

# MAINE STATE LEGISLATURE

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November 16, 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 August 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, 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

August 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 nationally during the month.

National:

- The Nuclear Regulatory Commission (NRC) issued a news release that all 3.692 million documents from the Yucca Mountain licensing process will be publicly available on their online database, Agency-wide Documents Access and Management System (ADAMS). Prior to this only those submitted by the NRC staff as discovery documents were publicly available.
- Waste Control Specialists (WCS) met with the NRC to discuss the NRC's Request for Supplemental Information on WCS's consolidated interim storage license application. The purpose was to address NRC's questions on what storage systems would be included in WCS's application, how canisters awaiting shipment and received at WCS would meet WCS's license, and their progress in responding to NRC's supplemental request. WCS re-emphasized their initial license application would focus only on shutdown sites, such as Maine Yankee.

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

There were no fire-related impairments for the month. However, there were two security impairments. The first occurred on August 5 and was for the pre-planned maintenance of a security door. The second impairment was for the scheduled nuisance fence maintenance project, which was expected to last a few weeks. There were

six security incident reports logged for the month. Two of the incident reports were for the two impairments. Two other reports were for troubleshooting and maintenance on a security system. The last incident report was for the first condition report reported below. All five incidents required compensatory measures.

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

- 1<sup>st</sup> CR: Documented a failure of a single security component. The component was replaced, tested, and placed back into service.
- 2<sup>nd</sup> CR: Documented finding some wasp nests in the outlet vents of the vertical concrete casks during inspections. The condition was evaluated and found acceptable as is with no adverse conditions. The CR will remain open until the wasp nests are removed.
- 3<sup>rd</sup> CR: Documented two ISFSI ground wires severed during the excavation for the nuisance fence maintenance project. The fence area was inspected prior to starting work with ground penetrating radar. The two ground wires were not located. The two damaged ground wires were repaired at that time. There were no further issues with the excavation.
- 4<sup>th</sup> CR: Documented stains on the entrance roadway pavement. The issue was documented as an assumed small quantity spill with no further actions warranted.
- 5<sup>th</sup> CR: Documented a diesel fuel spill to pavement. About one cup or less leaked from an overfilled fuel tank that expanded with the daily temperature rise. The spill was cleaned-up promptly and was not reportable to outside agencies.
- 6<sup>th</sup> CR: Documented a vehicle search that identified prohibited items on-site. The items were removed immediately. The Security procedure and protocol was used to evaluate the fitness for duty of the individuals.
- 7<sup>th</sup> CR: Documented that Maine Yankee found five groundwater wells that were no longer part of the ground water monitoring program and had not been abandoned previously. The CR will remain open until the five wells are properly abandoned.
- 8<sup>th</sup> CR: Documented a small hydraulic fluid leak of about one to two ounces to the pavement. The spill was cleaned-up promptly and was not reportable to outside agencies.
- 9<sup>th</sup> CR: Documented a small mixed fluid leak of about two ounces to the soil. The spill was cleaned-up promptly and was reported to the Department of Environmental Protection.

#### *Other ISFSI Related Activities*

There were no ISFSI related activities to report on this month.

#### Environmental:

The State received the second quarter results in late July from the field replacement of its thermoluminescent dosimeters (TLDs) around the ISFSI and the Maine Yankee industrial site. The results from the quarterly TLD change out continued to illustrate three exposure groups: elevated, slightly elevated, and normal. The two usual high stations were stations G and K with one extra station this quarter, Q, all with an average of 27.9 milliRoentgens<sup>2</sup> (mR). Typically, station Q is in the slightly elevated grouping as it was last quarter. It should be noted that Q was borderline in that it was on the low side of the elevated grouping and on the high side of the slightly elevated grouping.

There were six stations in the slightly elevated group (D, E, F, I, L, and M) with an average of 25.9 mR with a number of stations (D, F, I, J, M, O, and Q) swapping places, some by dropping down others by rising from

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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.

