

Paul R. LePage, Governor

Mary C. Mayhew, Commissioner

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

February 29, 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 May through August 2015 Monthly Reports to the Legislature on the Interim Spent Fuel Storage Facility in Wiscasset, Maine

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

The enclosed reports provide the information required under Title 22 of the Maine Revised Statutes Annotated §666, as enacted under Public Law, Chapter 539, in the second regular session of the 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 Sorensen, Senior Health Policy Advisor  
Kenneth Albert, Director, Maine Center for Disease Control and Prevention  
Paul Mercer, Commissioner, Department of Environmental Protection  
Timothy Schneider, Maine Public Advocate  
Lieutenant Scott Ireland, Special Services Unit, Maine State Police  
Nancy Beardsley, Director, Division of Environmental Health  
Jay Hyland, PE, Manager, Radiation Control Program

State Nuclear Safety Inspector Office  
Maine CDC – DHHS

May 2015 Monthly Report to the Legislature

Executive Summary

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

National:

- The House of Representatives approved its Fiscal Year 2016 Energy and Water Appropriations Bill by a vote of 240-177 and allocated \$150 million for the Department of Energy's (DOE) nuclear waste disposal program and \$50 million to the Nuclear Regulatory Commission (NRC) to continue its Yucca Mountain licensing proceedings.
- The Senate Water and Appropriations Committee did not recommend any funding for Yucca Mountain but instead voted for \$30 million to implement a pilot program to construct a consolidated storage facility for the storage of spent nuclear fuel with priority given to stranded fuel at sites without an operating nuclear reactor.
- Waste Control Specialists (WCS) announced that AREVA Inc., a French firm, will be the exclusive subcontractor for the design, development, construction, operation, and maintenance of WCS's proposed interim storage facility in Andrews County, Texas.
- AREVA Inc. and NAC International signed an agreement to jointly support Waste Control Specialists' proposed interim storage facility for spent nuclear fuel. "AREVA and NAC represent 62% of existing dry storage systems in the U.S., including 78% of spent nuclear fuel stored at sites" at shutdown reactor sites.
- The Governor of Nevada responded to the House Subcommittee Chair on Environment and Economy's invitation to Nevada to discuss the country's nuclear waste management policy and potential economic incentives in exchange for the Yucca Mountain project. The Governor stated in no uncertain terms that Nevada unequivocally opposed the project.

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, historical addendum, and glossary 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 May, the general status of the ISFSI was normal, with no instances of spurious alarms due to environmental conditions.

There were two fire-related impairments for the month. The first involved the ongoing Building Alteration Project. Compensatory measures were put into place and the impairment will continue until the office build-out new fire system is put into service. The second was established upon discovery of a fire door not properly closing. It was repaired and returned to service in less than thirty minutes.

There was one security incident report logged for the month and it was related to a transient environmental condition.

There were 14 condition reports<sup>1</sup> (CR) for the month and they are described below.

- 1<sup>st</sup> CR: Documented an instance where the video recording system experienced a freeze. It was promptly rebooted and returned to full service. It has not occurred since.
- 2<sup>nd</sup> CR: Documented a truck that was making a delivery for the office build-out project had a minor oil leak to the asphalt which was cleaned up immediately. There was no need to report the leak to the Department of Environmental Protection.
- 3<sup>rd</sup> CR: Documented the need to administratively update the weapons inventory to reflect changes to assigned weapons due to personnel changes. A procedure revision is in progress.
- 4<sup>th</sup> CR: Documented an instance of suspicious activity. A photographer was taking pictures of the facility from Old Ferry Road. The Local Law Enforcement Agencies (LLEA) and the Nuclear Regulatory Commission (NRC) Operations Center were notified. The local officials were not able to apprehend the individual.
- 5<sup>th</sup> CR: Was written as a result of detailed review of the Emergency Plan and implementing procedures. The review was being conducted as a result of an NRC issued violation at another decommissioned site. As a result of the review performed at Maine Yankee, some inconsistencies were identified that will involve some procedure revisions.
- 6<sup>th</sup> CR: Documented two turkey hunters being observed across the street from Maine Yankee entrance putting out decoys in the small field. The Game Warden was contacted but was unable to respond. Contacted the Wiscasset Police Department but, by the time they arrived, the hunters had picked up their gear and left the area.
- 7<sup>th</sup> CR: Documented the results of a self-assessment on nuisance alarm frequency. Some short term items were corrected. A long term resolution was being planned.
- 8<sup>th</sup> CR: Documented the identification of and subsequent reporting of suspicious aircraft in the vicinity of the facility. The Federal Aviation Administration and the FBI were notified.
- 9<sup>th</sup> CR: Documented when Security identified an incorrect phone number in a security procedure. The phone number for the Boston office of the FBI had two numbers transposed. A procedure revision was pending.
- 10<sup>th</sup> CR: Was written when water was observed leaking into the truck bay of the Security Office Building. The leakage into the building was attributed to the construction activities associated with office build-out project.
- 11<sup>th</sup> CR: Documented the issue of the fire door not closing completely. As noted under fire impairments above, the door was repaired and returned to service within 30 minutes.
- 12<sup>th</sup> CR: Documented an instance of suspicious activity. Another photographer was taking pictures of

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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.

the facility from Old Ferry Road. The LLEA and NRC Operations Center were notified. The photographer left before the LLEA arrived.

13<sup>th</sup> CR: Documented some degradation in the Security System. Since this involved safeguards information no information was available for public disclosure.

14<sup>th</sup> CR: Documented an ongoing problem with groundhog burrows in the protected area. The facility is exploring various options to address the issue.

#### *Other ISFSI Related Activities*

1. On May 7, Maine Yankee submitted revisions to three of its Emergency Plan Implementing Procedures for Off-Normal Operations, Accidents, and Natural Phenomena. Each procedure incorporated an extra set of steps to record the dates and times of the event, when the four hour Technical Specification response for cask surveillance was performed, and when the air circulation conditions were restored.
2. On May 20, Maine Yankee held its annual medical and fire drills. Since half the Security and Operations Building is under construction for office space the drills were performed as a tabletop exercise at the Wiscasset Fire Department (WFD). The evening commenced with a slide presentation of the Maine Yankee storage facility and its capabilities to fight a fire onsite, the locations of available water and fire hydrant resources, and potential hazardous materials and fire sources onsite. The scenario involved a diesel truck delivery to the storage tank and a lightning strike on the truck with fire engulfing the truck driver while he was pumping the diesel into the tank. Even though the driver was able to drop and roll to snuff out the fire on him, he was badly burned. Maine Yankee's security officers listed what steps they would take and invoke internally to summon local services to fight the fire, obtain medical services for the burned individual, and local law enforcement agencies. In addition, they also mentioned others who would be on their call list, such as Maine Yankee management and state oversight agencies, such as the State Police, Maine Emergency Management Agency, Department of Environment Protection (DEP), and the State Nuclear Safety Inspector. It was noted that DEP would be heavily involved in this situation due to the diesel spill to the soil. In turn, the WFD and the Ambulance Services enumerated their actions in responding to the request for fire assistance and the injured truck driver. A couple of suggestions were made to potentially enhance the local response such as gel blankets for burn victims and relocating a fire hydrant near Central Maine Power's 354 kV switchyard to a more advantageous location.

#### Environmental:

The State received the 2015 first quarter results in May from the field replacement of its thermoluminescent dosimeters (TLDs)<sup>2</sup> 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 an average of 24.5 milliRoentgens<sup>3</sup> (mR).

There were four stations in the slightly elevated group (E, F, J, and L) with an average of 22.1 mR. Three of the previous six stations traded places. F went from the elevated grouping down to the slightly elevated group. B, M, and Q went back to the normal group. Eleven stations (A, B, C, D, H, I, M, N, O, P, and Q) were in the normal group with an average of 19.4 mR for this quarter. Due to numerous snowstorms, the snow cover was thicker than usual and lasted for most of the quarter. With the thicker snow cover reducing the impact of the natural background to a more consistent value across the site, it would explain why more stations were in the normal grouping this month.

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<sup>2</sup> Thermoluminescent dosimeters (TLDs) are very small plastic like phosphors or crystals that are placed in a small plastic cage and mounted on trees, electric utility poles, etc. to absorb any radiation that impinges on the material. For a further explanation, refer to the glossary on the Radiation Program's website.

<sup>3</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.

