

State Nuclear Safety Inspector Office
Maine CDC – DHHS

August 2013 Monthly Report to the Legislature

Executive Summary

As part of the State's long standing oversight of Maine Yankee's nuclear activities, legislation was enacted in the second regular session of the 123rd Legislature and signed by Governor John Baldacci requiring that the State Nuclear Safety Inspector prepare a monthly report on the oversight activities performed at the Maine Yankee Independent Spent Fuel Storage Installation (ISFSI) facility located in Wiscasset, Maine.

The report covers activities at the storage facility, including the State's ongoing environmental radiation surveillance and the national debate over the licensing and construction of a geologic repository for the disposal of spent nuclear fuel. The report's highlights assist readers to focus on the significant activities that took place during the month nationally.

National:

- The U.S. Court of Appeals for the District of Columbia issued an Order directing the Nuclear Regulatory Commission (NRC) to resume its review of the Department of Energy's construction license application for a repository at Yucca Mountain in Nevada. The Order was a result of a writ of mandamus filed by petitioners from the states of South Carolina and Washington, Aiken County South Carolina, three business leaders from the Tri-City area near Hanford, Washington, the National Association of Regulatory Utility Commissioners, and Nye County, Nevada. The petitioners had maintained that the NRC could not unilaterally and lawfully cease the licensing process for Yucca Mountain without being in direct violation of the Nuclear Waste Policy Act. Two of the three judges viewed the disregard for the law as raising significant questions about the extent of the Executive's authority.
- The NRC unanimously approved the staff's proposed Waste Confidence Rule and draft Generic Environmental Impact Statement (GEIS) for publication and public comment. The NRC's 2010 Waste Confidence Rule was vacated by the D.C. Circuit in June, 2012, and remanded it back to the NRC to address environmental concerns should a geologic waste repository not be available for the disposal of spent nuclear fuel. The NRC's 2010 Rule had assumed that a repository would be available when needed. The NRC's Rule was challenged in the Courts by the states of Connecticut, New York, Vermont, Massachusetts and numerous environmental organizations. The Court deemed the presumption as not meeting the requirements of the National Environmental Policy Act (NEPA). Subsequent to the Court's Order, in September, 2012, the Commission ordered the NRC staff to propose a new rule and issue an Environmental Impact Statement to address the NEPA concerns raised by the Court.
- In response to the Court's writ of mandamus the NRC issued an Order seeking input from the participants in the adjudicatory proceeding on the resumption of the Yucca Mountain licensing review and how the NRC should continue with the licensing process to ensure the most efficient use of its remaining \$11 million in appropriated funds. In the meantime the Commission directed its staff to gather pertinent budgeting information during the 30 day comment period ending on September 30th.

Introduction

As part of the Department of Health and Human Services' responsibility under Title 22, Maine Revised Statutes Annotated (MRSA) §666 (2), as enacted under Public Law, Chapter 539 in the second regular session of the 123rd Legislature, the foregoing is the monthly report from the State Nuclear Safety Inspector.

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 on-going, 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.

Commencing with the January 2010 report, the glossary and the historical perspective addendum are no longer included in the report. Instead, this information is available at the Radiation Control Program's website noted above. In some situations the footnotes may include some basic information and may redirect the reviewer to the website. In October 2011 the format of the report was changed to include an executive summary which replaced the official memorandum to the legislative leadership transmitting the report. To further streamline efforts, beginning in August of 2012, the report featured hyperlinks to documents that would normally be attached as copies to the report. The hyperlinks should facilitate the reports review with some readers focusing on the report while others who wish to explore the cited documentation can do so.

Independent Spent Fuel Storage Installation (ISFSI)

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

There were no fire or security related impairments for the month. However, there were three security events logged. Two involved transient environmental conditions and one was related to a short term communication loss with the remote alarm monitoring facility.

There were twelve condition reports¹ (CR) for the month and they are described below.

1st CR: Documented the need to update the safety program document to remain consistent with the Occupational Safety and Health Administration.

2nd CR: Documented an equipment failure in the atmospheric monitor.

3rd CR: Documented that the key inventory was not updated to reflect a recent key addition.

4th CR: Was written to document a worm digger on Maine Yankee property. The digger immediately left when he saw the Security Officer. The local law enforcement agency was not contacted.

