Department of Health and Human Services
Maine People Living Safe, Healthy and Productive Lives
Paul R. LePage, Governor
Mary C. Mayhew, Commissioner

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April 4, 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 September through December 2015 Monthly Reports to the Legislature on the Interim Spent Fuel Storage Facility in Wiscasset, Maine

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

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

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

MCM/klv

Enclosure

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

State Nuclear Safety Inspector Office
Maine CDC – DHHS

November 2015 Monthly Report to the Legislature

Executive Summary

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

Local

- The Chairs of the Communities and Citizens Advisory Panels for Maine, Connecticut, Massachusetts, and Vermont forwarded a letter to members of the New England delegation urging them to overcome the stalemate in Congress over nuclear waste management policy by supporting legislation introduced in the House on interim storage. The Panels declared that indefinite on-site storage of spent nuclear fuel in their communities was unacceptable and instituting a pilot consolidated storage facility focused on the stranded spent fuel at their sites would go a long way in relieving their communities' burden by returning these sites to productive use.

National:

- A team of Chinese scientists have moved a step closer to a breakthrough that could end the nuclear waste problem and remove the meltdown threat. The Chinese used an external, accelerator-driven proton beam to sustain nuclear fission, which stopped immediately when the beam was turned off. The proton beam was able to change heavy elements such as plutonium, americium and other long-lived radioactive elements into elements with much shorter half-lives decreasing significantly the geologic isolation time for disposal from the current one million years to a few hundred years.
- On November 12, Finland became the first country in the world to approve the construction of a permanent underground repository for spent nuclear fuel. Construction will start in 2016 and the facility could begin operation in 2023.
- In its initial license application to the Nuclear Regulatory Commission on constructing a consolidated storage facility in Andrews, Texas, Waste Control Specialists stated that they will be concentrating on stranded fuel from the shutdown reactor sites of Maine Yankee, Connecticut Yankee, Millstone Unit 1 in Connecticut, Yankee Rowe in Massachusetts, La Crosse Power Station in Wisconsin, Zion Units 1 and 2 in Illinois, Oyster Creek in New Jersey, and the California sites of Rancho Seco and San Onofre Unit 1.

Introduction

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

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

Independent Spent Fuel Storage Installation (ISFSI)

During November, 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 five security incident reports logged for the month. Three of the incident reports were written to provide compensatory measures to support a system maintenance activity. The other two reports were due to a security system degradation due to an equipment malfunction which required compensatory measures until the system was restored.

There were twelve condition reports[1] (CR) for the month and they are described below.

- 1st CR: Was written to track three deficiencies noted in a recent quality assurance surveillance regarding proper documentation and closure of engineering, license basis documents and regulatory correspondence. The CR remained open pending resolution of these issues.
- 2nd CR: Was written to track seven areas for improvement from a recent quality assurance surveillance regarding various documentation issues including logging, closure, and transmittal to records. All seven issues were addressed.
- 3rd CR: Documented an incorrect time stamp on the temperature monitoring computer. The time was reset and a tracking item was created to ensure the time was correct at daylight savings time changes.
- 4th CR: Documented the degradation of the security system due to an equipment malfunction. Compensatory measures were put into place until the system was restored the same day.
- 5th CR: Documented the degradation of the security system due to another equipment malfunction. Compensatory measures were put into place until the system was restored.
- 6th CR: Documented a video monitor degrading. Adjustments were made to improve the quality and the CR remained open pending replacement of the monitor.
- 7th CR: Documented that a utility vehicle was running poorly. The vehicle was sent out for repairs and was returned.
- 8th CR: Documented that the Diesel Generator shut down in five minutes after a momentary loss of offsite power. It was determined that this was the expected response as the transfer switch did not actuate because the power loss was so short.
- 9th CR: Documented a potential trend in nuisance alarms for the third quarter. The frost heaves project corrected some of the issue. Therefore, a project is planned for next year to address the rodent issue.
- 10th CR: Documented that numerous bolts along the fence line protruded into a walkway causing a safety concern for catching clothing with the CR remaining open pending an evaluation.
- 11th CR: Documented that the patrol vehicles do not have storage devices for long guns. The CR remained open pending an evaluation.
- 12th CR: Documented a process improvement for temporary weapons storage. Weapons had been stored in an area not designated for storage. Guidance was provided on approved storage areas.

