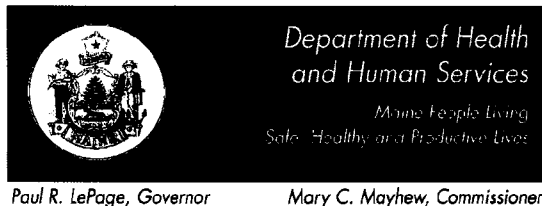


MAINE STATE LEGISLATURE

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February 17, 2016

MEMORANDUM

TO: Senator Michael Thibodeau, President of the Senate, and Representative Mark Eves, Speaker of the House

FROM: Mary C. Mayhew, Commissioner
Department of Health and Human Services

SUBJECT: State Nuclear Safety Inspector's January through April 2015 Monthly Reports to the Legislature on the Interim Spent Fuel Storage Facility in Wiscasset, Maine

Legislation enacted in the spring of 2008 requires the State Nuclear Safety Inspector to provide monthly reports to the President of the Senate, Speaker of the House, the U.S. Nuclear Regulatory Commission, and Maine Yankee. The reports focus on activities at the site and include highlights of the national debate on storing and disposing of the used nuclear fuel. For your convenience, highlights of local and national events are captured in the executive summary of the reports.

The enclosed reports provide the information required under Title 22 of the Maine Revised Statutes Annotated §666, as enacted under Public Law, Chapter 539, in the second regular session of the 123rd Legislature.

Should you have questions about its content, please feel free to contact Mr. Patrick J. Dostie, State Nuclear Safety Inspector, at 287-6721.

MCM/klv

Enclosure

cc: Mark Lombard, U.S. Nuclear Regulatory Commission
Monica Ford, U.S. Nuclear Regulatory Commission, Region I
J. Stanley Brown, Independent Spent Fuel Storage Installation Manager, Maine Yankee
David Sorensen, Senior Health Policy Advisor
Kenneth Albert, Director, Maine Center for Disease Control and Prevention
Paul Mercer, Commissioner, Department of Environmental Protection
Timothy Schneider, Maine Public Advocate
Lieutenant Scott Ireland, Special Services Unit, Maine State Police
Nancy Beardsley, Director, Division of Environmental Health
Jay Hyland, PE, Manager, Radiation Control Program

State Nuclear Safety Inspector Office
Maine CDC – DHHS

April 2015 Monthly Report to the Legislature

Executive Summary

The report covers activities at the Maine Yankee Independent Spent Fuel Storage Installation (ISFSI) facility, including the State's ongoing environmental radiation surveillance and provides updates on the national effort to license and construct a consolidated interim storage facility and/or a permanent geologic repository for the disposal of spent nuclear fuel. Maine's goal is to move the ISFSI waste stored at Maine Yankee to one of these facilities. The report's highlights assist readers to focus on the significant activities that took place both locally and nationally during the month.

Local:

- Maine Yankee notified the Department of Environmental Protection (DEP) that no chemical contamination was found when it invoked its Soil Management Plan for underground drainage and paving around the Maintenance Building, the installation of windows on the north side of the Security and Operations Building, and the replacement of a security system foundation.

National:

- The Governor of New Mexico forwarded a letter to Energy Secretary Moniz notifying him of her support for the local communities of Carlsbad and Hobbs in Eddy and Lea Counties that wish to locate and site a consolidated interim storage facility for spent nuclear fuel in southeastern New Mexico.
- The Department of Energy (DOE) published its Waste Isolation Pilot Plant (WIPP) Radiological Release Phase II Investigation Report regarding last year's Valentine's Day incident where one waste drum was breached and slightly contaminated 21 workers and some low levels of radioactivity was released from the underground salt dome to the environs.
- The Governor of New Mexico and the DOE Secretary announced the terms of a \$73 million settlement on the State's claims against DOE and its contractors for the two incidents at the WIPP facility that took place in February of 2014, a truck fire and a radioactive release. Instead of paying \$54 million in fines, DOE will provide support for a variety of mutually beneficial and crucial projects that will protect local communities and better safeguard transportation routes in the State and around DOE sites.
- Holtec International and the Eddy-Lea Energy Alliance announced the signing of an agreement for plans to design, license, construct and operate an interim spent fuel, underground storage facility for 3,600 dry casks near the cities of Carlsbad and Hobbs, New Mexico. Holtec expects to apply for a NRC license within a year and projected the storage facility could be receiving spent nuclear fuel in as little as four to five years.

