

MAINE STATE LEGISLATURE

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Department of Health and Human Services
Commissioner's Office
221 State Street
11 State House Station
Augusta, Maine 04333-0011
Tel. (207) 287-3707
Fax (207) 287-3005; TTY (800) 606-0215

January 23, 2017

MEMORANDUM

TO: Senator Michael Thibodeau, President of the Senate, and Representative Sara Gideon, Speaker of the House

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

SUBJECT: State Nuclear Safety Inspector's September and October 2016 Monthly Report 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 report focuses on activities at the site and includes highlights of the national debate on storing and disposing the used nuclear fuel. For your convenience highlights of local and national events are captured in the executive summary to the report.

The enclosed report provides 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 Sorenson, Senior Health Policy Advisor
Sheryl Peavey, Chief Operating Officer, 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

September 2016 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 locally and nationally during the month.

Local:

- The State Inspector submitted an article on Maine Yankee's cask lid lift and robotic demonstration to be published in the Department of Energy's (DOE) National Transportation Stakeholders Forum's quarterly newsletter. The article featured Maine Yankee's efforts to inspect the bolted joint on the cask lid which keeps out unwanted moisture from inside the cask system, the numerous salt testing and samples taken to determine the extent of any salt residue, and the use of a robotic device installed with cameras to visually inspect the inside of the concrete cask liner and the outer surface of the steel canister that contained high-level waste.

National:

- Holtec International issued a press release indicating that the State of New Mexico had approved a land sale option for Holtec to buy 1,000 acres of land from the Eddy-Lea Alliance paving the way for Holtec to build their HI-STORE underground facility, a consolidated interim storage unit for spent nuclear fuel.
- Holtec International announced that it had successfully tested a first of its kind rectangular transport cask for high-level waste by subjecting it to three successive 30 foot drops from three different angles without damaging its containment boundary.
- The Department of Energy (DOE) held a public meeting in Washington to present a summary of the public input they received from eight regional meetings on establishing a national, generic consent-based siting process for the storage or disposal of spent nuclear fuel and high-level radioactive waste. The major themes encountered in the regional meetings included the nature of consent, the meaning of informed consent, equity and environmental and social justice concerns, intergenerational equity and the durability of consent, an oversight or regulatory role for states, tribes, and local governments, trust and credibility, the need for a new waste management organization, transportation, and stabilizing funding.

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

There were no fire- or security-related impairments for the month. However, there was one security incident report logged for the month and it involved instituting compensatory measures for a security system being out of service during surveillance testing.

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

- 1st CR: Documented that a lawn mower hit a small metal scrap in the grass that was left behind during the fence repair project. The mower was not affected. The area was checked, but no other scraps were found.
- 2nd CR: Documented a suggestion to evaluate installing painted stop lines for vehicle approaches to gates.
- 3rd CR: Documented that a security system was out of service during surveillance testing. Compensatory measures were put into place until the system was restored to service and tested.
- 4th CR: Documented the finding of water on the interior passenger side floor board of a Maine Yankee pick-up truck. The truck was taken to the dealership for inspection and repair.
- 5th CR: Documented the finding of a small quantity of an unknown substance on pavement. The substance was assumed to be petroleum base. The spill was cleaned up and disposed of properly. Since the spill was on the pavement, it was not reportable to the Department of Environmental Protection.
- 6th CR: Documented that the computer for the radiation monitor cycled through an unexpected reboot. An investigation determined that an antivirus software was running as a background program and using all available computer resources. It was determined that the virus software was not necessary as the computer is isolated from the internet. The software was removed.
- 7th CR: Documented a coyote onsite. Contacted the Game Warden who advised that coyotes are curious but not normally dangerous. No action was needed unless the animal becomes aggressive.
- 8th CR: Documented the finding of small cracks in the handrail for the steps to Pad#2. As a precaution, caution tape was hung on the handrail and steps. The handrail will be repaired or replaced.
- 9th CR: Documented the brief loss of a backup telephone communication line during planned maintenance. The communication line was found unplugged and was reconnected.
- 10th CR: Documented the recommendations identified through a voluntary site walk-down assessment by an OSHA consultant hired by Maine Yankee to enhance their existing safety protocols and programs.