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

Other ISFSI Related Activities

1. On November 9, Maine Yankee informed the NRC of a change in their Board of Directors. Two members from the Canadian firm, Emera, were removed and replaced with two other individuals from the firm. Since they represent a foreign sponsor company, both signed certifications of foreign sponsor representatives to "ensure that Emera Maine will not exert control, domination, or influence over operational, safety or security matters at Maine Yankee."

2. On November 17, Maine Yankee submitted comments to the NRC on their draft Fuel Retrievability in Spent Fuel Applications document. Maine Yankee had four comments. They supported the NRC staff's position that retrievability should include removal from both a canister loaded with spent fuel from a storage cask and a cask loaded with spent fuel from a storage location. Maine Yankee also supported NRC's reliance on Aging Management Programs and Time-Limited Aging Analyses for license renewals. Since Maine Yankee no longer has the capability to retrieve fuel loaded in their casks, they advocated for retrievability to be performed at future consolidated storage or repository facilities.

Environmental:

The State received the third quarter results in late October 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, F, all with an average of 27.2 milliRoentgens[2] (mR).

There were ten stations in the slightly elevated group (A, C, D, E, I, J, L, M, O, and Q) with an average of 24.6 mR. Normally, stations C, D, M, and O are in the normal group. For the second consecutive quarter there were more stations that experienced higher than normal readings as evidenced by three stations in the elevated grouping and ten 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 four stations (B, H, N, and P) in the normal group with an average of 22.0 mR for this quarter.

The Maine Yankee industrial site TLDs averaged 22.3 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. 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 11.7 mR. Although the storing of the control TLDs at HETL's pre-World War II steel vault lowers the natural background values, the 11.7 mR value for this quarter was slightly higher than the second quarter's control results of 11.0 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 typically returned to the State's TLD vendor, Global Dosimetry in California, for an analysis of the transportation exposures. The initial set of results from the control TLD badges returned indicated an average of 7.0 mR for the total exposure picked up between leaving the vendor, arriving at the

[2] 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.

State and then immediately being shipped back and received by the vendor. The 7.0 mR was higher than the previous quarter's reported 6.0 mR transit badges. After three years the State started 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, 25.0, and 20.5 mR, respectively. Historically, the Edgecomb Fire Station value is higher than the Westport Island location.