Introduction

As part of the Department of Health and Human Services' long standing oversight of Maine Yankee's nuclear activities under Title 22, Maine Revised Statutes (MRS) §666 (2), legislation was enacted in the second regular session of the 123rd Legislature and signed by Governor John Baldacci requiring that the State Nuclear Safety Inspector prepare a monthly report on the oversight activities performed at the ISFSI facility located in Wiscasset, Maine.

The State Inspector's individual activities for the past month are highlighted under certain broad categories, as illustrated below. Since some activities are periodic and on-going, there may be some months when very little will be reported under that category. It is recommended for reviewers to examine previous reports to ensure connectivity with the information presented as it would be cumbersome to continuously repeat prior information in every report. Past reports, historical addendum, and glossary are available from the Radiation Control Program's web site at the following link: www.maineradiationcontrol.org and by clicking on the nuclear safety link in the left hand margin.

Independent Spent Fuel Storage Installation (ISFSI)

During April, the general status of the ISFSI was normal, with no instances of spurious alarms due to environmental conditions.

There was one fire-related impairment for the month. This is the ongoing impairment that has been implemented to cover the office build-out project. Fire rounds were put into place each shift as a compensatory measure. The project is scheduled to complete in late July.

There were two security incident reports logged for the month. The first report documented that a security system did not alarm as anticipated during personnel transit. The system was tested and found to be operating satisfactorily. The second documented the semi-annual performance testing of a security system.

There were twenty condition reports¹ (CR) for the month and they are described below.

- 1st CR: Documented that an individual received a slight shock when touching the exit keycard reader at the gatehouse. The grounding wires were replaced and tightened and rubber strips were installed on the edges of the enclosure.
- 2nd CR: Documented that a culvert running under a roadway in the entrance area had collapsed. The area is currently blocked off and the culvert area will be repaired or modified to eliminate the culvert.
- 3rd CR: Documented that an exterior light pole was intermittently going on and off at night. This CR remains open for troubleshooting and may need a bulb and/or a ballast replacement.
- 4th CR: Documented a non-reportable oil spill from a concrete truck onto the pavement. The truck left the site and the minor leakage was cleaned up.
- 5th CR: Documented as a tracking CR for a self-assessment completed on a surveillance procedure. The procedure will be updated to reflect the recommendations in the assessment, including changing the frequency of various routine surveillances.
- 6th CR: Documented that a security system did not alarm as anticipated during a personnel transit. The system was tested and found to be operating satisfactorily.
- 7th CR: Documented that an emergency light battery pack surveillance did not check one battery pack as required. The procedure form was not clear on the location and the office build-out project was believed to have removed this light. The procedure will be clarified on emergency light locations going forward.
- 8th CR: Documented that a procedure data log was missing for one day in March. The shift log for that day indicated the data log was completed but the form was not in the file. A memo was written to document the missing form in the records system.
- 9th CR: Documented an inconsistency between the Security Plan and a procedure regarding issuing keys. Interim guidance was provided to shift personnel and the procedure will be updated to provide consistency with the Security Plan.
- 10th CR: Documented that a surveillance procedure had not been updated to reflect changes in the Radiation Protection Program. The procedure is slated for cancellation which will close this CR.

¹ A condition report is a report that promptly alerts management to potential conditions that may be adverse to quality or safety. For more information, refer to the glossary on the Radiation Control Program's website.