The Maine Yankee industrial site TLDs averaged 18.5 mR, which is comparable to the normally 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 third quarter results being slightly higher than the previous quarter or this 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.

The four control TLDs that were stored at the State's Health and Environmental Testing Laboratory (HETL) in Augusta averaged about 13.3 mR. Although the storage of the control TLDs at HETL's pre-World War II steel vault lowers the natural background values, the 13.3 mR value for this quarter was higher than the 2014 fourth quarter's control results of 10.7 mR. There appears to be no obvious reason for the increase. The controls were initially part of a program to better quantify the individual impacts of storage and transit exposures on the TLDs. However, as indicated above, they also have been instrumental in pointing out changes that normally would have not been captured if it were not for the program.

As a further application of this TLD control assessment, every quarter three of the seven control TLDs received for the upcoming quarter are normally returned to the State's TLD vendor, Global Dosimetry in California, for an analysis of the transportation exposures. The quarter's transit badges were not returned but rather placed in the storage vault at HETL with the other controls and returned with all the dosimeters after the field replacement. The initial set of results from the control TLD badges returned indicated an average of 5.8 mR for the total exposure picked up between leaving the vendor, arriving at the State and then immediately being shipped back and received by the vendor. The 5.8 mR was the same as the previous quarter's reported 5.8 mR transit badges. After three years, the State is starting to see signs of a pattern developing for the different quarters. Nevertheless, it is too early to tell if the pattern was real. More time is needed to verify if the pattern continues. Besides seasonal and daily fluctuations in the background, modest increases or decreases could be attributed to extra days or fewer days in transit.

The field control TLDs at Ferry Landing on Westport Island, the Edgecomb Fire Station and the roof of the State's Laboratory read 20.8, 19.3, and 20.7 mR, respectively. Historically, the Edgecomb Fire Station value is higher than the Westport Island location. It is possible that the plowed snow mounds near the TLD location could have impacted the TLD result.

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 three 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>4</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 gross beta results ranged from 28.2 to 43.1 femto-curies per cubic meter (fCi/m<sup>3</sup>)<sup>5</sup>. A composite of the seven bi-weekly air filter samples was used to measure the Beryllium-7's concentration of 66.9 fCi/m<sup>3</sup>.

For informational purposes Figure 1 on page 6 illustrates the locations of the State's 17 TLD locations in the vicinity of the ISFSI. The State's locations are identified by letters with the highest locations for this quarter shown as G and K.

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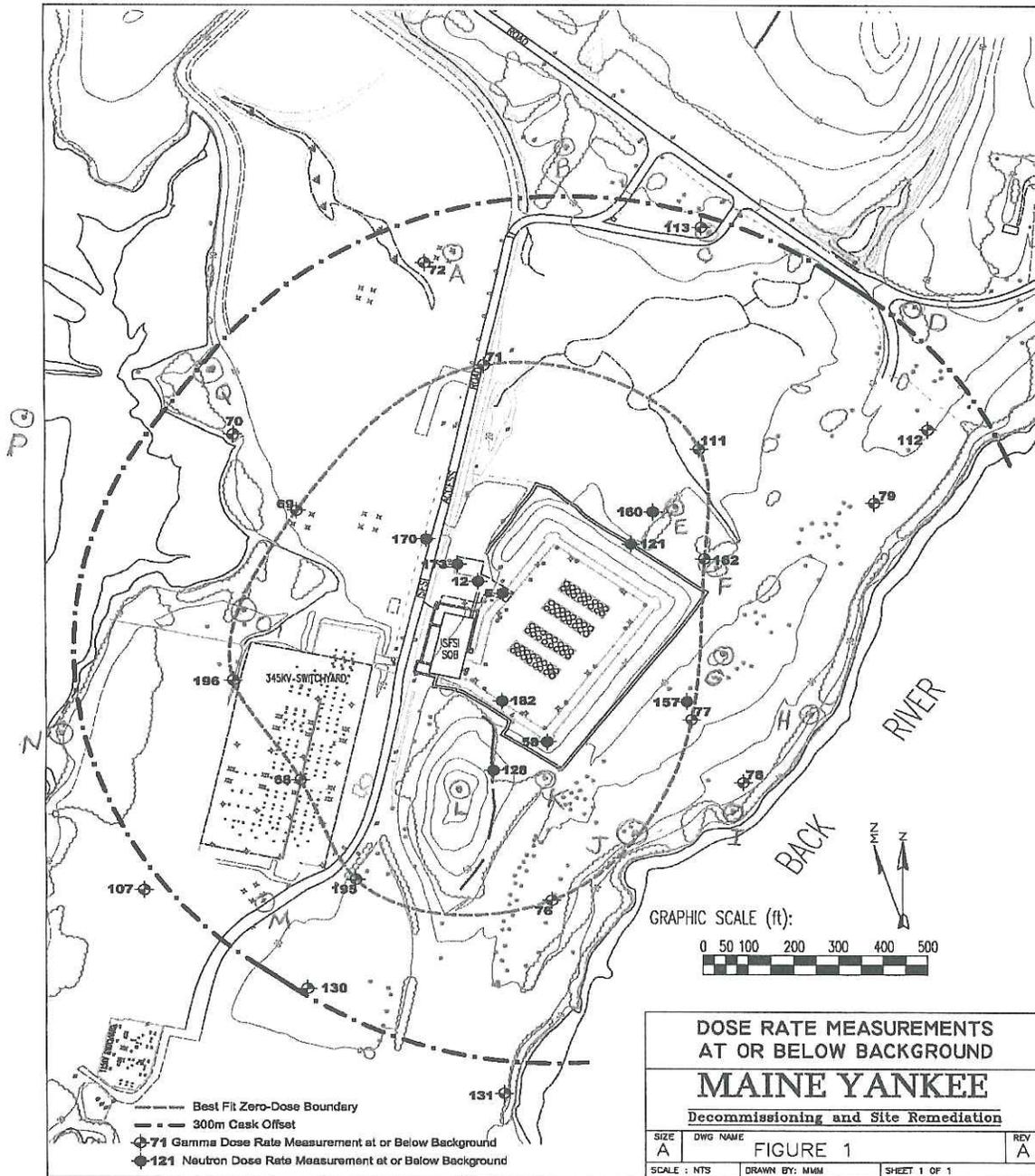
<sup>4</sup> Gross Beta is a simple screening technique that measures the total number of beta particles emanating from a potentially radioactive sample. Refer to the glossary on the website for further information.

<sup>5</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).

## Other Newsworthy Items:

1. On May 1, the House approved the Fiscal Year 2016 Energy and Water Appropriations Bill by a vote of 240-177. The proposed legislation funded nuclear security, the Army Corps of Engineers, environmental clean-up, energy programs, science research, and Yucca Mountain. The bill appropriated \$150 million for DOE's nuclear waste disposal program and \$50 million to the NRC to continue the Yucca Mountain licensing proceedings.
2. On May 15, the Energy Communities Alliance (ECA) sent a letter to the House Chair of the Energy and Commerce Committee responding to the Chair's April 14<sup>th</sup> letter to Energy Secretary Moniz expressing their agreement with the concerns presented in the Chair's April 14 letter to DOE. However, the ECA did note that any movement on defense-related wastes would be beneficial and provided seven advantages for prioritizing defense waste, based on the differences between defense and commercial wastes. They also conveyed that the present situation has resulted in their communities serving as de facto high-level waste storage sites. The ECA is a national organization of local, elected and appointed officials in communities near DOE defense facilities. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
3. On May 15, Energy Secretary Moniz responded to the House Chair's April 14 letter on President Obama's recent finding to seek the development of a separate repository for defense-related, high-level waste. The Secretary's letter did not address each specific question posed by the House Committee's Energy and Commerce. Instead, the Energy Secretary presented the basis for the 1985 decision to comingle commercial and defense spent nuclear wastes, what changed over time, and why the original assumptions supporting the comingling were no longer valid. The Secretary also explained why the decision to create separate repositories would be beneficial for certain types of defense wastes. The Secretary noted that \$3.7 billion has been appropriated since 1993 for defense-related wastes, outlined what efforts were underway for implementing field testing of the deep borehole concept, and the pursuit to develop of a consent-based siting process. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
4. On May 15, the House Subcommittee on Environment and the Economy held a hearing on the "Current Status of Nuclear Waste Management Policy." The Subcommittee provided a background document and requested an update from the State of Washington's Senior Counsel, the NRC Director of the Yucca Mountain Directorate, the Chairman of the Subcommittee on nuclear issues for the National Association of Regulatory Utility Commissioners, the Chairman of the San Onofre Nuclear power plant, the Senior Attorney for the Natural Resources Defense Council, and the Manager of the Rancho Seco Decommission Assets. After opening remarks from the Committee and Subcommittee Chairs, each witness provided testimony on their perspectives of what has impacted them. Four of those who testified supported the continuation of the Yucca Mountain licensing process. The NRC was noncommittal whereas the Natural Resources Defense Council was opposed. Each witness provided their rationale and basis for their position in their separate testimonies. The web link for the testimonies and opening remarks can be accessed by positioning the cursor over the underlined texts above and following the directions.
5. On May 20, the U.S. Nuclear Waste Technical Review Board issued a news release that it will hold a meeting on June 24 in Colorado to review DOE's activities relative to the transporting of spent nuclear fuel to an interim storage facility or a geologic repository. DOE will discuss their research and development efforts and new equipment designs. Other viewpoints on transportation were expected from NRC, an international nuclear utility, and some stakeholder groups.

