State Nuclear Safety Inspector Office

September 2008 Monthly Report to the Legislature

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 third monthly report from the State Nuclear Safety Inspector under this new legislation.

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.

To better understand some of the topics, some effort was placed in providing some historical information. However, for the time being this historical context will be provided as an addendum to the report.

Independent Spent Fuel Storage Installation (ISFSI)

During September the general status of the ISFSI was normal. There was one fire alarm related impairment. The main fire alarm control panel had one trouble alarm point tagged out of service for less than a day for a ground fault problem that was later cleared. The problem was caused by heavy rain.

Although there were no security related impairments, there was one failed intrusion zone test, which initiated a security event being logged for September. The malfunctioning equipment was adjusted and successfully retested.

There was one condition report in September concerning procedural adherence on the administrating tracking of internal documents.

The NRC recently conducted its annual inspection of the ISFSI. There were no violations, follow-up items, issues or concerns identified at the exit briefing held on September 26th.

Environmental

It was noted that Figure 1 illustrating the locations of the State's thermoluminescent dosimeters (TLD) locations in the vicinity of the ISFSI was inadvertently left out of the August report. Figure 1 is

[1] A condition report (CR) is a report that promptly alerts management to potential conditions that may be adverse to quality or safety. The report is generally initiated by a worker at the ISFSI facility. The report prompts management to activate a process to identify causal factors and document corrective and preventative measures stemming from the initial report.

included in this month's report. The quarterly TLD[2] readings ending on June 30th were disclosed in last month's report. Of the 13 TLD locations two had slightly elevated levels. The State's locations are identified by letters in the Figure with stations G and K being the two highest locations.

The State performed its periodic air sampling at the old Bailey Farm House. The findings will be published when results become available from the State's Health and Environmental Testing Laboratory.

Maine Yankee Decommissioning

In July the State split 18 soil samples with Maine Yankee from the gravel road for their final verification that the samples will meet Maine Yankee's License Termination Plan (LTP), and State and Federal decommissioning requirements. Last fall, the State had found three elevated areas of contamination on the gravel road. Since the State's findings demonstrated that Maine Yankee's initial classification of the road was incorrect, it was necessary to reclassify and perform additional surveys and soil testing to ensure Maine Yankee was compliant with their LTP. Due to the localized nature of the contaminant and the restricted security access to the site, the contamination found does not present a public health hazard.

The analysis of Maine Yankee's 18 soil samples was performed by the vendor laboratory, AREVA, located in Massachusetts. Their results indicate that most of the radioactivity was related to natural radioactive elements normally found in soil and bedrock, specifically the Uranium and Thorium decay series[3] and Potassium-40. One sample did contain the man-made radioactive element, Cesium-137. However, the concentration of the Cesium-137 was low and comparable to what is normally found in nature from past weapons testing during the 1950's and 1960's. The State's soil findings were not available at the time of this report and will be published in the October report.

The State will publish its decommissioning findings in a decommissioning summary that is expected in March of 2009. As part of that process the State will condense over 40 major survey areas into a dozen confirmatory reports that are being worked on by an outside consultant. The independent consultant has been collecting all the State's findings and summarizing them in confirmatory reports that the State Nuclear Safety Inspector will use to complete the State's decommissioning summary. Currently, there are eight confirmatory reports that are essentially complete, two are in draft form awaiting review and two are outstanding and have yet to be drafted. Since the consultant's contract expired in July, a renewal contract was written and approved in September to cover the remaining reports.

[2] TLDs use very small plastic like phosphors that are placed in a small plastic cage and mounted on trees, posts, etc. to absorb any radiation that impinges on the material. Special readers are then used to heat the plastic to release the energy that was stored when the radiation was absorbed by the plastic. The energy released is in the form of invisible light and that light is counted by the TLD reader.