- 11th CR: Documented that an Emergency Action Limit contained in an Emergency Plan implementing procedure lacked a baseline level to establish the 100 times threshold for airborne contamination. This CR is currently under review with the Licensing Engineer and the Radiation Protection Manager.
- 12th CR: Documented that two teenage trespassers entered the front entrance area and threw rocks at a porcupine, then left the property. The Local Law Enforcement Agency was contacted but was unable to locate the individuals. The event was not deemed suspicious.
- 13th CR: Documented that several Emergency Plan implementing procedures were inconsistent in specifying a Technical Specification requirement after an off-normal, natural phenomena, or accident event. This CR will remain open until the procedures are updated to reference the Technical Specification.
- 14th CR: Documented that water had been leaking into the truck bay through a buried conduit after a heavy rainstorm. The conduit was sealed.
- 15th CR: Documented a small non-reportable oil spill from a vendor's forklift. The spill was cleaned up and the forklift was returned to the rental company.
- 16th CR: Documented that a ground fault alarm had occurred on a fire panel. An existing fire impairment was modified to put compensatory measures into place until the vendor repaired the system.
- 17th CR: Documented that a utility vehicle had stopped working due to a bolt in the clutch backing out. The vehicle was sent back to the vendor for repairs.
- 18th CR: Documented that the Offsite Dose Calculation Manual (ODCM) change number 36 did not contain revision bars in the margin to identify changes. The change bars were added and distribution of the document is in progress. This was identified by the State Inspector.
- 19th CR: Documented that the vendor working on the office build-out project was performing hot work without a fire watch present. The work was stopped until a fire watch was put into place. The personnel involved were counseled on the requirements prior to restarting the job.
- 20th CR: Documented that the NRC called the site to request participation in a conference call involving Region 2 licensees. After discussion, the NRC indicated this call was in error since the conference call did not apply to Maine Yankee.

Other ISFSI Related Activities

1. On April 8, the legislatively mandated group, representing the Department of Environmental Protection (DEP), the State Police, the Public Advocate, the Department of Health and Human Services' Radiation Control Program and Maine Yankee, met for its quarterly meeting to discuss the State's and Maine Yankee's activities pertinent to the oversight of the Independent Spent Fuel Storage Installation (ISFSI). The State Inspector briefed the Group on the status of his monthly and annual reports to the Legislature, his participation in a national interregional team that is developing recommendations from states to the Department of Energy (DOE) on emergency preparedness for local communities on spent fuel shipments traversing their jurisdictions which includes a policy implementation exercise to assist the states on deciding on a funding protocol to recommend to DOE. The Group also discussed the State's environmental radiation data, the anomalies in the fourth quarter results, and options going forward to resolve the issue. Further discussions also centered on the Department of Health and Human Services' annual report to the Legislature, the anticipated move of the Radiation Control Program to DEP, and the Governor's recently introduced legislation to support Small Modular Reactors by waiving the statewide referendum requirement for reactors below 500 megawatts. Maine Yankee informed the Group of their periodic chemical sampling effort at the decommissioned industrial location on Bailey Point. They noted that they will be making recommendations soon to DEP on what wells should be closed out. Maine Yankee also apprised the Group of its changes in their Radiation Protection Program and procedures, such as Mr. Joseph Bourassa replacing Mr. James Connell who retired and the Nuclear Regulatory Commission's proposed ISFSI security rule and potential changes to the basis of the threat, which could take another four or five years before it is finalized. Maine Yankee also mentioned their

plans to upgrade their security cameras, the construction of a fence along Ferry Road to prevent trespassers, the installation of security cameras in Iberdrola's (Central Maine Power's owner) switchyard adjacent to the ISFSI, and the ongoing construction of new offices in the Security and Office Building. Maine Yankee anticipated that any nuclear waste bills introduced in Congress would probably not move forward until after the next presidential election. They also related that it annually costs ratepayers approximately \$10 million to operate the ISFSI.

2. On April 20, Maine Yankee submitted to the NRC its Individual Monitoring Form 5 Report for 2014. The report provided the occupational dose for last year for all those who work at the storage facility in Wiscasset. The Form 5 records the external and internal radiation exposures of the workers at the site. Since the spent fuel canisters are sealed there were no internal exposures to report.
3. On April 22, Maine Yankee notified the Department of Environmental Protection (DEP) that, according to their Environmental Covenant with DEP, Maine Yankee invoked its Soil Management Plan on three occasions last year. The first site preparation and excavation activity involved the underground drainage and paving around the Maintenance Building. The second concerned the installation of windows on the north side of the Security and Operations Building. The last one included the replacement of a security system foundation. In all three instances soil samples were taken and analyzed. No chemical contamination was found.
4. On April 29, Maine Yankee submitted their annual reports for radioactive effluent releases, radiological environmental monitoring, and changes to their Off-Site Dose Calculation Manual (ODCM). There were no planned or unplanned gaseous or liquid releases from the storage casks. Therefore, no assessment of the radiation dose to the most likely exposed person was required. Since there were no effluent releases from the casks, Maine Yankee was only required to monitor the direct radiation exposure from the facility, which it does with passive devices, called thermoluminescent dosimeters (TLDs)². The environmental monitoring report explained that Maine Yankee has nine TLD stations in the vicinity of the ISFSI and one control station at the Wiscasset Fire Station. All nine stations were comparable to or in some cases slightly higher than the control station. However, there was one station that was noticeably higher than the other eight ISFSI stations. This location has been consistently high since March, 2005. Due to its distance from the bermed area, the higher values were assumed to be due to its line of sight and proximity to the ISFSI. Maine Yankee calculated an annual dose of 0.99 mrem³ at its highest TLD location, which was much lower when compared to the Environmental Protection Agency's annual public limit of 25 mrem. Most of the changes to the ODCM were editorial in nature with the key exception being the change in the sampling frequency from quarterly to semi-annually for the TLDs.