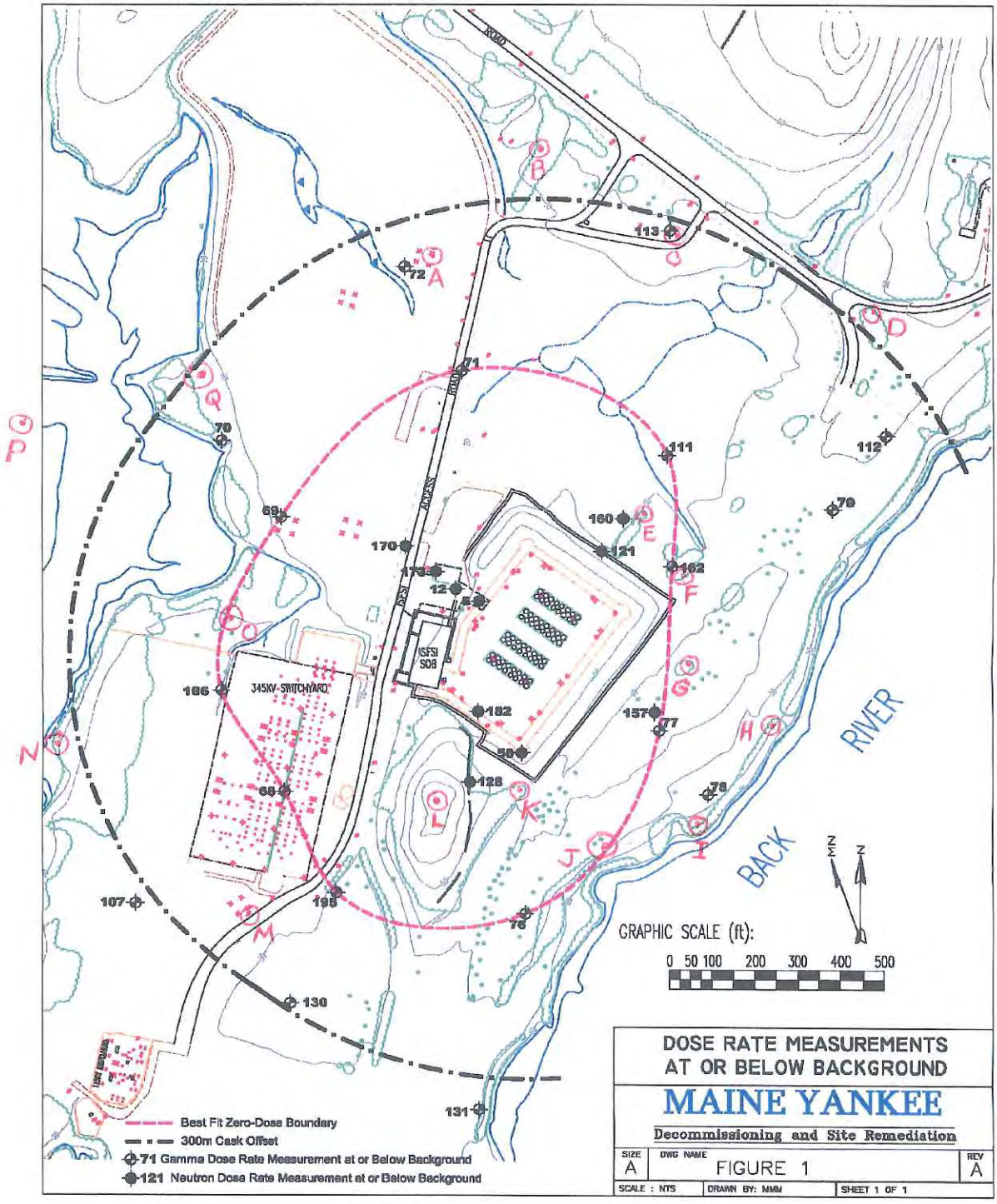
As noted in earlier reports, the State's maintains an environmental air sampler on the roof of HETL for local or national events. The air sampler was extremely instrumental during the Fukushima event in Japan over three years ago in quantifying the levels of radioactivity that was coming from the crippled reactors. This year's third quarter results did not identify any unusual radioactive elements and were within historical ranges for both gross beta[3] 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 10.3 to 36.4 femto-curies per cubic meter (fCi/m^3)[4]. A composite of the seven bi-weekly air filter samples was used to measure the Beryllium-7's concentration of 71.3 fCi/m^3.

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, and K.

[3] 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.

[4] A fCi/m3 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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AT OR BELOW BACKGROUND
MAINE YANKEE
Decommissioning and Site Remediation
SIZE A
DWG NAME FIGURE 1
REV A
SCALE : NTS
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SHEET 1 OF 1

Other Newsworthy Items:

1. On November 3-4, the Western Interstate Energy Board held its fall meeting in Spokane, Washington. Most of the meeting dealt with the U.S. Nuclear Waste Management Program. Presentations included the current status on nuclear waste issues and policy, a status report on nuclear waste activities in the West, a review of NRC activities on Yucca Mountain licensing, spent nuclear fuel storage, aging management, and transportation, DOE's nuclear fuel storage and transportation planning project, transportation security and safety, social risks in transporting spent nuclear fuel and high-level waste, and a discussion on how to capture 30 years of effort going forward. The web link for the meeting summary can be accessed by positioning the cursor over the underlined text and following the directions.