Other ISFSI Related Activities

1. On September 9, at the urging of the Project Director of the Council of State Governments' Northeast High-Level Radioactive Waste Task Force, the State Inspector submitted an article on Maine Yankee's cask lid lift and robotic demonstration to be published in the Department of Energy's National Transportation Stakeholders Forum's quarterly newsletter. The article featured Maine Yankee's efforts

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.

to inspect the bolted joint on the cask lid which keeps out unwanted moisture from inside the cask system, the numerous salt testing and samples taken to determine the extent of any salt residue, and the use of a robotic device installed with cameras to visually inspect the inside of the concrete cask liner and the outer surface of the steel canister that contained the high-level waste. Six photos were included to illustrate the lift, the salt testing, and the robotic demonstration.

2. On September 27, at the urging of the Nuclear Regulatory Commission (NRC), Maine Yankee withdrew their exemption request on reinstating their initial Technical Specification requirement on the concrete cask average surface dose rate from Amendment Number 2 of their Certificate of Compliance, which specified a one-time radiation measurement during loading operations as opposed to the current Amendment Number 5 which required the surface measurement to be performed during storage operations.
3. On September 28, the State Inspector provided a yearly update to Maine Yankee's Community Advisory Panel on Spent Nuclear Fuel Storage and Removal of his activities as part of his oversight function of the Maine Yankee storage facility in Wiscasset. The highlights of the overview included status of the monthly and annual reports to the Legislature, participation in the Council of State Governments' Northeast Radioactive Waste Transportation Task Force and the DOE's National Transportation Stakeholders Forum (NTSF), participation in three national Ad Hoc Working Groups for DOE's NTSF, NRC's biennial inspection of the Maine Yankee storage facility, Maine Yankee's cask lid lift and robotic demonstration, submission for publication of an article with photos on the cask lid lift and robotic demonstration project to DOE's NTSF newsletter, assessment of the radiation dosimeter controls for Maine Yankee, webcasts of national dialogue on consent-based siting for storage and disposal facilities for spent nuclear fuel, and attended DOE's meeting with Wiscasset officials and the public.

Environmental:

The environmental results for the third quarter will be published in the November monthly report.

Other Newsworthy Items:

1. On September 6, Senate Democratic Leader Harry Reid sent a letter to the President and Chief Executive Officer of the Nuclear Energy Institute (NEI) expressing his disappointment over NEI's continued position and insistence on the Yucca Mountain Project. The web link for the [letter](#) can be accessed by positioning the cursor over the underlined text and following the directions.
2. On September 8, the Greenland Analogue Project, made up of nuclear waste management organizations from Canada, Sweden and Finland, published its findings from a five year international project to study conditions at the surface and below the Greenland Ice Sheet and its impact on the future safety of deep geological repositories over time frames up to a million years. All three countries have experienced multiple ice ages over the last million years. The studies involved direct and indirect observations of ice sheet movement, meltwater runoff, water pressure due to the weight of the ice sheet, and water transfer from the ice sheet to areas below the ice surface. The studies confirmed earlier assessments that the average water pressure under the entire ice sheet was about 92% of the thickness of the ice. The findings on the processes in and under the ice sheet would be of value to glaciologists and climate scientists. The web links for the [final report](#) and the [data/processes report](#) can be accessed by positioning the cursor over the underlined texts and following the directions.
3. On September 13, Holtec International issued a press release indicating that the State of New Mexico had approved a land sale option for Holtec International to buy 1,000 acres of land from the Eddy-Lea Alliance. The acquisition would allow Holtec International to build their HI-STORE underground

facility, a consolidated interim storage unit for spent nuclear fuel. The web link for the [press release](#) can be accessed by positioning the cursor over the underlined text and following the directions.

