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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 123<sup>rd</sup> 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

October 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 three Yankee Companies (Connecticut Yankee, Maine Yankee, and Yankee Rowe in Massachusetts) informed interested stakeholders from Maine, Massachusetts, and Connecticut that they had received the \$76 million award for their lawsuit against the federal government for not taking the spent nuclear fuel at their sites. Maine Yankee's portion was \$24.6 million. The funds were received and deposited in the respective company accounts. The funds will be disbursed pending the outcome of the Federal Energy Regulatory Commission filing and subsequent filings with each State's Public Utilities Commission.
- The Maine Yankee Board of Directors voted to pay out of its Spent Fuel Trust Fund the amount they still owed under their Standard Contract with the Department of Energy (DOE) to the Nuclear Waste Fund. The outstanding pre-1983 fee obligation totaled \$186.4 million.
- Sandia National Laboratories published a report, entitled "Analysis of Dust Samples Collected from an In-Service Interim Storage System at the Maine Yankee Nuclear Site." The report presented the results from the dust samples that were collected last summer from the cask lid lift and robotic demonstration project. The chemical analysis on the filter papers and sponges showed that the salts were high in calcium, sodium, sulfates, chlorine, with lesser amounts of potassium and minor amounts of magnesium and nitrates. The salts represented a mixture of sea salts and continental salt aerosols. The sampling and robotic demonstrations were considered a success.

National:

- The Town of Rowe, Massachusetts was seeking federal compensation for hosting a spent nuclear fuel storage facility in their backyard. The local officials expressed their support for bipartisan legislation "that would compensate communities that are forced to store nuclear waste." The proposed legislation sponsored by Illinois Representative Dold, the Stranded Nuclear Waste Accountability Act of 2016, would provide "up to \$100 million for 13 towns ranging from Zion, Illinois to Wiscasset, Maine."
- The U.S. Court of Federal Claims awarded Entergy Nuclear \$34.5 million for damages resulting from the federal government's failure to take title and possession of the spent nuclear fuel at the Indian Point 2 nuclear facility, 25 miles north of New York City.
- The Daily Power Cooperative won a \$73.5 million settlement against the federal government for storing spent fuel that the government was supposed to take away. The small 50 megawatt reactor was shut down in 1987 and the spent fuel has been in storage since at its La Crosse facility in Wisconsin.
- DOE issued a Notice in the Federal Register requesting information on private initiatives for developing consolidated interim storage facilities. DOE was seeking feedback on key questions on what role private storage facilities could play in their integrated waste management system. Two private facilities,

Waste Control Specialists (WCS) of Texas and the Eddy-Lea Energy Alliance of New Mexico, have expressed their intents to construct such facilities. WCS has already submitted their license application to the Nuclear Regulatory Commission (NRC), while the Eddy-Lea Energy Alliance planned to submit their license application in March of 2017.

## 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 123<sup>rd</sup> 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 a 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](http://www.maineradiationcontrol.org) and by clicking on the nuclear safety link in the left hand margin.

## Independent Spent Fuel Storage Installation (ISFSI)

During October, 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 were two security incident reports logged for the month. They involved instituting compensatory measures for a temporary malfunction of a security system and the planned maintenance of a security system.

There were eight condition reports<sup>1</sup> (CR) for the month and they are described below.

