Maine Center for Disease Control and Prevention

An Office of the Department of Health and Human Services

Paul R. LePage, Governor Mary C. Mayhew, Commissioner

2011 Report to the Legislature-

on the

State Nuclear Safety Inspector's Oversight Activities

of the

Independent Spent Fuel Storage Installation (ISFSI)

at the

Maine Yankee Site in Wiscasset, Maine

Prepared for

Joint Standing Committee on
Energy, Utilities, and Technology

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Executive Summary

The following report details the State Nuclear Safety Inspector's oversight activities for the calendar year 2011 performed at the Maine Yankee site and the Independent Spent Fuel Storage Installation (ISFSI) in Wiscasset.

The Maine Yankee plant was decommissioned over an eight year period from 1997 to 2005. Because the Department of Energy was unable to fulfill its contractual obligations to accept the spent nuclear fuel by January 1998, Maine Yankee was compelled to construct an Independent Spent Fuel Storage Installation (ISFSI) in Wiscasset to store the high level waste in casks until a consolidated interim facility is constructed to store the waste, or a national repository becomes available to dispose of the used nuclear fuel.

The State Nuclear Safety Inspector's oversight role includes the following tasks:

- Reviews daily the operational and security reports from the on-site security staff;
- Performs environmental surveillance of the Maine Yankee environs to include fresh and saltwater monitoring, seaweed sampling, and field measurements of the local radiation levels;
- Participates in the annual Nuclear Regulatory Commission inspection of the facility;
- Participates in the ISFSI's annual emergency plan exercise;
- Conducts radiological groundwater assessments of the old industrial complex and yearly quality assurance checks of Maine Yankee's analysis of the groundwater;
- Reports activities monthly and annually to the Legislature;
- Provides an annual accounting to the Legislature of the funds received and disbursed out of the Interim Spent Fuel Storage Facility Oversight Fund;
- Interfaces with various state agencies also performing oversight functions at the ISFSI;
- Reviews Maine Yankee submittals to the Nuclear Regulatory Commission;
- Participates in regional and national organizations involved in the Yucca Mountain project in Nevada, and
- Investigates and monitors websites to keep abreast of national developments on spent nuclear waste management and research.

The storage of the high level waste in Wiscasset is an important issue to the State. It creates an undue burden to the local community and State by not being able to reuse or redevelop prime, coastal real estate. Moreover, it sets up a possible terrorist target that could result in future unintended consequences. Furthermore, it potentially imposes on our citizens a de facto high-level waste dump site in Maine. Secretary of Energy Chu's decision to withdraw the Department of Energy's license application before the Nuclear Regulatory Commission, effectively terminating the Yucca Mountain repository, means that the high level waste stored in Wiscasset may be there for 100 years or more, as per the Nuclear Regulatory Commission's 2010 waste confidence update, or, as some fear, potentially indefinitely.

The President's Blue Ribbon Commission on America's Nuclear Future drafted a report in July 2011 that provided a blueprint on how the nation should manage its used nuclear fuel. The Blue Ribbon Commission's draft report contains two key recommendations that would be instrumental in moving the used nuclear fuel from the Wiscasset facility. The first is the construction of one or more consolidated interim storage facilities. The second is the provision that used nuclear fuel stranded at decommissioned sites receive first priority in the movement of their spent fuel. The community of Carlsbad, New Mexico is seeking to host an interim storage facility to house the nation's nuclear stockpile. If the State of New Mexico is also willing and there are no indications to the contrary thus far, then there is an outside possibility we could witness some spent fuel shipments from the Wiscasset facility by the end of the decade.

1.0 Introduction

1.1 Historical Perspective

The State had one nuclear power plant, called the Maine Yankee Atomic Power plant, and it was located in Wiscasset, Maine. It operated from the fall of 1972 to December 1996. The Maine Yankee Plant was initially rated at about 825 megawatts electric or 2440 megawatts thermal and by the end of its life the Maine Yankee plant was producing slightly over 900 megawatts electric.

At the time of its last shutdown in December 1996 the plant owners were facing some major issues, principally cable separation and the aftermath of the Nuclear Regulatory Commission's (NRC) Independent Safety Assessment Team (ISAT) findings pertaining to plant safety systems. The State was a participant in the ISAT process. In 1997 the plant owners decided that the likelihood of the nuclear plant operating at a profit was non-existent in light of Maine's electric restructuring act passed that same year. With the availability of cheaper power from Canada, the plant was no longer considered economically viable. In May 1997 Maine Yankee announced that it would either sell or close the plant if there were no buyers. Even though there was a serious assessment performed by Philadelphia Electric Company to purchase the Maine Yankee plant, in July 1997 both parties could not come to an agreement and in August 1997 the Board of Directors voted to shutdown the plant permanently and commence the immediate dismantlement of the nuclear facility. The planning process for the site's decommissioning began shortly after the official closure and the decommissioning lasted nearly eight years.

When the Nuclear Waste Policy Act (NWPA) was enacted in 1982, Congress assumed that a national repository would be available by 1998 for the disposal of the spent fuel. The NWPA mandated the Department of Energy (DOE) to take title and possession of the nation's spent nuclear fuel in 1998. Since the high level waste repository at Yucca Mountain in Nevada had experienced significant licensing and construction delays, DOE was unable to take title and possession of the nation's spent fuel and consequently breached its legal contracts with all the nation's nuclear power utilities.

Early during the decommissioning it became evident that at DOE's current pace the Yucca Mountain repository would not open at its then projected start date of 2010. DOE's inaction prompted Maine Yankee to construct an Independent Spent Fuel Storage Installation (ISFSI) during decommissioning to store the 1434 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 of at a low level radioactive waste facility. These are expected to be shipped along with the spent fuel to a deep geologic repository when one becomes available sometime in the future.

Although President Bush recommended to Congress and Congress approved the Yucca facility as the nation's federal repository for spent nuclear fuel in 2002, the DOE did not submit a license application until June of 2008, which was accepted for review by the NRC in September of 2008. Since then, the Obama Administration and the new Energy Secretary, Dr. Chu, have advocated for the termination of the Yucca Mountain site as it was no longer considered a viable option for disposing of the nation's high level waste and spent nuclear fuel. Energy Secretary Chu has assembled a Blue Ribbon Commission of experts to review alternative strategies for managing these waste forms. In the meantime the entire nation's spent fuel will remain at their present storage locations until a new management strategy is devised and implemented.

1.2 Law

With the spent fuel at Maine Yankee likely to be stored in Wiscasset for decades to come, in March of 2008, in the second regular session of the 123rd Legislature, the Legislature enacted and the Governor signed into law the establishment of the State Nuclear Safety Inspector Office within the Department of Health and Human Services to provide independent oversight of the Maine Yankee ISFSI. The law also mandated that an Oversight Group, comprised of various state agencies, Maine Yankee and an independent expert in radiological and nuclear engineering, meet on a quarterly basis to discuss the protection of public health and safety at the ISFSI site and be involved in national activities that would hasten the timely removal of the spent nuclear fuel from the site. The law went into effect June 29, 2008.

The following sections contain the State Nuclear Safety Inspector's activities for the 2010 calendar year under certain broad categories covering the ISFSI, environmental surveillance around the Maine Yankee site, remaining pieces of the State's decommissioning efforts, on-going groundwater monitoring program, regional and national activities, and newsworthy items on the national repository situation.

2.0 State Nuclear Safety Inspector Activities

2.1 Independent Spent Fuel Storage Installation (ISFSI)

2.1.1 Annual Inspection

The Nuclear Regulatory Commission (NRC) did not perform any safety inspection of the ISFSI in 2011. In previous years the facility was inspected on a yearly basis. However, in May the NRC Office of Inspector General issued a report indicating that the frequency of ISFSI inspections was not uniform across all its Regions and varied from yearly up to six years. The disparity was due to frequency guidelines that were not clearly defined, which prompted the Inspector General to recommend that the frequency of routine inspections be standardized across the country. Moreover, the Inspector General noted that the training provided inspectors also varied from Region to Region. Therefore, another recommendation was made to institute and implement an agency-wide formalized training program for ISFSI inspectors. NRC management directed the staff to develop guidance and issue governing procedures for inspections and training by 2012.

2.1.2 Annual Drills and Exercises

On an annual basis Maine Yankee is required to perform an emergency plan drill, a radiological drill, a medical drill and a fire drill.

On May 18th Maine Yankee conducted its annual fire and medical drill. Since this was a mutual aid drill, it included the Wiscasset fire and ambulance crews and the Westport Island fire department. The drill involved a structural fire in the truck bay of the Security and Operations Building with one person overcome by smoke. The post drill critique identified one improvement item that involved fire fighter accountability.

In preparation for its annual emergency exercise Maine Yankee conducted on October 12th its annual emergency plan training to state officials at the Maine Emergency Management Agency. The overview consisted of the site's status and spent fuel considerations, emergency classifications, activation of the Maine Yankee emergency response organization, functions performed at the ISFSI control center, and the offsite interface with appropriate local, state and federal organizations.

On October 26th Maine Yankee conducted its annual mandated emergency exercise. The drill scenario involved two intruders reaching the ISFSI's vehicle barrier fence and launching two gas cylinders from the back end of a pick-up truck, then fleeing to the Ferry Road Landing and escaping by boat. The gas cylinders impacted two of the concrete casks with some minor concrete damage. Some of the concrete was chipped off near the bottom intake vents. Elevated radiation levels were localized to the casks with no radiation levels above normal background levels at the site boundary. Since the scenario included radiological aspects, the annual emergency plan drill also fulfills the annual radiological drill requirements as mandated by the Nuclear Regulatory Commission. Outside participants' in the drill included the State Police, the Maine Emergency Management Agency, the Wiscasset Police Department, the Lincoln County Sheriff's Office, the Lincoln County Emergency Management Agency, the Wiscasset Emergency Medical Services, and the State Nuclear Safety Inspector. A critique was held after the drill was terminated to discuss the overall response. Since some of the participants were new to the emergency plan process, the exercise afforded a valuable training opportunity.

2.1.3 Daily ISFSI Operations Pass-Ons

The on-shift Security Supervisor forwards the ISFSI Pass-On, essentially three times daily, to the State Inspector. The Pass-On provides an overview per shift of the ISFSI status, the cask monitoring status, procedures/surveillances/work in progress, equipment out of service, alarm issues, and team information. It is from these daily reports that the information is collected for condition reports, fire or security related impairments, security event logs and spurious alarms and discussed with the Site Vice-President prior to its disclosure in the State Inspector's monthly reports to the Legislature.

2.1.4 Maine Yankee Reports to the Nuclear Regulatory Commission (NRC)

In January Maine Yankee submitted revision 23 of its Defueled Safety Analysis Report (DSAR). The revision also fulfills the biennial update for the DSAR and includes the recent reconfiguration of the security fencing on the east side of the Security and Operations Building.

In February Maine Yankee submitted its 34th revision of the ISFSI's Off-Site Dose[1] Calculation Manual (ODCM). The ODCM contains the approved methodologies for estimating doses beyond the ISFSI's site boundary. The ODCM describes the facility's radiological monitoring program and how the thermoluminescent dosimeters[2] (TLD) demonstrate compliance with federal regulations. One of the changes specified a quarterly frequency for the TLDs to be analyzed. Another change included the estimated dose report to be part of the annual radiological environmental operating report. The remaining changes were essentially editorial.

In March Maine Yankee submitted its annual Decommissioning Funding Assurance Status Report. The Report estimates that $110.2 million will be necessary through 2023 for ISFSI operations and subsequent decommissioning of the facility. The current status of the fund at the end of 2010 stood at $98.1 million. Over the past year the Fund gained $2.4 million in revenue and the projected cost through 2023 decreased by $9.7 million.

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[1] Dose is a general term denoting the quantity of radiation energy deposited in the human body multiplied by a quality factor that depends on the different types of radiation absorbed in the body. A conventional unit of dose is the mrem.

[2] Thermoluminescent dosimeters (TLD) are very small plastic-like phosphors or crystals 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. The intensity of the light emitted from the crystals is directly proportional to the amount of radiation that the TLD phosphor was exposed to.

In April Maine Yankee submitted two annual reports to the NRC. The first was its 2010 Annual Radiological Environmental Operating Report. This Report summarizes the direct radiation results of nine TLD locations situated within a 288 meter (about 945 feet) ring from the center of the ISFSI with one control location at the Wiscasset Fire Station. All nine stations were comparable to or slightly higher than the control station. However, there was one station that was noticeably higher than the other eight ISFSI stations. This location has been consistently high since March of 2005. Due to its distance from the bermed area of the ISFSI, the values are higher than expected and could be due to its proximity to naturally higher background radiation, such as a ledge outcrop. The second document was the 2010 Radioactive Release Effluent Release Report which summarizes the radioactive gaseous and liquid effluents for each calendar quarter. By design there are no gaseous or liquid releases from the casks at the ISFSI. Therefore, there was no radioactivity to report in its Annual Effluent Release Report. In addition, there were no solid waste shipments from the ISFSI site to describe in the Effluent Release Report.

In May Maine Yankee electronically submitted its annual Individual Monitoring Report that describes the occupational radiation exposure record of each individual monitored at the used fuel storage facility in Wiscasset.

In September Maine Yankee submitted its annual Special Nuclear Material (SNM) Report to the NRC. The report represents the material accountability for fissionable material, such as Uranium-235 and Plutonium-239 on U.S. Government owned or non-U.S. owned nuclear fuel between beginning and ending inventories, radioactive decay differences, if any, and receipts of or removals of SNM. The report also includes source material such as natural Uranium and Thorium.

2.1.5 Security Plan

On January 14th the Nuclear Regulatory Commission (NRC) issued a letter to Maine Yankee stating that they had accepted Maine Yankee's response to their August 2nd letter on the applicability of the revised security rule to the ISFSI. The NRC Staff will perform a detailed evaluation of Maine Yankee's response.

In October the Chief Nuclear Officer for Maine Yankee and Chair of the national Decommissioned Plants Coalition submitted a letter to the Nuclear Regulatory Commission's Office of Nuclear Security and Incident Response expressing multiple concerns over the NRC's recent draft security guidance for independent storage of spent nuclear fuel, high-level radioactive waste, and reactor-related greater than Class C waste. The NRC draft proposal departs from its historical risk-informed and performance-based approach, significantly increases security related costs for ratepayers, and affects local law enforcement agencies as well as local and state governments. If accepted, the potential impacts to storage facilities could be to extend their site boundary by re-acquiring land that was previously sold or given away, increase security staff to repel threats as opposed to detecting and requesting law enforcement assistance, and re-establish emergency planning activities for the storage facilities along with state and local governments.

In October Maine Yankee submitted a letter to the Nuclear Regulatory Commission's Office of Nuclear Security and Incident Response commenting on a draft, security programs regulatory guide. Although Maine Yankee supported a revision to the regulations, they expressed concern that the proposed security regulations are based more on wet storage and other radioactive sources at operating nuclear power plants as opposed to a dry storage facility and its corresponding significantly lower risk.

2.1.6 Interface with Other State Agencies

As part of the legislation's mandate, on a quarterly basis, the State Inspector and the Manager of the Radiation Control Program, met with State Police, the Public Advocate, the Department of Environmental Protection and Maine Yankee to discuss oversight activities at the ISFSI. The quarterly meeting dates were January 11th, April 12th, July 12th and October 11th. At the meetings Maine Yankee provided a status of their activities followed by the State Inspector's update of his past, current and planned near term activities. Discussions also centered on the Group's annual and financial reports to the Legislature, national and congressional efforts on spent fuel waste management, especially centralized interim storage at some away facility outside of New England as opposed to on-site storage, the final groundwater monitoring costs, the Federal Energy Regulatory Commission rate case settlement cases pending before the federal Appeals Court, and environmental surveillance at the facility.

2.1.7 ISFSI Topics

2.1.7.1 ISFSI Status

The status of the ISFSI from January to December was normal, except for the three snowstorms in January two in February, and one in April. Additional measures were put in place for each snowstorm and were terminated once the storms passed. As part of its operational constraints after a snow event, the vent screens for the concrete casks need to be inspected daily for blockage. The venting is necessary to ensure that the cooling of the cask internals is maintained. In addition, the site loss power twice in September due to some down power lines on Route 1. The first outage lasted about four hours and the second about 30 minutes. All systems operated as designed. The back-up diesel started on both occasions and powered all systems on-site until power was restored.

2.1.7.2 Security Related Events/Impairments

There were no security related impairments or spurious alarms due to environmental conditions.

There was a marked decrease in the number of security events logged (SEL). There were 142 SELs logged over the course of the year as compared to 213 the previous year. Of the 142 events logged 119 were related to transient environmental conditions. Of the 23 remaining, five were related to the April snowstorm, five involved computer issues, nine were related to various equipment problems, two were safeguard information which precludes public disclosure, and the final two related to communication issues.

2011 witnessed a reversal of the dramatic increase from the previous year on the number of instances that prompted follow-up action with the Local Law Enforcement Agency (LLEA). There were 6 instances in 2011 as compared to 15 in 2010 and only two in 2009. The suspicious instances of vehicles and/or persons occurred over a period starting in March and ending in December. There were three incidents of suspicious vehicles. In two of those events individuals had stopped their vehicles to take photographs of the wildlife (wild turkeys and deer). In the other situation two individuals had parked their car on Ferry Road and were looking at the property across the road from Maine Yankee. In one instance a worm digger was found crossing on Maine Yankee property near Foxbird Island. In another instance duck hunters were found shooting in Bailey Cove. Lastly, the "Walk for Fukushima" group stopped in Wiscasset to visit the former nuclear power plant site. They were walking from Rockland to the Japanese Consulate in Boston to raise awareness and address concerns associated with the four reactor accidents in Fukushima, Japan.

In all six incidents the LLEA was notified and responded. In five of those situations they intercepted the vehicles or persons. In the worm digger situation the LLEA was unable to locate the individual. Generally, the persons are counseled on the site's security restrictions and released. If the individuals are on-site they are escorted off-site. Except for the worm digger, since none of the other situations involved vehicles or persons coming unto Maine Yankee property, Maine Yankee was not required to notify the Nuclear Regulatory Commission Operations Center of the incidents.

2.1.7.3 Fire Related Events/Impairments

There were eleven fire related impairments reported in 2011 as compared to five in 2010. The first two occurred in May and were both associated with new cores bored through walls installing new conduits and wiring for security system upgrades.