Environmental:

The quarterly information will be available in next month's report.

Other Newsworthy Items:

1. On April 1, the Finnish Waste Management Company, Posiva, announced they were starting to build a massive reinforced concrete plug for testing waste encapsulation at its proposed final repository near Olkiluoto. The full-scale test plug will be about 20 feet wide by 20 feet long. Sensors will be placed in

² Thermoluminescent Dosimeters (TLD) are very small, passive radiation monitors requiring laboratory analysis. For a further explanation, refer to the glossary on the Radiation Program's website.

³ A mrem or millirem is a conventional unit that is based on how much of the radiation energy is absorbed by the human body multiplied by a quality factor that is a measure of its relative hazard. For a further explanation, refer to the glossary on the Radiation Program's website.

the demonstration tunnel to pressure test the wedge-shaped plug to see if water is capable of flowing between the plug and the bedrock. The underground facility is known as Onkalo, which means "cave." The web link for the news article can be accessed by positioning the cursor over the underlined text and following the directions.

2. On April 7, Nevada Senator Heller sent a letter to Energy Secretary Moniz beseeching him to allow one technical specialist from Nevada to join the bipartisan congressional visit scheduled for April 9 to Yucca Mountain. The Senator emphasized the importance of receiving a technical briefing from Nevada's perspective and that input would subscribe to the Subcommittee Chairman's goal to dialogue with state, local, and tribal stakeholders. This was especially important considering that the Executive Director of Nevada's Agency for Nuclear Projects was refused earlier by the Subcommittee Chairman stating that there was no more room. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
3. On April 8, the three Yankee Companies held their quarterly conference call to brief interested stakeholders from the states of Maine, Massachusetts, and Connecticut on the status of the Federal Energy Regulatory Commission rate case settlement on spent nuclear fuel storage issues. The General Counsel updated the attendees on Yankee Companies' Phase III litigation damage claims for the period 2009 through 2012. The general and expert discoveries were closed and now waiting for the three day trial to start on June 30. Updates were provided on the status of the Yucca Mountain Licensing Application such as the completion of the NRC's five Volume Safety Evaluation Report (SER) on Yucca Mountain, the NRC staff recommendation to not issue a construction authorization since DOE had not procured the land and water rights to the proposed repository, the NRC would complete the supplemental environmental impact statement that DOE refused to do, and NRC projected that \$330 million would be required to complete the entire licensing process. Additional updates were provided such as the President's recent memorandum establishing a national policy to dispose of defense-related wastes into a separate repository as opposed to comingling with civilian spent nuclear fuel in one repository, Nevada Senator Reid's retirement announcement, the introduction of Senator Reid's Nuclear Waste Informed Consent Bill that would require the consent of affected state and local governments before NRC could authorize the construction of a nuclear waste repository, the introduction of comprehensive nuclear waste reform bill that would implement many of the recommendations from the Blue Ribbon Commission, the announcement by Waste Control Specialists, operators of a low-level waste facility in Texas, to build a private interim storage facility for spent nuclear fuel, and the NRC's intent to finalize a security rule for ISFSI's by 2019 that could encompass a dose based approach for Maine Yankee as opposed to its current design basis threat and could result in an expansion of its existing 985 foot controlled area boundary. Some discussion centered on the Council of State Governments eastern Regional Conference 's Northeast High-Level Radioactive Waste Transportation Task Force's involvement in DOE's grant process for state funding on emergency response needs on spent fuel shipments within their borders and with Connecticut and Pennsylvania both evaluating barge options for transporting the spent nuclear fuel. Finally, it was mentioned that the National Academy of Sciences was providing the NRC with a proposal on a pilot study to evaluate the cancer risk around six nuclear plants in the U.S. with two of them being from the Northeast, Connecticut Yankee and Millstone. The NRC was expected to decide on the 2½ year Pilot Study proposal by June.
4. On April 10, the Governor of New Mexico forwarded a letter to Energy Secretary Moniz notifying him of her support for the local communities of Carlsbad and Hobbs and Eddy and Lea counties that wish to locate and site a consolidated interim storage facility for spent nuclear fuel in southeastern New Mexico. The letter followed last month's announcement by Waste Control Specialists to locate and operate an interim storage facility near the Texas and New Mexico border. The two proposed sites would be about 35 miles from each other. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