- 1<sup>st</sup> CR: Documented the temporary malfunction of a security system. The system was immediately restarted and cleared the issue.
- 2<sup>nd</sup> CR: Documented a small leak (a few drops) from a hydraulic line connection on a rental "Skid Steer." The leak was on the concrete floor in the Maintenance Building and therefore, not reportable to the Department of Environmental Protection. The leak was repaired by the rental dealer.
- 3<sup>rd</sup> CR: Documented that the heating, ventilating, and air conditioning (HVAC) unit for various offices was not functioning properly. The local service company was contacted and the unit was repaired.
- 4<sup>th</sup> CR: Documented finding exposed (visible) wire through the outer sleeve of the power cord for the block heater on the diesel generator unit. The heater was functioning properly but was taken out of service. The cord was replaced and tested.
- 5<sup>th</sup> CR: Documented the outage of the land line telephone system. The problem was verified to be offsite in the vendor's system and was restored in about 45 minutes. All other communication systems were tested and found to be working properly.
- 6<sup>th</sup> CR: Documented the momentary loss of lighting. The emergency diesel did not start and there were no further issues noted. All lighting circuit panels were inspected with no issues found. The issue remains open for further assessment and evaluation.
- 7<sup>th</sup> CR: Documented that following periods of heavy rain there was a water puddle identified on the

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<sup>1</sup> 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.

floor of the Maintenance Building. Two small areas of concern were identified and sealed thoroughly.

8<sup>th</sup> CR: Documented the finding of a small water leak following a period of heavy rain. The leak was on the east side of the Security Office Building on the ground floor level at a connection joint of the HVAC duct work to the Building's siding. It was repaired and under observation.

#### *Other ISFSI Related Activities*

1. On October 5, Maine Yankee conducted its annual emergency plan training with state officials representing the Maine Emergency Management Agency, the State Radiation Control Program, the Maine National Guard Civil Support Team, and the Lincoln County Emergency Management Agency. Training included an overview of the expectations associated with the emergency action levels, who would be notified, and the expected radiation levels near the concrete casks. Also discussed were the projects that were completed this year and planned for next year and Maine Yankee's oil spill reporting criteria to the Department of Environmental Protection (DEP).
2. On October 11, the legislatively mandated group representing 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 ISFSI. The State Inspector's report highlighted the status of his monthly and annual reports to the Legislature, his ongoing participation in three national Ad Hoc working groups on spent fuel shipments, including an interregional team that is developing recommendations from states to DOE on funding emergency preparedness for local communities on spent fuel shipments traversing their jurisdictions, his ongoing evaluation of the State's field radiation monitoring devices and their current status relative to the exposures of the control badges at the Health and Environmental Testing Laboratory's storage vault, his submission to a national newsletter of Maine Yankee's cask lid lift and robotic demonstration project, and his observations of DOE's public input meeting on consent-based siting initiative. Maine Yankee informed the Group, of the 21 monitoring wells in the 30 year chemical sampling program, 14 wells were removed and capped. DEP noted that they had reviewed documents and performed a site visit of the wells in question and informed the Group that they were no major issues outstanding. The next sampling will take place in 2018. Maine Yankee also apprised the Group that it will be upgrading some of its security system for 2017. In addition, they also mentioned that their annual emergency plan exercise will be held the following week on October 19 and that there was very little development on the congressional front. The Public Advocate's Representative stated that there will be a hearing next spring on the funds from the latest \$24.6 million award. The expectations will be that some of the monies will be returned to ratepayers and some will go to the Efficiency Maine Program. State Police reported on what infrastructure issues they were focused on, whether they were communications, transportation, electrical grid, computer issues, and nuclear facilities.
3. On October 19, Maine Yankee conducted an annual emergency plan drill. The scenario involved four armed intruders that gained access to one of the conference rooms within the Security and Operations Building. The intruders requested money and a helicopter. The State Police's Tactical and Crisis Negotiating Teams responded. Prior to their arrival some of the intruders threw shaped charges over the security fence and damaged one concrete cask. The damage was minor as the on-site radiation levels remained the same. After the Tactical Team set up their perimeter, the State Police Crisis Negotiating Team was able to persuade the intruders that it was in their best interest to surrender and they came out with their hands up. The Tactical Team took the intruders into their custody. After the exercise some areas of improvement were noted.
4. In October, Sandia National Laboratories published a report, entitled "Analysis of Dust Samples Collected from an In-Service Interim Storage System at the Maine Yankee Nuclear Site." The report presented the results from the dust samples that were collected last summer from the cask lid lift and