   On November 3-5, the Idaho National Laboratory published the Transactions Report from the Fuel Cycle Technologies Annual Meeting. The meeting encompassed a broad array of Department of Energy (DOE) programs such as fuel resources program, the advanced fuels, nuclear fuels storage and transportation planning project, material recovery and waste form development, joint fuel cycle studies, used fuel disposition research and development, material protection, accounting, and control technologies, and fuel cycle options. The programs covered the entire fuel cycle from the front end to the back end, and the integrating campaigns. The nuclear fuel storage and transportation program (pages 31-47) concentrated on developing options for consolidated storage and transportation with an emphasis on consent-based siting, storage, transportation, and strategic crosscuts. This section also listed the major accomplishments to date, the modeling tools in development, and hardware. The used fuel disposition research and development (pages 79-91) focused on alternatives to support storage, transportation, and disposal in the near-term and long-term. This section also discussed deep borehole testing, international collaboration on disposal research, modeling spent fuel under transportation and storage loads, and the development of inspection and robotic systems for dry storage casks. The report can be accessed at the following web link https://curie.ornl.gov/system/files/documents/1362/fct-2015-transactions-report-5nov15.pdf and following the directions.

2. On November 4, an article was published in the South China Morning Post that indicated a team of Chinese scientists had moved a step closer to a breakthrough that could end the nuclear waste problem and remove the meltdown threat. The Chinese used an external, accelerator-driven proton beam to sustain nuclear fission. As soon as the beam was turned off the reactor stopped splitting atoms. Furthermore, the proton beam was able to generate enough fast neutrons to change other heavy elements such as plutonium, americium and other long lived radioactive elements into elements with much shorter half-lives decreasing significantly the geologic isolation time for disposal from the current million years to a few hundred years.

3. On November 6, the White House held a Summit on Nuclear Energy. The summit consisted of three panel discussions: the importance of nuclear energy to meeting low-carbon goals, maintaining U.S. leadership in nuclear energy, and innovation by unlocking the potential of nuclear energy. There were also four presentations on "a new generation – building the future of nuclear energy" that reported on new developments and technologies. At the summit, the DOE announced the establishment of Gateway for Accelerated Innovation in Nuclear (GAIN). The purpose of GAIN was to provide the nuclear energy community with access to the technical, regulatory, and financial support necessary to move new or advanced nuclear reactor designs toward commercialization. The web link for the Summit's agenda can be accessed by positioning the cursor over the underlined text and following the directions. The White House also circulated a fact sheet for the event that can be found at the following link: https://www.whitehouse.gov/the-press-office/2015/11/06/fact-sheet-obama-administration-announces-actions-ensure-nuclear-energy. The DOE GAIN initiative can be found at the following web link: https://gain.inl.gov/SitePages/Home.aspx.

3. On November 6, Duke Energy submitted their comments to the NRC on its draft Supplement Environmental Impact Statement on the Yucca Mountain groundwater system. Duke Energy agreed with the NRC staff's conclusion that the groundwater impacts would be small and contended that the assumption employed by NRC was a conservative one as it focused on the maximally exposed individual. Duke also attached a table comparing the maximum calculated groundwater dose with other activities that a U.S. citizen would normally be exposed to radiation. Duke Energy concluded that with the impacts being so minor, they urged the NRC to seek funding from Congress to complete the Yucca Mountain licensing application process. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

