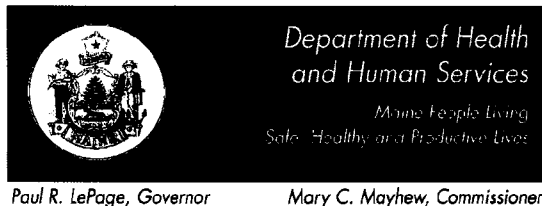


# MAINE STATE LEGISLATURE

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February 17, 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 January through April 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

February 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:

- Wiscasset Selectmen decided at their bi-weekly meeting to send a letter to the federal government urging them to move the spent fuel from the Maine Yankee site. The Selectmen tasked the Town Manager to work with Maine Yankee's Public and Government Affairs Director to draft a letter.
- Maine Yankee submitted to the Nuclear Regulatory Commission (NRC) their funding status report for managing the stored spent nuclear fuel and greater than class C wastes. The report noted that about \$104 million had been accumulated as of the end of the year and projected that approximately \$9.5 million per year would be required to cover expenses for storage out to 2033.

National:

- Waste Control Specialists, the owner and operator of a low-level radioactive waste facility in Andrews County, Texas, announced their intention to submit an application to the NRC by April 2016 to license an interim consolidated storage facility with the goal of starting to store the spent fuel from commercial nuclear power plants by the end of 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 February, the general status of the ISFSI was normal, with several instances of spurious alarms due to environmental conditions as noted below.

There was one fire-related impairment for the month due to the ongoing impairment put in place to cover the office space build-out project. Compensatory measures were put in place until the project is completed.

There were twenty-four security-related reports logged for the month. Twenty were due to transient environmental conditions. Three involved the loss of offsite internet connectivity with a vendor. One was due to a security system degradation. In all cases, compensatory measures were put into place until the systems were restored.

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

- 1<sup>st</sup> CR: Documented that a resistor required by a fire detection panel had been misplaced during modification work associated with the office space build-out project. A compensatory measure was put in place until a new resistor was installed to return the panel to service.
- 2<sup>nd</sup> CR: Documented a security system degradation due to transient environmental conditions. Compensatory measures were put into place until the system was restored.
- 3<sup>rd</sup> CR: Documented a security system degradation due to transient environmental conditions. Compensatory measures were put into place until the system was restored.
- 4<sup>th</sup> CR: Documented a hydraulic hose failure on a piece of snow removal equipment. The spill on the pavement was small. The leakage was cleaned up and the equipment was taken out of service until repaired. The leak was so small that there was no need to notify the Department of Environmental Protection.
- 5<sup>th</sup> CR: Documented a security system degradation due to transient environmental conditions. Compensatory measures were put into place until the system was restored.
- 6<sup>th</sup> CR: Documented a security system degradation due to transient environmental conditions. Compensatory measures were put into place until the system was restored.
- 7<sup>th</sup> CR: Documented an issue with the several frequencies used on the radio system. The unit had recently been re-programmed based on changes to the Maine State Police radio system. This change caused some bleed over issues between frequencies. The radio vendor was called in and corrected the issue by re-programming the system to a different radio tower.
- 8<sup>th</sup> CR: Documented that a lock was sticking and frozen due to extreme cold weather. The lock was replaced with a spare the same day.
- 9<sup>th</sup> CR: Documented a security system degradation due to transient environmental conditions. Compensatory measures were put into place until the system was restored.
- 10<sup>th</sup> CR: Documented that an emergency light was not illuminating properly during a test. The battery was replaced.
- 11<sup>th</sup> CR: Was written to track areas for improvement from a Quality Assurance surveillance. Three areas for improvement were identified and addressed.
- 12<sup>th</sup> CR: Documented that one bolt could not be re-installed in a VCC vent screen during re-installation of the screen. This was due to snow and ice buildup impacting proper alignment. An operability/functionality assessment was performed and the bolt was successfully installed after the ice and snow was removed.
- 13<sup>th</sup> CR: Documented that a door card reader and palm switch were not working properly. After troubleshooting it was determined that the latch was defective and was replaced.
- 14<sup>th</sup> CR: Documented that a key had broken off in a weapons storage locker. All locking mechanisms were replaced with an upgraded design.