robotic demonstration project. The samples included sponges and filter papers. Both were wetted to extract soluble salts from some of the surfaces. The filters collected both particles and salt while the sponges collected only soluble salts. The chemical analysis on the filter papers showed that the salts were high in calcium, sodium, sulfates, chlorine, with lesser amounts of potassium and minor amounts of magnesium and nitrates. The sponge samples composition was similar to the filter papers. The salts represented a mixture of sea salts. The qualitative results appeared to be consistent, indicating that representative salt samples were collected. The sampling and robotic demonstrations were considered a success.

### Environmental:

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

### Other Newsworthy Items:

1. On October 3, the Associated Press reported that the U.S. Navy and DOE want to build a \$1.6 billion storage facility at the Idaho National Laboratory (INL) to house spent nuclear fuel from its nuclear powered ships through at least 2060 and maybe beyond. The Laboratory has been receiving spent nuclear fuel from the Navy's nuclear fleet since 1957. Two former Governors were opposed to the proposed storage facility pending the federal government's stabilization and removal of the nearly 1 million gallons of high-level radioactive liquid waste in underground tanks. In addition, as per the 1995 Settlement Agreement between the State of Idaho and the federal government, the Navy is required to remove all the backlog of spent nuclear fuel by 2035. As part of its storage proposal, the Navy also proposed to upgrade its Expanded Core Facility at INL to ensure the future availability of its ability to unload shipping containers, and transfer, prepare, package, and temporarily store naval spent nuclear fuel as well as other irradiated test specimens. The web link for the [Navy's brochure](#) explaining its upgrade can be accessed by positioning the cursor over the underlined text and following the directions.
2. On October 4, the Town of Rowe, Massachusetts was seeking federal compensation for hosting a spent nuclear fuel storage facility in their backyard. The local officials expressed their support for bipartisan legislation "that would compensate communities that are forced to store nuclear waste." The proposed legislation sponsored by Illinois Representative Dold, the Interim Spent Nuclear Fuel Storage Compensation Act, would provide "up to \$100 million for 13 towns ranging from Zion, Illinois to Wiscasset, Maine."
3. On October 5, the Prague Monitor reported that 14 municipalities and 11 associations influenced by the preparations of an underground repository for spent nuclear fuel founded a group to mobilize against the government's plan. The group was dissatisfied with their government's actions and insisted on a general debate over spent nuclear fuel solutions, a reexamination on the repository search schedule and stopping the ongoing prospecting work.
4. On October 7, the Director of the Division of Spent Fuel Management at NRC informed the Vice President of Waste Control Specialists (WCS) of the staff's decision to start the environmental assessment process on WCS's license application to construct and operate a consolidated interim storage facility in Andrews County, Texas. The staff believed that an early start of the environmental assessment would assist them in engaging the public, consulting with tribes and other government agencies from the local to federal level, and simplify compliance with the Endangered Species and the National Historic Preservation Acts. The Director also informed WCS that the early start would not affect the staff's ongoing acceptance review of WCS's license application and reiterated the staff's expectations of the need to fully respond to the staff's outstanding Requests for Supplemental Information in order to accept the application. Otherwise, the staff could reject WCS's application. The

web link for the [letter](#) can be accessed by positioning the cursor over the underlined text and following the directions.