5. On April 14, the Chair and Ranking Member of the House Committee on Energy and Commerce sent a letter to the Secretary of Energy expressing their concerns on President Obama's recent determination to develop a separate repository for defense-related spent fuel and high-level wastes. They listed the six critical factors that were initially employed to justify the comingling of commercial and defense wastes during President Reagan's tenure. They then provided a list of ten questions for the Energy Secretary to respond to. The questions revolved around the use of federal monies for defense related activities at Yucca Mountain to how quickly a geological repository for civilian nuclear waste could be constructed under the best of circumstances to the use of deep borehole technology for disposal to cost estimates for shared and separate repositories to the technical and legal basis for changing the policy. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
6. On April 16, the DOE published the Waste Isolation Pilot Plant's (WIPP) Radiological Release Phase II Investigation Report relating to last year's Valentine's Day incident where one waste drum was breached and slightly contaminated 21 workers and some radioactivity was released from the underground salt dome to the environs. The WIPP facility was investigated along with the Los Alamos National Laboratory where the waste drum originated. Based on radiological, chemical, and fire forensic analyses the breaching of the drum was caused by a reaction between the nitrate salts and the kitty litter that was used as an organic absorbent. The reaction pressurized the drum which compromised the locking ring and raised the drum lid. A continuous air monitor detected the release and alarmed. The alarm activated an automatic shift to direct the underground ventilation through the high efficiency particulate filters. However, a small portion of the release leaked around the ventilation dampers and was exhausted to the outside air. The Phase I Report, which was released in April of 2014, focused on the immediate response to the radiological event. The web link for the report can be accessed by positioning the cursor over the underlined text and following the directions.
7. On April 23, the NRC's Deputy Director for the Yucca Mountain Directorate put on a webinar to provide an overview of the Yucca Mountain License Application. The Deputy Director provided a timeline from DOE's license application submission in June 2008 through the NRC's staff completion of their Safety Evaluation Report (SER) in January 2015. When the NRC docketed DOE's submission it contained 16 three ring binders for its license application, over 40 environmental reports to support its Environmental Impact Statements (EIS), and 196 key documents to support its license application. The NRC's SER was 1800 pages with Volumes 2 and 3 being the largest of the five Volume set. The SER concluded that DOE met most of the regulatory requirements, except for land and water rights and a supplemental EIS. The NRC staff recommended that the construction authorization not be issued due to the exceptions noted. Even with the NRC undertaking the completion of the supplement to DOE's EIS, about 300 contentions from 19 parties need to be adjudicated and the Commission must complete its review before it makes its final decision. The web link for the presentation can be accessed by positioning the cursor over the underlined text and following the directions.
8. On April 29, the Nuclear Waste Strategy Coalition held its annual meeting in D.C. to discuss nuclear waste management policy issues. Of the several topics on the agenda some were dedicated to how to move forward. Three were noteworthy. One dealt with the recent announcement by Waste Control Specialists (WCS) of Andrews County, Texas to construct, license, and operate a consolidated interim storage facility. WCS has scheduled April 2016 to file a license application with the NRC. Assuming that the NRC license review will take three years, WCS was planning on beginning construction of the storage facility in September 2019 with the goal of accepting spent fuel shipments by December 2020. The facility will be constructed in eight phases with the first phase dedicated for the storage of spent fuel from 10 decommissioned reactor sites. The second presented the Bipartisan Policy Center's (BPC) five public meetings and their efforts at bringing together diverse groups to take action on nuclear waste. The Northeast issues revolved around stranded fuel and stopping the generation of waste. The South's issues focused on defense high-level waste and reprocessing. The Midwest's concerns were on