5th CR: Was written to initiate a tracking CR as a follow-up to items from an internal self-assessment.

6th CR: Documented the repeated failure stalling of the man-lift. A service technician was called in to repair the unit.

7th CR: Was written to initiate a tracking CR as a follow-up to items from a Radiation Protection Program assessment.

8th CR: Was written to document a small hydraulic leak on the man-lift.

9th CR: Documented the man-lift stalling in the roadway while moving it to the repair location.

10th CR: Documented a battery surveillance not meeting the acceptance criteria. The batteries were replaced.

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 Program's website.

11th CR: Documented a call from the Nuclear Regulatory Commission which was intended for only operating plants.

12th CR: Was written to document some ceiling panels support frames not installed per code. The issue was corrected upon discovery.

Other ISFSI Related Activities

1. On August 15, the Nuclear Regulatory Commission (NRC) issued a letter to Maine Yankee revising an earlier response to a Maine Yankee exemption request that was granted on specific requirements of NRC's revised 2011 Emergency Planning Final Rule, which was based on an operating nuclear power plant and not a stand-alone ISFSI. The NRC had initially concluded that Maine Yankee's "compliance with the Emergency Plan requirements in effect before the effective date of the Emergency Plan Final Rule provided "an adequate basis for an acceptable state of emergency preparedness," and that Maine Yankee's Emergency Plan in combination with arrangements made with offsite response agencies provided "reasonable assurance that adequate protective measures could and would be taken in the event of a radiological emergency" at the site. This reissuance is for administrative purposes only in order to capture the publication of the environment assessment with no significant impact in the Federal Register.
2. On August 28, Maine Yankee sent the NRC revision 3 of their ISFSI Physical Security Plan. The revision reflected the change of the title of the document. There were no other changes. Since the Plan is considered safeguards information it was not available for public disclosure.
3. On August 28, Maine Yankee submitted a request to the NRC to rescind their June, 2012, Confirmatory Order requiring Maine Yankee to undertake negation actions regarding foreign ownership, control, or domination (FOCD). Since the NRC had exempted Maine Yankee of the FOCD requirements in July, 2013, Maine Yankee reasoned that the Confirmatory Order no longer had a regulatory, safety, or security basis. In addition, Maine Yankee will maintain its negation plan that it implemented in December, 2011, to address and preclude any FOCD issues.

Environmental

The State received the 2013 second quarter results in August from the field replacement of its thermoluminescent dosimeters around the ISFSI and the Maine Yankee industrial site. The results from the quarterly TLD change out continued to illustrate three distinct exposure groups: elevated, slightly elevated, and normal. The high stations identified were G and K with an average of 26.1 milliRoentgens² (mR). It should be noted that one of the six elements of station K had to be rejected as the reading on the element was 39.4 mrems. A statistical test was performed to verify that it was an outlier and was proved to be so.

There were four stations in the slightly elevated group (F, J, L, and Q) with an average of 23.2 mR. Some stations continue to trade places due to background variations. Two remained and two others traded places from the previous quarter. For example, stations E and O that were in the slightly elevated group last quarter returned to the normal group this quarter. Station F went from the elevated group down to the slightly elevated group and station J went from the normal group to the slightly elevated grouping. These deviations will be tracked over the next several quarters to see if a pattern develops. There were eleven stations (A, B, C, D, E, H, I, M, N, O, and P) in the normal group as opposed to the previous quarter's ten and they averaged 20.5 mR.

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

The Maine Yankee industrial site TLDs averaged 20.0 mR, which is comparable to the normally expected background radiation levels of 15 to 30 mR for the coast of Maine. Some of the background levels are highly dependent upon tidal effects, and local geology. However, virtually all the stations exhibit seasonal fluctuations that are affected by the out gassing of the naturally radioactive gas, Radon.

The four control TLDs that were stored at the State's Health and Environmental Testing Laboratory (HETL) in Augusta averaged about 10.4 mR. Although the storing of the control TLDs at HETL's pre-World War II steel vault lowers the natural background values, the 10.4 mR value for this quarter was slightly lower than last quarter's control results of 11.4 mR. Even though seasonal fluctuations were expected, the high background from one quarter to the next in a shielded environment was very unusual. Discussions with the vendor were ongoing. Although we have not pinpointed the cause of the fluctuations yet, there was no doubt that something was impacting the TLDs. 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 would normally have not been captured if it were not for the program.