5. On October 10, Indiana University researchers reported that they discovered a new molecular structure that has potential applications to the safe storage of nuclear waste and the prevention of algae blooms caused by the runoff of phosphate fertilizers into lakes. The existence of a supramolecule made by binding two negatively charged bisulfate ions to cyanostar molecules was considered an impossibility due to Coulomb's Law, which states that two like charges repel each other. The theory is that "the long-range repulsions between the two negatively charged ions are offset by short-range attractions." "The molecules could potentially be used to remove sulfate ions from the process used to transform nuclear waste into storable solids (a method called vitrification)" that are resistant to leaching. The study was recently published in the German Scientific Journal – Angewandte Chemie International Edition. More information on the discovery can be found at the following link:  
<http://news.indiana.edu/releases/iu/2016/10/flood-bisulfate-study.shtml>
6. On October 13, the U.S. Court of Federal Claims awarded Entergy Nuclear \$34.5 million for damages resulting from the federal government's failure to take title and possession of the spent nuclear fuel at the Indian Point 2 nuclear facility, 25 miles north of New York City. Initially, Entergy claimed nearly \$35.7 million for the period August 31, 2008 through June 30, 2013. The federal government disputed \$7.8 million of those damages. Even though the Court disallowed about \$1.1 million of the utility's claims, it upheld the remaining \$6.7 million.
7. On October 15, researchers at the Ecole Polytechnique Federale de Lausanne reported that underground nuclear waste repositories could benefit from a porous layer of material that could be placed between bentonite clay and rock to help bacteria metabolize the build-up of hydrogen gas from corroding steel containers, thereby making the repositories safer. The bacteria, which get their energy from the sulfate in the host rock and hydrogen, were discovered about 1000 feet underground at the Mont Terri Rock Laboratory, the future disposal site for Switzerland's spent nuclear fuel.
8. On October 18, the NRC staff presented to the Commission an overview of their decommissioning and low-level waste and spent fuel storage and transportation programs. The spent fuel storage and transportation focused on the current storage environment, monitoring external factors for workload increases due to public interest and the evolution of the Administration's high-level waste management strategy, consolidated interim storage facility licensing activities such as Texas' WCS current application and the anticipated submittal of New Mexico's Holtec's application in March 2017, safety and security oversight of ISFSIs, and an expected surge of license renewals for storage canisters while regulating aging management degradation programs. The web links for the [agenda](#), [slide presentation](#), and [transcript](#) can be accessed by positioning the cursor over the underlined texts and following the directions. The spent fuel discussion starts on slide 34 and page 46 of the transcript.
9. On October 18, the Taiwan Power Company (Taipower) announced that it was considering the possibility of building a final disposal site for spent nuclear fuel on the seabed off the coast of Wuqiu or Daren Townships. Wuqiu is an island near the coast of China whereas Daren is on the island of Taiwan. The Company raised the prospect of using an uninhabited island to build a tunnel under the sea to the seabed site. In the meantime the utility will invest \$2.54 billion for a storage facility on a sparsely populated island. Taipower has encountered strong opposition to locating a permanent site for its spent fuel.
10. On October 19, the NRC staff submitted a status report of their Yucca Mountain Repository Program activities to the Commission informing them of the available funds remaining for the Project and seeking direction on potential expenditures in wrapping up its Yucca activities. The staff provided the Commission with a detailed estimate of what activities remained, namely rulemaking in physical

security, material control and accounting, and fitness for duty, and their approximate costs. However, the staff recommended deferring these rulemakings as they could become protracted and their costs could easily exceed the remaining resources. Instead the staff recommended updating some previous knowledge management reports since 2011 in such topical areas as geologic framework, safety and performance assessments, performance of engineered barriers, climate and hydrology, radionuclide transport, thermal-mechanical behavior of natural barriers, and effects of disruptive events such as volcanic eruptions. In addition, the staff also proposed developing new topics on activities that would capture advances in technical understanding in climate and hydrology, corrosion science, and seismic stability. The staff estimated that such an effort would probably require \$700,000, leaving \$570,000 for unforeseen contingencies. The web links for the [status report](#), [cost expenditures and estimates](#), and [previous](#) and [new knowledge reports](#) can be accessed by positioning the cursor over the underlined texts and following the directions.

