

MAINE STATE LEGISLATURE

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February 29, 2016

MEMORANDUM

TO: Senator Michael Thibodeau, President of the Senate, and Representative Mark Eves, Speaker of the House

FROM: Mary C. Mayhew, Commissioner
Department of Health and Human Services

SUBJECT: State Nuclear Safety Inspector's May through August 2015 Monthly Reports to the Legislature on the Interim Spent Fuel Storage Facility in Wiscasset, Maine

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

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

August 2015 Monthly Report to the Legislature

Executive Summary

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

National:

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

Introduction

As part of the Department of Health and Human Services' long standing oversight of Maine Yankee's nuclear activities under Title 22, Maine Revised Statutes (MRS) §666 (2), legislation was enacted in the second regular session of the 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, historical addendum, and glossary 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 August, the general status of the ISFSI was normal, with no instances of spurious alarms due to environmental conditions.

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

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

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

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

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.

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

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

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

Other ISFSI Related Activities

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

Environmental:

The State received the second quarter results in late July from the field replacement of its thermoluminescent dosimeters (TLDs) around the ISFSI and the Maine Yankee industrial site. The results from the quarterly TLD change out continued to illustrate three exposure groups: elevated, slightly elevated, and normal. The two usual high stations were stations G and K with two extra stations this quarter, F and Q, all with an average of 25.1 milliRoentgens³ (mR).

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

The Maine Yankee industrial site TLDs averaged 21.8 mR, which is comparable to the normally expected background radiation levels of 15 to 30 mR for the coast of Maine. The industrial site TLD results exhibited the expected seasonal variations with the third quarter results being slightly higher than the previous quarter or this quarter. Some of the stations have background levels that are highly dependent upon tidal effects, and local geology. However, virtually all the stations display some seasonal fluctuations that are affected by the out gassing of the naturally occurring radioactive gas, Radon.

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

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

² 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.

³ A milliRoentgen (mR) is a measurement of radiation exposure in air. For a further explanation, refer to the glossary on the Radiation Program's website.

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

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

As noted in earlier reports, the State maintains an environmental air sampler on the roof of HETL for local or national events. The air sampler was extremely instrumental during the Fukushima event in Japan over three years ago in quantifying the levels of radioactivity that was coming from the crippled reactors. This year's first quarter results did not identify any unusual radioactive elements and were within historical ranges for both gross beta⁴ and Beryllium-7, a naturally radioactive cosmogenic element that is produced from cosmic rays interacting with the nitrogen and oxygen atoms in the atmosphere. The gross beta results ranged from 11.7 to 25.2 femto-curies per cubic meter (fCi/m³)⁵. A composite of the seven bi-weekly air filter samples was used to measure the Beryllium-7's concentration of 69.6 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 locations for this quarter as F, G, K, and Q.

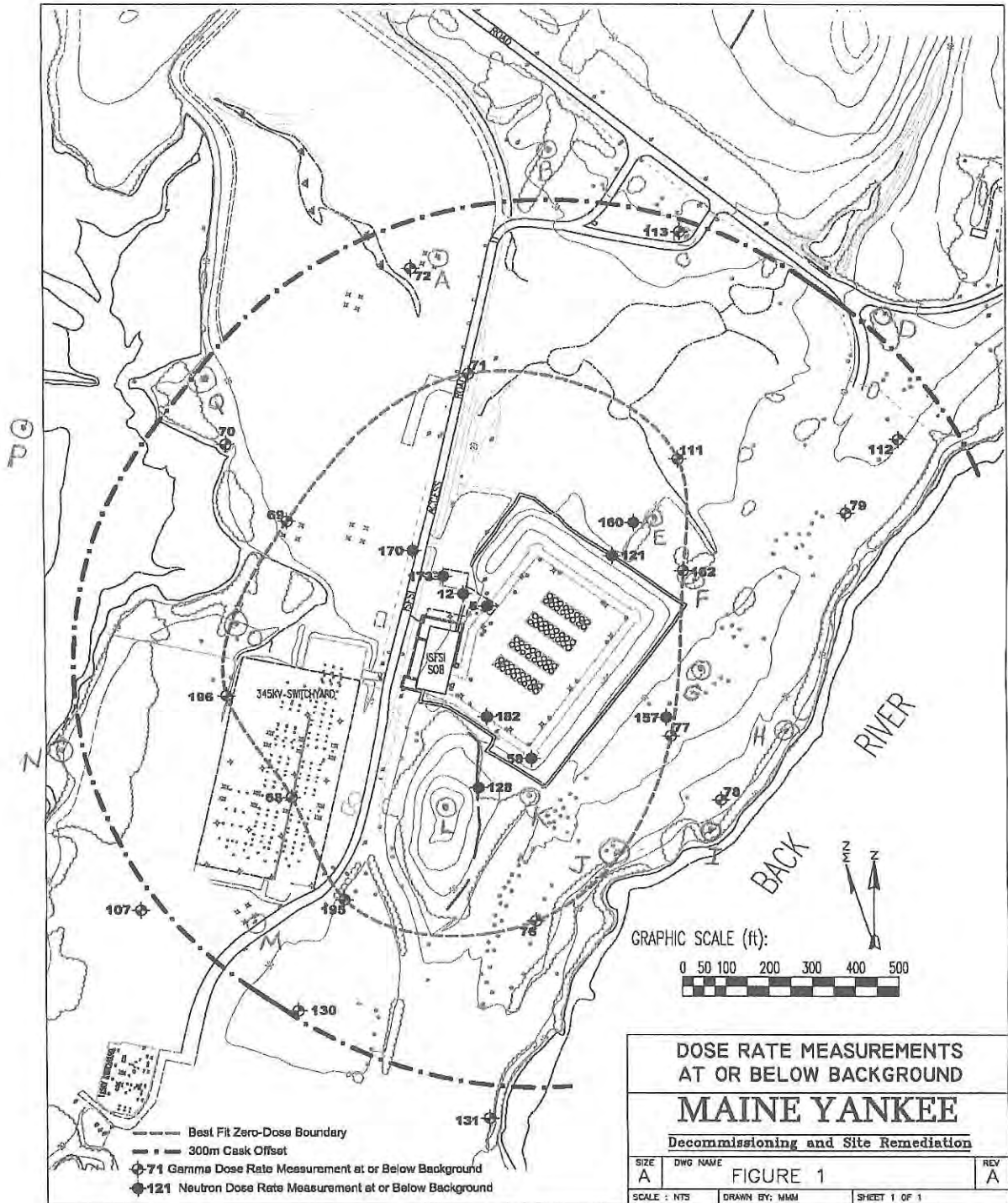
Other Newsworthy Items:

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

⁴ 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.

⁵ 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



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

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

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

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

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