transportation infrastructure and worries over stranded fuel. The West concentrated on just moving the fuel and the San Onofre Community Engagement Panel whereas the Pacific Northwest's issues centered on DOE priorities and a defense-only repository. The BPC also listed what they saw as common ground in the meetings, namely barriers to taking action, addressing nuclear waste means different things to different people, and suggested actions in moving forward. The third topic was on leveraging host communities to support consent based siting of consolidated interim storage. The presenter noted that the Wharton School's Risk and Decision Process Center has a well-documented procedure for consent-based siting that already exists and has proven successful in siting industrial facilities. The presentation also outlined how host communities have key roles in building and restoring trust, where those sources of credibility existed, and what common values stakeholders shared. The web link for the [agenda](#) and the presentations by [WCS](#), [BPC](#), and [consent-based siting](#) can be accessed by positioning the cursor over each of the underlined texts and following the directions.

9. On April 29, Holtec International and the Eddy-Lea Energy Alliance announced the signing of an agreement for plans to design, license, construct and operate an interim spent fuel storage facility near the cities of Carlsbad and Hobbs, New Mexico. The facility will employ Holtec's underground HI-STORM UMAX design for the planned 3600 dry casks. Holtec expects to apply for a NRC license within a year and projected the storage facility could be receiving spent nuclear fuel in as little as four to five years. The web link for the [news article](#) can be accessed by positioning the cursor over the underlined text and following the directions.
10. On April 30, the Governor of New Mexico and the DOE Secretary announced the terms of a \$73 million settlement on the State's claims against DOE and its contractors for the two incidents at the WIPP facility that took place in February 2014, a truck fire and a radioactive release. Instead of paying fines DOE will provide support for a variety of mutually beneficial and crucial projects that will protect local communities and better safeguard transportation routes in the State and around DOE sites. The projects included \$34 million to improve roads around the WIPP site, \$12 million to improve routes in and around Los Alamos, \$10 million to upgrade critical water infrastructure in and around Los Alamos, \$9.5 million to better manage storm water flows around the Los Alamos National Laboratory site, \$5 million to build an emergency operations center in Carlsbad and provide enhanced training for emergency responders and mine rescue teams, and \$2.75 million to fund an independent triennial compliance and operational review. The settlement resolved the two compliance orders issued by the State in December of last year over the two incidents and waived the imposition of \$54,350,899 in penalties. The web link for the [agreement](#) can be accessed by positioning the cursor over the underlined text and following the directions.
11. On April 30, the Nuclear Waste Strategy Coalition issued a call to action to key congressional leaders for the federal government to meet its legal obligations and address nuclear waste policy in the United States. The message focused on three key elements. The first involved funding the appropriate oversight agencies to complete the Yucca Mountain License Application. The second centered on promoting and constructing a consolidated spent nuclear fuel storage facility with priority given to shutdown reactor sites. The final one was multifaceted by prompting DOE to engage host communities, certify rail cars, and prepare the transportation infrastructure for a national spent fuel shipping campaign. The web link for the [message](#) can be accessed by positioning the cursor over the underlined text and following the directions.
12. In April, the Nuclear Waste Technical Review Board published a paper on "Deep Borehole Disposal of Spent Nuclear Fuel and High-Level Waste." The paper described the borehole concept as drilling a hole down to 16,400 feet and placing spent nuclear and high-level wastes in the bottom 6500 feet of the shaft and then sealing the upper 9900 feet. The waste packages could be placed individually or up to 400 or more packages depending on the length of the waste containers. This is contrasted with a mined repository at a depth of 1600 feet. The potential advantages included low permeability of the host rock

at such depths thereby increasing the travel times to reach the surface and lower solubility and mobility of some of the longer lived radioactive elements, such as plutonium. However, there are several technical challenges. The drilling technology to such great depths is only in its infancy and plagued with deformed walls. The casing and sealing technologies pose significant challenges, since an inadequate seal could provide a conduit for water. Other problems included consolidation and repackaging of wastes, problems with the placement of waste packages, retrieval of emplaced wastes, the complexity of characterizing the rock at such depths, and the role of multiple barriers. The web link for the paper can be accessed by positioning the cursor over the underlined text and following the directions.