11. On October 19, the quarterly brief of the Federal Energy Regulatory Commission (FERC) Rate Case Settlement took place. 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 FERC's rate case settlement on spent nuclear fuel storage issues. The three Yankees' General Counsel informed the attendees that the funds from the \$76 million award were received on October 14 and deposited in the respective company accounts. Maine Yankee's portion was \$24.6 million. A conference call was planned for the following week with the FERC counsel and state interveners to discuss the FERC filing that will result in payment to the owners of the respective Yankee companies. The payments to the owners could come as early as November. The final disposition of the funds will be subject to each company's FERC filings and then their appropriate State Public Utility Commissions. The General Counsel also reported that the Maine Yankee Board of Directors voted to pay out of the Maine Yankee Spent Fuel Trust Fund the amount they still owed under their Standard Contract with DOE. The outstanding pre-1983 nuclear waste fund fee obligation amounted to \$186.4 million. Currently, the Phase IV lawsuit for the three Yankee companies against DOE was expected to be filed next year after the 2016 financial numbers have been verified and audited. The filing will cover the years 2012 through 2016. On the congressional side the stakeholders were updated on the "Stranded Nuclear Waste Accountability Act of 2016." The proposed legislation would direct the Energy Secretary to provide local communities with stranded spent nuclear fuel, such as Wiscasset, some financial relief. The \$100 million fund would be available for the next seven fiscal years starting in 2017 and ending in 2023. Congresswomen Pingree was one of several co-sponsors on the legislation along with Congressmen Neal from Massachusetts, Courtney from Connecticut, and Welch from Vermont. It was also mentioned that the states of New York, Vermont, and Massachusetts appealed to the entire Appeals Court the ruling issued by the three panel judges that rejected the states challenge to the NRC's Continued Storage Rule. The 17 judges denied the states' appeal. Finally, the Administration's efforts on Consent-Based Siting and Consolidated Interim Storage were discussed. DOE issued a draft report on the ten meetings they held on public input to developing a consent-based siting process. The report confirmed that such a process could be created, but noted that it would be painstaking slow. While testifying before a Senate hearing, Energy Secretary Moniz stated that he received assurances from DOE counsel that he had the authority to enter into a contract with private facilities for consolidated interim storage and that he would initiate a Request for Information on how that could be accomplished. The discussion ended with the status of the Texas WCS' license application before the NRC on constructing and operating a consolidated interim storage facility and NRC's starting the environmental review even though the NRC was still waiting for more replies from WCS on their Request for Supplemental Information. The New Mexico team of Holtec International and the Eddy-Lea Energy Alliance notified the NRC that their consolidated interim storage license application for spent nuclear fuel would be delayed until March of 2017.
12. On October 21, Battelle, the world's largest nonprofit research and development organization, reported that it could be drilling a three-mile deep borehole in Dale County, Alabama on property owned by

Southern Company. The Dale County Commission passed a resolution in favor of the project. However, nearby residents and the Newton Town Council opposed the project. The research project will be the first of its kind and would attempt to prove the feasibility of drilling an 8.5 inch hole three miles deep while gathering useful information on rocks, fluids and temperatures. The research information could lead to drilling boreholes elsewhere for the future disposal of weapons related nuclear waste. If approved by DOE, the project would take five years to complete.