4. On September 15, the San Onofre Nuclear Generating Station's Community Engagement Panel held its third quarterly meeting to update the Panel and the public on the progress of the decommissioning, an environmental update, and used fuel management from the three unit nuclear power station. The used fuel management presentation focused on the dry storage system's multiple layers of defense, canister design and fabrication improvements, long-term monitoring, industry initiatives, development of inspection methods, and remediation methods. The web links for the Panel's [agenda](#) and [presentation](#) can be accessed by positioning the cursor over the underlined texts and following the directions. The excellent 20 minute overview of the presentation can be viewed on the Community Engagement Panel's meeting Part I video at the following web link: http://www.songscommunity.com/cep-events/091516_event.asp and moving the starting time stamp of the video to 1:19:07 for the overview.
5. On September 15, DOE held a public meeting in Washington to present a summary of the public input they received from eight regional meetings on establishing a national, generic consent-based siting process for the storage or disposal of spent nuclear fuel and high-level radioactive waste. The purpose of the meeting was to report on the major themes encountered in the regional meetings and to summarize those findings in a draft report. The Acting Assistant Secretary for Nuclear Energy explained DOE's role of engaging the public in the elements of a consent-based siting process, designing a flexible framework for such a process and using that framework to work with potential host communities. DOE's Project Lead then summarized what they had learned and the major themes from the public input. The themes included the nature of consent, the meaning of informed consent, equity and environmental and social justice concerns, intergenerational equity and the durability of consent, an oversight or regulatory role for states, tribes, and local governments, trust and credibility, the need for a new waste management organization, transportation, and stabilizing funding. The Associate Deputy Assistant Secretary for Fuel Cycles Technologies discussed the next steps which included a budget request for a \$25 million dollar appropriation from Congress for grants or cooperative agreements to engage hosting communities, design of spent fuel cask railcars with advanced sensors and braking systems, and ensuring an adaptive consent-based siting process. The web link for the [draft report](#) can be accessed by positioning the cursor over the underlined text and following the directions.
6. On September 19, the Australian Broadcasting Corporation reported that South Australia's Premier was visiting Finland touring Finland's underground nuclear waste disposal facility at Eurajoki, Finland. The Premier was researching the possibility of South Australia accepting spent nuclear fuel from other countries as part of a long-term economic prosperity plan. According to Australian scientists such a disposal facility could be safely built and economists believe it could bring in \$100 billion.
7. On September 21, Holtec International issued a press release that it had successfully tested a first of its kind rectangular transport cask for high-level waste. The quarter scale model was subjected to three successive 30 foot drops from three different angles, a top down oblique drop, a center of gravity over the corner drop, and a puncture drop. The rectangular cask had no damage to its containment boundary. The press release can be accessed at the following link: <http://www.holtecinternational.com/2016/09/industrys-first-large-rectangular-cask-for-high-level-waste-passes-successive-30-foot-free-drop-tests-without-any-breach-of-its-containment-boundary/>.
8. On September 21, the NRC held a webinar for State Liaison Officers and Indian Tribes on "Dry Storage and Transportation of High Burnup Fuel." The webinar discussed the differences of wet versus dry storage of spent nuclear fuel, what transportation packages look like, safety measures for handling spent nuclear fuel, what is burnup, why is it so important, and the technical concerns associated with high burnup. High burnup accelerates hydrogen pickup and oxidation of the cladding that contains the fuel pellets, increases fuel pellet swelling and fuel rod internal pressures, and changes some of the

mechanical properties of the fuel rod. High internal pressures can lead to cladding thinning which can increase the likelihood of hairline cracks or ruptures. Hydrogen re-orientation can affect the cladding's mechanical properties over time such as its ability to be stretched under stress. During normal transport a transportation cask can experience a large number of vibrations or bouncing, which can result in bending and fatigue failure of the cladding. The web link for the [slide presentation](#) can be accessed by positioning the cursor over the underlined text and following the directions.

9. On September 22, the DOE issued a new bid for a characterization project that would perform a "Deep Borehole Field Test." The previous two bids were rejected by local communities over concerns that the DOE may use the deep boreholes for disposing of high-level radioactive waste. Even though the federal government provided assurances that the test was only intended to gather insight to the local geology and the technical challenges for drilling a hole three miles into the earth's crust, local residents were not swayed. In the latest bid the DOE specifically requested public engagement from the beginning, including staff that would remain onsite day-to-day to hear local concerns, and for bidders to show how the project could benefit the community through science education or additional research. The bidding opportunity and associated documentation can be found at the following link:
https://www.fedconnect.net/FedConnect/PublicPages/PublicSearch/Public_Opportunities.aspx
10. On September 26, Lawrence Berkeley National Laboratory presented at the Geological Society of America's annual meeting in Denver an overview of current research and development activities in the U.S. disposal research program involving international collaboration with a specific focus on participation in field experiments conducted in underground research laboratories. This association allows U.S. researchers to benefit from decades of underground research in valuable field experiments in geologic media such as clay, salt, and crystalline rock not currently available in the U.S. The presentation covered geologic disposal safety and the location of dedicated underground research laboratories such as the Mont Terri Clay Project in Switzerland, the crystalline rock research in South Korea, Sweden, and Finland, the benchmark salt study in Germany, and the borehole studies in Sweden. The involvement has led to an improved understanding of field variations, engineered barriers, and radioactive migration. The web link for the [presentation](#) can be accessed by positioning the cursor over the underlined text and following the directions.
11. On September 26, a local newspaper in South Carolina reported that a plan had surfaced to build an interim nuclear waste disposal site. Apparently, the Spent Fuel Reprocessing Group wanted federal approval to move the spent fuel from the state's four nuclear power plants and store it indefinitely at the new facility. The NRC had received notice of the plan in July. The Governor expressed reservations at the announcement.
12. On September 26, the Nuclear Waste Strategy Coalition sent a letter to Energy Secretary Moniz pressing him to seek funding in the Fiscal Year 2018 budget for the following crucial items for a successful integrated waste management system by:
 - a) Preparing the nation's infrastructure for shipping spent nuclear fuel,
 - b) Assisting tribal, state and local governments on emergency preparedness,
 - c) Completing the Yucca Mountain licensing process,
 - d) Supporting consolidated interim storage with priority given to shutdown sites,
 - e) Re-establishing the Nuclear Waste Policy Act's Office of Civilian Radioactive Waste Management to manage the nation's nuclear waste stockpile.