As a further application of this TLD control assessment, on June 10th three of the seven control TLDs received for the second quarter of 2013 were 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 5.5 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 5.5 mR was slightly higher than last quarter's reported 4.8 mR transit badges. Besides seasonal and daily fluctuations in the background, small increases or decreases could be attributed to an extra few days of 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 Health and Environmental Testing Laboratory read 20.9, 22.1, and 18.7 mR, respectively.

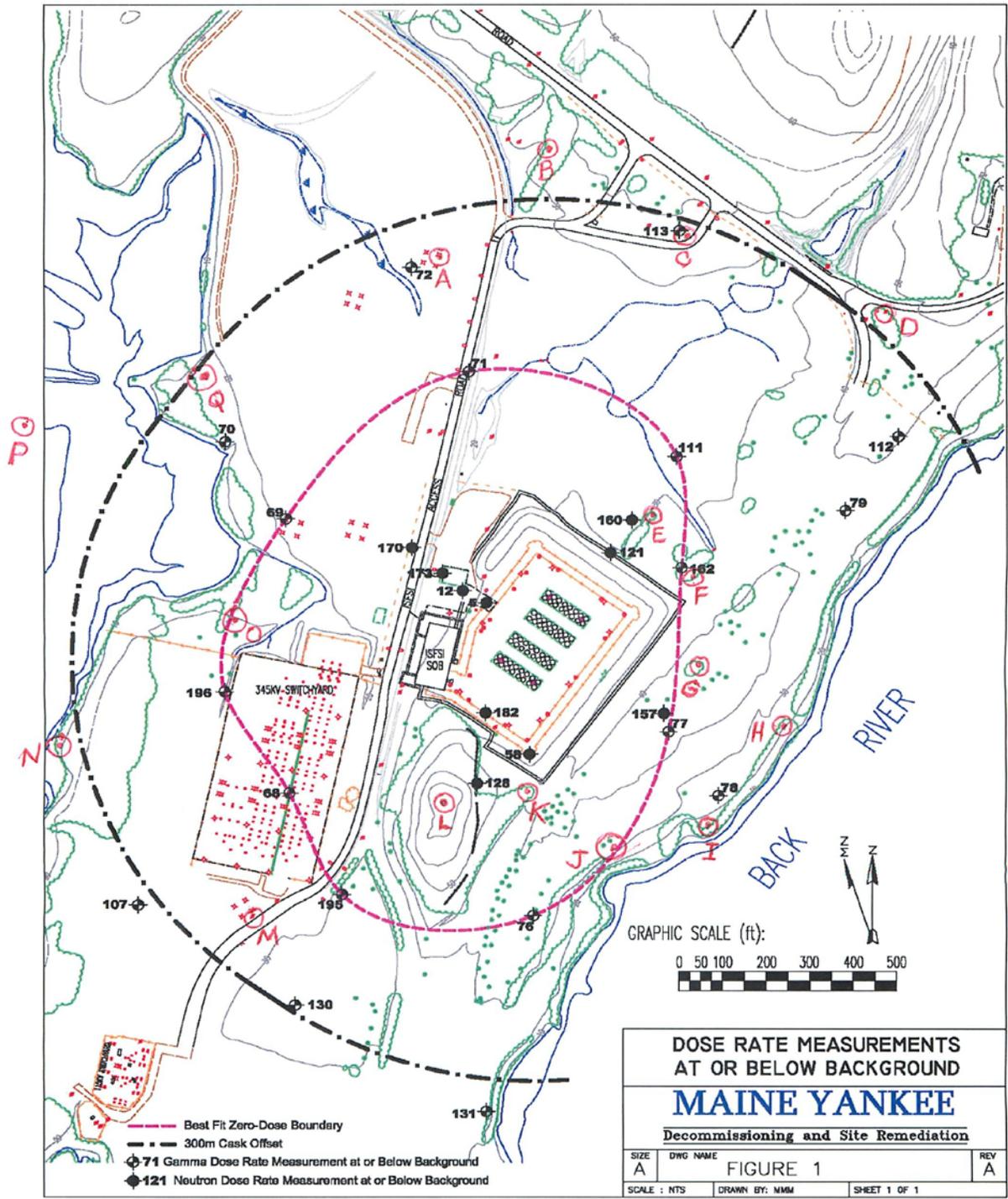
As noted in earlier reports, the State's maintains an environmental air sampler on the roof of HETL for local or national events. The air sampler was extremely instrumental during the Fukushima event in Japan two years ago as in quantifying the levels of radioactivity that was coming from the cripple reactors. This year's second quarter results did not identify any unusual radioactive elements and were within historical ranges for both gross beta³ 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 13.1 to 34.1 femto-curies per cubic meter (fCi/m³)⁴. A composite of the five bi-weekly air filter samples was used to measure the Beryllium-7's concentration of 109 fCi/m³.