13. On October 21, the La Crosse Tribune announced that the Daily Power Cooperative won a \$73.5 million settlement against the federal government for storing spent fuel that the government was supposed to take away. The company initially filed for \$85.2 million in damages. The small 50 megawatt reactor was shut down in 1987 and the spent fuel has been in storage since.
14. On October 25, the National Transportation Stakeholders Forum's Rail Routing Working Group held a webinar on the Association of American Railroads' (AAR) perspective on the transportation of spent nuclear fuel. The AAR presented a rebroadcast of an earlier webinar held in May of this year that included rail safety, dedicated trains, the new requirements for spent fuel shipments as well as other regulatory requirements, and the Rail Corridor Risk Management System (RCRMS). The AAR utilized 2014 data to illustrate their points on rail safety and the transport of spent nuclear fuel (SNF). For example, there has never been a release from a SNF rail shipment. Out of all the carloads of various hazardous materials, 99.997% arrived without a release. The presentation also focused on infrastructure to enhance safety such as roadbed, track geometry and structure, track appliances and related devices, inspections, and the rail testing facility in Pueblo, Colorado. The AAR stressed that dedicated trains would result in less handling, fewer switches, and on-board monitoring systems such as location finder, breaking performance, speed, and acceleration. The RCRMS contained security sensitive information for picking the safest and most secure routes. The web link for the [slide presentation](#) can be accessed by positioning the cursor over the underlined text and following the directions.
15. On October 26, four environmental and public policy organizations (Beyond Nuclear, Nuclear Information and Resource Service, Public Citizen, Inc. and SEED Coalition) submitted a letter to the NRC requesting that they dismiss WCS' application for an interim storage facility for spent nuclear fuel in Andrews County, Texas. They contended that the Nuclear Waste Policy Act prevented WCS from seeking a license under the terms that the Department of Energy will take title to the spent fuel as a condition for WCS to receive a license to construct a consolidated interim storage facility (CISF). According to the environmental organizations the "Nuclear Waste Policy Act contained no provision that would allow DOE to assume title and responsibility for the spent fuel at the proposed CSIF." The web link for the [letter](#) can be accessed by positioning the cursor over the underlined text and following the directions.
16. On October 26, 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 additional staff time was devoted to the loading of Licensing Support Network documents into the NRC public library. Of the \$19,721 expended in September, \$15,630 was for the loading of documents while the remainder was 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.
17. On October 27, the Executive Director of the Nevada Agency for Nuclear Projects forwarded a letter to DOE to comment on DOE's draft report on "Designing a Consent-Based Siting Process: Summary of Public Input." The Nevada Agency supported such a process for alternatives to Yucca Mountain, but was very clear in stating that Nevada's opposition to Yucca Mountain still remained. The Director advocated for obtaining written consent from a potential host state, county, affected Indian tribe, and any adjacent county affected by transportation before using any funds from the Nuclear Waste Fund. The

Director also urged DOE to consult with the NRC and the Environmental Protection Agency on developing generic disposal standards and to adopt the National Academy of Sciences' and the Blue Ribbon Commission's "transportation safety and security measures prior to starting any spent nuclear fuel shipping campaign. The web link for the [letter](#) can be accessed by positioning the cursor over the underlined text and following the directions.

18. On October 27, DOE issued a Notice in the Federal Register requesting information on private initiatives for developing consolidated interim storage facilities. DOE was seeking feedback on key questions on what role private storage facilities could play in DOE's integrated waste management system. Twelve questions were listed and included such typical queries as what are the benefits and drawbacks of private facilities versus a government owned facility, how would a private entity manage liabilities during the storage period, would there be a need for supporting agreements between the federal government and the host state, Indian tribe, and local community? The web links for the [Federal Register Notice](#) and the [Request for Information](#) can be accessed by positioning the cursor over the underlined texts and following the directions.

State Nuclear Safety Inspector Office  
Maine CDC – DHHS

September 2016 Monthly Report to the Legislature

Executive Summary

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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

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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](http://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 reports<sup>1</sup> (CR) for the month and they are described below.

- 1<sup>st</sup> 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.
- 2<sup>nd</sup> CR: Documented a suggestion to evaluate installing painted stop lines for vehicle approaches to gates.
- 3<sup>rd</sup> 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.
- 4<sup>th</sup> 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.
- 5<sup>th</sup> 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.
- 6<sup>th</sup> 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.
- 7<sup>th</sup> 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.
- 8<sup>th</sup> 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.
- 9<sup>th</sup> CR: Documented the brief loss of a backup telephone communication line during planned maintenance. The communication line was found unplugged and was reconnected.
- 10<sup>th</sup> 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

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<sup>1</sup> 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](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](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.