In June there were six fire impairments, five of which were associated with ongoing fire detection system upgrades. The sixth was due to a lightning strike that did not cause a fire but did result in a loss of communication between the gatehouse and the Security and Operations Building.

In August there were two fire impairments. The first involved a fire damper not closing fully and the second was from losing power due to tropical storm Irene. Since the fire panel is not powered by the emergency diesel, the power to the panel was lost when the back-up batteries became exhausted.

The last impairment occurred in December and involved a fire door that was not latching reliably. The latch was repaired the next day.

2.1.7.4 Condition Reports

There were 80 condition reports written in 2011 as compared to 115 in 2010. 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. The majority of the CR's are administrative in nature. Examples of some CR's written ranged from a door closer leaking fluid to a sewer vault filling with water to tracking observations from periodic surveillances to using an out of date procedure to a file custodian label found out of date to a very small gas spill about the size of a teaspoon to a worker's hand being burned on a hot mower muffler to not using a form when one was required. A complete list of CR's can be found in Appendix A.

2.1.7.5 Other ISFSI Related Activities

In February Maine Yankee submitted to the Nuclear Regulatory Commission its periodic update to its License Termination Plan. Maine Yankee noted that there were no changes to its current revision 5 that was originally submitted in February of 2009. In addition, Maine Yankee also submitted nine changes to its Emergency Plan to the Nuclear Regulatory Commission (NRC). Three of the changes were editorial in nature while three others involved formatting. One of the changes involved updating a drawing on the reconfiguration of the fencing near the Security and Operations Building. Another change allowed the use of flammable/combustible liquids within ten feet of the vertical concrete casks for ISFSI operations or maintenance. The other change eliminated the

radiological information from the list of pre-scripted information initially communicated to the Maine State Police and the NRC in an Unusual Event.

In March Maine Yankee sent a letter to the NRC requesting they include the Director of Regulatory Affairs for the three decommissioned Yankee plants in New England on their distribution list for NRC correspondence. The shutdown plants are Connecticut Yankee, Maine Yankee, and Yankee Rowe in Massachusetts. Later that month Maine Yankee shipped a neutron source (Americium-Beryllium) to Radiation Safety and Control Services (RSCS) in Stratham, New Hampshire. The old neutron source was used to calibrate neutron meters. RSCS is a contract firm that supplies radiological services to Maine Yankee. The neutron source will augment RSCS's radiation detector calibration capabilities. The Maine Radiation Control Program also employs RSCS for calibrating some of its radiation detection instruments.

In April Maine Yankee submitted a letter to the Department of Environmental Protection (DEP) signifying they had conducted their annual site inspection as per their Environmental Covenant Agreement with the DEP. The letter indicated that the Soil Management Plan was used once to support the modification of the security fence. Maine Yankee contracted with Ransom Environmental to take samples and analyze for any chemical contamination. No chemical contamination of the excavated soils was found.

In May Maine Yankee submitted to the DEP a revision to its Cumulative Risk Report that was issued in March of 2008. The Report evaluated the chemical and radiological risks in soils and groundwater at the site. The conclusions stated then that the chemical hazards drove the cumulative risks with the radiological risks contributing a very small portion to the risks. At that time there was less than two years worth of information from the radiological groundwater monitoring program. The purpose of the revision was to update the risk information from the recently terminated five year radiological groundwater monitoring program. The conclusions remain the same with the chemical risk dominating the overall residual site risk with a very small contribution from the radiological portion.

In June the State Inspector participated in a national webinar on Greater Than Class C (GTCC) wastes hosted by the Department of Energy (DOE). The purpose was to discuss the draft Environmental Impact Statement for the disposal of GTCC waste. The industry and State perspective has always been that these waste forms would eventually be disposed at a geologic repository, such as Yucca Mountain. The DOE considered GTCC a form of low level waste that could be disposed of at some near surface disposal facility, which is not currently allowed. Some of the discussion focused on the Waste Isolation Pilot Plant in New Mexico which buries the nation's Transuranic (elements heavier than uranium) wastes as a potential disposal site for the GTCC waste. Maine Yankee has four concrete casks at their ISFSI that house GTCC waste.

In July Maine Yankee notified the NRC that all 60 canisters storing spent fuel were now registered to the cask manufacturer's Certificate of Compliance Amendment 5 instead of the previous Amendment 2. With the change Maine Yankee is required to abide by the cask manufacturer's Final Safety Analysis Report, revision 9 dated November 2010.

As part of NRC's requirements, in September the State Inspector received his annual site access, security and safeguards training to maintain his security badge and personal radiation monitoring status.

In October the Nuclear Regulatory Commission (NRC) notified Maine Yankee that it was accepting their exemption request from NRC regulations on foreign ownership, control, or domination. The issue surfaced as part of a merger between Northeast Utilities and NSTAR, which own 24% of Maine Yankee through its subsidiaries. Maine Yankee also requested the NRC's consent to an indirect license transfer due to the merger because of foreign ownership in the main companies. The NRC is expected to complete its review of the indirect license transfer request by the end of this November.

On two separate occasions in November Central Maine Power performed maintenance on the 345 kV switchyard at the Maine Yankee site. Both maintenance activities resulted in a temporary loss of power. The first lasted thirty minutes with the second lasting about a second. The emergency diesel did start on the first occasion, but the second event was so short the diesel never started. In both instances all systems functioned as expected.

In December the State received the U.S. Nuclear Regulatory Commission's (NRC) threshold determination on a proposed merger between Northeast Utilities and NSTAR, both indirect co-owners of Maine Yankee. The NRC staff concluded that the proposed merger did not constitute a direct or indirect transfer of control of the Maine Yankee's facility license, which would require prior NRC approval. The NRC issued a Safety Evaluation Report to document its findings. However, the NRC staff did determine that a pre-existing issue regarding foreign ownership, control, or domination (FOCD) for Maine Yankee existed. As such the FOCD issue will be addressed separately. Until the NRC completes' its assessment for the exemption, the FOCD requirements continue to apply.

Also in December the State Inspector participated in two Nuclear Regulatory Commission (NRC) webinars. The first webinar informed stakeholders on its Waste Confidence Decision and Rule, the basis and assumptions that went into its Waste Confidence Rule, and the fulfillment of the NRC's National Environmental Policy Act. The Rule was necessary to allow for the construction and licensing of new nuclear power plants. The NRC noted that they were issuing a draft Environmental Impact Statement (EIS) to address future potential scenarios, such as natural events and terrorism impacts. The second informed stakeholders on a complimentary initiative, the technical feasibility of extended dry cask storage at reactor sites for potentially up to several hundred years. This webinar informed stakeholders of the NRC's three phase approach. The first phase would identify technical and regulatory issues associated with extended spent fuel storage. The second phase would perform focused research on the technical issues, such as safety functions and technical challenges to those safety functions, and develop regulatory options as needed. The final phase would establish the revisions to the regulatory framework.

2.2 Environmental

2.2.1 Radiological Environmental Monitoring Program (REMP) Description and Historical Perspective

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.

In late December 2009, after 39 years, the State ceased its air sampling station at the Maine Yankee site. In reviewing the historical air data and taking into account the leak tightness of the spent fuel casks, it was determined that there was no technical basis to continue the air monitoring location at the old Bailey Farm House. Although the air sampling station at Maine Yankee was discontinued, the State still maintained an active air sampling station on the roof of the Health and Environmental Testing Laboratory that acted as a control for comparative purposes during Maine Yankee's operating and decommissioning years. The State's air sampler at HETL is also available for radioactive fallout situations from national or global events. That proved to be instrumental in the quantifying of the impact from the Fukushima reactor accidents in March and April of last year. More information on Fukushima's impact on Maine is presented in section 2.2.5.z

In June of 2010 the State performed a review of its Radiological Environmental Monitoring Program at the Maine Yankee site. The review determined that the quarterly surveillance sampling of freshwater at Ward's Brook in Wiscasset, and the seawater and seaweed at the Ferry Landing on Westport Island would be discontinued permanently after 40 years. Both sampling stations were originally set up to monitor gaseous and liquid releases from the Maine Yankee nuclear power plant. Since the ISFSI did not release gaseous or liquid radioactivity and adequate time had elapsed since the power plant was decommissioned in 2005 for statistical comparisons, there was no further technical justification for the continued sampling of the media at these stations.

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 initially placed within a 10 to 20 mile radius of the plant to measure the background radiation levels. Later, when the plant was operating, the initial results would be used as a baseline to compare with the TLD values during the plant's operating years. Over time the number of TLDs more than doubled to over 90 TLDs to address public concerns over the clam flats in Bailey Cove after the steam generator sleeving outage in 1995-1996 and later, 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.

2.2.2 Changes to the State's REMP Program

Although most of the REMP changes took place in prior years, in 2010 the State had implemented further reductions in the TLDs not only in the vicinity of the former nuclear power plant, but also in Bailey Cove. Of the nine remaining TLDs beyond the site's boundary six were permanently discontinued after the second quarter's field replacement. The remaining three TLDs consisted of three controls, (one locally at the Edgecomb Fire Station, one near the site at the Ferry Landing on Westport Island, and one further away on the roof of the State's Health and Environmental Testing Laboratory). At the time this left 27 TLDs for the ISFSI and Bailey Cove. However, by late December of 2010 a final assessment was performed to consolidate the number of TLDS monitoring the ambient radiation levels near the ISFSI. Eight of the fourteen TLDs locations from Bailey Cove were removed from the REMP program. Of the remaining six Bailey Cove TLDs, four were reassigned as ISFSI TLDs to ensure coverage for the sixteen points of the compass. The four new stations were identified as N, O, P, and Q. The last two Bailey Cove stations were co-located with the State's solar powered environmental radiation

monitors on the Maine Yankee site. A review of whether or not these solar powered units should continue to operate will be assessed in the fall of 2012. The TLD changes would not go into effect until the first quarter field replacement in January 2011.

2.2.3 Thermoluminescent Dosimeters (TLDs)

As outlined in the historical context and as part of its independent oversight, the State has a TLD program to measure the quarterly ambient radiation levels over the years at Maine Yankee, both in the proximity of the power plant and at various locations within a 10 to 20 mile radius from the plant. At the beginning of the year the State's TLD program was focused on two areas - the ISFSI and Bailey Cove. However, as mentioned in section 2.2.2, a reduction in the TLD program was initiated with the first quarter's field replacement. The TLD program will cover only the ISFSI in 2011 and beyond.

2.2.3.1 ISFSI TLDs

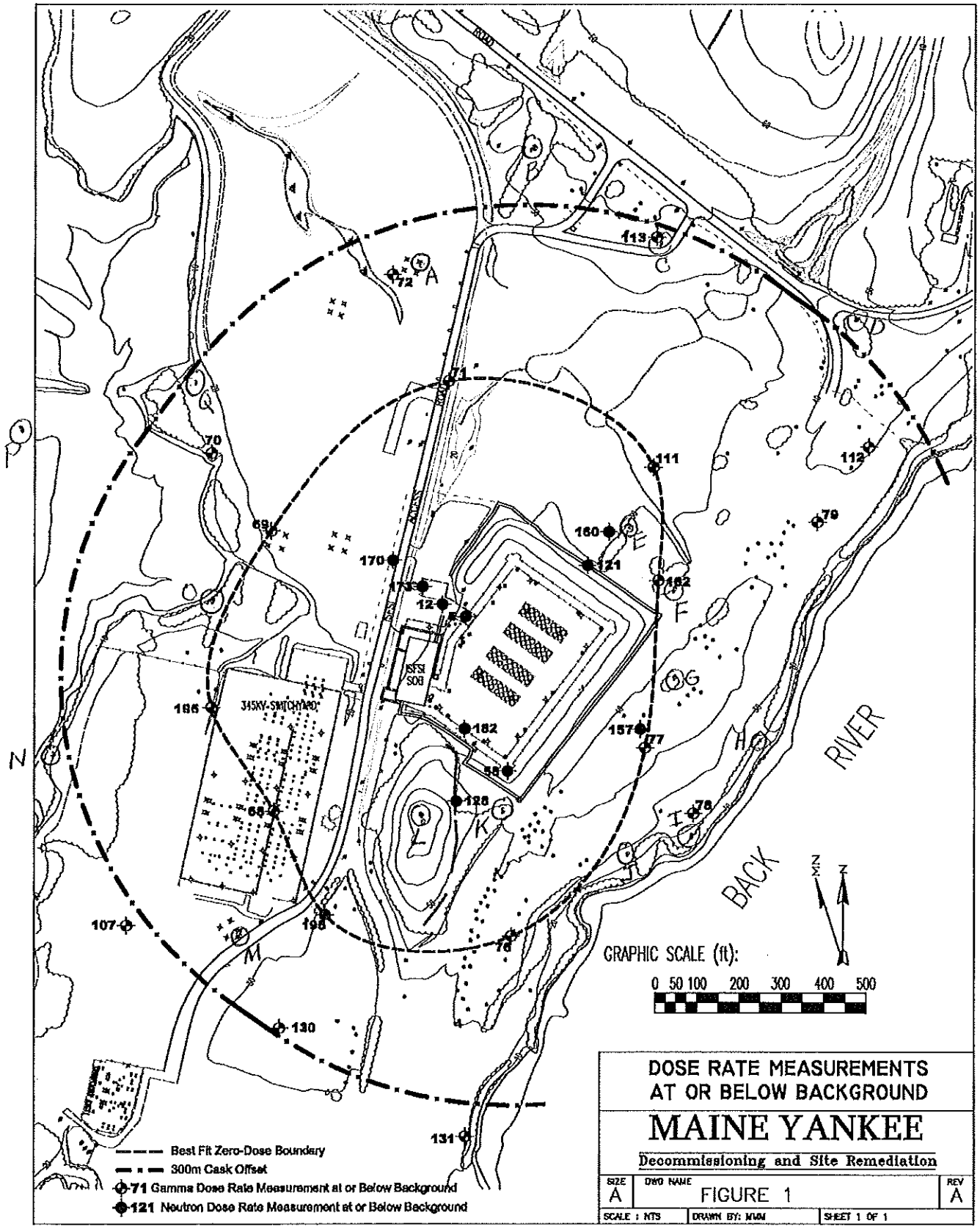
In October of 2000, in preparation for the spent nuclear fuel to be moved from the fuel pool and stored in concrete casks at the ISFSI, the State Inspector, as part of his independent oversight, established 13 TLD locations to monitor the local radiation levels from the ISFSI. Since the spent fuel was projected to be moved in the fall of 2001, it was necessary to perform monthly TLD field replacements as opposed to quarterly in order to gather enough field data to establish a pre-operational baseline. The monthly regimen was maintained until the fall of 2004 when it was converted to a quarterly frequency.

Initially, some of the state TLD locations were co-located with some of Maine Yankee's TLDs for future comparative purposes. However, Maine Yankee reconfigured its TLD locations in 2008 and only 2 remain co-located. To acquire statistical weighting for each location two TLDs were placed at each location. Each TLD has three plastic-like phosphors that capture the radiation.

The current seventeen locations are identified by the letters A through Q in Figure 1, courtesy of Maine Yankee, on page 11 with Table 1 on page 12 listing the State's ISFSI results for the year. The average represents the mean of the six element phosphors and the range depicts the low and high values for the six crystals. It should be mentioned that the values listed are the total readings from the vendor. The vendor nor the State employ any corrections for exposures to the TLDs shipped from California to here and their return shipment, or storage at the State offices prior to their use in the field. Since the values over inflate the true ISFSI dose, the State embarked on a three year program to better quantify the transit and storage exposures that are not part of the true field exposure and correspondingly the ISFSI's impact. The three years are necessary to gather enough quarterly data to develop the statistical power for the correction factors. Once these variables are quantified, then the State will employ the correction factors to its results. Very preliminary findings indicate that the 10 day transit exposures may range from 5 to 7 mrem, which is significant when compared to the total values reported in the TLD Tables. Based on this year's results and depending on which season it is, upwards of 20 to 45% of the dose reported is from shipping alone.

The ISFSI TLDs continued to demonstrate three separate groupings when it came to dose, elevated, slightly elevated and normal. Except for the first quarter, Stations G and K continued to be high due to their proximity to the ISFSI. However, Station L was in the elevated group in the first quarter whereas Station G for the first time in its history found itself in the slightly elevated group. Station L is located on top of a cement block that is mounted on top of a fairly large ledge outcrop on top of a knoll south of the ISFSI.

Figure 1


DOSE RATE MEASUREMENTS
AT OR BELOW BACKGROUND
MAINE YANKEE
Decommissioning and Site Remediation
FIGURE 1
SIZE A
REV A
SCALE : NTS
DRAWN BY: MWM
SHEET 1 OF 1
GRAPHIC SCALE (ft):
0 50 100 200 300 400 500
Best Fit Zero-Dose Boundary
300m Cask Offset
71 Gamma Dose Rate Measurement at or Below Background
121 Neutron Dose Rate Measurement at or Below Background
345KV-SWITCHYARD
BACK RIVER
N

However, the range of the individual phosphors was quite large as opposed to all the TLDs for the entire year. Of the two TLD badges at Station L, one had consistent readings of 20, 21, and 21, whereas the other had higher values of 26, 28, and 29, which resulted in a higher average. There was no natural variance in the background or in the casks' radiation levels that would explain the increased level in one of the TLDs. Sometimes overlapping TLDs will experience some differences but not to the degree observed here. The reading may be an artifact of the dosimeters and when the vendor calculates each phosphor's relative response to a known radiation exposure field, it can profoundly influence, at times, the final results.