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 location being station K this quarter as opposed to the historically high station G.

³ Gross Beta is a simple screening technique that measures the total number of beta particles emanating from a potentially radioactive sample. High values would prompt further analyses to identify the radioactive species. 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



Other Newsworthy Items

1. On August 2, the Center for Strategic and International Studies issued a commentary on “Finding a Solution to America’s Nuclear Waste Problem”. The commentary provided a perspective on the amount of tonnage of nuclear waste generated within the U.S. It illustrated that our energy, environment and national security policies were at stake and being undermined by our inability to resolve this issue. It also noted that several other countries were now ahead of us. For example, Finland has a repository that will begin operation in 2020. France has a site that is expected to open in 2025 and Sweden has a site that is undergoing their license review process. The commentary then focused on the key elements of a proposed Senate bill, which centered on a new nuclear waste agency, a consent-based process, linkage between storage facilities and a repository, and dedicated funding for disposition of the waste. The commentary advocated for a national waste policy that would result “in more immediate progress”. The web link for the [commentary](#) can be accessed by positioning the cursor over the underlined text and following the directions.
2. On August 7, the State Inspector participated in a national webinar on the Environmental Protection Agency’s draft protective action guidelines (PAGs) for radiological preparedness. The webinar was intended to clarify the use of PAGs for all radiological incidents, including terrorism at nuclear facilities and ISFSIs. It also incorporated guidance for long-term site restoration and lowered the projected thyroid radiation dose for the administration of Potassium Iodide (KI).
3. In August, the U.S. Nuclear Waste Technical Review Board submitted to Congress and the Secretary of Energy a 92 page report entitled, “Review of U.S. Department of Energy Activities to Preserve Records Created by the Yucca Mountain Repository Project”. The Board identified six findings and had six recommendations. Although documents appeared to be easily retrievable, e-mail correspondence supporting the Yucca Mountain required extra time and effort to retrieve the information. Public access was available but only through a Freedom of Information Act request. The current system was unable to load and execute most analytical software and retrieving records from the National Archives and Records Administration could be cumbersome. It was uncertain how physical objects such as videotapes, well logs and maps would be preserved for extended periods. The six recommendations focused on sustaining resources to preserve and retrieve documents and physical material. The web link for the [report](#) can be accessed by positioning the cursor over the underlined text and following the directions.
4. On August 13, the U.S. Court of Appeals for the District of Columbia issued an Order directing the NRC to resume its review of a construction license application for a repository at Yucca Mountain in Nevada. The Order was a result of a writ of mandamus filed by petitioners from the states of South Carolina and Washington, Aiken County South Carolina, three business leaders from the Tri-City area near Hanford, Washington, the National Association of Regulatory Utility Commissioners, and Nye County, Nevada. The petitioners had maintained that the NRC could not unilaterally and lawfully cease the licensing process for Yucca Mountain without being in direct violation of the Nuclear Waste Policy Act. Two of the three judges viewed the disregard for the law as raising significant questions about the extent of the Executive’s authority. The web link for the [Order](#) can be accessed by positioning the cursor over the underlined text and following the directions.
5. On August 13, the Director of Nuclear Energy Programs for the Energy Communities Alliance (ECA) presented a perspective on the role of local governments and the future of nuclear waste management and disposal at the National Conference of State Legislators Legislative Summit. The presentation listed the current, positive efforts to address nuclear waste management such as consent-based siting process, public comments considered in the Senate’s proposed nuclear waste legislation, the Administration’s strategy, federal, state and local governments viewed as equal partners, and affected communities decide on what terms they will host a nuclear facility. The presenter also catalogued a number of challenges