4. On November 8, the National Association of Regulatory Utility Commissioners held its annual meeting in Austin, Texas. Three presentations at the summit focused on spent fuel management. The first presentation was from the Nuclear Energy Institute (NEI) and presented the inventory of the spent fuel as of December 2014 in wet and dry storage, listed the nation's shutdown reactor sites, reported on what ratepayers and taxpayers have paid into the system, and listed the legislation that was introduced in the last four Congresses. The second presentation was from Waste Control Specialists (WCS) and their bid to build an interim storage facility in western Texas. The presentation centered on the size of the facility they were contemplating constructing, their storage capability, a timeline for filing a license application with the NRC, and their anticipation of the year 2020 when the spent fuel storage facility would be operational. The third presentation was from the Nuclear Waste Strategy Coalition (NWSC). The presentation provided an overview of the member organizations involved, such as state agencies, including Maine, tribal and local governments, and nuclear utilities, their legislative and congressional focus, and their outreach activities. All three presentations (NEI, WCS, and NWSC) are accessible through their respective web links and can be accessed by positioning the cursor over the underlined texts and following the directions.

5. On November 10, Eureka County in Nevada forwarded their comments to the NRC on the staff's draft supplement to the environmental impact statement (EIS) on groundwater for the Yucca Mountain repository. The County's primary concern was on the health and safety risks associated with the transportation of spent fuel through their county and the need for appropriate emergency response capability. The County argued that the NRC's draft EIS did not meet the demanding environmental review directed by the National Environmental Policy Act. They contended that DOE's conclusions in their final EIS submitted in 2008 was based on their Transportation, Aging, and Disposal (TAD) canister for containing the radioactivity and instead the DOE was now proposing to use the Standardized Transportation, Aging, and Disposal (STAD), which was significantly different than the TAD. The County also maintained that the NRC's generic EIS on continued storage of spent nuclear fuel contradicted the Yucca Mountain EIS. The County further insisted that a new draft supplemental EIS be composed and reissued for public review and comment. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

6. On November 12, the NRC held its final public conference call to receive comments on their draft supplemental environmental impact statement for the proposed yucca mountain repository. The NRC provided a background on the environmental review, the scope of the supplement, its findings on what areas and resources would be potentially affected, what bounding conditions, and its conclusions. There were ten commenters. The web link for the presentation slides can be accessed by positioning the cursor over the underlined text and following the directions.

7. On November 12th the Bipartisan Policy Center, a Washington think tank, held a meeting to discuss "Moving Forward on Nuclear Waste: Novel Approaches, Solutions, and Considerations". Topics included Korea's spent nuclear fuel management program, consolidated storage, defining consent-based approaches, and technical perspectives and considerations on factors affecting geological suitability of

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

8. On November 12, Finland became the first country in the world to approve the construction of a permanent underground repository for spent nuclear fuel on Olkiluoto Island. The spent nuclear waste will be packed in copper canisters and placed in holes lined with bentonite. Construction will start in 2016 and was expected to cost $1 billion. The facility could receive an operating license and begin operation in 2023 provided the government receives and reviews analyses on environmental impacts, retrievability of the spent nuclear fuel, and transport risks.

9. On November 16, the Chairs of the Communities and Citizens Advisory Panels for Maine, Connecticut, Massachusetts, and Vermont forwarded a letter to Senator Leahy of Vermont and other members of the New England delegation urging them to overcome the stalemate in Congress over nuclear waste management policy by supporting legislation introduced in the House on interim storage. The Panels declared that indefinite on-site storage of spent nuclear fuel in their communities was unacceptable and instituting a pilot consolidated storage facility focused on the stranded spent fuel at their sites would go a long way in relieving their communities' burden by returning these sites to productive use. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

10. On November 17, NEI forwarded their comments to the NRC on their draft supplement to the DOE's Environmental Impact Statement (EIS) on the Yucca Mountain repository in Nevada. Based on the NRC staff's determination that groundwater impacts would be small, NEI urged NRC to complete the Yucca Mountain licensing process by having their Atomic Safety and Licensing Board rule on the 299 contentions to the license application. NEI submitted supporting arguments as to why the NRC scope of the draft EIS was appropriate and in accordance with the National Environmental Policy Act and that NRC's conclusion of small environmental impact was justified based on their safety analysis report. NEI also took issue with comments from the Amargosa Conservancy that disputed the NRC's groundwater assessment and sought an independent assessment of the contentions raised by the Armagosa Conservancy. The independent evaluation addressed the Conservancy assertions and contended that the likely groundwater source cited in the Conservancy reports were from the Spring Mountains and not Yucca Mountain as they presumed. The web link for the letter, comments, and the independent assessment can be accessed by positioning the cursor over the underlined text and following the directions.