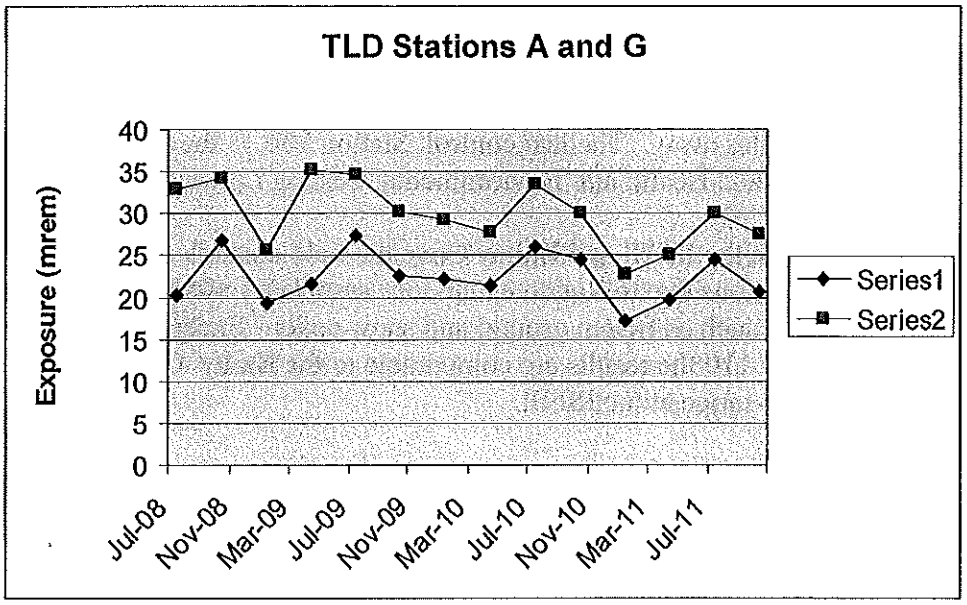
The results in Table 1 also clearly demonstrate the slightly elevated grouping of such Stations as E, F, and L showing signs of influence from the ISFSI as noted in Figure 1 by their short distances from the ISFSI. In addition, the data validates a very clear seasonal distinction. During the fall and winter months the values normally decrease when the ground is frozen and covered with snow as it impedes the out gassing of the Radon gas from the soils. The deeper the snow cover is the more pronounced the decrease in the natural radiation levels. For illustrative purposes the graphs in Figure 2 on page 13 reveal how the ISFSI radiation levels fluctuate seasonally. The series 2 top graph represents Station G while the series 1 bottom graph depicts Station B commencing with the Legislature's creation of the State Nuclear Safety Inspector position in July of 2008.

Table 1 – ISFSI TLD Results

	Quarterly Exposure Period							
TLD Stations	1st Quarter (Winter) Average (Range) (mrem)*		2nd Quarter (Spring) Average (Range) (mrem)		3rd Quarter (Summer) Average (Range) (mrem)		4th Quarter (Fall) Average (Range) (mrem)	
A	17.6	(15-21+)	19.3	(18-21)	24.2	(23-26)	19.8	(19-21)
B	17.2	(17-18)	19.7	(18-21)	24.5	(23-27)	20.7	(20-22)
C	17.5	(17-19)	20.8	(20-23)	25.8	(24-27)	20.7	(20-21)
D	17.8	(17-19)	20.7	(20-21)	25.0	(22-26)	21.0	(21-21)
E	21.2	(20-22)	23.5	(22-24)	28.3	(27-31)	23.0	(20-26)
F	21.0	(20-22)	24.0	(23-26)	28.8	(28-30)	24.3	(23-26)
G	22.8	(22-25)	25.0	(23-27)	30.0	(29-31)	27.5	(26-29)
H	17.3	(17-18)	19.8	(19-21)	24.3	(23-25)	21.2	(20-23)
I	17.0	(16-18)	20.2	(18-22)	23.8	(23-25)	20.7	(20-22)
J	18.0	(16-20)	22.8	(22-24)	28.8	(28-31)	22.3	(22-23)
K	25.3	(22-29)	25.7	(25-26)	30.7	(29-33)	25.6	(23-28++)
L	24.2	(20-29)	23.3	(22-24)	27.5	(26-30)	24.2	(22-26)
M	18.5	(18-20)	21.8	(21-23)	25.5	(24-28)	21.8	(21-23)
N	17.3	(16-19)	19.5	(19-20)	23.2	(22-26)	20.0	(19-21)
O	18.7	(18-20)	22.2	(21-23)	26.5	(25-28)	23.0	(22-24)
P	17.8	(17-19)	20.5	(18-23)	22.8	(21-24)	19.3	(18-20)
Q	19.0	(18-20)	23.7	(23-25)	28.2	(27-29)	23.7	(22-26)

+ Outlier rejected by the processor and verified by the State.
++ Outlier rejected by the processor but accepted and included by the State.
* Mrem is a conventional unit of dose that describes how much radiation energy was absorbed by a person's body with modifiers applied for the different types of particles or rays.

Figure 2



2.2.3.2 Bailey Cove TLDs

The Bailey Cove surveillance is a remnant of the operating days when the public had raised questions over the radiation levels in the Cove and its impact on clam and worm diggers from the extended shutdown due to the steam generator sleeving project in 1995. The number of TLD locations was reduced in January of 2008 from the initial 40 that covered both sides of Bailey Cove down to 14 and eventually down to 2 at the beginning of 2011. The TLD results for Bailey Cove for 2011 are illustrated in Table 2.

Table 2 – Bailey Cove TLD Results

	Quarterly Exposure Period			
TLD Stations	1st Quarter (Winter) Average (Range) (mrem)	2nd Quarter (Spring) Average (Range) (mrem)	3rd Quarter (Summer) Average (Range) (mrem)	4th Quarter (Fall) Average (Range) (mrem)
1	16.7 (16-18)	21.3 (19-22)	23.3 (23-26)	20.0 (20-21)
2	16.5 (16-18)	20.3 (18-21)	24.8 (22-24)	20.7 (18-21)

As with the ISFSI the Bailey Cove TLDs experienced the same seasonal fluctuations due to Radon excursions associated with weather conditions and seasonal effects such as frozen ground and snow cover. The Bailey Cove values are fairly comparable to the ISFSI results for the normal group. The background values are typical for the coast of Maine, which can range from 13 to 25 mrem, with the lower values indicative of their proximity to the water's edge. This effect is very evident at high tide with the water acting as a shield covering the natural radioactivity from the rocks and mud flats that are under water.

2.2.3.3 Field Control TLDs

As mentioned in section 2.2.2 there are three field controls that the State utilizes for comparative purposes. All three are located off-site and beyond Maine Yankee's Controlled Area of about 290 meters (approximately 950 feet). The closest is Ferry Landing on Westport Island, Station 110, about 3 quarters of a mile from the ISFSI. The second control, Station 143, is located at the Edgecomb Fire Station, about three and a half miles away. The last control, Station 160, is the traditional one located on the roof of the State's Health and Environmental Testing Laboratory, more than 21 miles away.

As with the ISFSI and Bailey Cove the field controls experienced the same seasonal fluctuations due to Radon excursions associated with weather conditions and seasonal effects such as frozen ground and snow cover. Except for the third quarter result for Station 110 the results are comparable to the Bailey Cove results and those within the normal range at the ISFSI.

Station 143 did experience some missing TLDs. The lost TLDs were not due to vandalism. Although this was seriously considered for the second quarter, the TLDs were later returned by an unknown person to the field cage that houses the TLDs. In the fourth quarter the TLDs were lost permanently when a tree fell due to high winds and destroyed the housing that the TLD cage was attached to. The crushed housing and everything attached to it was sent to the local dump. The individuals involved were unaware that the housing contained the State's TLD devices. The Edgecomb Fire Chief was apprised of the new location for the TLD cage and generously volunteered to notify the State Inspector in the future should anything happen to the cage.

Table 3 – Field Control TLD Results

	Quarterly Exposure Period							
TLD Stations	1st Quarter (Winter) Average (Range) (mrem)		2nd Quarter (Spring) Average (Range) (mrem)		3rd Quarter (Summer) Average (Range) (mrem)		4th Quarter (Fall) Average (Range) (mrem)	
110	19.7	(19-20)	22.3	(22-23)	28.0	(26-29)	22.8	(20-24)
143	17.0	(16-18)	*	(*)	24.3	(23-26)	*	(*)
160	18.7	(18-20)	21.3	(20-21)	22.2	(22-23)	20.5	(18-20)

*TLDs lost or missing

2.2.4 REMP Air Filter Results

2.2.4.1 State's Health and Environmental Testing Laboratory Roof Sampler

Table 4 below shows the quarterly air sampling results for the year. The State's Health and Environmental Testing Laboratory analyzed the samples and employed various analytical methods to measure specific radioactive elements. All the positive results reported highlight naturally occurring background levels and ranges in units of femto-curies per cubic meter[3].

[3] fCi/m^3 is another acronym for a femto-curie per cubic meter. Again it describes a concentration of how much radioactivity is present in a particular volume of air, such as a cubic meter. A "femto" is a scientific prefix that is equivalent to one quadrillionth (1/1,000,000,000,000,000).

Beryllium-7 (Be-7)[4] is a naturally occurring "cosmogenic" radioactive element, which means it is continuously being produced by cosmic-ray interactions in the upper atmosphere. Be-7 is produced from the high-energy cosmic rays bombarding the oxygen, carbon and nitrogen molecules in the atmosphere.

Table 4 – HETL Air Filter Results*

	Quarterly Sampling Period			
Positive Results	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Gross Beta[5] (range)	(13.2 - 17.8)	(6.83 - 13.7)	(14.4 – 22.5)	(14.9 – 30.4)
Quarterly Composite (Be-7)	ND**	66.2	66.8	55.8

* Control located on roof of State's Health & Environmental Testing Laboratory
** ND = Not Detected

2.2.4.2 Radioactive Iodine-131 Sampling Results from the Fukushima Incident

The State's first quarter TLDs results were not available at report time. However, as mentioned in last month's report, the following information represents the State's fallout monitoring efforts from the Fukushima incident in Japan. Normally, the air filters are collected on a biweekly basis from the roof of the Health and Environmental Testing Laboratory (HETL) and first tested for gross beta[5]. At the end of each calendar quarter all the air filters are assembled as one sample, a composite, and are analyzed for gamma radiation. The gamma energy peaks on the graph are like fingerprints pointing to specific radioactive elements.

After being notified by the University of Maine in Orono and the Portsmouth Naval Shipyard in Kittery that they were picking up radioactive Iodine in their air filters, the State directed the HETL to pull the State's air filter on the top of its roof and analyze the specimen for radioactive elements. The sample confirmed the presence of radioactive Iodine-131 in minute concentrations. Table 5 below lists the State's findings as well as those from the University of Maine and the Portsmouth Naval Shipyard.

After the initial find on the air filters the State increased its sampling efforts to daily before slowly increasing the time period between the sampling runs back to its normal bi-weekly frequency on April 27th. The average daily radon background lung dose from outdoor air in the U.S. is about 2.7 mrem per day. The radiation dose consequence for the Iodine-131 from Fukushima was very minor. Based on the highest Fukushima value found in Maine air, 0.087 pCi/m^3, the calculated radiological lung dose for one day for an adult male weighing about 154 pounds would approximate 0.000006 mrem, or less than a second of exposure from the natural radon background. The thyroid dose for one day to

[4] Radioactive elements are usually represented by their chemical names and corresponding mass numbers, which represent the number of protons and neutrons in the nuclei of atoms.

[5] 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.

the same individual would amount to 0.0027 mrem. This is considerably less than the 100,000 to 200,000 mrem a person would receive from a thyroid uptake study using Iodine-131.

Table 5 - AIR

All units are in pCi per cubic meter (pCi/m^3)[6]

DATE	Orono	Augusta	Kittery
3/22/2011	0.01		0
3/23/2011			0.087
3/24/2011		0.015	0.027
3/25/2011			0.019
3/26/2011		0.032	
3/28/2011		0.041	0.028
3/29/2011	0.019	0.000	0.05
3/30/2011		0.040	0.045
3/31/2011		0.085	0.036
4/1/2011	0.014		0
4/4/2011		0.053	0.055
4/5/2011			0.025
4/6/2011		0.000	0
4/7/2011	0.030		0.03
4/8/2011		0.023	
4/11/2011	0.011	0.022	
4/13/2011		0	
4/15/2011		0	
4/20/2011		0	
4/27/2011		0	

The State's Iodine values were comparable to what New England and what other states have measured with the higher values being detected in the western states. The highest Iodine value of 2.42 pCi/m^3 in the nation was found in Dutch Harbor, Alaska. In all the states the predominant radioactive element from Fukushima was Iodine-131. However, in Nome, Alaska they also detected seven other radioactive elements in the air. They were Cesium-134, Cesium-136, Cesium-137, Iodine-132, Tellurium-129^m, Tellurium-129 and Tellurium-132. Some of the western states, like California, Washington and Idaho, also detected some of these elements.

Table 6 illustrates the types of precipitation that was sampled in Maine. The highest precipitation finding of 37.4 pCi/L was comparable to what the other New England states found. Their values ranged from 2.5 to 47 pCi/L, whereas the western states detected higher concentrations of Iodine-131 ranging up to 390 pCi/L.

The calculated thyroid dose for a day for ingesting the highest concentration of 37.4 would have been around 0.065 mrem for an adult drinking a little over one quart of rainwater.

[6] A pCi/m^3 is an acronym for a pico-curie per cubic meter, which is a concentration unit that defines how much radioactivity is present in a unit volume of air measured in meters. A pico is a scientific prefix for an exponential term that is equivalent to one trillionth (1/1,000,000,000,000).

Table 6 - PRECIPITATION

All units are in picocuries per liter (pCi/L)[7]

DATE	Orono	Augusta	Type
3/23/2011	0		Snow
3/23/2011	0		Snow
4/1/2011		9.34	Snow
4/5/2011		37.4	Rain
4/6/2011		12.2	Rain
4/11/2011		4.79	Rain
4/13/2011		0	Rain
4/20/2011		0	Rain

The drinking water was tested as part of the State's quarterly surveillance of the Portsmouth Naval Ship Yard and the nuclear power station in Seabrook, New Hampshire. No radioactive Iodine -131 was detected as indicated in Table 7.

Table 7 - DRINKING WATER

All units are in picocuries per liter (pCi/L)

DATE	Bangor	Kittery		
3/30/2011	0			pCi/l
3/31/2011		0	Maximum Concentration Level for Iodine-131 in Drinking Water	3

From March 25th through April 4th no radioactive Iodine was found in 70 drinking water samples taken in 38 states across the U.S. as part of the Environmental Protection Agency's radiological sampling network.

The seaweed near Fort McCleary was also tested as part of the State's quarterly surveillance of the Portsmouth Naval Shipyard and Seabrook. Since seaweed is an excellent bio-accumulator of most elements, as expected, the State identified Iodine-131 at a concentration of 59.2 pCi/kg[8]. However, finding radioactive Iodine-131 in seaweed is not unusual at Fort McCleary. In the past the State normally finds this radioactive element during the summer months during the tourist season. Some individuals have had recent thyroid scans or uptakes as part of medical procedures using radioactive Iodine to evaluate their thyroids. Their urine is usually processed at a municipal wastewater treatment system, which eventually discharges its treated water into the ocean. As previously mentioned, seaweed easily absorbs and incorporates the Iodine. What is unusual is that the Iodine-131 was detected early, before the tourist season, which implies that it was probably from the Fukushima incident.

[7] A pCi/L is an acronym for a pico-curie per liter, which is a concentration unit that defines how much radioactivity is present in a unit volume, such as a liter. A pico is a scientific prefix for an exponential term that is equivalent to one trillionth (1/1,000,000,000,000).
[8] A pCi/kg is an acronym for a pico-curie per kilogram, which is a concentration unit that defines how much radioactivity is present in a unit mass, such as a kilogram. A kilogram is equivalent to 2.2 pounds.

2.3 Maine Yankee Decommissioning

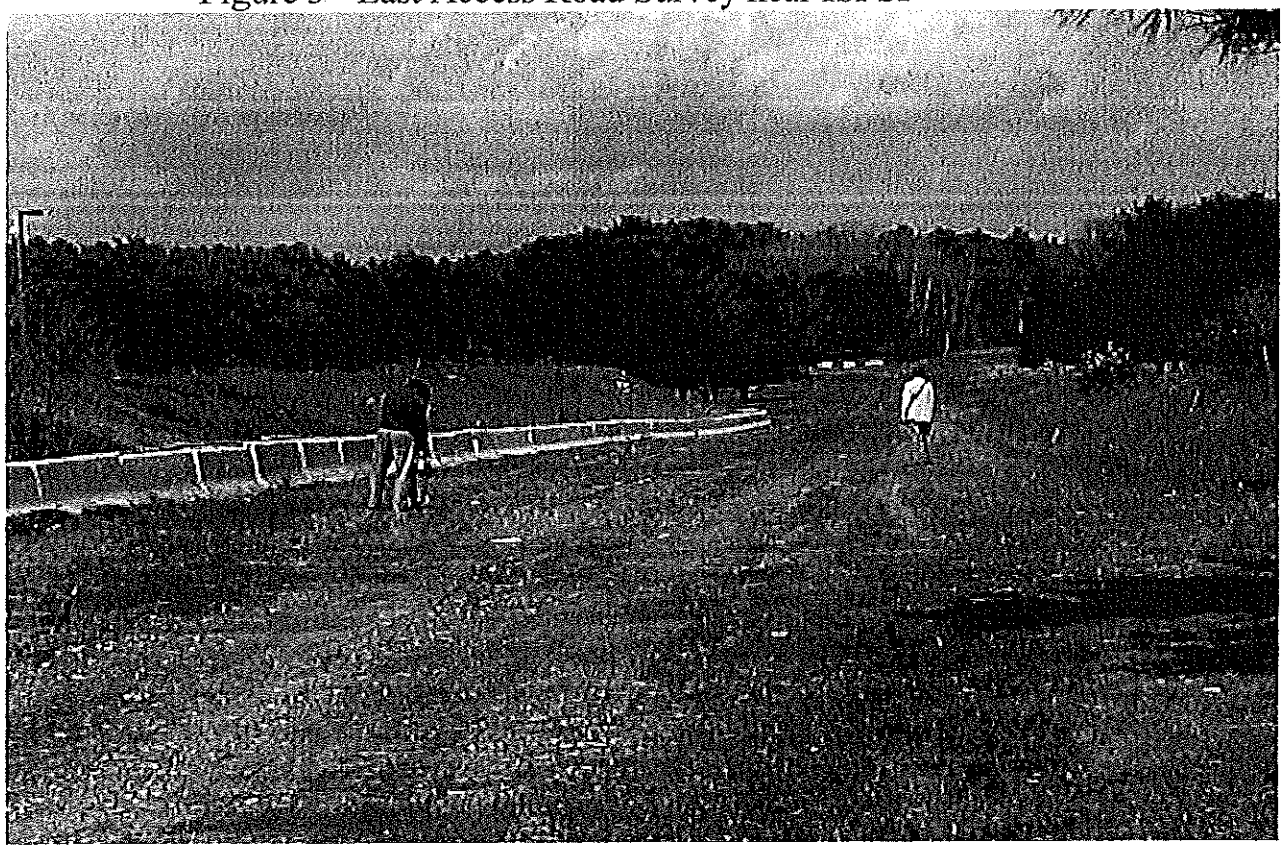
2.3.1 Background

Maine Yankee's decommissioning was completed in the fall of 2005. At that time the State Inspector also commenced his final walk down survey of the site with a special emphasis on the transportation routes exiting the plant site, such as both half-mile east and west access routes and the two thirds of a mile of the railroad track. In addition, nine specific areas, including the dirt road, were also examined as part of the final site walk down survey. With the discovery of three localized, elevated contaminated areas on the road, further work was performed to bound the contamination. No new contamination was found and the State closed the issue in October of 2008. Even though some residual radioactivity remains, due to the localized nature of the contaminant and the restricted security access to the site, the contamination found did not present a public health hazard.