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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.

- 15<sup>th</sup> CR: Documented the loss of offsite internet connectivity with a vendor. Compensatory measures were put into place until the system was restored.
- 16<sup>th</sup> CR: Documented technical specification, radiological controls and procedural issues with vent screen snow removal. A work order and radiation work permit were used to remove inlet vent screens and remove snow from the inlet plenums to proactively ensure compliance with technical specification requirements. The radiation work permit guidance was not clear and potentially conflicted with other procedural guidance. A root cause evaluation is in progress and corrective actions are currently being developed.
- 17<sup>th</sup> CR: Documented the loss of offsite internet connectivity with a vendor. Compensatory measures were put into place until the system was restored.
- 18<sup>th</sup> CR: Documented a small coolant system leak on a piece of snow removal equipment while stored in the maintenance building. The equipment was taken out of service until repaired.
- 19<sup>th</sup> CR: Documented a security system degradation due to transient environmental conditions. Compensatory measures were put into place until the system was restored.
- 20<sup>th</sup> CR: Documented a security system degradation due to transient environmental conditions. Compensatory measures were put into place until the system was restored.
- 21<sup>st</sup> CR: Documented the loss of offsite internet connectivity with a vendor. Compensatory measures were put into place until the system was restored.

#### *Other ISFSI Related Activities*

1. On February 3, Maine Yankee submitted to DEP their Groundwater Monitoring Report for Bailey Point. As part of the DEP's Resource Conservation and Recovery Act closure of the site, Maine Yankee was required to establish a 30 year groundwater program to perform periodic sampling of wells on the property to monitor for chemical contaminants. The report provided a monitoring overview and trend analysis for the three sampling events from October 2013 to September 2014. Maine Yankee informed the DEP that they were re-submitting their chemical Electronic Data Deliverable data to correct a sampling error of one of the wells and to revise seven data qualifiers on the results.
2. On February 5, Maine Yankee submitted to the NRC its annual notification of their foreign ownership, control or influence (FOCI) status. Maine Yankee noted changes in foreign interests since their last annual report that included two changes in Maine Yankee's Board of Directors. One change did not affect FOCI while the other did. Therefore, the Board's Negotiation Action Plan was enforced with a submission of a Certification of Foreign Sponsor Representative to the NRC to ensure that there would be no exertion of foreign control, dominion, or "influence over operational, safety or security matters at Maine Yankee".
3. On February 5, Maine Yankee also submitted to the NRC a periodic update of its License Termination Plan (LTP) over the two revisions that took place over 2013 and 2014. Fourteen changes were made. Some were editorial in nature. Some were made to eliminate specifics such as the number of utilities that own Maine Yankee or the number of acres of the parcel of land adjacent to the ISFSI. Others identified what activities would transpire after the removal of the spent nuclear fuel and the acreage that currently remained under the federal license. Still others updated new cost estimates for storage until 2031, decommissioning the ISFSI and terminating the license in 2033, and to reflect current practices at the site. Even though bounded by previous assessments, some also included updates to environmental impacts associated with the longer storage period. Others included the inclusion of old figures that were inadvertently removed from one of the previous revisions and now re-incorporated in the LTP.
4. On February 6, the Commissioner of the Department of Health and Human Services forwarded to the Legislature's Joint Standing Committee on Energy, Utilities, and Technology the Interim Spent Fuel Storage Facility Oversight Fund report. The annual report is a compilation of revenue, expenditures and disbursements from the Fund for state oversight of the Maine Yankee storage facility in Wiscasset.

