MAINE STATE LEGISLATURE

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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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

May 2015 Monthly Report to the Legislature

Executive Summary

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

National:

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

Introduction

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

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

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

There were 14 condition reports[1] (CR) for the month and they are described below.

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

[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.

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

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

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

Other ISFSI Related Activities

1. On May 7, Maine Yankee submitted revisions to three of its Emergency Plan Implementing Procedures for Off-Normal Operations, Accidents, and Natural Phenomena. Each procedure incorporated an extra set of steps to record the dates and times of the event, when the four hour Technical Specification response for cask surveillance was performed, and when the air circulation conditions were restored.

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

Environmental:

The State received the 2015 first quarter results in May from the field replacement of its thermoluminescent dosimeters (TLDs)[2] around the ISFSI and the Maine Yankee industrial site. The results from the quarterly TLD change out continued to illustrate three exposure groups: elevated, slightly elevated, and normal. The two usual high stations were stations G and K with an average of 24.5 milliRoentgens[3] (mR).

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

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[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.

The Maine Yankee industrial site TLDs averaged 18.5 mR, which is comparable to the normally expected background radiation levels of 15 to 30 mR for the coast of Maine. The industrial site TLD results exhibited the expected seasonal variations with the third quarter results being slightly higher than the previous quarter or this quarter. Some of the stations have background levels that are highly dependent upon tidal effects, and local geology. However, virtually all the stations display some seasonal fluctuations that are affected by the out gassing of the naturally occurring radioactive gas, Radon.

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

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

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

As noted in earlier reports the State maintains an environmental air sampler on the roof of HETL for local or national events. The air sampler was extremely instrumental during the Fukushima event in Japan over three years ago in quantifying the levels of radioactivity that was coming from the crippled reactors. This year's first quarter results did not identify any unusual radioactive elements and were within historical ranges for both gross beta[4] and Beryllium-7, a naturally radioactive cosmogenic element that is produced from cosmic rays interacting with the nitrogen and oxygen atoms in the atmosphere. The gross beta results ranged from 28.2 to 43.1 femto-curies per cubic meter (fCi/m^3)[5]. A composite of the seven bi-weekly air filter samples was used to measure the Beryllium-7's concentration of 66.9 fCi/m^3.

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

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[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).

Other Newsworthy Items:

1. On May 1, the House approved the Fiscal Year 2016 Energy and Water Appropriations Bill by a vote of 240-177. The proposed legislation funded nuclear security, the Army Corps of Engineers, environmental clean-up, energy programs, science research, and Yucca Mountain. The bill appropriated $150 million for DOE's nuclear waste disposal program and $50 million to the NRC to continue the Yucca Mountain licensing proceedings.