Figure 1



6. On May 20, Waste Control Specialists (WCS) announced that AREVA Inc., a French firm, will be the exclusive subcontractor for the design, development, construction, operation, and maintenance of WCS's proposed interim storage facility in Andrews County, Texas. AREVA could also support WCS in their storage licensing application to the NRC and offer support for transportation services to and from the facility. The web link for the press release can be accessed by positioning the cursor over the underlined text and following the directions. The web link for the news article can be accessed by positioning the cursor over the following link: <http://www.neimagazine.com/news/newsareva-selected-as-subcontractor-on-wcs-interim-storage-project-4582524>.
7. On May 21, AREVA Inc. and NAC International signed an agreement to jointly support Waste Control Specialists' proposed interim storage facility for spent nuclear fuel in Andrews County, Texas. "AREVA and NAC represent 62% of existing dry storage systems in the U.S., including 78% of spent nuclear fuel stored at sites" at shutdown reactor sites. The web link for the news release can be accessed by positioning the cursor over the underlined text and following the directions.
8. On May 21, Nevada's Governor forwarded a letter to the Chair of the House Subcommittee on Environment and Economy responding to the Chairs earlier letters inviting Nevada to a discussion on the country's nuclear waste management policy and potential economic incentives in exchange for the Yucca Mountain project. The Governor expressed his State's sentiments to the Chair's overtures in no uncertain terms by stating that "we oppose the project based on valid scientific, technical and legal merits." The Governor indicated that Nevada was supportive of the Blue Ribbon Commission's recommendations. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
9. On May 21, Senate appropriations bill H.R. 2028 was voted on in the Senate Water and Appropriations Committee and by a vote of 26-4 approved \$35.4 billion in funding DOE and the Army Corps of Engineers. The proposed bill's text recommended \$30 million to implement the Senate's version of managing the nation's nuclear waste stockpile by implementing a pilot program to construct a consolidated storage facility or facilities for the storage of spent nuclear fuel and high-level waste with priority given to stranded fuel at sites without an operating nuclear reactor. The proposal also allocated \$3 million for the design, procurement, and testing of railcars to support the transportation of spent fuel to interim storage facilities. The bill also provided for the establishment of a consent-based process for a host facility with the Governor of the State, the local government(s) having jurisdiction over the host facility and affected Indian Tribe(s).
10. On May 26, World Nuclear News reported that the heat experiment that was started in 1997 at the underground research laboratory for a high-level waste repository at Grimsel, Switzerland was coming to an end. The experiment involved two radioactive waste containers with multiple sensors embedded in bedrock and backfilled with a special aluminum clay-like material. The purpose of the experiment was to determine the effects of heat from high-level waste on the surrounding rock and backfill material. This last container will be fully excavated by the end of June and its data will be compared with the first waste container that was removed in 2002. The web link for the news release can be accessed by positioning the cursor over the underlined text and following the directions.

State Nuclear Safety Inspector Office  
Maine CDC – DHHS

June 2015 Monthly Report to the Legislature

Executive Summary

The report covers activities at the Maine Yankee Independent Spent Fuel Storage Installation (ISFSI) facility, including the State's on-going 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:

- Maine Yankee recommended to the Department of Environmental Protection to reduce their chemical groundwater sampling program on Bailey Point.

National:

- Representative Conaway from Texas drafted legislation that would authorize the Department of Energy (DOE) to contract with a private company to construct a storage facility for spent nuclear fuel or develop one on its own.

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, historical addendum, and glossary 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 June, the general status of the ISFSI was normal, with no instances of spurious alarms due to environmental conditions.

There were two fire-related impairments for the month. One impairment was associated with the ongoing office build-out project with periodic fire rounds instituted as a compensatory measure. The impairment will be cleared when the new fire system is placed into service. The second impairment was due to a fire door not closing properly. The door was repaired and the impairment was cleared.

There were four security incident reports logged for the month and one was related to a transient environmental condition. The second was due to a loss of internet connectivity with an offsite vendor. The third was due to a degraded security system. The fourth was due to a computer system issue. In all cases, compensatory measures were put into place until the issues were resolved.

There were 23 condition reports<sup>1</sup> (CR) for the month and they are described below.

- 1<sup>st</sup> CR: Documented was a tracking CR for lessons learned from the May 2015 Fire-Medical Drill. The CR remains open with several suggestions being pursued such as an additional fire hydrant and more frequent flushing of the fire pond piping.
- 2<sup>nd</sup> CR: Documented a computer system issue associated with door alarms. Compensatory measures were put into place until the issue was resolved
- 3<sup>rd</sup> CR: Documented that a computer backup function was not enabled properly after a reboot. The function was enabled and personnel retrained on the requirement.
- 4<sup>th</sup> CR: Documented that a door latch on a utility vehicle was missing. The part was ordered and installed.
- 5<sup>th</sup> CR: Documented that an Automated External Defibrillator unit failed its battery check. The battery was replaced.
- 6<sup>th</sup> CR: Documented the loss of internet connectivity with an offsite vendor. Compensatory measures were put into place until the issue was resolved.
- 7<sup>th</sup> CR: Documented that the controlled copy of a manual was missing from the Conference Room. The issue is under evaluation as to whether the manual should be deleted from controlled status.
- 8<sup>th</sup> CR: Documented that an overheated extension cord was found in the construction area. The cord was taken out of service and discarded. The issue was loose connections on a plug. All other extension cords onsite were checked and found to be satisfactory.
- 9<sup>th</sup> CR: Documented a degraded security system. Compensatory measures were put into place until a component was replaced.
- 10<sup>th</sup> CR: Documented that a weapons turnover was observed to be not in accordance with the weapons handling procedure. The individuals were counseled on the proper process and all personnel were informed of the proper process. Procedure clarifications were also being considered.
- 11<sup>th</sup> CR: Documented a procedure non-conformance regarding keeping an access authorization list in the Alarm Station. The procedure was revised to provide clarification.
- 12<sup>th</sup> CR: Was written as a tracking CR to track changes to a procedure due to changes in Fire Protection designees onsite. The issue is under evaluation.
- 13<sup>th</sup> CR: Documented a procedure non-compliance regarding signing documents in and out of the repository. The individual was counseled on the proper process.
- 14<sup>th</sup> CR: Documented a possible software issue regarding computer login screens. This issue is under evaluation.
- 15<sup>th</sup> CR: Documented that a temporary light in the construction area was touching and melting the plastic casing. The light was taken out of service and all other lighting was checked for similar issue.
- 16<sup>th</sup> CR: Documented that a video recorder re-booted itself with no operator input. This issue is under evaluation.
- 17<sup>th</sup> CR: Was written to document a fire door closer not working properly. A fire impairment was implemented until the issue was repaired.
- 18<sup>th</sup> CR: Documented that a daily log check was not completed properly. The individual was coached on the proper process.
- 19<sup>th</sup> CR: Was written to document that a security system degradation due to environmental conditions. Compensatory measures were put into place until the issue was resolved.
- 20<sup>th</sup> CR: Was written to document that one state police radio channel was not working properly. 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.

Maine State Police was contacted and the issue was an equipment problem on their end. The issue has since been resolved.

21<sup>st</sup> CR: Documented a water leak into the Operations Building. The issue was due to incomplete ducting as part of the office buildout project. The ductwork has been sealed.