2.3.2 East Access Road Survey

With the closure of the Dirt Road, the only remaining walk down survey left to be performed on-site was the portion of the East Access Road adjacent to the ISFSI bermed area as depicted in Figure 3.

Figure 3 - East Access Road Survey near ISFSI



A final survey of the road was taken in May. Even though the ambient radiation levels had decreased from the initial survey of greater than 30,000 counts per minute (cpm) in 2006 to 23, 000 cpm in 2011, the State Inspector issued a closure letter to Maine Yankee stating that a final survey of the East Access Road was unwarranted. The State provided the following six reasons for not pursuing a final survey of the road.

- The initial survey did not identify any contamination areas in excess of the ambient radiation levels.

- Based on the current levels it would take another two or more years for the levels to decrease below the 20,000 counts per minute established to minimize any potential masking due to elevated radiation background levels.
- The chances of detecting any contamination physically decreases with time as the radioactive elements decay away. Consequently, the potential radiological risk from contamination also decreases proportionately.
- The resources for performing the road survey are now much more limited than they were during the decommissioning. For example, there would be manpower constraints to perform the survey in a timely and efficient manner. In addition, the State's Health and Environmental Testing Laboratory's ability to process and analyze soil samples has also diminished, which would further delay a timely resolution.
- Ever since President Obama decided to forego the construction of a national nuclear repository for the geologic disposal of spent nuclear fuel at Yucca Mountain in Nevada, the likelihood that the Maine Yankee site will be released to the public within the next decade is virtually nonexistent.
- The area is maintained under constant security surveillance and will be for decades to come until either a consolidated interim storage facility or a repository is approved and constructed. Even then it will take time for all the used nuclear fuel to be removed from the Wiscasset storage facility.

With the closure of the East Access Road survey the State had officially ceased all its decommissioning survey activities pertaining to the Maine Yankee nuclear power plant site.

2.3.3 Confirmatory Report

There were extensive delays due to on-going commitments and emerging issues that prevented the initial drafting of the Confirmatory Summary Report of the State's four year effort to verify the residual radioactivity levels remaining after the decommissioning of Maine Yankee. As part of his on-going commitments, the State Inspector also conducts mammography inspections on about half the mammography facilities in Maine. This was necessary to minimize the workload on the State's only X-Ray Inspector whose responsibility included oversight of 1193 facilities with nearly 3400 X-Ray units at hospital facilities, dental establishments, veterinarians, and industrial applications. All this resulted in the report being postponed and essentially drove its writing to an 'as time permits basis'. However, in mid-October of 2010 a concerted effort was made to draft a preliminary report. By early March of 2011 a preliminary draft was submitted and has been under management review.

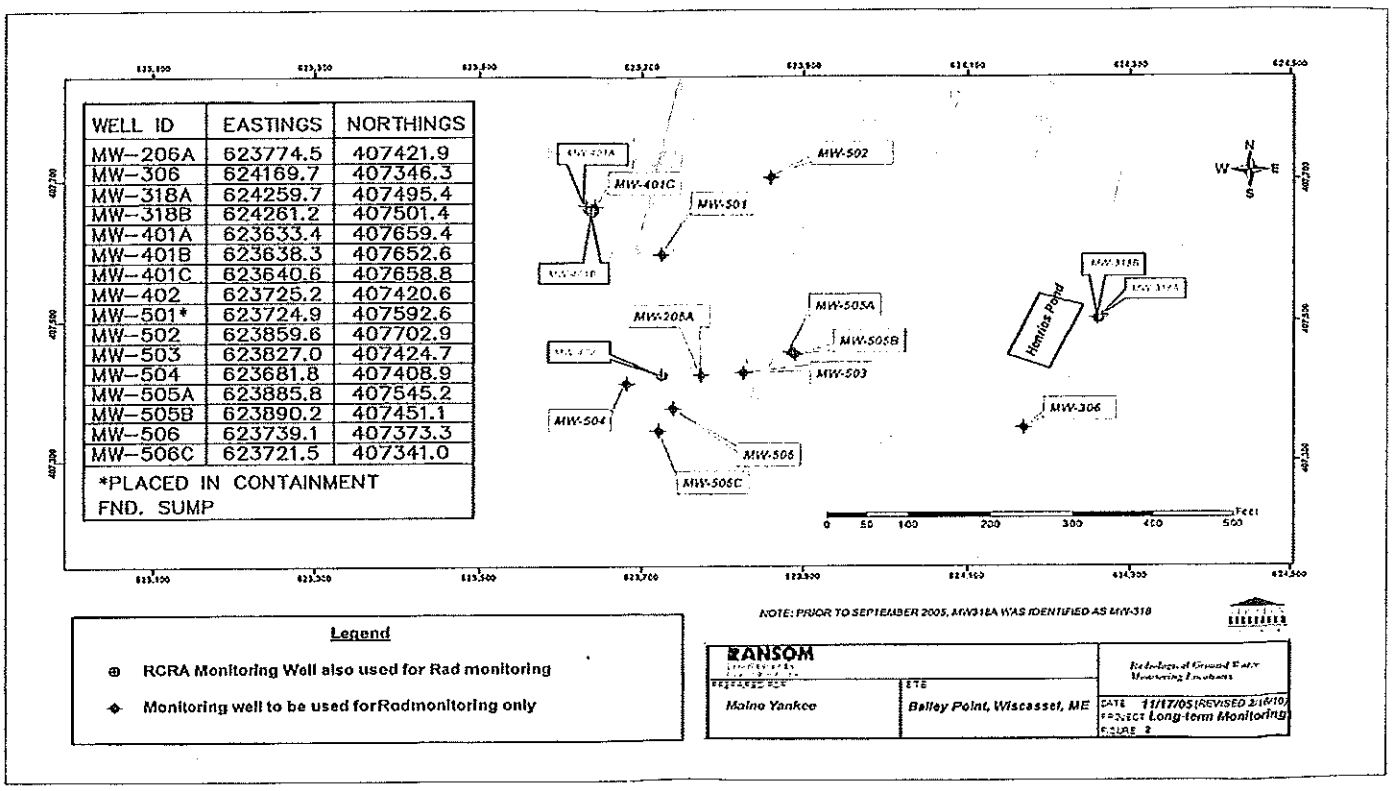
2.4 Groundwater Monitoring Program

2.4.1 Background

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. 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. It should also be noted that Maine Yankee, as part of its hazardous materials closure of the site for DEP, is conducting a concurrent 30-year chemical monitoring program to perform sampling of 23 wells from selected past industrialized activities on the Bailey Point Peninsula. About twenty-three years remain before the chemical monitoring is terminated.

The normal sampling regimen for the groundwater monitoring program was three times a year. However, since the first sampling took place in September of 2005, the annual sampling constituted the September sampling of the current calendar year and finished with the June sampling of the following year. According to Maine Yankee's Rad Work Plan Rev 3, their environmental consultant, Ransom Environmental from Portland, normally sampled 16 individual wells on a tri-annual basis and shipped the well water samples to the AREVA environmental laboratory in Westborough, Massachusetts for analysis. Figure 3 below, courtesy of Maine Yankee, illustrates the locations of the 16 sampling wells including the two that were not sampled in June of 2010. Some wells also double as chemical sampling wells. The letter 'A' signified that it is a bedrock well, whereas the 'B' denoted a surficial or surface well.

Figure 4 - Monitoring Well Locations



WELL ID	EASTINGS	NORTHINGS
MW-206A	623774.5	407421.9
MW-306	624169.7	407346.3
MW-318A	624259.7	407495.4
MW-318B	624261.2	407501.4
MW-401A	623633.4	407659.4
MW-401B	623638.3	407652.6
MW-401C	623640.6	407658.8
MW-402	623725.2	407420.6
MW-501*	623724.9	407592.6
MW-502	623859.6	407702.9
MW-503	623827.0	407424.7
MW-504	623681.8	407408.9
MW-505A	623885.8	407545.2
MW-505B	623890.2	407451.1
MW-506	623739.1	407373.3
MW-506C	623721.5	407341.0

*PLACED IN CONTAINMENT FND. SUMP

Most radioactive species emit gamma radiation and are therefore more readily detected and identified by their gamma energy peaks, or fingerprints. The well water was analyzed for man-made radioactive elements that emit gamma ray radiation, such as Cesium-137 and Cobalt-60, and for tritium, a form of heavy hydrogen that is naturally radioactive, and a beta particle emitter. Some radioactive elements, however, are either pure alpha or beta emitters and require special instrumentation and analytical methods to chemically separate and analyze them. The more commonly known ones are Strontium-90, which is a pure beta particle emitter, and Plutonium-239, which is an alpha particle emitter. These pure beta or alpha emitters are generally labeled as Hard-To-Detect/Transuranic[9] (HTD/TRU).

[9] Transuranic is an acronym to define any element that is heavier than Uranium.

2.4.2 Sampling Reports and Annual Report

After each sampling event Maine Yankee would submit to the State Inspector a summary report of their findings. The State Inspector reviewed the report, commented on the findings and forwarded his comments to Maine Yankee for their response. The State Inspector also forwarded his comments to the Department of Environmental Protection (DEP) to apprise them of the radiological findings. At the end of the three sampling events an annual report would be generated that covered the sampling year's findings with an independent third party validation of the data from an outside vendor. All the raw data was submitted to the DEP and the State Inspector for review. The annual report was reviewed by some staff persons at DEP, whose primary focus was on the chemical sampling program and deferred to the State's Radiation Program, or the State Inspector in this case, for their expertise in radiological matters.

The State Inspector provided his comments on the fifth annual groundwater report to the DEP in May, which were later forwarded to Maine Yankee for their response. The fifth and final report was initially delayed due to problems that surfaced with the hasty dismantling of the AREVA Laboratory and the subsequent re-sampling and re-analysis of the wells.

2.4.3 State Quality Assurance Oversight

In addition to Maine Yankee's vendor laboratory, AREVA, the State Inspector also collected annually from Maine Yankee's consultant, Ransom Environmental, groundwater samples from seven wells to conduct independent quality assurance checks on Maine Yankee's AREVA laboratory by having the State's Health and Environmental Testing Laboratory (HETL) perform the same types of analyses on gamma emitting radioactive elements and the beta emitter tritium. Over the five year program the comparisons between Maine Yankee's contracted laboratory results and the State's Laboratory were comparable, except for those at the lower limits of detection. At those low levels the State consistently identified more positive indications of tritium than the vendor laboratory.

When it came to HTD/TRUs, the State Laboratory did not have the capability to analyze for these exotic elements. Although the Agreement with Maine Yankee did allow for the State to collect and have the HTD/TRUs samples analyzed as part of its quality assurance role, the State never exercised its option. The $500,000 ceiling imposed by the Agreement became a constraint at the end of the monitoring program. As part of the cost cutting savings to stay below the $500,000 ceiling, the State advocated to forego its QA version of the HTD/TRUs when it became evident that the State would have used the same vendor laboratory that Maine Yankee employed after the dismantling of the AREVA Laboratory in the summer of 2010, General Engineering Laboratories from Charleston, South Carolina to analyze essentially the same samples.

2.4.4 Findings, Radiological Impact and Tritium

Over the course of the five-year sampling program numerous radioactive species were reported as identified in the groundwater. The man-made radioactive elements detected are arranged according to their mass numbers and included Hydrogen-3, Cobalt-57, Cobalt-60, Iron-59, Nickel-63, Zinc-65, Strontium-90, Niobium-94, Zirconium-95, Technetium-99, Silver-110m, Antimony-125, Cesium-134, Cesium-137, Cerium-141, Cerium-144, Europium-152, Europium-154, Plutonium-238, and Plutonium-239. Since the State had established a very low threshold for positive indications[10], some of these radioactive elements may not truly exist as their identifications could very well be part of the statistical fluctuations encountered as part of the

[10] A positive indication is one where the result is greater than its statistical radiological counting uncertainty at the 95% confidence level.

analyses and potentially false positives. Maine Yankee did expend some considerable effort to have some samples re-analyzed to ensure that the findings were real. Conservatively though, all the elements identified were included in the calculations of the radiation dose to a potential resident farmer. Other radioactive species were also identified. They were the natural radioactive elements of Beryllium-7, Potassium-40, Thallium-208, Lead-214, Bismuth-214 and Actinium-228. Their radiological impact was not included in the radiation dose assessment.

The Agreement between the State and Maine Yankee set an administrative limit of 2 mrem per year per well as a demonstration that it had met the State's groundwater decommissioning standards of a 4 mrem dose per year above background values. If a well exceeded the 2 mrem value after the five year monitoring program ended, Maine Yankee would allow the State to continue monitoring that well. Fifteen of the sixteen wells sampled never exceeded one tenth of the limit, or 0.2 mrem per year. Only well number MW-502 had come close to exceeding the 2 mrem administrative limit and that was back in March of 2006 when the dose was 1.96 mrem.

Although Tritium is a by-product of fission and neutron activation in an operating nuclear plant, it is also a naturally occurring radioactive element that is produced from cosmic interactions in the earth's atmosphere. Therefore, the State set the natural background limit of Tritium in a well sample to 600 pCi/L. Hence, as per the Agreement, only a well with a Tritium concentration in excess of 600 pCi/L would be included in the radiological dose assessment. The elevated Tritium in well MW-502 has been steadily decreasing since its peak value of 59,570 pCi/L in March of 2006 as shown by the illustration in Figure 5 on page 23. From the graph in Figure 5 it appears that the physical decay of the tritium along with the very low water infiltration yields a combined effect that results in the tritium losing one half of its radioactive concentration about every six years. At that rate it is expected that this well will remain elevated for quite some time. Consequently, the decrease will be slow and steady. At the last sampling in June 2010 the groundwater dose from well MW-502 had decreased to 1.2 mrem above naturally occurring concentrations. In comparison the average natural background radiation dose equivalent to the United States population is estimated to be 292 millirems per year, or 0.8 millirem per day, with 68 % of that dose coming from Radon and its subsequent decay products.

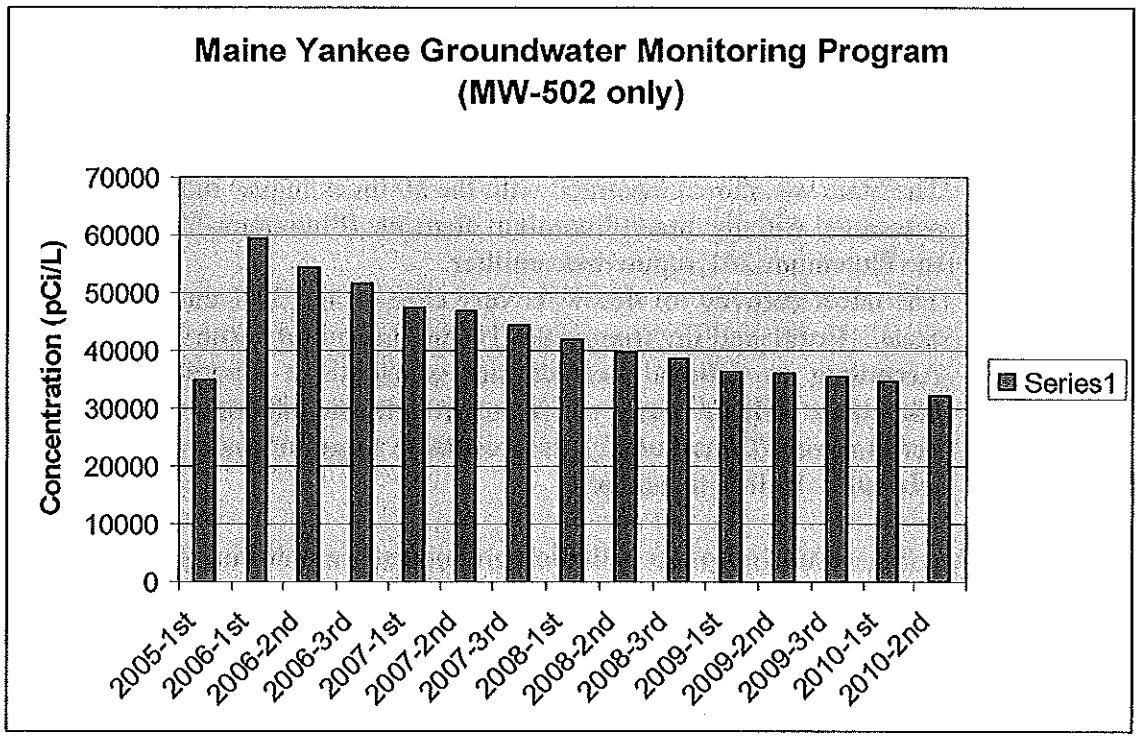
The findings demonstrated that Maine Yankee complied with the State's decommissioning standard of a 4 mrem limit on a groundwater pathway dose to the public.

2.4.5 Resolution of Outstanding Issues and Final Disposition

There were two major issues that were carried over into 2011 from previous years that had to be resolved. The first issue revolved around the hasty dismantling of Maine Yankee's contracted laboratory, the AREVA Laboratory in Westborough, Massachusetts, which forced a re-sampling and re-analysis of the HTD/TRU elements and ultimately delayed the transmittal of the fifth and final groundwater report. The second involved whether there would be adequate funding for the close out of the groundwater monitoring program.

The second contracted laboratory performed a second set of analyses on the HTD/TRUs elements since the first batch of results that was performed by the previous laboratory contractor, AREVA, was rejected by all parties, Maine Yankee, the independent third party evaluator, and the State. The second set of results was incorporated into the fifth and final report for the groundwater monitoring program with the initial set of results that were not affected by the dismantling, namely the gamma analyses and the tritium results, and submitted by Maine Yankee in March.