[3] There are three naturally occurring series of heavy elements that naturally decay or transform into a series of various radioactive elements by releasing energy in the form of particles, (such as alpha or beta), and/or gamma rays to end in a stable form of non-radioactive Lead. All three decay series start with extremely long lived radioactive, heavy elements that can be measured in geologic time units. They are Uranium-238 with an approximate half-life of 4.5 billion years, Uranium -235 with a half-life of about 700 million years, and Thorium-232 with a half-life of 14 billion years. All three series contain some more well-known radioactive species, Radium and Radon.

Groundwater Monitoring Program

From September 16th through September 18th Maine Yankee's environmental consultant, Ransom Environmental from Portland, collected 16 groundwater samples from 12 well locations, three of which have multiple well heads, within the confines of the old power plant area of the Bailey Point peninsula. As part of its annual quality assurance oversight of the groundwater monitoring program, the State received seven well samples for analysis. The results of both Maine Yankee's analyses and the State's quality assurance testing will be described in a future monthly report when those results become available. The September sampling starts the fourth year of the five year monitoring program.

The normal sampling regimen for the groundwater monitoring program is March, June and September of each year. However, since the first sampling took place in September of 2005, the annual sampling constitutes the September sampling of the current calendar year and finishes with the June sampling of the following year. Hence, the third annual report of the post decommissioning groundwater monitoring program, summarizing the past year's findings, will be available later this fall.

Other Newsworthy Items

1. The State Nuclear Safety Advisor (SNSA) position was terminated on August 29, 2008. Presently, several agencies are contemplating how to best to carry out some of the SNSA duties and how those duties will be apportioned amongst the respective agencies involved, including the Office of the Public Advocate, the Governor's Office and the Department of Health and Human Services. Since his termination the State Nuclear Safety Inspector has become the State's representative to the Northeast High Level Radioactive Waste Transportation Task Force, an affiliate of the Council of State Governments, Eastern Regional Conference. The purpose of the Task Force is not only to develop the safest and most efficacious transportation route to ship spent nuclear fuel from the Northeast, but also to provide the State with direct involvement in formulating and establishing national policy in the design of the national transportation system and development of a proposed repository at Yucca Mountain in Nevada. Jay Hyland, the State's Radiation Control Program Manager, was appointed as the State's representative to the Maine Yankee Community Advisory Panel on Spent Fuel Storage. Mr. Hyland has also assumed the SNSA's role in the Nuclear Waste Strategy Coalition, which is a national coalition of stakeholders, from both private and public sectors, seeking a resolution to a final repository for spent nuclear fuel and high level waste. Finally, he has been participating in the quarterly Federal Energy Regulatory Commission (FERC) rate case settlement briefings relevant to Yankee Atomic, Maine Yankee, and Connecticut Yankee. The briefings provide updates to both state and private officials in the states affected by the FERC settlements.

2. In August Maine Yankee filed a FERC rate case to replenish the spent nuclear fuel trust fund, which was somewhat drawn down to pay for the construction of the Independent Spent Fuel Storage Installation (ISFSI). The proposed rate will be for $6.4 million per year from now until 2013 as compared to the most recent annual collection of $25.6 million per year, which ends October 31st. Based on current information, Maine Yankee is projecting that after 2013 the rate assessed should drop to zero.

3. The Nuclear Regulatory Commission (NRC) announced on September 8th that it had docketed the Department of Energy's (DOE) 8,646 page license application for the construction of a high-level waste repository at Yucca Mountain in Nevada. Docketing means that the NRC considers the license application sufficiently complete to begin a thorough technical review.

By law NRC is required to complete its review within three years, with the possibility of a one year extension that may be granted by Congress. Funding uncertainties may compel the NRC to request an extension from Congress. At the end of the review NRC will decide whether or not to grant a construction authorization to DOE.

4. In the FY-08 omnibus appropriations law Congress directed the DOE to develop a plan to remove spent nuclear fuel stored at decommissioned reactor sites and provide for consolidated storage. The DOE's report is currently under review.