22<sup>nd</sup> CR: Documented that a Resistance Temperature Detector (RTD) conduit was impacted by a manlift during Vertical Concrete Cask inspections. The RTD continued to function as designed and the conduit was repaired the next day.

23<sup>rd</sup> CR: Documented that an environmental thermoluminescent dosimeter (TLD) (#6) could not be found during TLD changeout activities. The TLD was subsequently found on 7/2/15 on a nearby tree.

#### *Other ISFSI Related Activities*

1. On June 11, Maine Yankee forwarded their recommendations to the Department of Environmental Protection (DEP) to modify the existing chemical groundwater sampling program on Bailey Point. According to the Consent Order every five years Maine Yankee can make suggestions to change the sampling program. Now that enough data has been collected over the past ten years, Maine Yankee was able to perform a comprehensive review that included statistical trend analyses, comparisons with the model developed for the site, and evaluations of the geochemical conditions for the chemical parameters being monitored. The review indicated that a majority of the monitored parameters met health and environmental guidelines and there was no human exposure since there are no residential facilities onsite and no use for the groundwater. Therefore, Maine Yankee is recommending reduced monitoring with a highly focused sampling program for those remaining wells.
2. On June 18, Maine Yankee submitted to the NRC its changes to the storage facility's Physical Security Plan to address administrative changes and its protection of certain radioactive material in its possession from theft or diversion. Since the Plan involved security sensitive information disclosure to the public was prohibited.

#### Environmental:

The State's second quarter results will be published in the August monthly report.

#### Other Newsworthy Items:

1. On June 16, Representative Conaway from Texas crafted legislation to amend the Nuclear Waste Policy Act and entitled it, "Interim Consolidated Storage Act of 2015." There were five key provisions to the proposed legislation, interim storage, repository, linkage, fulfillment of the federal government's responsibilities, and benefits to host communities. The draft bill would authorize DOE to develop its own storage facility or contract with a private company. The bill would remove the Yucca Mountain land and water rights issues as impediments to the licensing process and expand the disposal capacity of the Yucca site to above the current 70,000 ton limit. The proposed legislation would also direct DOE to take title to the spent nuclear fuel and increase financial incentives to the hosting state(s). The web link for the [draft legislation](#) can be accessed by positioning the cursor over the underlined text and following the directions.
2. On June 16, the U.S. Nuclear Waste Technical Review Board issued a report entitled, "Evaluation of Technical Issues Associated with the Development of a Separate Repository for U.S. Department of Energy-Managed High-Level Radioactive Waste and Spent Nuclear Fuel." The Report was in response to the Administration's earlier decision to develop two mined repositories, one for the disposition of defense-related high-level waste (HLW) and some DOE spent nuclear fuel (SNF) and another to dispose of commercially generated HLW and SNF along with other DOE managed HLW and SNF. In the Report the Board made four recommendations:

- Consider waste form performance in different host-rock types after degradation of the waste package in future assessments.
- Develop a better understanding of the degradation rates of DOE SNF types in potential repository geologic environments.
- Evaluate approaches, benefits, and costs of repackaging cooler naval SNF into smaller disposal packages.
- Conduct research on borehole sealing technology and assess whether more robust engineered barriers might be required for disposing of selected waste forms in deep boreholes.

The web link for the Report can be accessed by positioning the cursor over the underlined text and following the directions.

3. On June 22, the Georgia Public Service Commission (PSC) forwarded a letter to the Georgia Congressional delegation seeking their help in urging Congress to move forward past the stalemate on spent nuclear fuel and high-level waste removal from operating and shutdown nuclear plants. The Commission advocated funding for the Yucca Mountain license application, pressing for consolidated interim storage with priority to shutdown sites, funding and governance reform for the nation's nuclear waste program, and supporting transportation infrastructure. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
4. On June 24, the Swedish Radiation Safety Authority issued its preliminary findings on the construction application submitted by SKB, the builder and operator of the impending spent nuclear fuel repository at Forsmark. The Swedish Regulator was cautiously optimistic that the proposed facility could meet the country's long-term radiation protection standards, but further work was necessary to take a final position on whether the radiation protection requirements would be met over a minimum period of 100,000 years. The Swedish agency also noted that additional reviews were necessary to resolve the manufacture of the copper canisters that will be used to house the spent nuclear fuel. The web link for the article can be accessed by positioning the cursor over the underlined text and following the directions.
5. On June 24, the NRC Chair forwarded to the House Chair of the Committee on Energy and Commerce the agency's May monthly status report on the resumption of the Yucca Mountain licensing process. The staff noted that they had completed the five volume set of their Safety Evaluation Report (SER) on the DOE's Yucca Mountain license application with the issuance of Volumes 2 through 5, its completion of SER records retention and development of a lessons-learned report, and its work on the supplemental environmental impact statement (EIS) on groundwater. The Commission also approved, pending funding, the loading of the Licensing Support documents into its public library. The staff estimated that \$3.2 million would be required to complete the EIS supplement, the lessons-learned report and the public availability of the licensing documents. The web link for the cover letter and status report can be accessed by positioning the cursor over the underlined text and following the directions.
6. On June 24, the U.S. Nuclear Waste Technical Review Board's (NWTRB) summer meeting focused on DOE's plans for the transportation of spent nuclear fuel from nuclear power plants to an interim storage site or a geologic repository. The Board posed several questions for the presenters to address. The discussion centered on research and development activities as well as new equipment designs. DOE also provided information on how damaged fuel would be handled. The NRC provided their regulatory perspectives on transportation. The Western States Energy Board provided their take on the impact of transportation on states in their region. The Swiss presented their program for managing and transporting spent nuclear fuel. The web link for the agenda can be accessed by positioning the cursor over the underlined text and following the directions. The individual presentations can be accessed by clicking on the following link <http://www.nwtrb.gov/meetings/2015/june/15june24.html> and then clicking on the name of the presenter.

# State Nuclear Safety Inspector Office Maine CDC – DHHS

## July 2015 Monthly Report to the Legislature

### Executive Summary

The report covers activities at the Maine Yankee Independent Spent Fuel Storage Installation (ISFSI) facility, including the State's on-going 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 Department of Energy (DOE) solicited proposals to perform deep borehole testing in order to conduct characterization investigations for burying spent nuclear fuel and high-level waste.
- President Obama designated the Basin and Range in Nevada as a new national monument. The 704,000 acre parcel would prohibit the construction of a 40 mile segment of the proposed 200 mile Caliente Rail line that would have transported spent nuclear fuel shipments to Yucca Mountain in Nye County, Nevada.
- The Bipartisan Policy Center, a Washington think tank that is working on finding solutions to the nation's key challenges, announced a nuclear waste primer series that would cover such topics as consolidated storage options, state's authority to regulate, Yucca Mountain, options and limits for presidential executive action, and transportation.
- The U.S. Court of Federal Claims ordered the federal government to pay Entergy Corporation's Palisades's nuclear plant in Michigan \$20.6 million for failing to take the plant's spent nuclear fuel.
- Senators Reid and Heller from Nevada introduced legislation, the Nuclear Waste Informed Consent Act, that would prevent DOE from making payments for transporting nuclear waste through Nevada without first receiving consent from the Governor, local officials, and tribal leaders.
- Holtec International disclosed that it will submit a license application to the Nuclear Regulatory Commission (NRC) in 2016 to construct a consolidated interim storage facility for spent nuclear fuel in New Mexico that would be expected to receive shipments by the year 2020.

### 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, historical addendum, and glossary 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 July, the general status of the ISFSI was normal, with no instances of spurious alarms due to environmental conditions.

There was one fire-related impairment for the month and it involved a fire detection panel that was taken out of service to support the office build out project. Compensatory measures were put into place until the project is completed.

There were twelve security incident reports logged for the month. Five of the reports involved transient environmental conditions. Three dealt with project work associated with the security system. Two of the incidents involved the office build out project. The remaining two involved a loss of internet connectivity and security system maintenance. In all instances compensatory measures were put into place until the systems were resolved.