<sup>2</sup> A milliRoentgen (mR) is a measurement of radiation exposure in air. For a further explanation, refer to the glossary on the Radiation Program's website.



their previous quarter's placement. Fluctuations in the background are not unusual and are expected. These appear to be within the statistical boundaries of seasonal variations. There were eight stations (A, B, C, H, J, N, O, and P) in the normal group with an average of 24.1 mR for this quarter.

The Maine Yankee industrial site TLDs averaged 26.6 mR, which is comparable to the routinely expected background radiation levels of 15 to 30 mR for the coast of Maine. The industrial site TLD results exhibited the expected seasonal variations with the second quarter results being much higher than the previous quarter. Some of the stations have background levels that are highly dependent upon tidal effects, and local geology. However, virtually all the stations display some seasonal fluctuations that are affected by the out gassing of the naturally occurring radioactive gas, Radon. However, the second quarter experienced unusually dry conditions as noted by the elevated readings for all the TLDs. The results were more comparable to July through September summer values than second quarter spring values. The drier conditions would have been favorable for more Radon gas to escape with correspondingly higher radiation values.

As mentioned in the May report, the State initiated a program four years ago to use TLD controls to better quantify the individual impacts of storage and transit exposures on its environmental TLDs. Initially, the State focused on the transit exposure. Over the last four years, the State was able to estimate an average of 6.5 mR for the transit exposure. The State has now shifted its attention to the final unknown, the storage exposure within the steel vault unit. The first of four sets of control data illustrated an exposure value of about 8.6 mR over a storage period of 202 days, which equated to an exposure rate of 1.77 microRoentgen per hour (ur/hr). (A normal environmental exposure rate would be in the range of 6 to 10 microR/hour.) The very low exposure within the steel vault was indicative of a very effective low background storage/shielding unit. It should be noted that one of the elements in one of the control dosimeters had a value of 24 when compared to the other two element readings of 14 and 14. The vendor did not perform a statistical outlier test but the State did. Technically, the data point could be rejected as an outlier with over 99% assurance. However, the State did not reject the data point since it was part of the control badges.

The field control TLDs at Ferry Landing on Westport Island, the Edgecomb Fire Station and the roof of the State's Health and Environmental Testing Laboratory (HETL) read 27.2, 31.5, and 28.5 mR, respectively. Historically, the Edgecomb Fire Station value is higher than the Westport Island location.

As noted in earlier reports, the State maintains an environmental air sampler on the roof of HETL for local or national events. The air sampler was extremely instrumental during the Fukushima event in Japan over five years ago in quantifying the levels of radioactivity that was coming from the crippled reactors. This year's first quarter results did not identify any unusual radioactive elements and were within historical ranges for both gross beta<sup>3</sup> and Beryllium-7, a naturally radioactive cosmogenic element that is produced from cosmic rays interacting with the nitrogen and oxygen atoms in the atmosphere. The available gross beta results ranged from 11.9 to 29.6 femto-curies per cubic meter (fCi/m<sup>3</sup>)<sup>4</sup>. A composite of the six bi-weekly air filter samples was used to measure the Beryllium-7's concentration of 90.2 fCi/m<sup>3</sup>.