The letter concluded by requesting an audience with the Energy Secretary to discuss these critical topics. The Coalition is an ad hoc organization representing the collective interests of member state utility regulators, state consumer advocates, state radiation control officials, state energy officials, tribal governments, local governments, electric utilities with operating and shutdown nuclear reactors, and

other public and private sector experts on nuclear waste policy matters. The web link for the [letter](#) can be accessed by positioning the cursor over the underlined text and following the directions.

13. On September 27, the NRC Chairman forwarded to the House Chair on Energy and Commerce Committee his monthly status report of the agency's activities and use of carryover funds on the Yucca Mountain Project. The report summarized what had been accomplished to-date and indicated that the staff will forward options to the Commission for spending the remaining funds by the end of this year. Of the \$28,018 expended in August, loading the Licensing Support Documents cost \$18,485 while the remaining expenditures of \$9,533 were for program planning and support. The web links for the [cover letter](#) and [status report](#) can be accessed by positioning the cursor over the underlined texts and following the directions.

14. On September 27, the Bipartisan Policy Center, a Washington think tank, released a publication entitled, "Moving Forward with Consent-based Siting for Nuclear Waste Facilities," on the recommendations from their Nuclear Waste Council. The Council noted that in 1990 academic researchers, public officials, and private sector representatives developed a "Facility Siting Credo" that involved 14 steps to a successful siting process, which was reaffirmed by the Blue Ribbon Commission's 2012 report. The report contrasted the siting outcomes between Yucca Mountain in Nevada and the Waste Isolation Pilot Project in New Mexico. The report listed seven recommendations:
 - "Establish a new and dedicated nuclear waste management organization, separate from DOE.
 - Implement siting processes that emphasize voluntary participation, flexibility, transparency, inclusion and consultation, trust, accountability, and scientific and technical integrity.
 - Develop generic safety standards and other siting and operating criteria.
 - Empower state and host communities to engage as full participants.
 - Assure a fair and thorough assessment of all options and make selections among competing options on the basis of objective, observable metrics.
 - Develop generic timelines for key milestones and decision points.
 - Develop a generic list of incentives."

The web links for the two page [report summary](#) and the 36 page [publication](#) can be accessed by positioning the cursor over the underlined texts and following the directions. In addition to the publication, the Bipartisan Policy Center also issued a "Nuclear Waste Primer." The Primer described the differences between low-level waste, high-level waste, and transuranic waste. The Primer discussed interim storage of high-level waste and the design goals of a permanent repository for spent nuclear fuel, which included illustrations of the different types of geologic media for its ultimate disposal, such as volcanic tuff, salt, crystalline rock, clay, shale, and deep boreholes. The web link for the [Primer](#) can be accessed by positioning the cursor over the underlined text and following the directions.

Other Noteworthy Items

1. On August 29, the NRC Chairman forwarded to the House Chair on Energy and Commerce Committee his monthly status report of the agency's activities and use of carryover funds on the Yucca Mountain Project. The report summarized what had been accomplished to-date and indicated that the staff had completed a lessons learned report from the licensing process. The report also noted the staff's continued work to upload the licensing document collection to the NRC's publicly accessible library. Of the \$63,494 expended in July, loading the documents cost \$56,541 while the remaining expenditures of \$6,953 were for wrap-up activities on the Yucca Mountain Safety Evaluation Report. The web links for the [cover letter](#) and [status report](#) can be accessed by positioning the cursor over the underlined texts and following the directions.