still remaining such as timeline and sense of urgency, trust, future of Yucca Mountain, defining a consent-based process, minimizing political influence, and resources for education, outreach, and feasibility studies. The responsibility of local governments was also outlined and included education and outreach to the community and industry as well as to state, regional, and federal decision-makers, negotiating on behalf of the potential host community, protecting public and environmental health and safety, and securing a viable economic future. The Director also defined consent agreements as being negotiated and reached between local, state and federal governments, must be legally enforceable, and “reflect the terms and conditions under which a community will host a facility. The ECA went on to list its priorities and recommendations, and the lessons learned from the Waste Isolation Pilot Project geologic repository in Carlsbad, New Mexico. The final lesson learned was from Yucca Mountain where local government and community support alone will not guarantee success and that state support is crucial to the process. The ECA is a national, non-profit organization of local governments adjacent to and impacted by DOE nuclear activities. The web link for the [presentation](#) can be accessed by positioning the cursor over the underlined text and following the directions.

6. On August 14, the NRC held a public teleconference to discuss the status of their Waste Confidence Generic Environmental Impact Statement (GEIS) and rulemaking. The NRC staff related that the Commission had unanimously approved the proposed Waste Confidence rule and draft GEIS for publication and public comment. The staff discussed the availability of the draft GEIS and proposed rule. The public questioned the locations of the regional public meetings. Some questioned whether they could phone in during the meetings, while others wondered if the meetings would be webcast. Some questioned the format and agenda of the meetings and others asked if they could use presentation materials. The web link for the [summary](#) can be accessed by positioning the cursor over the underlined text and following the directions.
7. On August 14, the law firm, Van Ness Feldman, provided a commentary on the recent U.S. D.C. Court of Appeals ruling that the NRC was “simply flouting the law” by terminating the licensing application review of the Yucca Mountain Project. Besides providing some background, the article highlighted the main points of the Court’s Order and offered some possible legal steps the NRC could undertake. Although the Court’s decision was a strong warning on federal agencies nullifying a statutory mandate, they concluded that the Court’s decision would not resolve the ongoing saga of the Yucca Mountain Project, but could provide an impetus for the Senate’s proposed legislation, the Nuclear Waste Administration Act of 2013, to move forward. The web link for the [commentary](#) can be accessed by positioning the cursor over the underlined text and following the directions.
8. On August 20, the U.S. Nuclear Waste Technical Review Board issued a summary report, entitled “Deep Borehole Disposal of Spent Nuclear Fuel and High-Level Waste”. The report provided a conceptual model of the disposal technique, which required a borehole to be drilled in crystalline rock, such as granite, to a depth of roughly 16,500 feet. The spent fuel would be placed in the lower 6,500 feet with the upper 10,000 feet of the borehole sealed. The potential advantages for this technique included deeper isolation from the biosphere, low permeability of the host rock to radioactive contaminant migration, and the potential availability of multiple disposal sites near nuclear power facilities with suitable geologies that would reduce the need for spent fuel shipments. The report did raise eight technical challenges associated with this disposal technique. They included drilling technology, casing and sealing technology, consolidation and repackaging of the waste, problems with emplacement of the waste packages, effective borehole seals, retrieval of the waste packages, complexity of characterizing the host rock at such depths, and the role of multiple barriers. The web link for the [borehole concept](#) can be accessed by positioning the cursor over the underlined text and following the directions.
9. On August 23, the Chair of the House’s Committee on Energy and Commerce and the Chair of the Subcommittee on Environment and the Economy sent a letter to the NRC Chairman requesting her

presence at a Subcommittee hearing to provide an update on the Commission's actions to implement the Court's Order. The Chairs requested that the NRC Chair also provide the Subcommittee with what actions the NRC has initiated in response to the Court Order and a schedule for releasing the five Safety Evaluation Reports on Yucca Mountain. The web link for the [letter](#) can be accessed by positioning the cursor over the underlined text and following the directions.