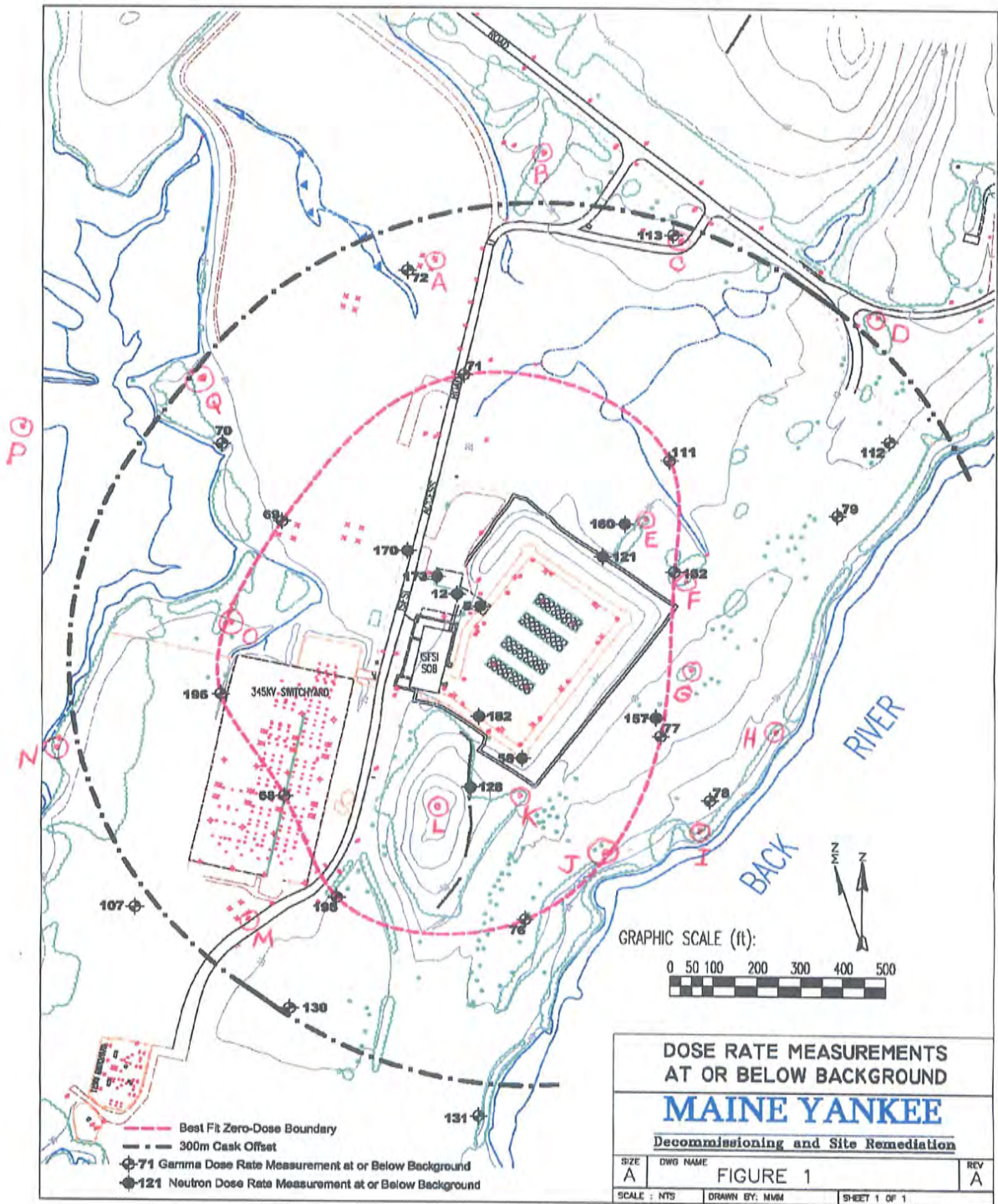
For informational purposes Figure 1 on page 4 illustrates the locations of the State's 17 TLD stations in the vicinity of the ISFSI. The State's locations are identified by letters with the highest locations for this quarter as G, K, and Q.

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<sup>3</sup> Gross Beta is a simple screening technique that measures the total number of beta particles emanating from a potentially radioactive sample. Refer to the glossary on the website for further information.

<sup>4</sup> A fCi/m<sup>3</sup> is an acronym for a femto-curie per cubic meter, which is a concentration unit that defines how much radioactivity is present in a particular air volume, such as a cubic meter. A "femto" is a scientific prefix for an exponential term that is equivalent to one quadrillionth (1/1,000,000,000,000,000).