5. On February 10, Maine Yankee submitted to the NRC their funding status report for managing the stored spent nuclear fuel and greater than class C wastes. The report noted that about \$104 million had been accumulated as of the end of the year and approximately \$9.5 million per year would be required to cover expenses for storage out to 2033. The report also mentioned that Maine Yankee has the ability to collect additional funds, if necessary, to cover expenses through their investments, power contracts, amendatory agreements, and their on-going litigations with the federal government over their breach of contract to take the spent fuel.

### Environmental:

The State received the 2014 fourth quarter results in November 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 station F joining the group this quarter. The elevated stations averaged 28.2 milliRoentgens<sup>3</sup> (mR). Station K had one of its three elements reading higher than expected. The statistical outlier test was applied and indicated that the value could be discarded at the 95% confidence level but not at the 99% confidence level. The decision was made to keep the value as the disparity between the readings for the individual six elements for the two TLDs was not large and would have preferred rejecting a value at greater than the 99% confidence level to limit any uncertainties. With seasonal variations in the background the expectation was for a lower value compared to the previous quarter.

There were six stations in the slightly elevated group (B, E, J, L, M, and Q) with an average of 25.5 mR. Four of the six stations traded places. B went from the normal grouping to this slightly elevated group. F went from this group to the elevated grouping. O went back to the normal group while Q went from the elevated last quarter to the slightly elevated group this quarter. One of the TLDs at station M was damaged by moisture which left only the results from the remaining TLD available. Eight stations (A, C, D, H, I, N, O, and P) were in the normal group with B and O trading places as described above. The normal group averaged 22.7 mR this quarter.

The Maine Yankee industrial site TLDs averaged 22.8 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 10.7 mR. Although the storing of the control TLDs at HETL's pre-World War II steel vault lowers the natural background values, the 10.7 mR value for this quarter was slightly lower than the third quarter's control results of 11.2 mR. The State has noted that after two years a pattern was developing indicating that the fourth quarter TLD controls have higher measurable values contrary to expectations. However, this past fourth quarter witnessed a change, a return to normal values. There were no elevated readings for the fourth quarter as opposed to the previous two years. Currently, the State is evaluating what caused the anomalies in the previous two years. Although the cause has not been pinpointed, there was no doubt that something was impacting the TLDs. The controls were initially part of a program to better quantify

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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 individual impacts of storage and transit exposures on the TLDs. However, as indicated above, they also have been instrumental in pointing out changes that would normally 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 barely lower than the previous quarter's reported 5.9 mR transit badges. After two years the State was starting to see signs of a pattern developing for the different quarters. Nevertheless, it was 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 24.8, 25.5, and 21.0 mR, respectively. Historically, the Edgecomb Fire Station value is higher than the Westport Island location.

As noted in earlier reports, the State maintains an environmental air sampler on the roof of HETL for local or national events. The air sampler was extremely instrumental during the Fukushima event in Japan over 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 17.1 to 31.0 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 47.4 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 as F, G, and K.

### Other Newsworthy Items:

1. On February 3, Wiscasset Selectmen decided at their bi-weekly meeting to send a letter to the federal government urging them to move the spent fuel from the Maine Yankee site. The Selectmen tasked the Town Manager to work with Maine Yankee's Public and Government Affairs Director to draft the letter. The web link for the news article can be accessed by positioning the cursor over the following link: <http://www.wiscassetnewspaper.com/article/prospects-sink-gardiner-pond-land-buy/47743>.
2. On February 6, Waste Control Specialists, the operator of a low-level radioactive waste facility in Andrews County, Texas, announced their intention to submit an application to the NRC by April 2016 to license an interim consolidated storage facility with the goal of starting to store the spent fuel from commercial nuclear power plants by the end of 2020. The announcement followed last month's resolution adopted by County Commissioners favoring the establishment of a consolidated interim