11. On November 17, the Yankee Atomic Electric Company submitted their comments on the NRC's draft guidance on spent fuel retrievability in storage applications. The company agreed with the NRC guidance on what spent fuel configurations could be retrieved and the NRC staff's reliance on the facility's aging management programs and time-limited aging analysis. Yankee Atomic is part of the three Yankees consortium that includes Maine Yankee and Connecticut Yankee. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

12. On November 17-18, the National Transportation Stakeholders Forum's Rail/Routing Working Group held a meeting to discuss its future work plan. The Navy presented an overview of its spent nuclear fuel shipping program, the different shipping containers, and examples of two shipping events. The state of Illinois provided its perspectives on rail inspections while the Federal Railroad Administration provided theirs. The second day featured a mock inspection based on the Commercial Vehicle Safety Alliance Inspection Program. The day was capped with further discussions on issue papers such as routing and sample routes, an update and demonstration of the DOE's Stakeholder Tool to Assess Radioactive Transportation, and future activities. The web links for the meeting agenda and summary can be accessed by positioning the cursor over the underlined text and following the directions. The Navy presentation is available by clicking on the following link: Navy Program.

13. On November 18, the Nuclear Waste Strategy Coalition submitted their comments to the NRC's draft Supplemental Environmental Impact Statement on the groundwater from the Yucca Mountain repository. Armed with the conclusions that the groundwater environmental impact would be small and the safety evaluation report confirming the safety of the Yucca Mountain repository, the Coalition urged the NRC to seek funding from Congress to complete the Yucca Mountain licensing review. The Coalition is an ad hoc organization of state utility regulators, consumer advocates, energy officials, and radiation officials, tribal governments, local governments, electric utilities, and other private and public sector experts. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

14. On November 18-19, the NRC held its annual spent fuel management regulatory conference to discuss issues involving spent fuel storage and transportation. The first day was concentrated on storage licensing, change control threshold issues for tests, physical changes, and experiments, spent fuel storage and transportation research activities, and stakeholder perspectives. The second day focused on inspections and operating experience, transportation certification, technical issues such as extended storage and cladding, and potential consolidated storage in Texas and New Mexico. The web link for the agenda can be accessed by positioning the cursor over the ensuing underlined text http://www.nrc.gov/public-involve/conference-symposia/dsfm.html and following the directions. The individual presentations can be accessed by clicking on their titles.

15. On November 19, Waste Control Specialists stated that they will be concentrating on stranded fuel from the shutdown reactor sites in its initial license application to the NRC on constructing a consolidated storage facility in Andrews, Texas. Their license application will cover the spent fuel from Maine Yankee, Connecticut Yankee, Millstone Unit 1 in Connecticut, Yankee Rowe in Massachusetts, La Crosse Power Station in Wisconsin, Zion Units 1 and 2 in Illinois, Oyster Creek in New Jersey, and the California sites Rancho Seco and San Onofre Unit 1. However, the largest obstacle looming will be the revision to the Nuclear Waste Policy Act (NWPA) to allow for the construction of interim storage facilities. Representative Conaway from Texas introduced legislation in the House to amend the NWPA to permit DOE to partner with private companies for storing spent fuel. The web link for the article can be accessed by positioning the cursor over the underlined text and following the directions.

16. On November 20, the Swedish Radiation Safety Authority announced that their preliminary assessment indicated that, of all the Swedish sites investigated for a deep geologic repository, the Forsmark site was the most suitable because of its dry and low fracturing granite bedrock. The Authority will submit its final conclusions to the court next spring and then the government. The government was expected to make a final decision in 2017 with construction and operation beginning in 2030.