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

- 1<sup>st</sup> CR: Documented the loss of internet connectivity with an offsite vendor. Compensatory measures were put into place until the internet connection was restored. This CR will address adding additional redundancy to the system as well as upgrading the process when loss of the internet occurs.
- 2<sup>nd</sup> CR: Documented that compensatory measures required by procedure were not followed during a system outage. The staff was provided with refresher training on this procedural requirement.
- 3<sup>rd</sup> CR: Documented that the compensatory measures required by a procedure were not followed by the Local Law Enforcement Agency (LLEA). Corrective actions are being formulated and will include a change in compensatory measures.
- 4<sup>th</sup> CR: Documented one of two radio systems could not contact the LLEA. After troubleshooting and contacting Maine State Police, the problem was determined to be with one of the State's radio towers. All other communication channels were working as designed. The State repaired their equipment and the radio re-tested as satisfactory.
- 5<sup>th</sup> CR: Documented a follow-up to the second CR above, noting that alternate compensatory measures should have been considered. A barrier screen was performed on the issue to capture all corrective actions on this issue.
- 6<sup>th</sup> CR: Documented that an industrial camera exhibited poor video quality. The camera was replaced.
- 7<sup>th</sup> CR: Documented that the new regulation screening form was not completed in a timely manner. Personnel involved in reviewing the new regulations are being trained on the requirements to perform their screening prior to the regulation becoming final.
- 8<sup>th</sup> CR: Documented that an industrial camera field of view was found inadequate. The camera had just been replaced. The issue was not with the camera, but rather with the operation of the joystick. All personnel were briefed on its proper operation.
- 9<sup>th</sup> CR: Documented the Procedure Noncompliance Trend Analysis. This was a tracking CR that noted 19 procedure non-compliance issues for the prior 12 months. Management was evaluating the proper coding for the CRs' cause codes and will determine appropriate corrective actions.
- 10<sup>th</sup> CR: Documented that the system was degraded due to environmental conditions. Compensatory measures were put into place until the system was restored.
- 11<sup>th</sup> CR: Documented that the Special Nuclear Material Balance Report for 2014 was not submitted to records. The Report was submitted to records.
- 12<sup>th</sup> CR: Documented that the system was degraded due to environmental conditions. Compensatory measures were put into place until the system was restored.

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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.

- 13<sup>th</sup> CR: Documented a tracking CR to perform the evaluation for Process Improvements for the field transfer of weapons. CR remained open to perform benchmarking at other sites.
- 14<sup>th</sup> CR: Documented a procedure cancellation Regulatory Review form was not signed off in 2014. It was found during an audit of regulatory reviews. The form was properly signed off.
- 15<sup>th</sup> CR: Documented a vendor being brought in to perform equipment maintenance without processing a purchase requisition. The requisition will be processed to cover the scope of work.
- 16<sup>th</sup> CR: Documented that the system was degraded due to environmental conditions. Compensatory measures were put into place until the system was restored.
- 17<sup>th</sup> CR: Documented that the system was degraded due to environmental conditions. Compensatory measures were put into place until the system was restored.
- 18<sup>th</sup> CR: Documented that during the office project a contractor was found using a propane torch without a permit. The work was terminated and the individual counseled on the proper tools and process requirements.
- 19<sup>th</sup> CR: Documented that a breaker was found to be labelled incorrectly during the camera project. The breaker labelling was corrected.
- 20<sup>th</sup> CR: Documented that the system was degraded due to environmental conditions. Compensatory measures were put into place until the system was restored.
- 21<sup>st</sup> CR: Documented that the South HVAC unit was not working. Troubleshooting determined that the inlet screen was clogged causing the coils to freeze. The inlet screen was cleaned and the unit restarted.

*Other ISFSI Related Activities*

1. On July 6, Maine Yankee notified the NRC of some changes in its Board of Directors with the resignation of one and the appointment of another from Eversource, formerly known as Northeast Utilities. Since the firm was a domestic corporation, there were no foreign ownership, control or influence issues to contend with.
2. On July 14, the legislatively mandated group, representing the Department of Environmental Protection (DEP), the State Police, the Public Advocate, the Department of Health and Human Services' Radiation Control Program and Maine Yankee, met for its quarterly meeting to discuss the State's and Maine Yankee's activities pertinent to the oversight of the ISFSI. The State Inspector's report highlighted the status of his monthly and annual reports to the Legislature, his meeting with the Director of Maine's Center for Disease Control and the new initiatives implemented to streamline the monthly reports, his meeting with Maine Yankee on dry cask licensing, his work on the Confirmatory Summary Report, his on-going participation in a national interregional team that is developing recommendations from states to the Department of Energy (DOE) on funding emergency preparedness for local communities on spent fuel shipments traversing their jurisdictions. Maine Yankee informed the Group of their recommendations to reduce the number of wells sampled on-site. DEP informed the Group that they have reviewed Maine Yankee's recommendations and will implement the changes at the next scheduled sampling in five years. Maine Yankee also apprised the Group that its office project at Maine Yankee is nearing completion, that they will be installing a fence along Ferry Road starting in September and will be requesting an exemption from the NRC on their technical specifications. In addition, they also stated that their annual emergency plan exercise will be held on October 21 and that there was very little development on the congressional front. The Public Advocate's Representative updated the status on the nuclear bills introduced in this legislative session and remarked that electric rates were slightly lower than they would be due to the Maine Yankee's successful lawsuit over the federal government's failure to take the spent nuclear fuel.
3. On July 28, Maine Yankee submitted to the NRC revision 5 to its Emergency Plan and a revision to one of its implementing procedures. The revision to the Plan involved the retitling of a table along with a restructuring of that table to better reflect the initiating conditions, the action levels, and the

corresponding NRC classification level. The changes to the procedure were minor as they encompassed the matching of the revised table in the Emergency Plan, clarifications on actions undertaken as recommended from a previous exercise observation for the Site Supervisor/Emergency Coordinator, ensuring that contractors are included in any evacuation of unnecessary personnel, and updates to phone contacts.

### Environmental:

The State's second quarter results will be published in the August monthly report.

### Other Newsworthy Items:

1. On July 2, Nuclear Engineering International reported that both Texas and New Mexico are vying to host a consolidated storage facility for spent nuclear fuel and were expected to submit license applications in 2016. Both states want to expand their nuclear footprint with New Mexico having higher aspirations of also hosting a spent fuel reprocessing or recycling industry and possibly even a fast reactor. Although both states enjoy local and gubernatorial support for the construction of such a storage facility, New Mexico's two congressional senators have expressed strong reservations over such a facility while Texas' senators are supportive. The web link for the magazine article can be accessed by positioning the cursor over the underlined text and following the directions.
2. On July 3, Bond Technologies, a small start-up company in Elkhart, Indiana, landed a contract with Posiva Oy, the firm responsible for the disposal of spent nuclear fuel in Finland, to build a special welding machine to secure the lids on spent fuel copper barrels designed to last 100,000 years. The welding is performed by spinning a tool to heat the metal just hot enough to soften it. The barrel and the barrel's lid are then pressed together to form a natural seam that is stronger than a traditional weld.
3. On July 8, the Department of Energy (DOE) issued a request for proposals to perform deep borehole testing for up to five years in order to conduct site and borehole characterization investigations. DOE is exploring the possibility of burying spent nuclear fuel or high-level waste in deep, geologic boreholes. The contract would be awarded on a cost plus fixed fee basis. A pre-proposal meeting will be held in Las Vegas with proposals due by September 9. The web link for the proposal can be accessed by positioning the cursor over the underlined text and following the directions.
4. On July 8, the quarterly brief of the 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 the Federal Energy Regulatory Commission rate case settlement on spent nuclear fuel storage issues. The General Counsel updated the attendees on Yankee Companies' Phase III litigation damage claims for the period 2009 through 2012. The trial ran for two days starting on June 30. The Judge requested post-trial briefings after which the case will be ready for a decision. However, it was assumed that the decision would not be rendered until next year. Updates were provided on the appropriations legislation in Congress. The House approved funding for \$150 million for the Nuclear Waste Disposal Program and \$25 million for the NRC to continue the Yucca Mountain licensing proceedings. The Senate's appropriations bill included a pilot program for interim storage of spent nuclear fuel (SNF) and allowing DOE to store SNF at private facilities such as those proposed for Texas and New Mexico. As for proposed legislation the House had not introduced new legislation but was working on a bill that would address some of the obstacles put in place by Nevada. The house was also considering drafting legislation that would add a provision for the DOE to use private facilities to store the SNF, that DOE would accept title to the spent fuel that was moved, that priority would be given to shutdown plants, and that funds for the storage program would be restricted to the interest of the Nuclear Waste Fund. The Senate introduced the Nuclear Waste Administration Act with a hearing scheduled for August 4. The Act included the establishment of a pilot project for the

storage of spent nuclear fuel with provisions that directed the priority removal from permanently shutdown reactor sites. A further update noted that the Northeast High-Level Radioactive Waste Transportation Task Force was focused on the funding allocation for states and municipalities over emergency preparedness for spent fuel shipments within their borders and the condition of the rail line infrastructure in the Northeast to support SNF shipments.