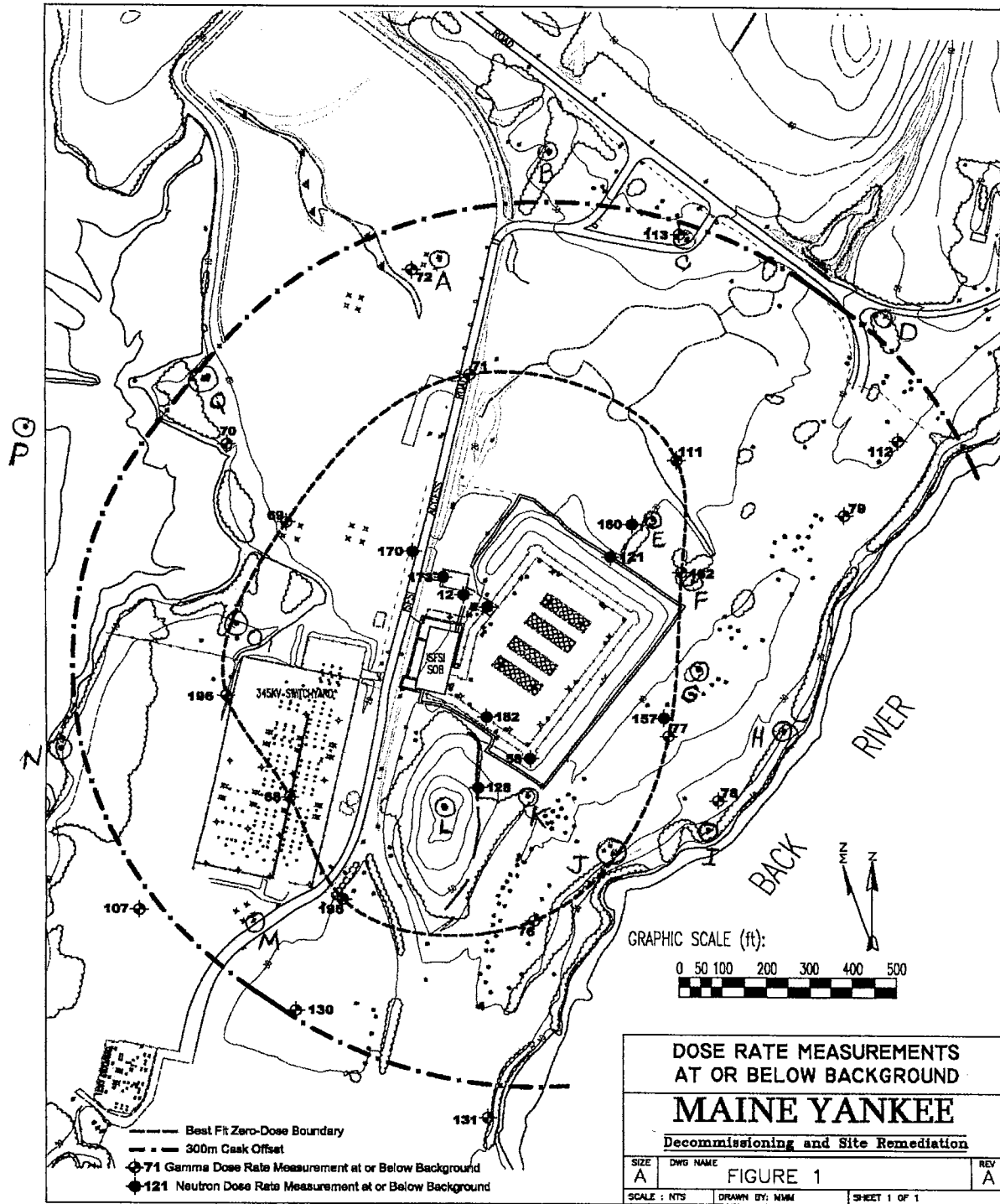
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<sup>4</sup> Gross Beta is a simple screening technique that measures the total number of beta particles emanating from a potentially radioactive sample. Refer to the glossary on the website for further information.