Figure 5 – Monitoring Well MW-502 with Elevated Tritium



The State Inspector reviewed the 3965 page report which extensively included the laboratory's calibrations and quality assurance checks. The final report indicated that several radioactive elements were sporadically detected over the year in some of the wells. The man-made radioactive elements identified included tritium (Hydrogen-3), Iron-55, Cobalt-57, Cobalt-60, Nickel-63, Zinc-65, Strontium-90, Zirconium-95, Cerium-141, Cesium-137 and Plutonium-238. Nine of the fourteen wells tested had Strontium-90 in minute concentrations. The results ranged from 2.71 to 8.35 pCi/L. None of the wells exceeded the administrative limit of 2 mrem that was established under the Radiological Groundwater Monitoring Agreement between the State and Maine Yankee.

With the submittal Maine Yankee anticipated closing the wells in early June. However, that action was delayed when the State Inspector noted in his May review and comments that there were two questionable results for one well, MW-502, that did not meet the agreed upon quality assurance criteria range for tracer recoveries for four radioactive Plutonium elements. Apparently, the tracer recoveries for two radiological tests were below the acceptable range of 50% as denoted by an independent third party evaluation. In June, after consultation with HETL, the State Inspector provided a list of technical questions for Maine Yankee's contracted laboratory, General Engineering Laboratories (GEL), to respond. GEL's response clarified most of the issues. The prompting also helped GEL to locate and retrieve a spare sample it had stored from the original sample taken last fall and re-analyzed the sample. The laboratory report indicated that the tracer recoveries reanalyzed it for three of the four tracer deficiencies. The reanalysis demonstrated that three of the Plutonium elements were within specifications and their results were accepted. However, this left one radioactive Plutonium element still outside the acceptable range at a 48.6% recovery. Upon further review, the State decided to waive the minimum 50% tracer recovery criteria for this one result and accepted the 48.6% tracer recovery on the Plutonium-241 analysis. The decision was predicated on the following:

1. The highest minimum detectable concentration for the Plutonium-241 was 5.6 pCi/L.
2. Neither the sample nor its duplicate had any positive findings for Plutonium-241.

3. According to the Agreement between Maine Yankee and the State, at least a ten-fold increase in the concentration to 60 pCi/L would be necessary to force an investigation of the well.
4. Since the inception of the five year post decommissioning groundwater agreement, there has never been a positive finding of Plutonium-241 in any well above the instruments's lower level of detection.
5. The State was more concerned with the 50 times higher radiological health consequences associated with the three Plutonium elements (Plutonium-238, -239 and -240) than that of the Plutonium-241, a pure beta emitter.
6. The tracer recovery of 48.6% is very close to the 50% cut-off, which was based on the State's Health and Environmental Testing Laboratory criteria.
7. According to national accreditation standards a laboratory must establish its own acceptance criteria based on its own intrinsic laboratory equipment, processes, and performance. Consequently, an acceptable range for tracer recoveries may vary from one laboratory facility to another.

With the final results in for the radiation groundwater monitoring program Maine Yankee closed the radiation monitoring wells at the site on July 19th. They did, however, agreed to leave two of the radiation monitoring wells open as part of its chemical sampling program commitment. The two wells will only be used for water level measurements going forward.

In the fall Maine Yankee responded to the State Inspector's earlier comments on the fifth and final report and reissued a revised, final groundwater report incorporating most of the changes highlighted in the State's comments. After reviewing Maine Yankee's comments the State Inspector recommended to the DEP closure for all the radiation tasks associated with the post decommissioning groundwater radiation monitoring agreement between Maine Yankee and the DEP. In December DEP issued a letter to Maine Yankee officially informing them of the closure to the radiological groundwater monitoring program.

According to Maine Yankee the final tally of expenditures for the post decommissioning groundwater monitoring program amounted to $528,268, slightly in excess of the initial agreed upon limit of $500,000.

In the end the State concluded that Maine Yankee met the State's decommissioning standards of no more than 4 mrem from groundwater sources.

Since the radiological groundwater monitoring program was completed, this topic will no longer be covered in future reports.

2.5 Other Noteworthy Activities

2.5.1 Reports to the Legislature

2.5.1.1 Monthly

As mandated by legislation passed in the spring of 2008, the State Inspector is required to submit monthly reports to the Legislature on his oversight activities of Maine Yankee's Independent Spent Fuel storage Installation (ISFSI) located in Wiscasset. Since the law went into effect on June 29, 2008, the State Inspector has been providing monthly reports to a distribution that includes the President of the Senate, the Speaker of the House, the U.S. Nuclear Regulatory Commission (NRC) at NRC Headquarters in Rockville, Maryland and NRC's Region I in King of Prussia, Pennsylvania, Maine Yankee, the

Governor's Office, the Department of Health and Human Services, the Department of Environmental Protection, the Public Advocate and the State Police's Special Services Unit. The topics covered in the monthly reports are highlighted in sections 2.1.7, 2.2, 2.3, 2.4 and 2.6 of this report.

As noted in section 2.3.3 a major effort was expended in writing a report of the State's observations and findings that covered four years of the radiological portion of the Maine Yankee decommissioning. The drawback was that the State Inspector was five months behind on his monthly reports to the Legislature. With the Fukushima reactor accidents in early March there was a renewed public interest in radiation issues, particularly Maine Yankee's used nuclear fuel storage facility in Wiscasset and the State Inspector's reports to the Legislature. The urgency to get the monthly reports to the Legislature out was paramount and over a two month period the State Inspector issued seven monthly reports covering a period from October of 2010 through April of 2011. With the issuance of the April report the monthly reports to the Legislature were back on schedule. Nevertheless, there was some slippage later in the fall. The September through November monthly reports were submitted but were under management review by the end of the year.

2.5.1.2 Annual

Under 22 MRSA §668, as enacted under Public Law, Chapter 539 the State Inspector prepares an annual accounting report of all the funds received into and all disbursements out of the Interim Spent Fuel Storage Facility Oversight Fund. The report is due the first Monday of February. In addition, the State Inspector must annually report his activities to the Department of Health and Human Services Manager of the Radiation Control Program for inclusion in the Manager's Annual Report of Oversight Activities and Funding to the Legislature. In addition to the above annual reports the Inspector also prepares an annual report by July first of every year to the Legislature of his oversight activities. This 2011 report fulfills that obligation. Moreover, it should be noted that the 2010 annual report was under management review.

2.5.2 Northeast High Level Radioactive Waste Transportation Task Force (NEHLRWTTF)

As the State's representative the State Inspector has participated in periodic conference calls on the status of Yucca Mountain and transportation issues that could impact Maine.

The Department of Energy's (DOE) annual National Transportation Stakeholders Forum (NTSF) was held in Denver. The NTSF is the mechanism through which DOE communicates at a national level with states and tribes about the Department's shipments of radioactive waste and materials. The DOE Forum highlighted all the various agencies within DOE that were tasked with transportation issues, communication issues with stakeholders and other federal partners, enhancements to the DOE transportation emergency preparedness program, rail inspections, security enhancements for shipments, and lessons learned. In addition, the Forum allowed the four regional state transportation groups to meet and discuss their respective regional issues. The State Inspector did not attend the conference due to the mandate for the monthly reports to the Legislature.

In October the Northeast Task Force co-hosted with the Blue Ribbon Commission on America's Nuclear Future (BRC) the second public meeting seeking public and stakeholder input to the BRC's July draft report on its recommendations to managing the back end of the nuclear fuel cycle. The meeting focused on four regional topics, such as the dilemma of consolidated versus on-site storage, consent-based siting process, transportation planning, and mixing of federal and commercial nuclear waste streams. Break-out sessions were also formed to discuss and expand

on key elements from the topics covered. In addition, Maine Yankee's Vice President and members of Maine Yankee's Community Advisory Panel also testified at the Boston Meeting. Both testimonies welcomed the Commission's recommendation for consolidated interim storage with priority removal of the stranded spent nuclear fuel at decommissioned reactor sites.

The following day the Northeast Task Force held its second regional meeting focusing primarily on the previous day's BRC discussions and presentations. In addition, several presentations were made to the Northeast Task Force. They covered such areas as the Department of Energy's (DOE) National Nuclear Safety Administration foreign spent nuclear fuel acceptance program, updates of the DOE's Waste Isolation Pilot Plant transportation program and Brookhaven National Laboratory's decommissioning and transportation activities, the Nuclear Regulatory Commission's spent nuclear fuel management and transportation package performance update, with additional updates on the Decommissioning Plant Coalition, federal lawsuits, and Maine Yankee's ISFSI. A representative from Carlsbad, New Mexico made a presentation highlighting his local community's interest in hosting a consolidated interim storage facility including the potential siting of a geologic disposal facility in the salt formations near Carlsbad. The Task Force charged its membership to submit comments so that a set of unified comments from the region would be submitted to the BRC on their draft report.

The State Inspector provided some preliminary comments to the Northeast Task Force. In addition, he spearheaded an internal effort for the Governor to add his support to the BRC's recommendations on consolidated interim storage with stranded spent fuel being first in line for movement of the used nuclear fuel. The effort was successful in that it led to the Governor, the Commissioner of Health and Human Services, and the Director of the Maine Center for Disease Control and Prevention individually weighing on recommendations to the BRC.

The Task Force is an affiliate of the Eastern Regional Conference of the Council of State Governments. The purpose of the Task Force is to not only develop the safest and most efficient transportation route to ship spent nuclear fuel from the Northeast, but also to provide the States with direct involvement in formulating and establishing national policy in the design of the national transportation system and development of any proposed geologic repository. The Northeast Task Force is comprised of representatives from the six New England states, New York, Pennsylvania, New Jersey, Maryland and Delaware.

2.5.3 Yankee Federal Energy Regulatory Commission (FERC) Rate Case Settlement

The State participated in the quarterly conference call briefings relevant to Yankee Rowe, Connecticut Yankee and Maine Yankee. The briefings provide updates to both state and private officials affected by the FERC settlements over the Department of Energy's (DOE) breach of contract to take possession of the spent fuel at Maine Yankee as mandated by the Nuclear Waste Policy Act of 1982, as amended. In September 2006 Maine Yankee won a $75.8 million judgment for monetary damages through 2002 in its lawsuit with the DOE in the U.S. Court of Federal Claims.

The ruling was appealed by the Justice Department and in August 2008 the U.S. Court of Appeals for the Federal Circuit upheld the Court of Federal Claims ruling that the three parties were due damages and remanded the case back to the Court of Federal Claims for a reassessment of the compensation package based upon a court approved fuel pick up rate. The recent ruling raised the damages initially awarded to Maine Yankee by $5.9 million to $81.7 million for the period January 31, 1998 through 2002. As expected the Department of Justice (DOJ) appealed the ruling. In September 2010 the U.S. Court of Federal Claims again awarded Maine Yankee

$81.7 million, Connecticut Yankee $39.7 million and Yankee Rowe $21.2 million. The DOJ again appealed the remanded decision and employed further delaying tactics by filing more extensions. However, the Court set a date for final oral arguments in November. A decision is expected in the spring of 2012.

In December 2007 the three Yankee companies filed a second round of damage claims that are specific to each company. The Court of Federal Claims set a trial date in October to hear oral arguments. Maine Yankee is pursuing recovery of spent fuel management costs for the period January 2003 to December 2007. The litigations are expected to continue until the used nuclear fuel is finally removed from their respective sites.

Besides the lawsuits, updates are also provided of other organizational activities, both on the regional and national levels, on spent fuel issues, whether they be the Yucca Mountain repository or focusing attention on local or centralized storage. These organizations include the Administration, the Department of Energy, the Blue Ribbon Commission on America's Nuclear Future, the Nuclear Regulatory Commission, Congress, the National Conference of State Legislatures, the Nuclear Waste Strategy Coalition, the Decommissioning Plant Coalition, the National Association of Regulatory Utility Regulators, the Council of State Governments, the New England Governor's Conference, the New England Council, the Coalition of Northeastern Governors, and the New England Conference of Public Utility Commissioners.

2.5.4 Nuclear Waste Strategy Coalition (NWSC)

The State is a member of the NWSC and participated in bi-weekly status briefings of the NWSC. The briefings provided updates on such national activities as congressional efforts related to the geologic repository at Yucca Mountain in Nevada, including such federal agencies as the Department of Energy and the Nuclear Regulatory Commission, litigations pending in the U.S. Court of Appeals, and the Blue Ribbon Commission's public meetings and reports.

The NWSC is an ad hoc organization representing the collective interests of state utility regulators, state attorneys general, consumer advocates, electric utilities and associate members on nuclear waste policy matters. NWSC's primary focus is to protect ratepayer payments into the Nuclear Waste Fund and to support the removal and ultimate disposal of spent nuclear fuel and high-level radioactive waste currently stranded at some 125 commercial, defense, research, and decommissioned sites in 39 states.

Section 2.6 Some Newsworthy Items

On June 3, 2008, as mandated by the federal Nuclear Waste Policy Act, as amended, the Department of Energy (DOE) submitted its license application for the construction of a high-level waste repository at Yucca Mountain in Nevada. On September 8, 2008, the Nuclear Regulatory Commission (NRC) accepted DOE's license application for technical review.

The Obama Administration's position was to discontinue disposal activities at Yucca Mountain. Subsequently, in March 2010, without any technical or safety merits, the DOE submitted a motion to the Nuclear Regulatory Commission's Atomic Safety and Licensing Board to withdraw its license application to construct a geological repository at Yucca Mountain to dispose of the nation's spent nuclear fuel and high level waste. The NRC Chairman added fuel to the fire when he directed the NRC staff to terminate all activities associated with the Yucca Mountain license proceedings. This generated a lot of controversy, anguish and activity on multiple fronts with 2010 witnessing nearly a fourfold

increase over previous years. In 2011 the activity levels did not abate either as both sides dug their heels deeper. It became apparent that the Courts would have to weigh in and decide on the merits of lawsuits brought against the federal government.

The following provides a timeline of the major highlights that transpired in 2011 that produced an overabundance of activity on several fronts.

- January 10th the U.S. Court of Appeals for the District of Columbia Circuit set March 22nd as the date to hear oral arguments on the Yucca Mountain Project.
- January 21st the DOE filed with the NRC's Atomic Safety and Licensing Board (ASLB) its motion to renew the temporary suspension of the Yucca Mountain license proceedings.
- February 10th the Chair and Vice-Chair of the House of Representatives Committee on Science, Space and Technology, the Chair of the Subcommittee on Investigations and Oversight and the Chair of the Subcommittee on Energy and Environment sent a letter to the Chairman of the NRC, Dr. Jaczko, requesting in a spirit of openness the un-redacted version of the NRC's Volume III of the Safety Evaluation Report on Yucca Mountain.
- February 14th the states of New York, Connecticut and Vermont filed a lawsuit with the U.S. Court of Appeals for the District of Columbia against the Nuclear Regulatory Commission's temporary storage rule for spent nuclear fuel up to 120 years and waste confidence rule that were issued on December 23, 2010.
- February 16th the National Association of Regulatory Utility Commissioners issued a resolution calling for the federal government to honor its obligations under the Nuclear Waste Policy Act (NWPA) and that storage of spent nuclear fuel at reactor sites up to 120 years is inconsistent with the NWPA.
- February 17th the Natural Resources Defense Council filed with the U.S. Court of Appeals for the District of Columbia a lawsuit against the NRC challenging the NRC's Waste Confidence and Temporary Storage Rules.
- February 18th the Blue Ridge Environmental Defense League, Riverkeeper, Inc. and the Southern Alliance for Clean Energy filed a joint lawsuit against the NRC and the United States of America on the NRC's Waste Confidence Ruling.
- February 25th the NRC's ASLB issued an Order denying the DOE's motion to renew the temporary suspension of the Yucca Mountain license proceedings.
- March 4th the DOE filed with the NRC a motion to renew a temporary suspension of the Yucca Mountain license proceedings due to the Board's February 25th denial of the DOE's initial motion.
- March 7th the National Association of Regulatory Utility Commissioners filed with the U.S. Court of Appeals for the District of Columbia Circuit requesting relief from the imposition of a Nuclear Waste Fund fee for a non-existent disposal program.
- March 8th the Nuclear Energy Institute (NEI) and sixteen of its member utilities across the country filed suit in the U.S. Court of Appeals for the District of Columbia Circuit requesting the Court to direct the Department of Energy to suspend its collection of the one-tenth of a cent per kilowatt-hour surcharge on electric bills.
- March 8th the NEI filed with the U.S. Court of Appeals for the DC Circuit a motion to leave and intervene in support of the federal government against the states of Connecticut, New York and Vermont lawsuit over the NRC's Waste Confidence Decision Update and Temporary Storage Rule.
- In March the Blue Ribbon Commission (BRC) on America's Nuclear Future issued its first document, entitled "What We've Heard". The report is a staff summary of the seven major themes that resonated in testimony and comments received.

- March 22nd the U.S. Court of Appeals for the District of Columbia Circuit heard oral arguments on the DOE's plan to withdraw its license application before the NRC.
- April 5th Nye County, Nevada sent a letter to DOE's Dr. Peter Lyons taking exception to his comment to the House Appropriations' Subcommittee on Energy and Water Development that Yucca Mountain did not have local support. The letter alluded to several other Nevada counties supporting the Yucca Mountain Project and including past resolutions, even the original 1975 resolution urging the federal government "to choose the Nevada Test Site for the storage and processing of nuclear material".
- April 11th the NRC's ASLB issued an Order to the parties involved in the Yucca Mountain license proceedings to preserve all their documents in "PDF" format and submit them electronically to the NRC's Office of the Secretary.
- April 21st the NRC staff filed a motion with the NRC's ASLB to stay the Board's April 11th Order.
- May 9th the Chairs of the House Committee on Energy and Commerce and Subcommittee on Environment and Economy sent a letter to NRC Chairman Jaczko requesting his immediate assistance with the Committee's investigation of the DOE's license application before the NRC.
- May 31st the BRC's Subcommittee on Transportation and Storage issued its draft report to the full Commission on its findings and seven recommendations.
- June 1st the House Appropriations Committee released its FY 2012 Energy and Water Appropriations Bill providing $35 million to support Yucca Mountain activities, $10 million of which is for the NRC to continue their review of the license application.
- June 1st the BRC Disposal Subcommittee issued its draft report to the full Commission listing seven recommendations for the ultimate disposal of the nation's civilian and defense-related used nuclear fuel. .
- June 6th the NRC's Inspector General released his findings on the seven month investigation of Chairman's Jaczko's unilateral decision and actions to terminate the Commission's Yucca Mountain license proceedings, including how he withheld information from and misled the other Commissioners on his intent to shutter the Yucca Mountain license proceedings and stop the Staff from issuing Volume III of the Safety Evaluation Report on Yucca Mountain.
- June 8th the House Committee on Science, Space, and Technology released its report detailing the suppression of science behind the Yucca Mountain decision.
- June 20th NRC staff testimonies before the House Committee on Energy and Commerce illustrated to what extent senior management bowed under pressure from the NRC Chairman's directives to shut down the NRC's review of the Yucca Mountain license application.
- On June 24th the House Committee on Energy and Commerce's Subcommittee on Environment and the Economy held a hearing on the NRC scuttling of the Yucca Mountain license proceedings. The NRC technical experts openly criticized the NRC Chairman and senior staff members for suppressing information to stop the scientific review of the Nevada waste disposal site.
- June 30th Senator Lisa Murkowski of Alaska introduced legislation to provide for the safe and secure safe storage of the nation's used nuclear fuel stockpile by creating two federal interim storage repositories to centralize spent nuclear fuel and providing financial incentives for state and local governments
- July 1st the Washington, D.C. Circuit Court of Appeals dismissed the lawsuit that argued the Obama Administration acted illegally in shutting down the Yucca Mountain Project. The Court ruled that the lawsuit was premature until the NRC makes a final decision.
- July 8th the House Committee on Energy and Commerce sent a letter to the NRC Chairman expressing their concern over the Chairman's and other NRC staff's involvement "in the

alteration of the original language in the professional staff's draft of the Technical Evaluation Report" to replace Volume III of the Safety Evaluation Report.