5. On July 9, SKB International, Sweden's national radioactive waste management company, signed a three year contract to assist Taiwan in drawing plans for a final repository for spent nuclear fuel. Taiwan will adopt Sweden's and Finland's repository techniques. However, Taiwan's geological conditions differ from Sweden's or Finland's as Taiwan has a much greater risk from earthquakes.
6. On July 10, President Obama designated the Basin and Range in Nevada as a new national monument. The area included rock art dating back 4,000 years and served as a resource for archaeologists, historians and ecologists. The 704,000 acre parcel also included the proposed Caliente Rail line that would have transported spent nuclear fuel shipments to Yucca Mountain in Nye County, Nevada. Recently, there were discussions of reviving the shuttered Yucca Project when the U.S. Court of Appeals ordered the NRC to restart its licensing process to construct the repository. However, the designation placed another roadblock for the Yucca Project. The designation was seen as a ploy to stop the Yucca Mountain since it was created at the urging of Senator Harry Reid, a long-time, staunch opponent of the proposed nuclear waste repository. The web link for the fact sheet is <https://www.whitehouse.gov/the-press-office/2015/07/10/fact-sheet-president-obama-designates-new-national-monuments> and can be accessed by positioning the cursor over the underlined text and following the directions.
7. On July 16, the Bipartisan Policy Center, a Washington think tank that is working on finding solutions to the nation's key challenges, announced a nuclear waste primer series of five briefs over the next few months. The briefs will cover such issues as options for consolidated storage, state's authority to regulate, Yucca Mountain, options and limits for presidential executive action, and transportation. The briefs grew out of five regional meetings from an extensive range of interests. The first two briefs published in the primer series are "[Options for Consolidated Storage of Nuclear Waste](#)" and "[State's Authority to Regulate Nuclear Waste](#)." The Options primer discussed three interim storage options – at-reactor sites, federal facilities, or private facilities and presented the main advantages and disadvantages of each approach. The State's Authority primer discussed five options for expanding the state role, namely through a negotiated agreement, state enforcement, state certification, state certification and enforcement authority, and a change in radioactive material exemption. In order for the options to become viable changes to federal law would be required. The web link for the [announcement](#) and the two briefs can be accessed by positioning the cursor over the underlined texts and following the directions.
8. On July 17, the U.S. Court of Federal Claims ordered the federal government to pay Entergy Corporation's Palisades's nuclear plant in Michigan \$20.6 million for failing to take the plant's nuclear waste. Entergy had initially sued over the breach and claimed the government owed them \$36 million. During the trial, a government expert calculated that Entergy was only owed \$20.6 million with \$15.7 million remaining in dispute. Even though the government objected and argued that the judgment should not be granted until the case was fully litigated, the Court rejected the argument and ordered a partial payment on that portion that was not in dispute.
9. On July 21, the NRC Chairman forwarded the monthly status report to the House Chair on Energy and Commerce on NRC's activities pertaining to the licensing proceedings on Yucca Mountain. The report listed the accomplishments to date such as the issuance of Volumes 2 through 5 of the Yucca Mountain Safety Evaluation Report (SER). The report also noted the ongoing work approved by the Commission on the supplemental Environmental Impact Statement (EIS) on groundwater and SER wrap-up activities, records retention and a lessons learned report. Almost all of the \$136,000 expended during the month

was for the development of the EIS supplement. The web link for the cover letter and report can be accessed by positioning the cursor over the underlined text and following the directions.

10. On July 22, Senators Reid and Heller from Nevada introduced legislation, the Nuclear Waste Informed Consent Act, that would prevent the Energy Department from making payments for transporting nuclear waste through Nevada without first receiving consent from the Governor, local officials, and tribal leaders. The Act also included contiguous units of local governments should spent nuclear fuel be transported through their jurisdictions. The web link for the proposed legislation can be accessed by positioning the cursor over the underlined text and following the directions.
11. On July 29, Holtec International disclosed in a national webinar its schedule to construct and operate a consolidated interim storage facility for spent nuclear fuel in New Mexico by 2020. The facility will be located on a 1,000 acre parcel midway between Hobbs and Carlsbad, New Mexico. Holtec will submit a letter of intent to NRC next month, which will trigger a pre-application meeting between the parties later this year with the goal of submitting an application by June 2016. If so, the expectation will be for the NRC to issue a storage license by January 2019 with construction of the facility starting in April 2019 and operation starting as early as April 2020. The facility will feature Holtec's HI-STORM UMAX design with dry storage of the spent fuel casks underground. The web link for the article can be accessed by positioning the cursor over the underlined text and following the directions.
12. On July 30, Oak Ridge National Laboratory (ORNL) reported that, with NRC's support, researchers have developed a Cyclic Integrated Reversible-bending Fatigue Tester (CIRFT) to test spent nuclear fuel under dynamic vibration conditions. The Tester was capable of bending the spent fuel rod sample and measured the forces that represent the normal vibrations during transport. This type of testing is crucial to the NRC and the nuclear industry to better understand deformation and stress in fuel rods under transportation conditions. Previous testing was performed without the fuel in the rod and never tested the system as a whole. The web link for the invention can be accessed by positioning the cursor over the underlined text and following the directions.

State Nuclear Safety Inspector Office  
Maine CDC – DHHS

August 2015 Monthly Report to the Legislature

Executive Summary

The report covers activities at the Maine Yankee Independent Spent Fuel Storage Installation (ISFSI) facility, including the State’s on-going 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:

- Holtec International sent a letter to the Nuclear Regulatory Commission’s (NRC) Division on Spent Fuel Management informing them of their intent to seek a license for the Eddy-Lea Alliance consolidated interim storage facility for spent nuclear fuel and high-level waste in southeast New Mexico.
- The NRC issued a news release on their published draft environmental impact statement (EIS) supplement on groundwater to the Department of Energy’s original EIS on the Yucca Mountain repository in Nevada indicating that the impact from groundwater was small.
- The Department of Energy (DOE) awarded a contract to AREVA, with principal subcontractor KASGRO Rail, to design, analyze, and fabricate cask and buffer railcars that would meet the Association of American Railroads requirements for future large-scale transport of spent fuel and high-level waste.
- The Bipartisan Policy Center, a Washington think tank, published a rudimentary report entitled, “Restarting the Yucca Mountain Project: The Case For and Against,” that inferred the resumption of the licensing process would be a lengthy and arduous ordeal with no guarantee that the repository would ever be built.

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, historical addendum, and glossary 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 was one fire-related impairment for the month and it involved a fire detection panel that was taken out of service to support the office build out project. Compensatory measures were put into place until the project is completed.

There were three security incident reports logged for the month. All three were related to supporting compensatory measures associated with security project that was not available for public disclosure.

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

- 1<sup>st</sup> CR: Documented a lost keycard. The individual lost his badge at home. The badge was deactivated and a new badge was issued.
- 2<sup>nd</sup> CR: Documented that the diesel generator failed to swap power during the monthly surveillance test. The output breaker tripped during start-up. The breaker was reset and the diesel loaded properly.
- 3<sup>rd</sup> CR: Documented the men's room toilet pulled away from the wall. The toilet was replaced.
- 4<sup>th</sup> CR: Documented improvement areas identified during a radiological protection assessment. The CR was listed as a tracking CR to follow the corrective actions based on a six month assessment of the Radiological Protection Program.
- 5<sup>th</sup> CR: Documented the loss of onsite power for two hours. Central Maine Power was contacted and power was restored. The back-up power functioned as designed.
- 6<sup>th</sup> CR: Documented the recent Uninterruptible Power Supply (UPS) and Fire Warden Alarms that were noted during the diesel swap-over during the loss of onsite power. A fire panel alarm came in as well as the UPS alarm. The issue remained open pending further engineering evaluation.
- 7<sup>th</sup> CR: Documented the momentary loss of off-site power. There were no impacts to the security systems. However, trouble alarms were noted on the fire and UPS systems, which were were reset manually.
- 8<sup>th</sup> CR: Documented that the Emergency Notification System phone was found without a dial tone. An investigation revealed that the phone was unplugged from the wall outlet. The probable cause was the recent telephone upgrade. The phone was plugged in and returned to service.
- 9<sup>th</sup> CR: Documented a procedure being revised into a common procedure which resulted in the six month self-assessment not being completed. This was expected and the CR will remain open until the assessment is performed.
- 10<sup>th</sup> CR: Documented that a fire door was not latching consistently. The door was repaired.
- 11<sup>th</sup> CR: Documented that five old VHS tapes were found that were labeled safeguards information. The tapes were evaluated. Four of the tapes did not contain safeguards information and were properly declassified. One tape was found to contain safeguards information and should not have been initially declassified. A new CR was written to address the improper declassification and remains open pending further evaluation.
- 12<sup>th</sup> CR: Documented that the phone in the clean room was not working. The cause was found to be an improper cable connector. The connector was replaced.
- 13<sup>th</sup> CR: Documented the finding of a room number error in a newly revised operational procedure. The procedure will be revised.
- 14<sup>th</sup> CR: Documented the remote alarm internet switch not working properly during a switchover. Further troubleshooting will be performed.
- 15<sup>th</sup> CR: Documented the improper declassification of a safeguards VHS tape. The tape was placed into a safeguards repository pending further evaluation. As part of the extent of conditions all offices, file cabinets, etc. were searched for any other safeguards information that was marked and declassified. None was found.
- 16<sup>th</sup> CR: Documented that a personal vehicle was leaking oil in the front parking area. The oil and soil