10. On August 23, Nye County, Nevada filed a motion with the Commission for recusal of NRC Chairman, Allison MacFarlane, from the resumption of the licensing proceedings on Yucca Mountain. Nye County questioned the impartiality of the Chairman based on her publications and previous statements on the inappropriateness of the Yucca Mountain site as a location for a nuclear repository and her critical position of the Department of Energy's modeling and factual support of the Yucca Mountain license application. The web link for the [motion](#) can be accessed by positioning the cursor over the underlined text and following the directions.
11. On August 23, the State of Nevada filed a motion with the NRC on how the Commission should act relative to a possible restart of the Yucca Mountain licensing proceeding. The motion requested the Licensing Network that once held all the pertinent documents to be recreated, any hearings should be conducted in Las Vegas, and the original administrative law judges should be reappointed to the restarted proceeding. The web link for the [motion](#) can be accessed by positioning the cursor over the underlined text and following the directions.
12. On August 23, Nye County, Nevada filed a motion with the NRC requesting that the NRC immediately lift the suspension of the Yucca Mountain licensing proceedings, revise and reinstitute the discovery schedule suspended by the NRC, and issue an Atomic Safety and Licensing Board order directing the immediate release of the NRC Safety Evaluation Reports. The web link for the [filing](#) can be accessed by positioning the cursor over the underlined text and following the directions.
13. On August 26, the Chair of the House's Committee on Energy and Commerce and the Chair of the Subcommittee on Environment and the Economy sent a letter to Energy Secretary Moniz expressing their sentiment that the Department of Energy (DOE) fully support the recent D.C. Circuit Court of Appeals' decision for the NRC to resume the Yucca Mountain licensing proceeding. The Chairs requested that the DOE provide "monthly reports detailing actions and expenditures in support" of NRC's review. The Chairs also requested that the DOE provide information on recent actions in support of the Court's Order and a detailed description of all the available resources to support the NRC's licensing review. The web link for the [letter](#) can be accessed by positioning the cursor over the underlined text and following the directions.
14. On August 27, the New England Council's Committee on Energy and Environment provided an overview on the U.S. Court of Appeals for the D.C. Circuit's Order mandating the NRC resume the Yucca Mountain licensing proceeding. The update provided a historical perspective on the Nuclear Waste Policy Act that was enacted in 1983 and its mandates. The overview also provided an analysis of the Court's decision and the constitutional principles governing the President, the Executive Branch of the government, and independent agencies such as the NRC. The update also provided some insight on the "two constitutional principles that give the Executive authority, in certain circumstances, to decline to follow a statutory mandate". The analysis went on to illustrate how neither of the two applied in this situation. The conclusion highlighted the recommendations of the President's Blue Ribbon Commission on America's Nuclear Future. The web link for the [update](#) can be accessed by positioning the cursor over the underlined text and following the directions.
15. On August 27, the Mississippi Energy Institute, a not-for-profit group, "formally urged the state's senate to consider establishing a dedicated management center to provide interim storage for used nuclear fuel" with a future possibility of recycling and even disposal as Mississippi's geology includes salt domes.

16. On August 30, the NRC issued an Order seeking input from participants in the adjudicatory proceeding on the resumption of the Yucca Mountain licensing review and how the NRC should continue with the licensing process to ensure the most efficient use of its remaining \$11 million. In the meantime the Commission directed its staff to gather pertinent budgeting information during the 30 day comment period ending on September 30th. The web link for the [Order](#) can be accessed by positioning the cursor over the underlined text and following the directions.
17. On August 30, the Nuclear Energy Institute (NEI) filed a response with the NRC to Nevada's and Nye County, Nevada's motions for the restart of the Yucca Mountain licensing activities. NEI maintained that the remaining funds should be directed at completing the NRC's Safety Evaluation Report (SER). After the publication of the SER volumes, any remaining funds should be used to resume the Yucca Mountain licensing activities. The web link for the [filing](#) can be accessed by positioning the cursor over the underlined text and following the directions.
18. On August 30, the State of Nevada filed a response with the NRC on Nye County's motion for the recusal of the NRC Chair, Allison Macfarlane. Nevada contended that the Nye County motion relied on the use of an improper recusal/disqualification standard and none of the Chairman's statements cited by Nye County as warranting disqualification. The web link for the [response](#) can be accessed by positioning the cursor over the underlined text and following the directions.