposal facility in California's arid Mojave Desert designed to serve the four states of the Southwestern Compact (Arizona, California, North Dakota, and South Dakota). The Ward Valley facility never opened because of political opposition, first by the Clinton Administration and later by the California Legislature and the governor of California (former Governor Gray Davis). Texas has an active program to develop a new disposal facility (Texas and Vermont Compact) and is currently in licensing proceedings.

In a 2002 speech, NRC Chairman Richard Meserve noted the need for Congressional action to modify the approach of the LLRWPA of 1980 and the LLRWPA Amendments. It was hoped that Envirocare of Utah (now Energy*Solutions*) would obtain approval from the State of Utah for disposal of Class B and C LLRWs. However, a state law enacted in 2005 prohibits the acceptance of Class B and C LLRWs for storage or disposal.[3] In Chairman Meserve's speech, he said the following:

> Sufficient disposal capacity currently exists to handle today's disposal needs, particularly in light of the trend towards license renewal of civilian nuclear power plants. (License renewal delays decommissioning and hence postpones the need to dispose of the waste associated with decommissioning.) In addition, waste minimization, volume reduction, and decay-in-place strategies reduce the overall volume of material. Nonetheless, the disposal situation is increasingly uncertain. With the eventual closure of the Barnwell disposal facility to states outside the Atlantic Compact, the absence of progress in other Compacts to site low-level waste disposal facilities, and few other disposal options, access to facilities for the disposal of low-level waste is increasingly constrained. Although Envirocare of Utah may eventually obtain state approval for disposal of Class B and C wastes, the limited options for disposal are likely to keep disposal costs high. There is thus the potential that the decommissioning process for many sites and the medical use of radionuclides will be affected adversely.[4]

Other members of the NRC—Commissioners Gregory Jaczko, Peter Lyons, and Jeffrey Merrifield—have also commented on the post-July 1, 2008, Class B and C LLRW disposal problem.[5] In comments on a 2004 report of the U.S. General Accounting Office, the NRC noted the following:

> At the same time, the nearly 20 years of experience under the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) has demonstrated the difficulties in siting and licensing a LLRW disposal facility. Not one new facility has been developed in this time under the LLRWPAA. Therefore, we believe it is in the national interest to begin exploring alternatives identified in Appendix II that would potentially provide a better legal and policy framework for new disposal options for commercial generators of LLRW. (Quoted in part.)[6]

More recently, at the 2008 Waste Management Conference, current NRC Chairman Dale Klein noted that "LLW Compacts never worked as they were supposed to" and that it is important to act now to avoid a crisis in the future.[7]

PROPOSED SOLUTIONS FOR DISPOSAL OF NON-DOE CLASS B AND C LLRWs

1. The DOE has issued a Notice of Intent to Prepare an Environmental Impact Statement (EIS) for the Disposal of Greater-Than-Class C (GTCC) LLRW. This action by the DOE was pursuant to the Energy Policy Act of 2005.[b] The Health Physics Society[8] first advanced the proposal that the GTCC disposal facility also be used for the disposal of non-DOE Class B and C LLRWs. Existing statute requires further Congressional action in any event because the DOE must obtain Congressional approval of the GTCC EIS before issuing a Record of Decision in selecting a site for a proposed GTCC facility. The facility should be used for Class B and C LLRWs also, since if it can safely dispose of GTCC LLRWs, it can certainly dispose of Class B and C LLRWs safely.

2. In order to avoid a time delay in providing disposal access to non-DOE users of radioactive materials for Class A biological and sealed sources, Class B LLRW, and Class C LLRW, it will likely be necessary to rely on facilities that exist today. Existing DOE disposal facilities dispose of DOE LLRW materials that are similar to non-DOE LLRWs classified as Classes B and C under 10 CFR 61 (Refs. 1 and 2). According to DOE Inspector General Gregory Friedman's report issued in 2001 (Ref. 9), there is excess capacity at disposal facilities operated by the DOE for its own LLRW at which Class B and C LLRWs could be disposed. Some existing DOE facilities suitable for Class B and C LLRW disposal should be made available to non-DOE users for Class A biological and sealed sources, Class B LLRW, and Class C LLRW only.

3. Reclassification of some Class B and C LLRWs and changes in the classification scheme of 10 CFR 61 (Refs. 1 and 2) have been suggested from time to time and should be investigated. However, reclassification of Class B and C LLRWs is unlikely to gain access for these LLRWs to the Energy*Solutions* disposal facility in Clive, Utah, because of the acceptance criteria established by Utah state law and regulations.[3]

The DOE is already contributing to a management solution for some non-DOE LLRWs. Through a program run by the Los Alamos National Laboratory, the DOE's Off-Site Recovery Project

[b]The basis of the DOE actions also includes the LLRWPA Amendments. See http://www.gtcceis.anl.gov/eis/why/index.cfm.

collects and stores sealed radioactive sources from a wide variety of commercial and institutional users. This project exemplifies a federal resolution of a national LLRW problem—the kind of federal role that is needed today to resolve the Class B and C LLRW disposal problem in a timely, safe, and economical way.

References

1. Title 10, "Energy," Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," Sec. 55, "Waste Classification," *Code of Federal Regulations*.

2. Title 10, "Energy," Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," Sec. 56, "Waste Characteristics," *Code of Federal Regulations*.

3. Utah Code, Title 19, Chapter 03, "Radiation Control Act"; available on the Internet at http://www.le.state.ut.us/~code/TITLE19/19_03.htm.

4. Richard A. Meserve, "Providing Certainty in Low-Level Radioactive Waste Disposal: The Continuing Challenge," Keynote Address, 17th Annual Low-Level Radioactive Waste Decision Makers Forum and Technical Symposium, Scottsdale, Arizona, May 14, 2002; see also "The Impact of Low-Level Radioactive Waste Management Policy on Biomedical Research in the United States," National Research Council, Board on Radiation Effects Research (2001).

5. Transcript of NRC Meeting with members of Advisory Committee on Nuclear Waste: Commissioner Jaczko, pp. 44–45; Commissioner Lyons, pp. 48–49; and Commissioner Merrifield ("Failure of the LLRW Policy Act"), pp. 59–60 (Jan. 11, 2006).

6. Luis Reyes, NRC, Letter to Robin M. Nazzaro, U.S. General Accounting Office, review of GAO-04-604 draft, "Low-Level Radioactive Waste Disposal Availability Adequate in the Short Term, but Oversight Needed to Identify Any Future Shortfalls" (NRC Adams ML041260340) (May 25, 2004).

7. Nancy J. Zacha, "Editor's Note," page 4, and "A Report from Waste Management 2008," pages 47 and 49, *Radwaste Solutions* (May/June 2008).

8. Health Physics Society, Letter to DOE Office of Regulatory Compliance, "Comments on Notice of Intent to Prepare an Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste" (Sep. 17, 2007).

9. Gregory Friedman, "Utilization of the Department's Low-Level Waste Disposal Facilities," DOE/IG-0505, U.S. Department of Energy Office of Inspector General (May 25, 2001).

The American Nuclear Society, founded in 1954, is a not-for-profit scientific and educational society of over 10,000 scientists, engineers, and educators from universities, government and private laboratories, and industry.
Position Statements are the considered opinions and judgments of the Society in matters related to nuclear science and technology. They are intended to provide an objective basis for weighing the facts in reaching decisions on important national issues.