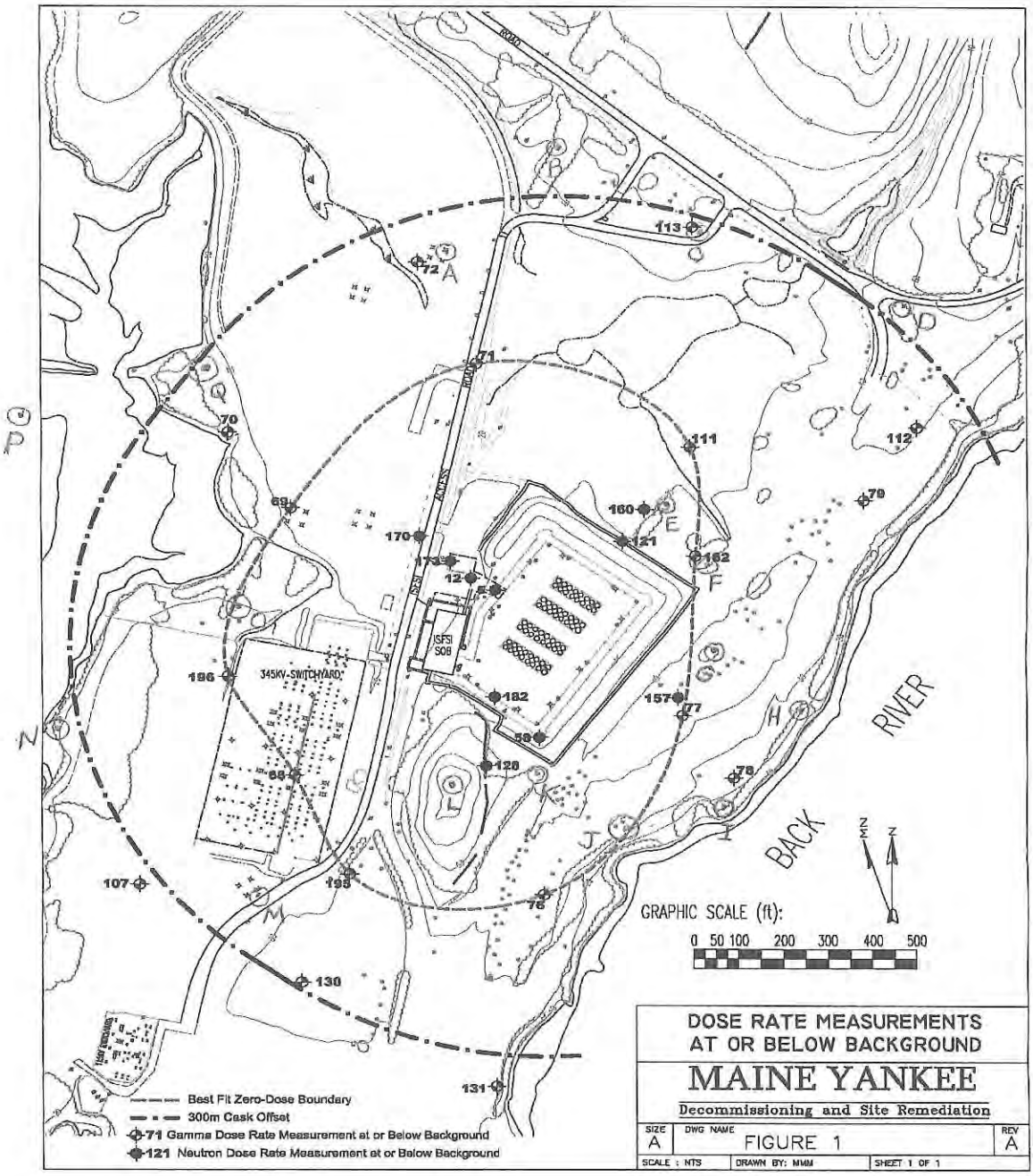
2. On May 15, the Energy Communities Alliance (ECA) sent a letter to the House Chair of the Energy and Commerce Committee responding to the Chair's April 14th letter to Energy Secretary Moniz expressing their agreement with the concerns presented in the Chair's April 14 letter to DOE. However, the ECA did note that any movement on defense-related wastes would be beneficial and provided seven advantages for prioritizing defense waste, based on the differences between defense and commercial wastes. They also conveyed that the present situation has resulted in their communities serving as de facto high-level waste storage sites. The ECA is a national organization of local, elected and appointed officials in communities near DOE defense facilities. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

3. On May 15, Energy Secretary Moniz responded to the House Chair's April 14 letter on President Obama's recent finding to seek the development of a separate repository for defense-related, high-level waste. The Secretary's letter did not address each specific question posed by the House Committee's Energy and Commerce. Instead, the Energy Secretary presented the basis for the 1985 decision to comingle commercial and defense spent nuclear wastes, what changed over time, and why the original assumptions supporting the comingling were no longer valid. The Secretary also explained why the decision to create separate repositories would be beneficial for certain types of defense wastes. The Secretary noted that $3.7 billion has been appropriated since 1993 for defense-related wastes, outlined what efforts were underway for implementing field testing of the deep borehole concept, and the pursuit to develop of a consent–based siting process. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

4. On May 15, the House Subcommittee on Environment and the Economy held a hearing on the "Current Status of Nuclear Waste Management Policy." The Subcommittee provided a background document and requested an update from the State of Washington's Senior Counsel, the NRC Director of the Yucca Mountain Directorate, the Chairman of the Subcommittee on nuclear issues for the National Association of Regulatory Utility Commissioners, the Chairman of the San Onofre Nuclear power plant, the Senior Attorney for the Natural Resources Defense Council, and the Manager of the Rancho Seco Decommission Assets. After opening remarks from the Committee and Subcommittee Chairs, each witness provided testimony on their perspectives of what has impacted them. Four of those who testified supported the continuation of the Yucca Mountain licensing process. The NRC was noncommittal whereas the Natural Resources Defense Council was opposed. Each witness provided their rationale and basis for their position in their separate testimonies. The web link for the testimonies and opening remarks can be accessed by positioning the cursor over the underlined texts above and following the directions.