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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.

were removed into a disposal container. There was no release to a waterway and the spill was not considered a reportable spill to the State DEP.

17<sup>th</sup> CR: Documented that during fire related rounds in the new office area it was initially observed that the fire protection procedure did not reflect all the new devices, such as signs, emergency lights, etc. Upon further review the procedure was determined to be correct.

18<sup>th</sup> CR: Documented that during processing of the site's environmental thermoluminescent dosimeters (TLDs)<sup>2</sup>, the vendor noted that one of the TLDs was missing from the group collected at the end of the second quarter. The TLD was found and processed by the vendor. Apparently, the TLD was shipped separately to the vendor.

#### *Other ISFSI Related Activities*

1. On August 12, Maine Yankee responded to the State's Low Level Waste Questionnaire for 2014. The company noted that it did not produce or ship any low-level radioactive waste last year.

#### 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 two extra stations this quarter, F and Q, all with an average of 25.1 milliRoentgens<sup>3</sup> (mR).

There were ten stations in the slightly elevated group (A, B, C, D, E, J, L, M, N, and O) with an average of 22.5 mR. Normally, stations C, D, M, and O are in the normal group. Apparently, this quarter there were more stations that experienced higher than normal readings as evidenced by four stations in the elevated grouping and seven in the slightly elevated group. Fluctuations in the background are not unusual and are expected. These appear to be within the statistical boundaries of seasonal variations. That left only three stations (H, I, and P) in the normal group with an average of 20.3 mR for this quarter.

The Maine Yankee industrial site TLDs averaged 21.8 mR, which is comparable to the normally 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 third quarter results being slightly higher than the previous quarter or this 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.

The four control TLDs that were stored at the State's Health and Environmental Testing Laboratory (HETL) in Augusta averaged about 11.0 mR. Although the storage of the control TLDs at HETL's pre-World War II steel vault lowers the natural background values, the 11.0 mR value for this quarter was lower than the 2015 first quarter's control results of 13.3 mR. There appears to be no obvious reason for the decrease. The controls were initially part of a program to better quantify the individual impacts of storage and transit exposures on the TLDs. However, as indicated above, they also have been instrumental in pointing out changes that normally would have not been captured if it were not for the program.

As a further application of this TLD control assessment, every quarter three of the seven control TLDs received for the upcoming quarter are normally returned to the State's TLD vendor, Global Dosimetry in California, for

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<sup>2</sup> Thermoluminescent dosimeters (TLDs) are very small plastic like phosphors or crystals that are placed in a small plastic cage and mounted on trees, electric utility poles, etc. to absorb any radiation that impinges on the material. For a further explanation, refer to the glossary on the Radiation Program's website.

<sup>3</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.

an analysis of the transportation exposures. The quarter's transit badges were not returned, but rather placed in the storage vault at HETL with the other controls and returned with all the dosimeters after the field replacement. The initial set of results from the control TLD badges returned indicated an average of 6.0 mR for the total exposure picked up between leaving the vendor, arriving at the State and then immediately being shipped back and received by the vendor. The 6.0 mR was slightly higher than the previous quarter's reported 5.8 mR transit badges. After three years, the State is starting to see signs of a pattern developing for the different quarters. Nevertheless, it is too early to tell if the pattern was real. More time is needed to verify if the pattern continues. Besides seasonal and daily fluctuations in the background, modest increases or decreases could be attributed to an extra few days or a few days less transit.

The field control TLDs at Ferry Landing on Westport Island, the Edgecomb Fire Station and the roof of the State's Laboratory read 23.8, 24.8, and 20.3 mR, respectively. Historically, the Edgecomb Fire Station value is higher than the Westport Island location. It is possible that the plowed snow mounds near the TLD location could have impacted the TLD result.

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 three 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>4</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 gross beta results ranged from 11.7 to 25.2 femto-curies per cubic meter (fCi/m<sup>3</sup>)<sup>5</sup>. A composite of the seven bi-weekly air filter samples was used to measure the Beryllium-7's concentration of 69.6 fCi/m<sup>3</sup>.

For informational purposes Figure 1 on page 5 illustrates the locations of the State's 17 TLD locations in the vicinity of the ISFSI. The State's locations are identified by letters with the highest locations for this quarter as F, G, K, and Q.

### Other Newsworthy Items:

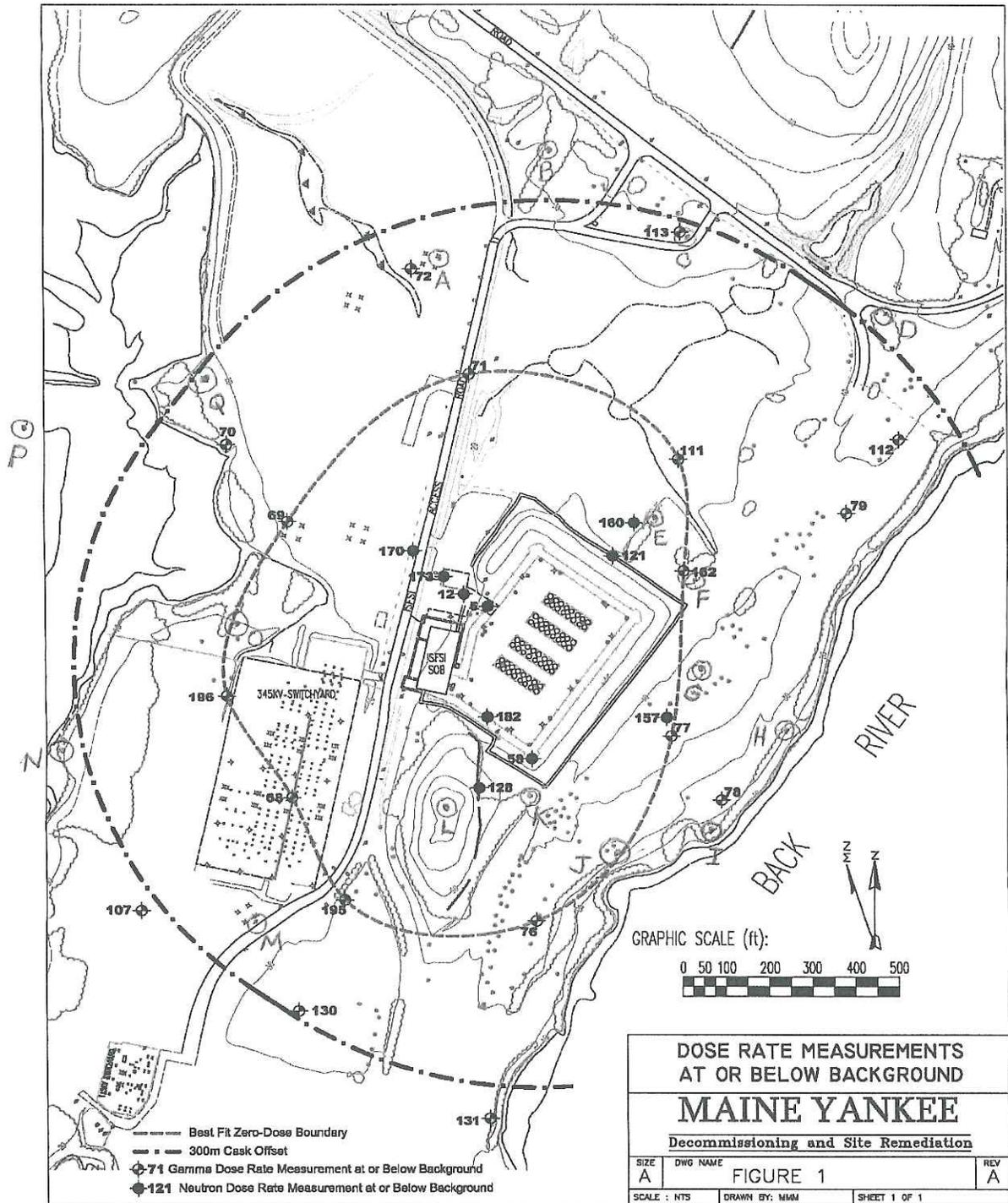
1. On August 3, Holtec International sent a letter to NRC's Division Director of Spent Fuel Management requesting to establish a new part 72 docket for the purpose of their notice of intent to license the Eddy-Lea Alliance consolidated interim storage facility in southeast New Mexico. Holtec informed the NRC it will deploy their HI-STORM UMAX underground system to store the canisters from ISFSI's around the country, including those from shutdown plants, like Maine Yankee. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
2. On August 5, The Heritage Foundation issued a commentary in their "Backgrounder" Newsletter and entitled it, "Fooled Again: The Nuclear Waste Administration Act Preserves Futile Status Quo." The concern expressed in the article was that the proposed legislation would not address the root problems of nuclear waste management as currently conducted. The authors took issue with the proposed bill as it did not solve the political manipulation that has afflicted Yucca Mountain, deferred for decades the creation of a permanent repository, required a new industry fee, even though the current balance in the Nuclear Waste Fund is over \$30 billion, and transferred waste management to a new agency that was less accountable than the DOE to Congress by removing congressional oversight and control of appropriations. The authors advocated an approach that would require utilities and waste producers,