5. The Maine Yankee site is being considered for a proposed underground power plant. The Riverbank Development Corporation met with some local and state officials in September on a proposed hydro project, called an Aquabank, that would generate 1,000 megawatts of electricity for peak load demands. The project would call for the construction of six cavernous reservoirs and four, three story tall turbines, carved out of the bedrock 2,000 feet below the surface. The electricity would be generated by taking roughly 1.2 billion gallons of water from the Back River and gravity feeding it down through four large turbines. The water would be stored in six reservoirs and returned to the Back River during off-load demands. The Maine Yankee site may be suitable for this project since it has the electrical infrastructure and its proximity to high voltage transmission lines.

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Addendum

Historical Perspective

Independent Spent Fuel Storage Installation (ISFSI)

Since the licensing and construction of the high level waste repository at Yucca Mountain in Nevada has been delayed until at least the year 2017, further delays are expected unless funding of the program is returned to appropriate levels. However, even with proper funding, delays until 2020 to 2025 would still be expected.

The Department of Energy (DOE) has not taken title and possession of any of the nation's spent fuel as mandated by the Nuclear Waste Policy Act of 1982 and is not expected to do so in the near term. DOE's inaction prompted Maine Yankee to construct an ISFSI during decommissioning to store the more than 1400 spent fuel assemblies that were previously housed in the spent fuel pool in the plant into 60 storage casks on-site. Another four casks contain some of the more radioactive components of the reactor internals that were cut up during decommissioning, since their radioactive concentrations were too high to dispose at a low level radioactive waste facility. These are expected to be shipped along with the spent fuel to the Yucca site should the repository open. However, there was some movement in the last Congress as it required the DOE to report back by the end of this year on the logistics of removing the spent nuclear fuel from the nation's closed plants.

Environmental

Since 1970 the State has maintained an independent, radiological environmental monitoring program of the environs around Maine Yankee. Over the years there was an extensive quarterly sampling and analysis program that included such media as salt and fresh water, milk, crabs, lobsters, fish, fruits, vegetables, and air. Since the decommissioning the State's program has been reduced twice to accommodate decreased revenues for sample analyses at the State's Health and Environmental Testing Laboratory (HETL). Presently, the State monitors one freshwater location, one saltwater and seaweed location, and one air sample location. The State maintains a quarterly sampling regimen, except for the air sample, which is performed bi-weekly near the old Bailey Farm House. The results of the most recent sampling will be published when the results become available from HETL. Besides the media sampling, over the years the State has maintained a robust thermoluminescent dosimeter (TLD) program to measure the radiation environment. The TLDs were placed within a 10 to 20 mile radius of the plant to measure the background radiation levels and later, when the plant was operating, any potential increases in background levels due to plant operations. Over time the number of TLDs nearly doubled to address public concerns over the clam flats in Bailey Cove and the construction of the ISFSI. After the plant's decommissioning the State reduced the number of TLDs around Bailey Cove, but maintained the same number for the environmental surveillance of the ISFSI.

Maine Yankee Decommissioning

Maine Yankee's decommissioning was completed in the fall of 2005. At that time the State Nuclear Safety Inspector's (SNSI) also commenced his final walk down survey of the site. Certain areas such as the transportation routes exiting the plant site were surveyed later after the plant industrial area was decommissioned. Due to the length of the egress routes, it took a considerable amount of time to

complete both half-mile east and west access routes and the two thirds of a mile of the railroad track. In addition, seven specific areas, including the gravel road, were also examined as part of the site survey. The State's final survey of the gravel road leading to the old softball field was extended last fall when the State discovered three localized elevated areas on the road that were contaminated. At that time, extensive bounding samples were taken to determine the extent of the contamination.

Groundwater Monitoring Program

In June of 2004, the State, through the Department of Environmental Protection's (DEP) authority under 38 MRSA §1455, signed an agreement with Maine Yankee for a five year, post decommissioning radiological groundwater monitoring program at the site. Presently, the program is starting its fourth year. The details of how the agreement would be carried out relative to the quality assurance facets of the monitoring, sampling and analyses would be captured in Maine Yankee's Radiological Groundwater Monitoring Work Plan.