<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).

storage facility in Andrews County for spent nuclear fuel and high-level waste. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

Figure 1





3. On February 12, the National Transportation Stakeholders Forum (NTSF) held a webinar for interested stakeholders on the latest information of the recovery activities at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico since it experienced a radioactive leak on February 14, 2014. The WIPP facility is the nation's only geologic repository for the disposal of defense-related transuranic (elements heavier than uranium) wastes, principally plutonium, from the nuclear weapons era. The webinar recapped the leak incident, which was caused by one drum that experienced a reaction from incompatible waste materials and resulted in the drum rupturing. The stakeholders were also apprised of the extensive sampling performed by DOE, the state of New Mexico, and the independent monitoring performed by New Mexico's State University to identify and isolate the radioactive contaminants. The Federal Project Director elaborated on the current efforts to stabilize, decontaminate, and safety enhancements going forward to restore the underground facility and resume operations. He also noted that shipments to the facility were still suspended pending a successful resumption of operations in the spring of 2016. However, when operations resume, priority would be placed on those wastes that require minimal handling. The NTSF is the mechanism by which the DOE communicates at a national level to states and tribes about DOE radioactive waste shipments. The web link for the slide presentation can be accessed by positioning the cursor over the underlined text and following the directions.
4. On February 25, U.S. Court of Federal Claims ruled on three motions submitted by the federal government to dismiss three contentions put forward by Georgia Power Company and Southern Nuclear Operating Company on the federal government's breach of contract on spent nuclear fuel. The federal government had previously filed with the Court and contended that a) Southern Company was not a proper party to the lawsuit since the breach was with Georgia Power involved Georgia Power Company, b) Georgia Power's and Southern Company's claim for prejudgment interest was improper, and c) Georgia's and Southern's claim for damages between the time the lawsuit was filed and the time of the trial was improper. The Claims Judge granted the government's motion to dismiss Southern as a party to the lawsuit since the breach was with Georgia Power. On the prejudgment interest, the Judge felt that the issue was not ripe for ruling and denied the government's request. Lastly, the Judge granted the government's motion to prohibit the recovering of future damages and limit them only to those that were incurred. The Senior Judge issuing the Order was the same judge who ruled in favor of the three Yankees (Maine Yankee, Connecticut Yankee, and Yankee Rowe) in their litigation cases against the federal government. The web link for the Court Order can be accessed by positioning the cursor over the underlined text and following the directions.
5. On February 25, the Chair of the House Committee on Energy and Commerce along with the Chairs of the Subcommittees on Environment and Economy and Oversight and Investigations forwarded a letter to the Secretary of Energy expressing their concern over DOE's and the Defense Threat Reduction Agency's consideration to conduct activities near the Yucca Mountain site in Nevada. They further related their anxieties about the potential impacts of any planned activities that would affect the adequacy of the site and requested both agencies to discontinue any activities in the area. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.
6. On February 27, the NRC Chairman transmitted to the House Committee Chair on Energy and Commerce the Commission's monthly status report on its activities relative to their resumption of the Yucca Mountain licensing proceedings as mandated by the D.C. Circuit Court of Appeals. The January status report noted the previous publications of Volumes 3 and 4 of the Safety Evaluation Report (SER) and informed the Committee Chair of the recent release of Volumes 2 and 5 of the SER. In addition, since DOE refused to supplement their initial environmental impact statement (EIS) on groundwater as part of their Yucca Mountain license application, the Commission directed the staff to develop and issue

a supplement to DOE's initial EIS. The completion of the Yucca Mountain SER took about one year and cost about \$8.14 million, which is below the original estimate of \$8.31 million. The total expended to date was about \$9.26 million leaving a balance of \$4.29 million to complete the supplemental EIS. The web links for the letter and the report can be accessed by positioning the cursor over the underlined texts and following the directions.