5. On May 20, the U.S. Nuclear Waste Technical Review Board issued a news release that it will hold a meeting on June 24 in Colorado to review DOE's activities relative to the transporting of spent nuclear fuel to an interim storage facility or a geologic repository. DOE will discuss their research and development efforts and new equipment designs. Other viewpoints on transportation were expected from NRC, an international nuclear utility, and some stakeholder groups.

Figure 1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0 50 100 200 300 400 500
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71 Gamma Dose Rate Measurement at or Below Background
121 Neutron Dose Rate Measurement at or Below Background
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AT OR BELOW BACKGROUND
MAINE YANKEE
Decommissioning and Site Remediation
SIZE A
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REV A
SCALE : NTS
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SHEET 1 OF 1

6. On May 20, Waste Control Specialists (WCS) announced that AREVA Inc., a French firm, will be the exclusive subcontractor for the design, development, construction, operation, and maintenance of WCS's proposed interim storage facility in Andrews County, Texas. AREVA could also support WCS in their storage licensing application to the NRC and offer support for transportation services to and from the facility. The web link for the press release can be accessed by positioning the cursor over the underlined text and following the directions. The web link for the news article can be accessed by positioning the cursor over the following link: http://www.neimagazine.com/news/newsareva-selected-as-subcontractor-on-wcs-interim-storage-project-4582524.

7. On May 21, AREVA Inc. and NAC International signed an agreement to jointly support Waste Control Specialists' proposed interim storage facility for spent nuclear fuel in Andrews County, Texas. "AREVA and NAC represent 62% of existing dry storage systems in the U.S., including 78% of spent nuclear fuel stored at sites" at shutdown reactor sites. The web link for the news release can be accessed by positioning the cursor over the underlined text and following the directions.

8. On May 21, Nevada's Governor forwarded a letter to the Chair of the House Subcommittee on Environment and Economy responding to the Chairs earlier letters inviting Nevada to a discussion on the country's nuclear waste management policy and potential economic incentives in exchange for the Yucca Mountain project. The Governor expressed his State's sentiments to the Chair's overtures in no uncertain terms by stating that "we oppose the project based on valid scientific, technical and legal merits." The Governor indicated that Nevada was supportive of the Blue Ribbon Commission's recommendations. The web link for the letter can be accessed by positioning the cursor over the underlined text and following the directions.

9. On May 21, Senate appropriations bill H.R. 2028 was voted on in the Senate Water and Appropriations Committee and by a vote of 26-4 approved $35.4 billion in funding DOE and the Army Corps of Engineers. The proposed bill's text recommended $30 million to implement the Senate's version of managing the nation's nuclear waste stockpile by implementing a pilot program to construct a consolidated storage facility or facilities for the storage of spent nuclear fuel and high-level waste with priority given to stranded fuel at sites without an operating nuclear reactor. The proposal also allocated $3 million for the design, procurement, and testing of railcars to support the transportation of spent fuel to interim storage facilities. The bill also provided for the establishment of a consent-based process for a host facility with the Governor of the State, the local government(s) having jurisdiction over the host facility and affected Indian Tribe(s).

10. On May 26, World Nuclear News reported that the heat experiment that was started in 1997 at the underground research laboratory for a high-level waste repository at Grimsel, Switzerland was coming to an end. The experiment involved two radioactive waste containers with multiple sensors embedded in bedrock and backfilled with a special aluminum clay-like material. The purpose of the experiment was to determine the effects of heat from high-level waste on the surrounding rock and backfill material. This last container will be fully excavated by the end of June and its data will be compared with the first waste container that was removed in 2002. The web link for the news release can be accessed by positioning the cursor over the underlined text and following the directions.