- July 14th the House Appropriations Committee approved an amendment to increase the FY 2012 funding from $10 Million to $20 million for the NRC to complete its review of the Yucca Mountain license application.
- July 15th the House passed a $30.6 billion energy bill that has a provision blocking the Administration from closing the Yucca Mountain Project in Nevada.
- July 21st the NRC issued a news release indicating that they had published the first of three technical evaluation reports on the agency's Yucca Mountain license application review.
- July 26th the NRC's Licensing Support Network (LSN) Administrator notified the NRC's ASLB that the LSN will cease operations by August 5th.
- July 29th Aiken County, South Carolina, the Tri-City business leaders from Hanford, Washington, the states of South Carolina and Washington, the National Association of Regulatory Utility Commissioners, and Nye County, Nevada filed a petition for writ of mandamus with the U.S. Court of Appeals for the District of Columbia Circuit against the NRC and its Chairman requesting the Court to compel the NRC to issue a final merits-based decision approving or disapproving the DOE's application for a repository construction authorization at Yucca Mountain in Nevada.
- July 29th the National Association of Regulatory Utility Commissioners joined the States of Washington and South Carolina and local governments from Nevada in filing a lawsuit against the NRC for withholding a decision on Yucca Mountain.
- July 29th the BRC submitted its draft report to the Secretary of Energy on its findings and conclusions by presenting an initial set of seven recommendations for public review and input.
- In August Nye County in Nevada, the host county for the Yucca Mountain Project, joined the States of Washington and South Carolina, Aiken County in South Carolina, and three business leaders from the Tri-City area near the Hanford site in Washington in a lawsuit to prevent the dismantling of the Yucca Mountain nuclear repository.
- August 8th the NRC's LSN Administrator notified the NRC's ASLB that the LSN website operated by the ASLB for the Yucca Mountain license application would cease immediately.
- September 1st the NRC released the second Yucca Mountain Technical Evaluation Report on repository safety before permanent closure.
- September 9th the NRC issued a "Memorandum and Order" stating that the Commission was deadlocked on a decision of whether to uphold or overturn the NRC's ASLB decision to deny the DOE's motion to withdraw its Yucca Mountain license application. The Commission directed the staff and the ASLB to close all activities and license proceedings on Yucca Mountain by the end of the current fiscal year, September 30, 2011.
- September 13th the BRC held its first regional meeting to receive input from stakeholders on its July 29th draft report on how the nation should manage its used nuclear fuel stockpile.
- September 13th the NRC issued its third and final Technical Evaluation Report on the DOE's Yucca Mountain License Application.
- September 15th the Sustainable Fuel Cycle Task Force issued a letter to the U.S. Senate noting that "26 Organizations Call for the Resumption of the Yucca Mountain Review". The host county and five other counties in Nevada bordering the Yucca Mountain Project were signatories to the letter.
- September 28th the NRC held its first of three public meetings to inform stakeholders of its extended storage and waste confidence activities for spent nuclear fuel storage up to 120 years.
- September 30th the NRC's ASLB issued an Order suspending its Yucca Mountain license proceedings due to uncertain funding.

- October 4th the NRC held its second public meeting to inform and seek stakeholder input on the NRC's spent nuclear fuel activities over their Waste Confidence Rule for long-term on-site storage up to 120 years, extended on-site storage up to 300 years, and transportation of the used nuclear fuel.
- October 12th the BRC held its second public meeting in Boston to receive feedback from stakeholders on managing the back-end of the nuclear fuel cycle.
- October 13th four Nuclear Regulatory Commissioners sent two letters, one to the Chief of Staff at the White house and the other to the NRC Chair expressing their "grave concerns regarding the leadership and management practices exercised by the NRC Chairman".
- October 18th the BRC held its third public meeting to gather information from stakeholders on its July 29th draft recommendations report for managing the nation's nuclear wastes.
- October 20th the BRC held its fourth meeting on its July 29th draft recommendations report for managing the nation's nuclear stockpile.
- October 27th Maine Representatives Michael Michaud and Chellie Pingree forwarded a letter to the Co-Chairs of the BRC expressing their concerns over the stranded used nuclear fuel at the Wiscasset storage facility, its financial impacts on ratepayers and the local community, and endorsed the Commission's draft recommendation of "placing a priority on moving spent nuclear fuel at shutdown reactor sites".
- On October 28th the BRC held its fifth public meeting to gather stakeholder input to their July draft report.
- November 4th the U.S. Court of Appeals for the District of Columbia issued an Order expediting the review of the DOE's and the NRC's dismantling of the Yucca Mountain Project and license application proceedings.
- November 9th the BRC announced the formation of an Ad Hoc Subcommittee on Co-mingling of Defense and Commercial Waste.
- November 29th the NRC issued an Order denying the NRC Staff's requests to reverse two previous ASLB Orders issued on April 11th and June 9th that had directed the parties involved in the Yucca Mountain licensing application proceedings to submit their Yucca Mountain document collections to the Secretary of the NRC for preservation.
- December 2nd the BRC held a final meeting to discuss the Subcommittees proposed resolutions to the public comments received from the five nationally held meetings.
- December 5th the states of Washington and South Carolina, Aiken County in South Carolina, Nye County in Nevada, the three business leaders from the Tri-City area near Hanford, Washington, and the National Association of Regulatory Utility Commissioners filed a writ of mandamus (mandate) with the U.S. Court of Appeals for the District of Columbia over the NRC's unreasonable withholding of agency action on the Yucca Mountain license proceedings.
- December 7th the NRC Chairman sent a letter to the White House's Chief of Staff disputing and rebutting the accusations raised by the other four Commissioners.
- December 9th the Chair of the House's Committee on Oversight and Government Reform sent a letter to the White House's Chief of Staff raising serious concerns over the NRC Chairman's leadership ability and management style.
- December 12th the Nuclear Energy Institute filed an amicus brief (friends of the court) in support of the petitioners' lawsuit against the NRC and its Chairman.
- December 12th the White House Chief of Staff responded to the Chair of the House Committee on Oversight and Government Reform December 9th letter on management issues at the NRC and outlined his actions since being made aware of the discord between the Commissioners and the NRC Chairman.

- December 13th the House of Representatives' Committee on Oversight and Government Reform issued an investigation report that detailed how the actions of the Chairman were damaging the NRC.

To provide a more comprehensive and complete depiction on all the unfolding events on this controversial subject, the newsworthy items were segregated into seven main categories to better illustrate the on-going nature of DOE's activities to terminate the project, the formation and activities of the BRC, the NRC's Yucca Mountain licensing proceedings, the Congressional response to the Administration's posture, the response from other stakeholders and interested parties, the federal court filings and actions, and finally the significant reports that were published during the year that impacted the on-going discussions. The events and the cascading actions and reactions for each of the categories are presented in Appendices B through H.

Besides the events mentioned above Appendix I contains some international highlights. Appendix J has a balance sheet on the Nuclear Waste Fund (NWF) as of the end of September 2010. The Table lists the status for each state that has or had nuclear generating facilities and their respective payments into the NWF. It is important to note that under the debt column, the ratepayers of Maine still owe the federal government $116.9 million dollars for nuclear fuel that was used prior to 1983.

Appendix A

Condition Reports

Date	CR o.	Description
1/3/11	11-01	Missed source leak test
1/4/11	11-02	Tracking previous cask inspection observations through CR process
1/6/11	11-03	Door closer leaking fluid
1/19/11	11-04	Equipment damage during snow removal
1/20/11	11-05	Equipment malfunction
1/24/11	11-06	Intermittent operation of a door lock
1/24/11	11-07	Minor damage to a pull box cover locking bar on a man-cover during snow removal
1/24/11	11-08	Track observations associated with a CR trend evaluation
1/25/11	11-09	Use of an out of revision procedure attachment
1/25/11	11-10	Track observations associated with a review of the Training and Qualification Plan
1/26/11	11-11	Track observations associated with a review of the Preventative Maintenance Program
2/3/11	11-12	Minor damage to a conduit during snow removal
2/10/11	11-13	Track actions from a review of the Emergency Plan
2/28/11	11-14	Damage to a signal wire from a chirper box during snow removal
3/1/11	11-15	Omission of a check off while performing fire extinguisher surveillances
3/10/11	11-16	In service fire extinguisher was overdue for its six year inspection
3/15/11	11-17	Channel failure on one 2-way radio
3/15/11	11-18	Minor hydraulic leak on a man-lift
3/15/11	11-19	Spill form was not used for the man-lift leak
3/16/11	11-20	Use of an out-of-revision form
3/17/11	11-21	Internet problem with the loss of a signal to an off-site alarm station
3/22/11	11-22	Security-related issue
3/24/11	11-23	Removal of guidance from a procedure prior to guidance being included into procedure
3/24/11	11-24	Use of an incorrect or outdated form instead of one from the current procedure
3/24/11	11-25	Not using a form when one was required
3/28/11	11-26	Sewer vault filling with water
3/28/11	11-27	Door not closing properly but found afterwards to be operating properly
3/29/11	11-28	A surveillance being performed not in accordance with the procedure
3/29/11	11-29	A pre-shift briefing not being covered with a person returning from medical leave
3/29/11	11-30	Use of another out of revision form instead of the current procedure revision
3/29/11	11-31	Error in filling out a work request - incorrect number was entered for the work control #
4/11/11	11-32	Involved security information
4/18/11	11-33	Fire detection zone alarm with no fire
4/20/11	11-34	Loss of signal from the off-site security contractor
4/25/11	11-35	Track recommendations from a review of training modules
4/28/11	11-36	Drain cover that was cracked by construction paving equipment
5/2/11	11-37	Diesel transfer switch found in the manual rather than the automatic mode
5/2/11	11-38	Security equipment test failure
5/2/11	11-39	Minor damage to a conduit that was bumped by construction equipment during paving a operation
5/10/11	11-40	Missing shift supervisor's review signature from evening log
6/6/11	11-41	Man-lift bumping into equipment and causing some minor damage

6/6/11	11-42	Man-lift bumping into equipment and causing some minor damage
6/6/11	11-43	Spotty spill trail from the parking lot to the dumpster
6/13/11	11-44	Another instance of equipment being bumped by a man-lift during maintenance activities
6/16/11	11-45	Normally locked security cabinet found unlocked for less than two minutes
6/16/11	11-46	File custodian label found out of date
6/29/11	11-47	Door access control issue - door control was not fully compliant with fire safety codes
6/29/11	11-48	Communication relay damage from the lightning strike on the gatehouse
6/29/11	11-49	Vehicle not properly secured in the protected area
6/29/11	11-50	Track open items from an internal, semi-annual quality assurance surveillance
6/29/11	11-51	Track open items from an internal, semi-annual quality assurance surveillance
6/29/11	11-52	Person entering the restricted area without wearing assigned radiation dosimetry
7/11/11	11-53	Testing to the security computer caused a brief loss of some input parameters
7/11/11	11-54	Back-up security vendor not following established protocol
7/25/11	11-55	Involved security computer issues
7/25/11	11-56	Involved security computer issues
7/26/11	11-57	Confusion existed over perceived inconsistency since not all keys are required to be inventoried
8/22/11	11-58	Procedure attachment issued with some information missing
8/22/11	11-59	Use of a procedure attachment with an incorrect procedure revision number
8/24/11	11-60	5.8 Virginia earthquake that occurred on August 23rd
8/25/11	11-61	Track recommendations form a recent training review
8/25/11	11-62	Some minor erosion around a culvert from tropical storm Irene
8/29/11	11-63	Inlet damper to the diesel generator not working properly
9/15/11	11-64	Very small gas spill - size of a teaspoon
9/15/11	11-65	Hand burnt from a hot mower muffler
9/15/11	11-66	Track open items associated with the annual vertical concrete cask inspection
9/26/11	11-67	Missing serial number digit on a procedure attachment
10/3/11	11-68	Failing non-security monitor
10/12/11	11-69	Non-security camera experiencing problems
10/19/11	11-70	Track open items from a periodic, in-house self-assessment
10/19/11	11-71	Track open items from an emergency plan drill
10/20/11	11-72	Some spare equipment being found out of date as part of a periodic, in-house self-assessment
11/1/11	11-73	Track open items from an annual emergency drill held October 27th
11/3/11	11-74	Visitor access list was not properly updated during one of the shift turnovers
11/16/11	11-75	Intermittent transmission problems with one of the base radios
11/22/11	11-76	Track open items from a routine external QA Surveillance of the non-security related programs
11/22/11	11-77	Track open items from a routine external QA Surveillance of the non-security related programs
11/28/11	11-78	Additional intermittent transmission problems with one of the base radios from a separate channel
12/13/11	11-79	Documentation oversight in security work force qualification records
12/21/11	11-080	Remote sensing alarm monitoring company not strictly following communication protocols during testing

Appendix B

Department of Energy (DOE) Activities

The bulk of DOE's activities was performed under the Blue Ribbon Commission shown in Appendix C. In addition, there are further DOE activities listed in Appendix D under the NRC's Yucca Mountain licensing proceedings.

1. On February 11th Energy Secretary Chu sent a letter to the Co-Chairs of the President's BRC reinforcing and clarifying the initial guidance that he provided to the Commission. Dr. Chu emphasized that the BRC role is not to be a siting commission to counter some recent public presentations discussing specific sites and to ensure that the BRC will not include limited recommendations on Yucca Mountain.

2. On February 18th the DOE issued a draft Environmental Impact Statement (EIS) for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste. The EIS evaluated several disposal options such as a deep geological repository, intermediate depth boreholes, enhanced near surface trenches, and above grade vaults. Several disposal locations were analyzed including the Waste Isolation Pilot Project and the Los Alamos National Laboratory in New Mexico, the Savannah River Site in South Carolina, the Hanford Site in Washington, the Idaho National Laboratory, the Nevada Test Site, and four commercial disposal sites in the U.S. The DOE did not identify a preferred disposal alternative or location. A Federal Register Notice was published on February 25th starting a 120 day public comment period on the draft EIS. (Editorial Note: Maine Yankee has four concrete casks with GTCC wastes from the cut-up of the reactor internals at their storage installation in Wiscasset.)

3. On April 5th Nye County, Nevada sent a letter to DOE's Dr. Peter Lyons taking exception to his comment to the House Appropriations' Subcommittee on Energy and Water Development that Yucca Mountain did not have local support. The letter alluded to several other Nevada counties supporting the Yucca Mountain Project. The letter included past resolutions, even the original 1975 resolution that was passed urging the federal government "to choose the Nevada Test Site for the storage and processing of nuclear material".

4. On April 27th the Executive Director of the U.S. Nuclear Infrastructure Council and a former Deputy Assistant to the Secretary of Energy concluded that the April 26th Massachusetts Institute of Technology report was a recipe for inaction. Although there were some commendable findings, his response raised five concerns, one of which was the report's assurance of a century-long supply of uranium. He countered that currently, "other nations are moving aggressively to lock-up future sources of supply".

5. On May 10th-12th the DOE held its second annual National Transportation Stakeholders Forum in Denver. The meeting covered numerous topics including state regional and tribal groups and their interface with the DOE, DOE planned shipments and lessons learned, rail inspections and lessons learned, enhancements to shipment security, and emergency and medical preparedness training for states and tribes. DOE uses the Forum as a mechanism to communicate and collaborate with states and tribes at the national level about the Department's shipments of radioactive waste and materials.

6. On June 27th the Decommissioned Plant Coalition (DPC) sent a letter to the Department of Energy (DOE) providing their comments to the DOE's "Draft Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste". The letter reaffirmed that the GTCC wastes stored at decommissioned sites are covered by the utilities spent fuel

contracts and that DOE is obligated to remove this waste along with the spent nuclear fuel. The letter further stated that the Courts have upheld this position through the various lawsuits against the federal government. Maine Yankee's ISFSI has four canisters with GTCC. The DPC membership is comprised of representatives from single unit decommissioned reactor sites such as Maine Yankee, Connecticut Yankee, Yankee Rowe in Massachusetts, Lacrosse in Wisconsin, Rancho Seco in California, and Big Rock Point in Michigan.

7. On July 1st the DOE's National Transportation Stakeholders Forum (NTSF) sent a letter to all transportation stakeholders listing the major topics for ad hoc working groups and webinars for the next year. The lists were compiled from the second annual NTSF meeting held in May. Three of the webinar topics are of great interest to the State of Maine. They are the

    a. President's BRC's Draft Recommendations on nuclear waste management
    b. Electric Power Research Institute and the federal government's Extended Used Fuel Storage Study
    c. GTCC Low Level Waste Disposal

    All three webinars will provide insight on what the future holds for the spent fuel storage facility in Wiscasset. The NTSF is the mechanism by which the DOE communicates at a national level with states and tribes about the Department's shipments of radioactive wastes and materials.