Figure 1





## Other Newsworthy Items:

1. On August 3, the local newspaper of Halifax, Massachusetts, reported that the lawsuit filed by local residents in 2013 against the Town of Plymouth and Entergy over violations of local zoning laws will go to trial on August 8 in Boston. The plaintiffs maintained that the town building inspector illegally approved Entergy's storage facility for the Pilgrim Nuclear Power Station as an "as of right" use without the need of a special permit. A decision was expected by the end of the year.
2. On August 5, the Department of Energy (DOE) posted a new solicitation for a deep borehole field test. The research project will evaluate deep drilling technologies and characterize deep geologic environments over time without the use of any radioactive waste. Proposals are due by October 21. The previous two proposals, one in North Dakota and one in South Dakota, were rejected by local residents. The solicitation can be accessed at the following link:  
[https://www.fedconnect.net/FedConnect/PublicPages/PublicSearch/Public\\_Opportunities.aspx](https://www.fedconnect.net/FedConnect/PublicPages/PublicSearch/Public_Opportunities.aspx).
3. On August 11, the Wyoming Legislature's Joint Minerals, Business and Economic Development Committee voted 8 to 5 to update a state law that would allow for temporary storage of spent nuclear fuel and high-level radioactive waste. Wyoming's 1995 law allows temporary storage for only 40 years. The article can be found at the following link: <http://www.wyofile.com/lawmakers-warm-nuke-waste-storage/>.
4. On August 19, the NRC issued a news release that all of the 3.692 million documents from the Yucca Mountain licensing process will be publicly available on their online database, Agencywide Documents Access and Management System (ADAMS). Prior to this only those submitted by the NRC staff as discovery documents were publicly available. The web link for the [news release](#) can be accessed by positioning the cursor over the underlined text and following the directions.
5. On August 20, the NRC released a brochure on the "Safety of Spent Fuel Transportation." The brochure identified the agencies involved in the transport and packaging of nuclear materials, described the types of testing performed on spent fuel shipping containers, illustrated the design of rail and truck casks, and explained the four step process that researchers use to study actual and potential accidents and their impacts. The web link for the [brochure](#) can be accessed by positioning the cursor over the underlined text and following the directions.
6. On August 22, WCS met with the NRC to discuss the NRC's Request for Supplemental Information on WCS's consolidated interim storage license application. The purpose was to address NRC's questions on what storage systems would be included in WCS's application, how canisters awaiting shipment and received at WCS would meet WCS's license, and their progress in responding to NRC's supplemental request. WCS re-emphasized their initial license application would focus on shutdown sites, such as Maine Yankee. They would limit the contents and canister designs to those already approved by the NRC and allow only those canisters that meet their licensing basis to be shipped to their facility. The web link for the [slide presentation](#) can be accessed by positioning the cursor over the underlined text and following the directions.
7. On August 24, the Nuclear Waste Technical Review Board met to discuss DOE's integrated program for the management and disposal of spent nuclear fuel and high-level radioactive waste. The DOE overview included presentations on containers for commercial spent nuclear fuel, tools to assess DOE's integrated waste management plan, DOE's integration perspective at various DOE facilities across the country, DOE's transportation overview and integration, and their spent nuclear fuel and high-level waste integration. The Nuclear Energy Institute provided the industry's perspective on spent nuclear fuel management and transportation, while the U.S. Navy described their program for nuclear fuel management and transportation. The discussion ended with DOE describing their plans on the

development of a separate repository for defense-related wastes. Each presenter was required to respond to specific questions from the Board as outlined in the agenda. The web link for the full [agenda](#) for the meeting can be accessed by positioning the cursor over the underlined text and following the directions, whereas the individual presentations can be accessed at the following link:  
<http://www.nwtrb.gov/meetings/2016/aug/16aug24.html>.