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<sup>4</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>5</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



similar to other countries, to be responsible for waste management thereby allowing competition and market based pricing as opposed to a flat fee that was disconnected from actual costs. The web link for the article can be accessed by positioning the cursor over the underlined text and following the directions.

3. On August 12, the German Cabinet adopted a draft national radioactive waste disposal program with a comprehensive approach to the safe disposal of all radioactive wastes. The Cabinet proposed the former iron ore mine Konrad in Salzgitter for the disposal of low level radioactive waste. However, the German government was still struggling with finding another site for the disposal of their high-level radioactive waste and spent nuclear fuel.
4. On August 13, the NRC held a public meeting on the current state of affairs associated with the “greater than Class C” radioactive waste. The Commission heard testimony from two panels. The first was a panel of four external stakeholders, the industry representative’s Nuclear Energy Institute, the DW James Consulting firm, Waste Control Specialists and operator of a low level waste disposal site in Texas, and a public interest perspective from the Institute for Energy and Environmental Research. The second panel was comprised of Government stakeholders, namely the DOE, the Texas Commission on Environmental Quality, and three senior managers from the NRC staff. The issue is important as Maine Yankee has four concrete casks that contain “greater than Class C” wastes at their storage facility in Wiscasset. The web links for the agenda and the individual presentations can be accessed by positioning the cursor over the underlined texts and following the directions.
5. On August 13, NRC issued a news release indicating that it had published a draft environmental impact statement (EIS) supplement to DOE’s original EIS on Yucca Mountain. The draft EIS supplement focused on potential impacts on groundwater and groundwater discharges to the surface from radiological and chemical contaminants from the repository through the volcanic-silty aquifer in Fortymile Wash and the Armagosa Desert, and to the Furnace Creek/Middle Basin area of Death Valley. DOE deferred to the NRC to prepare the supplement. The peak dose of 1.3 mrem was calculated to be 11 miles south of the Yucca Mountain site in the Armagosa Desert. The NRC rated the impacts as “small”, which are not detectable or so minor as to not noticeably alter any important quality of the resource. To maximize public input the NRC will hold three meetings, two of which will be held in Nevada. The NRC is expecting to issue a final supplement in early 2016. The web link for the news release can be accessed by positioning the cursor over the underlined text and following the directions. The draft supplement can be accessed at: <http://pbadupws.nrc.gov/docs/ML1522/ML15223B243.pdf>.
6. On August 21, the NRC Chairman forwarded the monthly status report to the House Chair on Energy and Commerce on NRC’s activities pertaining to the licensing proceedings on Yucca Mountain. The report listed the accomplishments to date such as the issuance of Volumes 2 through 5 of the Yucca Mountain Safety Evaluation Report (SER). The report also noted the ongoing work approved by the Commission on the supplemental Environmental Impact Statement (EIS) on groundwater and SER wrap-up activities, records retention and a lessons learned report. Virtually all of the \$112,400 expended during the month was for the development of the EIS supplement. The web links for the cover letter and report can be accessed by positioning the cursor over the underlined texts and following the directions.
7. On August 21, the NRC issued a press release and a Federal Register Notice identifying the dates they will hold public meetings on the draft supplement to the EIS on Yucca Mountain. The NRC will hold the first public meeting at their Headquarters in Rockville, Maryland on September 3. The second meeting will be held in Las Vegas, Nevada on September 15 with the third meeting at Nye County’s Amargosa Valley, Nevada, in Yucca Mountain’s backyard. The final meeting will be by a conference call at their Headquarters. The web links for the press release and the Notice can be accessed by positioning the cursor over the underlined texts and following the directions.

8. On August 21, the DOE awarded a contract to AREVA, with principal subcontractor KASGRO Rail, to design railcars that meet the Association of American Railroads (AAR) requirements for transporting spent fuel and high-level waste. The contract covered the design, analysis, and fabrication of the cask and buffer railcars to lay the groundwork for future large-scale transport of spent fuel and high-level waste.
9. On August 26, NRC held a public conference call to review the commenting process for their recently released draft supplement to Yucca Mountain's Environmental Impact Statement (EIS) on groundwater issues. Nevada formally requested a 60 day extension beyond the October 20 deadline. Other environmental organizations seconded that request. California specifically requested a public meeting in their state since they are affected by the groundwater issues mentioned in the draft supplement.
10. On August 31, the Nuclear Waste Technical Review Board forwarded a letter to the Acting Assistant Secretary for Nuclear Energy at DOE on their perspective of the transportation of spent nuclear fuel presentations made at their June meeting. The Board provided feedback on four major topics:
  - The transportability of spent nuclear fuel from operating nuclear power plants,
  - System-level analyses and stakeholder engagement,
  - Chloride-Induced stress corrosion cracking under dry storage conditions, and
  - Standardized transportation, aging, and disposal (STAD) canisters.

On the first issue the Board foresaw technical challenges in meeting regulatory requirements for transporting commercial spent fuel and recommended that DOE address those challenges with the NRC and utilities soon before the infrastructure for repackaging at a nuclear power plant is decommissioned. On the second topic the Board urged DOE to publish its transportation planning tools as soon as possible and recommended that one of the tools should be modified to enhance the public's understanding of transportation constraints for spent nuclear fuel. On the cracking issue the Board recommended that DOE work with NRC and the Electric Power Research Institute to determine the conditions conducive to stress corrosion cracking, crack initiation and growth and develop robust inspection tools for dry storage systems. Finally, the Board considered the lack of information on the standardized canisters troubling and recommended that DOE work closely with nuclear utilities to better understand the implications and future use of these STAD canisters at storage sites across the country. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

11. In August, the Bipartisan Policy Center (BPC), a Washington think tank that is working on finding solutions to the nation's key challenges, announced in July a nuclear waste primer series of five briefs over the next few months. The first two were issued last month and the third, entitled, "Restarting the Yucca Mountain Project: The Case For and Against" was published this month. The primer listed 14 steps that would most likely be required in resuming the Yucca Mountain licensing process. The report also noted that Nevada would maintain its staunch opposition including using its trump cards over the land, water and transportation issues. There were also some feasibility and cost issues that needed to be addressed along with the necessity for changes in the repository design that could complicate the license application. In addition, the BPC also published an information sheet of "10 Things You Need To Know About Nuclear Waste." The web links for the primer and the information sheet can be accessed by positioning the cursor over the underlined texts and following the directions.