17. On November 20, the Massachusetts Institute of Technology (MIT) issued a news release indicating that new research showed cement was an effective binding agent for containing radioactive materials and a compelling choice for long-term confinement of nuclear wastes. The study was performed with cement as a waste form and using Strontium-90 and its decay products (Yttrium-90 and Zirconium-90) as the radioactive constituents. The web link for the MIT news release is http://mitei.mit.edu/news/nanoscale-concrete-proves-effective-nuclear-containment.

18. On November 20, the State of Nevada submitted their comments to the NRC's draft Supplemental EIS on the Yucca Mountain repository's groundwater impact. The letter reiterated what the Governor previously maintained in his September 15 letter to the NRC that the DOE license application was untenable, the repository was unsafe, and that DOE does not have the necessary land and water rights to construct the repository. The State asserted that the draft EIS violated both the National Environmental Policy Act (NEPA) and the Nuclear Waste Policy Act (NWPA) as amended. The comment section outlined 19 major points of contention on how the draft utterly failed to meet the requirements and intent

of NEPA and NWPA. In addition, the State took issue with the groundwater assessment by citing 13 deficiencies relative to climate conditions, water intrusion, modeling, and dose consequences. In the end the State concluded that the proposed repository would not be protective of its people and environment. The web links for the letter and comments can be accessed by positioning the cursor over the underlined texts and following the directions.

19. On November 23, NEI sent a letter to the House Chair of the Energy and Commerce informing on their updated principles for managing the country's spent nuclear fuel. NEI revised their legislative principles based on NRC's determination that the Yucca Mountain repository would meet EPA's radiation standards, NRC's completion of the supplemental environmental statement on ground water, and the D.C. Court of Appeals ruling that DOE cease collecting fees until the Yucca Mountain Project is resurrected or another site has been chosen to dispose of the spent nuclear fuel. NEI urged congressional leaders to support funding for a consolidated storage facility and for completing NRC's Yucca Mountain license proceedings. NEI listed ten legislative principles for Congress to consider ranging from a new management organization other than DOE to the intended use of the Nuclear Waste Fund to developing a consolidated storage facility with priority to shutdown reactor sites to research reducing the volume, heat, and toxicity of the by-products of spent nuclear fuel to states and communities receiving benefits for hosting storage or disposal facilities. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

20. On November 23, the NRC forwarded to the House Chair of Energy and Commerce their Yucca Mountain status report for October. The report noted the staff's achievements to date, such as the publication of the remaining four volumes of the Yucca Mountain Safety Evaluation Report and the draft supplement to the DOE's EIS of the Yucca Mountain repository. The report stated that the October expenses amounted to $78,809 with $78,442 of that spent on the development of the EIS supplement. The total unobligated funds remaining amounted to about $2.8 million, of which $1.1 million would be needed to load all the licensing documents into the NRC's public document system. The web link for the cover letter and report can be accessed by positioning the cursor over the underlined texts and following the directions.

21. In November, the Nuclear Waste Technical Review Board issued to Congress and the Secretary of Energy two reports, both entitled, "Designing a Process for Selecting a Site for a Deep-Mined, Geologic Repository for High-Level Radioactive Waste and Spent Nuclear Fuel." However, one of the reports was an Overview and Summary while the other was a Detail Analysis Report. The Board recommended that DOE's siting guidelines for 1984 were appropriate for site selection as long as they contained Host-Rock-Specific-Criteria for the different types of geologic formations, such as salt, clay/shale, and crystalline rock. However, DOE's 2001 site suitability for Yucca Mountain would not be appropriate for the initial site selection. The Board further recommended that "any new site-suitability criteria minimize ambiguity" and the "final choice of a site await extensive underground characterization." The web link for the Overview and Summary can be accessed by positioning the cursor over the underlined texts and following the directions. For those who wish to review the Detailed Analysis Report, the web link is http://www.nwtrb.gov/reports/siting_report_analysis.pdf.