Appendix C

Blue Ribbon Commission (BRC) on America's Nuclear Future

1. On January 6th-7th the BRC toured the Savannah River Site nuclear complex and held a meeting in Augusta, Georgia to hear from state and local officials and the public on how the nation's high-level waste should be managed. State and local officials included the mayors of Augusta and Waynesboro, Georgia, U.S. Senator Lindsey Graham from South Carolina, representatives of U.S. Senators Jim DeMint of South Carolina, Johnny Isakson and Saxby Chambliss of Georgia, and staff of the U.S. House of Representatives John Barrow and Paul Broun of Georgia. In addition, two panels were convened, one for environmental perspectives and the second for economic and other considerations.

2. On January 26th-28th the BRC toured the Waste Isolation Pilot Plant (WIPP) disposal complex and held meetings in Carlsbad and Albuquerque, New Mexico. The Carlsbad meeting on the 27th featured three panels with overviews on WIPP's background and history critique, WIPP's transportation topics such as operations, issues and local impacts, and lessons learned from the WIPP siting. The meeting on the 28th in Albuquerque included two panels, one on state, local and tribal perspectives, and the other on the National Transuranic Program. The nation's defense-related transuranic radioactive waste is disposed at the WIPP facility.

3. On February 1st -2nd the BRC held a meeting in Washington, D.C. The venue included three roundtable discussions on key questions raised during Commission hearings. The panels will focus on establishing an environmentally, politically, and socially legitimate facility siting process, the organization and scope of the governing body managing the nation's nuclear waste, and financial consideration issues.

4. On February 4th the BRC held a closed meeting. Due to national security considerations the discussions and minutes of the meeting are not available for public disclosure.

5. In March the BRC issued a document, entitled "What We've Heard". The report is a staff summary of the major themes that resonated in testimony and comments received. The purpose of the report is twofold. The first is to afford an opportunity to those that have provided input to confirm that their key messages have been heard or to highlight what the BRC may have overlooked. The second is to provide an avenue for those who are following, but have not commented, in the BRC's deliberations, an opportunity to raise issues that may have been overlooked. The main themes were summarized into the following seven broad categories:

    - Program Governance and Execution
    - Nuclear Waste Fee and Fund
    - Approach to Siting
    - Reactor and Fuel Cycle Technologies
    - Transport of Used/Spent Fuel and High-Level Wastes
    - Storage of Used/Spent Fuel and High-Level Wastes
    - Disposal System for High-Level Waste

6. On April 20th the Director of the Nuclear Waste Program Office for the National Association of Regulatory Utility Commissioners sent a letter to the Co-Chairs of the BRC providing personal comments on the BRC's "What We Heard" report issued in March. The comments covered the following topics of interests:

- program governance and execution,
- approach to siting,
- reactor and fuel cycle technologies,
- transport and storage of used/spent nuclear fuel and high-level wastes,
- disposal system for high-level waste, and
- Nuclear Waste Fund and fee

7. In April the Decommissioning Plant Coalition sent a letter to the Co-Chairs of the BRC's Subcommittee on Transportation and Storage commenting on the Commission's interim report, "What We Heard". The letter expressed concern that the report failed to capture the importance of shipping spent nuclear fuel and Greater Than Class C waste from decommissioned reactor sites to a centralized storage facility "on a **priority** basis". The letter cataloged numerous organizations and individuals supporting this approach.

8. On April 26th the Director of the Nuclear Waste Program Office for the National Association of Regulatory Utility Commissioners sent a second letter to the Blue Ribbon Commission noting an oversight from his earlier April 20th letter of the need to emphasize the priority nature of removing spent nuclear fuel from decommissioned reactor sites to a centralized interim storage facility.

9. On May 13th the BRC held a meeting to discuss the NRC's recent actions involving spent nuclear fuel storage in light of Japan's Fukushima reactor accidents in addition to presentations from its three Subcommittees on their draft recommendations for managing the nation's nuclear waste stockpile. Each Subcommittee had several recommendations. Two of the Transportation and Storage Subcommittee recommendations resonated well with the State and the Northeast. They were the establishment of "one or more consolidated interim storage facilities" and that spent nuclear fuel from "decommissioned reactor sites" receive priority in shipping their wastes to an interim storage facility.

10. On June 29th the Sustainable Fuel Cycle Task Force (SFCTF) sent a letter to the Co-Chairs of the Blue Ribbon Commission on America's Nuclear Future expressing their long held belief on the technical feasibility of the Yucca Mountain repository as illustrated in the House Science, Space and Technology Committee Report, "Yucca Mountain: The Administration's Impact on U.S. Nuclear Waste Management Policy". In light of the findings of the House Committee's Report the SFCTF science panel requested that the Blue Ribbon Commission recommend the Yucca Mountain site as an alternative solution to the nation's nuclear waste management program.

11. On June 29th the Chair of the Nuclear Issues Subcommittee of the National Association of Regulatory Utility Commissioners (NARUC) sent a letter to the BRC Co-Chairs commenting on the recommendations from the two draft Subcommittee reports issued. The letter added their support to the consolidated interim storage proposal, especially for used nuclear fuel from decommissioned reactor sites. It also indicated that NARUC was interested in the prospect of a new nuclear waste management organization. However, the letter did express that the Subcommittee recommendation on the funding source was insufficiently forceful and advocated more direct language to emphasize the seriousness of the issue.

12. On June 30th the U.S. Nuclear Waste Technical Review Board sent a letter to the Chairs of the BRC's Disposal Subcommittee expressing their concurrence with the Subcommittee's three key draft recommendations on organizational form, funding and siting strategy. The letter further expanded on these topics and how well they correlated with the Board's own conclusions in their June reports submitted to Congress and the Secretary of Energy.

13. On June 30th the U.S. Nuclear Waste Technical Review Board (NWTRB) sent a second letter to the Chairs of the Blue Ribbon Commission's Transportation and Storage Subcommittee commenting on four of the Subcommittee's recommendations. The NWTRB highlighted other challenges that the Subcommittee should consider and incorporate in their final report. For example, although the recommendation to expeditiously construct a consolidated interim storage facility is a laudable one, siting such a facility without an integrated waste management plan was not recommended.

14. On July 29th the BRC submitted its draft report to the Secretary of Energy. The Commission's findings and conclusions present an initial set of recommendations for public review and input. There were seven BRC key recommendations:

    - A new consent-based approach to siting
    - A new organization to implement the waste management program
    - Access to *(and use of)* utility waste disposal fees for their intended purpose
    - Prompt efforts to develop a new permanent geologic disposal facility
    - Prompt efforts to develop one or more consolidated interim storage facilities
    - Support for advances in nuclear energy technology and for workforce development
    - Active U.S. leadership in international efforts to address safety, non-proliferation and security concerns

    The fifth recommendation is a major point for moving spent fuel out of Maine. Also embodied in this recommendation is the BRC's supplemental recommendation that spent fuel currently stored at decommissioned reactor sites should be first in line for transfer to a consolidated interim storage facility. The BRC will hold four public meetings across the country for public input prior to submitting its final report to the Secretary of Energy in January of 2012.

15. On September 6th the BRC received comments from a nuclear engineer who proffered the integral fast reactor (IFR) as a technology concept that could drastically reduce the need for storage and disposal of spent nuclear fuel across the country. The IFR concept uses spent fuel and depleted uranium from uranium processing to fuel the fast reactor and burns it more efficiently than present reactors. One reactor benefit is its passive shutdown properties thereby preventing core meltdowns. Another benefit is its ability to withstand certain reactor accidents such as a loss of flow without injecting control rods to shutdown the reaction immediately, which usually induces pressurized thermal shock (PTS) and challenges the integrity and safety of the reactor vessel. PTS is especially important in older vessels as they become embrittled over time due to radiation and neutron exposure. If elements heavier than uranium are reprocessed using pyro-electrolysis instead of the current water technique, then it could be possible to dispose of the waste stream in geologic facilities designed for 400 years as compared to the hundreds of thousands of years now envisioned for Yucca Mountain in Nevada. Copies of the letter and comments are attached. In addition, mass flow diagrams were included to illustrate the current light water technology versus the IFR concept with its disposal savings.

16. On September 13th the BRC held its first regional meeting in Denver to receive input from stakeholders on its July 29th draft report to the Secretary of Energy on how the nation should manage its used nuclear fuel stockpile. The meeting was held in concert with the Western Governors' Association's High-Level Waste Committee. The interactive breakout sessions focused on reactions from state, local, tribal and non-government organizations and elicited responses on how to improve interactions between the federal government and other government entities and communities. The meeting is one of five scheduled meetings nationwide.

17. On September 13th the Yankee Rowe Spent Fuel Storage & Transportation Community Advisory Board (CAB) sent a letter to the Co-Chairs of the BRC relating their comments on the BRC's July 29th draft

report to the Secretary of Energy. The Chair of the CAB expressed urgency in removing the spent nuclear fuel and the Greater Than Class C wastes on a priority basis from the decommissioned reactor site in Massachusetts. The letter also expressed concerns on the site's inability to remove the spent fuel from the canisters for inspection purposes to support long term relicensing efforts. The letter did advocate for the Department of Energy to immediately lay the groundwork for implementing consolidated storage and to involve state, tribal, and local officials in extensive transportation planning and preparation efforts.

18. On September 29th the Sustainable Fuel Cycle Task Force sent a letter to the BRC's Co-Chairs presenting their comments on the BRC's July 29th draft report. The comments raised numerous concerns spanning seven broad areas.

    1. Need to Preserve All Alternatives
    2. Deep Bore Holes
    3. Historical Reality Complications
    4. Regulation Development Complications
    5. Interim Storage is Realistically Linked to Meaningful Repository Progress
    6. National Needs vs. Consensus
    7. Legal & Ethical Needs

19. On October 6th the BRC issued a press release soliciting feedback on their July 29th draft Commission report on how to develop, implement, manage, and dispose of the nation's nuclear waste stockpile. The Presidential Commission in cooperation with The Council of State Governments – Eastern Regional Conference's Northeast High-Level Radioactive Waste Transportation Task Force held a public meeting at the Harvard Medical School's Conference Center in Boston on October 12th.

20. On October 7th Representative John Olver from Massachusetts forwarded a letter to the BRC's Co-Chairs supporting the Commission's draft recommendations that spent fuel form shutdown reactors be first in line to have their nuclear waste transferred to a consolidated interim storage facility. Representative Olver also urged the Commission to retain this draft language in their final report.

21. On October 11th the Confederated Tribes and Bands of the Yakama Nation sent a letter to the BRC submitting their comments on the Commission's draft report. The Institute for Energy and Environmental Research prepared the comments on behalf of the Yakama Nation. The comments listed eleven recommendations besides concurring on the need for a geologic repository to dispose of the spent nuclear fuel, generic regulations, science- and consent-based processes for site selection, and tribal authority to formulate their own regulations. The Yakama Nation is domiciled in the State of Washington bordering the DOE's Hanford site.

22. On October 11th the New England Council issued a letter to the BRC's Co-Chairs in anticipation of the BRC's public meeting in Boston the following day. The Council reiterated its support for a geologic disposal repository at Yucca Mountain and for consolidated interim storage with first-in-line shipping rights to decommissioned reactor sites.

23. On October 12th the BRC held its second public meeting in Boston, Massachusetts to receive feedback from stakeholders on managing the back-end of the nuclear fuel cycle. The meeting focused on four regional topics, such as the dilemma of consolidated versus on-site storage, consent-based siting process, transportation planning, and mixing of federal and commercial nuclear waste streams. A break-out session was formed to discuss and expand on key elements from the topics covered. In addition, Maine Yankee's Vice President and members of Maine Yankee's Community Advisory Panel also testified at the Boston Meeting. Both testimonies welcomed the Commission's recommendation for consolidated

interim storage with priority removal of the stranded spent nuclear fuel at decommissioned reactor sites. On the same day the State Representative for the Town of Rowe, Massachusetts sent a letter to the BRC's Co-Chairs urging the Commission to support the U.S. House of Representatives initiative directing the DOE to develop plans for consolidated storage capacity for decommissioned reactors. Also on the same day Representative Joe Courtney from Connecticut issued a letter to the BRC's Co-Chairs applauding the Commission's recommendations on consolidated interim storage with stranded spent fuel being first in line for movement of the used nuclear fuel.

24. On October 13th the Northeast High-Level Radioactive Waste Transportation Task Force held a meeting to discuss the previous day's BRC's public meeting testimonies. In addition, several presentations were made to the Northeast Task Force. They covered such areas as the DOE's National Nuclear Safety Administration foreign spent nuclear fuel acceptance program, updates of the DOE's Waste Isolation Pilot Plant transportation program and Brookhaven National Laboratory's decommissioning and transportation activities, the NRC's spent nuclear fuel management and transportation package performance update, with additional updates on the Decommissioning Plant Coalition, federal lawsuits, and Maine Yankee's ISFSI. A representative from Carlsbad, New Mexico made a presentation highlighting his local community's interest in hosting consolidated interim storage facilities as well as siting a geologic disposal facility in the salt formations near Carlsbad.

25. In October Eureka County, Nevada issued 20 pages of detailed comments and recommendations on the BRC's draft report. The County presented their unique perspective of a local government that was potentially affected by transportation of spent nuclear fuel. In summary they listed four key recommendations:

    - Adopt a consent-based, transparent, phased, adaptive and science-based approach to siting nuclear waste facilities.
    - Recognize the key roles, responsibilities, and authorities of local state and tribal governments with direct authority over aspects of regulation, permitting and operation of the waste facilities.
    - Replace the Department of Energy with a single-purpose federal corporation to re-establish public trust and confidence.
    - Retain the U.S. Nuclear Waste Technical Review Board as an independent reviewer.

26. On October 17th the State Inspector provided some preliminary comments to the Northeast High-Level Radioactive Waste Transportation Task Force as part of a larger set of unified comments that would be submitted to the BRC on their draft report. The Northeast Task Force is comprised of representatives from the six New England states, New York, Pennsylvania, New Jersey, and Delaware.

27. On October 18th the BRC held its third public meeting in Atlanta, Georgia to gather information from stakeholders on its July 29th draft recommendations report for managing the nation's nuclear wastes. The panel discussions focused on states' perspectives of the draft report, financing the country's nuclear waste strategy, the policy implications for consolidated versus on-site storage, consent-based siting process, and policy considerations such as a shipping queue for a national transportation plan.

28. On October 20th the BRC held its fourth public meeting in Washington, D.C. to gather information from stakeholders on its July 29th draft recommendations report for managing the nation's spent nuclear fuel. The panel discussions focused on advanced technology and the co-mingling of civilian and defense-related wastes. In addition, Maine Yankee's Chief Nuclear Officer testified before the Commission. His testimony expressed concern over the potential extension of on-site storage out to 300 years and the attendant risks and costs that will rise with time. He urged the Commission to embody language in its

final report to specifically address steps for the DOE to take immediately pending future passage of implementing legislation on the Commission's recommendations.

29. On October 24th the State of Nevada sent a letter to the Blue Ribbon Commission on its comments to the Commission's draft report. Nevada commented on 10 specific areas of the report, such as the assessment of the Yucca Mountain failure, consent-based siting, repository regulatory requirements for retrievability, waste program reorganization and transportation recommendations. However, Nevada felt that the "single most important aspect of the draft report.....is the requirement that siting for storage, disposal, and other related facilities be consent-based, with full and voluntary participation on the part of potential host states and communities."

30. On October 25th the National Association of Regulatory Utility Commissioners (NARUC) provided its comments to the BRC's July 29th draft report. NARUC's had six recommendations for the BRC and they are listed below:

    a. Complete the Yucca Mountain license review.
    b. Clarify the scope of consolidated interim storage.
    c. That NARUC be represented if a Waste Fund Oversight Commission is formed.
    d. The report should be clearer on the Nuclear Waste Fund being used for consolidated interim storage and the amending of the Nuclear Waste Policy Act.
    e. Include recommendations on the transition to the new federal waste management organization.
    f. That the repository be a shared government/commercial waste facility.

    Since NARUC had participated in four of the five BRC public meetings it also expressed concern over public comments that expanded on the conventional philosophy of "Not In My Back Yard" (NIMBY) and coined a new term "NOPE" (Not on Planet Earth) to reflect the sentiment articulated. NARUC also provided additional comments on benefits and compensation for states, tribes, and local communities and on how to reform the Nuclear Waste Fund.

31. On October 28th the BRC Future held its fifth and final public meeting in Minneapolis, Minnesota to gather stakeholder input to their July draft report. The meeting centered on regional issues and initial reactions to the draft report. The interactive breakout sessions focused on affected units of government, transportation safety and impacts on long-term extended storage on host communities.

32. On October 31st the U.S. Nuclear Waste Technical Review Board sent a letter to the BRC. The Board offered comments and perspectives in the following categories:

    a) Developing generic siting criteria
    b) Generic research on geologic media
    c) Methods of deep geologic disposal, including deep borehole disposal
    d) Radiation source term
    e) Fuel degradation mechanisms related to extended dry storage of spent nuclear fuel
    f) Management of federally owned spent nuclear fuel and high-level waste
    g) Effects of various fuel cycle technologies on spent nuclear fuel and high-level waste management
    h) Transport of high burn-up fuel
    i) International Cooperation
    j) Retaining Technical Capability and Preservation of Technical Experience

    The Board concurred with the Commission's recommendations on items a, b and e above.

33. On October 31st The Massachusetts Attorney General forwarded a letter to the BRC's Co-Chairs strongly supporting the Commission's draft recommendations to establish interim storage facilities for operating and decommissioned reactor sites with shutdown reactors receiving priority removal of their stranded spent fuel. The Attorney General expressed concerns over the NRC's recent ruling to allow storage on-site for periods up to 120 years coupled with future considerations out to 300 years as "fostering a lack of urgency" to remove the stranded spent nuclear fuel. She emphasized the need to significantly improve the railroad infrastructure in preparation for eventual removal and also urged the Commission to include the necessary infrastructure improvements as a Commission recommendation.

34. On October 31st the Decommissioning Plant Coalition (DPC) sent a letter to the designated federal officer from the DOE to the BRC on their comments to the Commission's draft report. The DPC endorsed the seven key recommendations in the Commission's draft report, especially the establishment of one or more consolidated interim storage facilities with first priority given to decommissioned reactor sites for the movement of the spent fuel. The DPC also expressed concern over the NRC's recent draft guidance pertaining to the security programs at stand alone storage facilities such as Maine Yankee. The DPC contended that the draft guidance will significantly increase the costs of the storage facilities. (On the same day the DPC issued a second letter to the designated federal officer listing five factors supporting their contention.) The DPC further maintained that the standardization of the cask systems should not be a short term priority, greater than Class C wastes should be removed along with the spent nuclear fuel to an interim storage facility, and emphasized the types of near term activities that could be undertaken instantly under existing statute by the DOE.

35. On October 31st the BRC sent a letter to the DOE's Designated Federal Officer requesting approval for forming an Ad Hoc Subcommittee to study the co-mingling of commercial and defense wastes. The Subcommittee's investigation focus will be to determine whether the 1985 decision to co-mingle is still appropriate after twenty six years.

36. On November 3rd the BRC sent a letter to the members of the Joint Select Committee on Deficit Reduction urging the Committee to consider as part of their deficit deliberations to maintain the original purpose of the Nuclear Waste Fund to ensure revenues are available to fund the nation's nuclear waste management program and not divert funds to the Treasury. The BRC recommended in their July 29th draft recommendations report that the utilities pay only a portion of the current fee that is commensurate with what Congress appropriated for waste management each year with the remainder placed in a trust for future needs.

37. On November 7th the DOE's Designated Federal Officer assigned to the BRC sent a letter to the BRC's Co-Chairs to form an Ad Hoc Committee to review and recommend to the Commission whether defense high-level radioactive waste should be co-mingled with commercial spent nuclear fuel.

38. On November 9th the BRC announced the formation of an Ad Hoc Subcommittee on Co-mingling of Defense and Commercial Waste. The Subcommittee was established in response to a series of BRC public meetings seeking stakeholder input to the Commission's July 29th draft report. The Subcommittee's review will focus on whether the 1985 decision to co-mingle the wastes for disposal was still appropriate given the changes within the last 26 years.

39. On November 17th the BRC published in the Federal Register that it will hold its last public meeting prior to issuing its final report in January 2012. The purpose of the meeting will be for the Co-Chairs for the three Subcommittees (Reactor and Fuel Cycle Technology, Transportation and Storage, and Disposal) to review with the full Commission their proposed revisions to their draft recommendations as a result of public comments on the full Commission's July 29th draft report. In addition, the newly

formed Ad Hoc Subcommittee on the co-mingling of defense and commercial nuclear wastes will present their findings of their investigation.

40. On December 2nd the BRC held a meeting in Washington, D.C. to discuss the Disposal, Transportation and Storage, and Reactor and Fuel Cycle Subcommittees on their proposed resolutions to the public comments received from the five nationally held meetings seeking stakeholder feedback. Although all three subcommittees proposed a number of edits to their reports to address some of the recurring themes, only the Transportation and Storage Subcommittee proposed a new key recommendation based on public input. The new recommendation advocated the prompt development of programs to support a national shipping campaign of used nuclear fuel in concert with states and tribes while ensuring appropriate funding and assistance for those activities. The basis of the recommendation was motivated by the decade long lead times to plan, prepare, design, fabricate and test before waste can be accepted for shipment. The Ad Hoc Committee on the comingling of commercial and defense-relates wastes informed the Commission that it required additional time to render a recommendation.

41. On December 20th the Department of Justice (DOJ) responded to the Blue Ribbon Commission's December 5th inquiry. The DOJ provided two tables listing the status of the lawsuits against the federal government on the Department of Energy's breach of contracts with the nation's nuclear utilities. Table 1 recorded that there was $6.4 billion in claims with approximately $2 billion paid out to date. The DOJ response failed to mention that the $6.4 billion is based on those utilities that have accepted the Exelon framework settlement, which amounts to 30 of the 118 reactors. According to the DOE Director of the Office of Standard Contract Management the federal government's October 26, 2011 liability estimate was much higher, $20.8 billion. Only 26 reactors have accepted the DOE's new framework settlement or one time settlement amounting to an additional $4.4 billion in claims. The remaining 52 reactors have not accepted the DOE's settlement offers. The liability for the remaining reactors was estimated at $10 billion. The $20.8 billion is predicated on the DOE's estimated "last year of pickup date" for each reactor based on the Yucca Mountain license application using the concept of "oldest fuel first". In the Exelon settlement model the DOE's calculated average cost amounted to $2.5 million per storage year, which is much less than the current costs of about $8 million to operate and maintain the storage facility at Maine Yankee.

Appendix D

Nuclear Regulatory Commission's (NRC) Yucca Mountain Licensing Proceedings

1. On January 20th the State of Nevada filed with the NRC's Atomic Safety and Licensing Board (ASLB)its motion for reconsideration of the Board's rejection of a previous contention that was dismissed by the Board. Nevada argues that the Board's recent December 2010 Order on Phase I legal issues resurrects the initial legal basis which the Board had earlier decided as moot or irrelevant. The safety contention deals with the erosion of Yucca Mountain to the point that the repository is exposed within 500,000 years after the repository's closure.

2. On January 21st the State of Nevada filed with the NRC 's ASLB its four safety contentions against the DOE's license application to construct a used nuclear fuel repository at Yucca Mountain. The first Nevada safety issue dealt with the DOE's ability to exclude deviations from repository design or errors. The remaining three safety issues involved the assumption of the complete and total failure of the drip shields.

3. On January 21st the DOE filed with the NRC's ASLB its statement of additional views as per the Board's December 14th Order. The DOE argues that four Nevada safety issues should be dismissed. DOE admitted that it could not exclude deviations from repository design or errors and corrected this deficiency before submitting its license application. Therefore, Nevada's point is moot and should be dismissed. The remaining three safety issues rest on the drip shields as being the only barrier for the entire repository. Since the repository design is based on a multi-barrier system, DOE contends that the safety issues have been adequately addressed and Nevada's contentions should be dismissed.

4. On January 21st the Nuclear Energy Institute (NEI) filed with the NRC's ASLB declaring its right to respond to any motions relative to its Phase I safety contention on excessive conservatism employed in the post-closure nuclear criticality analysis for Yucca Mountain.

5. On January 21st the DOE filed with the NRC's ASLB its motion to renew the temporary suspension of the Yucca Mountain license proceedings. DOE's filing also included its joint report with all the intervenors as to their position on DOE's motion to renew the temporary suspension. Eureka County, Nevada and the Nuclear Energy Institute supported DOE's relief motion. Clark and Lincoln Counties, Nevada, Inyo County, California, the State of Nevada, the Nuclear Regulatory Commission Staff, the Joint Timbisha Shoshone Tribe, and the Native Community Action Council did not oppose DOE's motion. Aiken County, South Carolina, the states of Washington and South Carolina, the California Energy Commission, the National Association of Regulatory Utility Commissioners, Nye and White Pine Counties, Nevada, and Prairie Island Indian Community took no position but rather reserved their right to respond once DOE files its motion.

6. On January 21st the NRC staff filed with the NRC's ASLB its opposition to the four safety contentions from Nevada and one safety contention from the NEI. The Staff was requesting that all five safety contentions be dismissed.

7. On January 28th Aiken County, South Carolina filed with the NRC's ASLB its response to the DOE's motion to renew the temporary suspension of the Yucca Mountain licensing Proceedings. Aiken County considered the DOE motion a delay tactic and requested the Board to deny their motion.

8. On January 31st the DOE filed with the NRC's ASLB its opposition to the State of Nevada's motion for reconsideration of the Board's earlier rejection of its safety issue on the effects of erosion increasing radiological exposures after 10,000 years based on erosion effects 500,000 years after the waste is emplaced. DOE opposes Nevada's reconsideration and contends the Board earlier dismissal was proper.

9. On January 31st the NRC staff filed with the NRC's ASLB its opposition to the State of Nevada's motion for reconsideration of the Board's earlier rejection of its safety issue on the effects of erosion increasing radiological exposures after 10,000 years based on erosion effects 500,000 years after the waste is emplaced. The Staff opposes Nevada's reconsideration on the grounds that it is untimely and does not demonstrate compelling circumstances.

10. On February 22nd the NRC staff filed with the NRC's ASLB its certification of no additional witnesses to its Phase I National Environmental Protection Act contentions.

11. On February 23rd the State of Nevada and White Pine County in Nevada filed with the NRC's ASLB their notifications of no additional witnesses to the Yucca Mountain license proceedings. On the same day the State of Nevada also filed with the ASLB its sixth notification of no additional party witnesses to its Phase I discovery list.

12. On February 25th Clark County, Nevada and the Joint Timbisha Shoshone Tribal Group filed with the NRC's ASLB both their certifications of no additional party and other witnesses to the Yucca Mountain license proceedings.

13. On February 25th the NRC's ASLB issued an Order denying the DOE's motion to renew the temporary suspension of the proceedings associated with the Yucca Mountain license application. On the same day the ASLB issued another Order directing the NRC staff to show cause why it should not provide the unredacted version of their Safety Evaluation Report, Volume III on Yucca Mountain.

14. On February 27th Inyo County, California filed with the NRC's ASLB both fifth certifications of no additional party and no other witnesses to the Yucca Mountain proceedings.

15. On March 3rd the NRC staff responded to the NRC's ASLB's February 25th order directing the staff "to show cause why it should not be ordered to place Volume 3 of the Safety Evaluation Report in unredacted form.....in its Licensing Support Network (LSN) collection as a circulated draft". The Staff presented arguments to demonstrate that it "should not be ordered to place an unredacted version of SER Volume 3 on the LSN because it is a preliminary draft, not a circulated draft".

16. On March 4th the DOE filed with the NRC a motion to renew a temporary suspension of the license proceedings governing the Yucca Mountain license application. The filing with the Commission was prompted by the NRC's ASLB's February 25th denial of the DOE's January 21st request to renew a temporary suspension.

17. On March 7th the NRC's ASLB issued an Order denying the State of Nevada's reconsideration motion of two contentions, one legal and one safety, which were initially dismissed by the Board in the Yucca Mountain proceedings.

18. On March 11th Aiken County, South Carolina filed with the NRC its response requesting the Commission to reject the DOE's motion to renew the temporary suspension to the Yucca Mountain license proceedings. On the same day Nye County, Nevada also filed with the Commission its opposition to the DOE's motion to renew the suspension and requests that the motion be denied.

19. On March 24th the NRC's ASLB issued an Order dismissing four Nevada safety contentions. Nevada also agreed that it will not pursue another safety contention since it is a petition for a rule waiver as opposed to a safety contention.

20. On April 8th the DOE filed with the NRC's ASLB a motion to dismiss one of the NEI's safety contentions. This contention was initially dismissed by the Board on December 14, 2010 and subsequently challenged by NEI. On the same day the DOE filed with the Board its motion to dismiss four of Nevada's safety contentions on purely legal grounds.

21. On April 11th the NRC's ASLB issued an Order to the parties involved in the Yucca Mountain License proceedings. Since the Administration's funding proposals for FY 2012 stipulated no funding for the preservation of the Yucca Mountain documents at the NRC after September 30th, the Board then directed the parties to preserve all their documents in "PDF" format and submit them electronically to the NRC's Office of the Secretary.

22. On April 16th the DOE filed with the NRC's ASLB a supplement to their motion to dismiss one of the NEI's safety contentions. The purpose of the supplement was to notify the Board that the DOE's efforts to resolve the issues the Board raised in its April 8th motion were unsuccessful.

23. On April 18th the NRC's staff filed with the NRC's ASLB its response to the DOE's motion to dismiss four of Nevada's safety contentions. The staff agreed to the full dismissal of two of the safety contentions and two in part. On the same day the staff also filed with the Board its support for the DOE's motion to dismiss one of the NEI's safety contentions.

24. On April 18th the State of Nevada filed with the NRC's ASLB a response opposing the DOE's motion to dismiss four of Nevada's safety contentions. The filing took issue with the positions taken by DOE and provided information to support their safety contentions.

25. On April 18th NEI filed with the NRC's ASLB a motion to dismiss one Nevada safety contention. The purpose of the filing was to reserve NEI's right to appeal.

26. On April 21st the DOE filed with the NRC's ASLB a motion requesting clarification of the Board's April 11th Order to "PDF" all the Yucca Mountain license documents and to provide electronic versions to the NRC Secretary. The DOE requested the Board to allow "PDF/A" formatting for the documents and to provide the NRC Secretary with high capacity external drives as opposed to hundreds of DVDs.

27. On April 21st the NRC staff filed a motion with the NRC's ASLB to stay the Board's April 11th Order. Unless a stay is issued, the staff maintained that it will be irreparably harmed and contrary to the public's interest. On the same day the staff also filed with the Board a request to leave to file a motion for reconsideration and a motion for reconsideration of the Board's April 11th Order. The staff's filing was a separate request for a stay of the effectiveness of the Order or a housekeeping stay pending resolution of its motion. The separate motions outlined the compelling circumstances for the Board to reconsider its Order.

28. On April 25th the State of Nevada filed with the NRC's ASLB its intent to take oral depositions from two consultants on their knowledge respective to six separate Nevada safety contentions that were admitted to the Yucca Mountain license proceedings.

29. On April 25th the NRC staff filed with the NRC's ASLB their certification of no additional witnesses for Phase I contentions of the National Environmental Policy Act.

30. On April 26th the Joint Timbisha Shoshone Tribal Group filed with the NRC's ASLB their certifications of no additional party or other witnesses to their status as intervenors in the Yucca Mountain license proceedings.

31. On April 27th the State of Nevada and Clark County, Nevada filed with the NRC's ASLB their certifications of no additional party or other witnesses to their status as intervenors in the Yucca Mountain license proceedings.

32. On May 2nd the NRC'S staff filed with the NRC's ASLB its response to the DOE's motion for clarification relative to their Yucca Mountain documents submittal to the NRC and status report regarding the ASLB's April 11th Order for the preservation of the Yucca Mountain documents in "PDF" format for the NRC. The NRC Staff opposed the DOE motion until its April 21st motion was resolved. However, the Staff was willing to accept documents provided DOE met the following three conditions. The documents were:

    - "on high capacity external drives that can connect to Microsoft Windows computers with universal serial bus (USB) interfaces,
    - the format and file system is compatible with Microsoft Windows, and
    - the DOE's portable document format (PDF) files are enabled for Fast Web Viewing."

    On the same day Nevada also filed with the NRC's ASLB its response that it did not object to the DOE's motion for clarification and status report regarding the ASLB Order.

33. On May 2nd the State of Nevada also filed with the NRC's ASLB its response that it took no position and did not object to the NRC's staff April 21st request for leave to file a motion for reconsideration of the ASLB's April 11th Order".

34. On May 4th White Pine County, Nevada filed with the NRC's ASLB that it had not identified any additional party or other witnesses to the Yucca Mountain license proceedings.

35. On June 8th NRC Chairman, Gregory Jaczko, issued a news release stating that the NRC's Inspector General's (IG) investigation reaffirmed that his actions did not violate the law and cleared him of any legal wrong doings.

36. On June 9th the NRC's ASLB issued an order granting in part and denying in part the NRC staff's request for reconsideration of the Board's April 11th order directing parties in the Yucca Mountain license proceedings to submit their document collections in 'PDF' format to the NRC Office of the Secretary (SECY) and for the SECY to install those documents into a separate library of the Agencywide Documents Access and Management System for public access.

37. On June 20th the DOE filed a motion with the NRC's ASLB for leave to file a motion for reconsideration of the June 10th Board Order on the licensing network documents supporting the Yucca Mountain licensing proceedings before the NRC. The DOE stated that the Order was inconsistent with NRC's regulations and potentially imposed an undue and unnecessary expense.

38. On June 20th the NRC's staff filed with the NRC's ASLB a stay in the effectiveness of both the April and June ASLB Orders. The staff presented four arguments as to why the stay should be granted. The staff believed it made a strong showing and was likely to prevail on the merits. They will be irreparably harmed if a stay is not granted and that granting it will not harm the other parties. Finally, the public's interest rested in granting the stay. On the same day the NRC staff also petitioned the Commission to exercise its inherent supervisory authority to review the April 11th and June 9th Board Orders.

39. On July 7th William Ostendorff was sworn in to a five year term as a Commissioner to the NRC. Ostendorff previously served on the Commission until his term ended on June 30th. He was reconfirmed by the Senate on June 30th.

40. On July 21st the NRC issued a news release indicating that they had published the first of three technical evaluation reports (TER) on the agency's Yucca Mountain license application review. The 723 page TER described the NRC staff's technical evaluation of the DOE's Safety Analysis Report and provided technical insights on the application of performance assessment in the context of geologic disposal. The TER does not include conclusions as to whether or not the DOE satisfied the Commission's regulations. The other two TERs are expected to be completed by September 30th.

41. On July 26th the NRC's LSN Administrator notified the NRC's ASLB that the LSN will cease operations by August 5th. The LSN was created as part of the NRC's review of the DOE's Yucca Mountain license application. After the shutdown the public or other interested parties will not be able to access the documents. However, the parties involved in the Yucca Mountain licensing review will control their own documentary material.

42. On August 8th the NRC's LSN Administrator notified the NRC's ASLB that the LSN website operated by the ASLB for the Yucca Mountain license application would cease immediately. The LSN provided stakeholders with the DOE's supporting documents for its the Yucca Mountain license application before the NRC.

43. On August 22nd the American Nuclear Society sent a letter to the NRC Chairman expressing their deep concern over the Commission's inability to complete the scientific and technical review of the Yucca Mountain license application and urging the Commission to perform its legally mandated duties as prescribed by the Nuclear Waste Policy Act.

44. On August 22nd the NRC issued a notice of its upcoming meeting on September 28th to obtain feedback from stakeholders on their extended storage and waste confidence activities for used nuclear fuel storage and transportation.

45. On September 1st the NRC released the second Yucca Mountain Technical Evaluation Report on repository safety before permanent closure. The NRC staff's review found as reasonable a) the proposed geologic repository operations area, b) the identification of structures, systems, and components important to safety, and c) the permanent closure and decontamination or decontamination and dismantlement of surface facilities. The DOE agreed to evaluate additional design details and conduct analyses to confirm the safety functions of structures, systems, and components important to safety.

46. On September 6th the NRC issued a meeting notice on a public meeting at NRC headquarters to discuss the indirect license transfer request relative to the pending merger of Northeast Utilities and NSTAR and the extent of its impact on the three decommissioned sites in New England: Maine Yankee, Connecticut Yankee and Yankee Rowe.

47. On September 9th the NRC issued a "Memorandum and Order" stating that the Commission was deadlocked on a decision of whether to uphold or overturn the NRC's ASLB decision to deny the DOE motion to withdraw its license application for the construction of a geologic repository at Yucca Mountain in Nevada. The tie vote leaves the July 29, 2010 ASLB ruling intact as the final NRC decision. The decision should have compelled the NRC to consider DOE's application. Instead the

Commission did the opposite and directed the staff and the ASLB to close all activities and license proceedings on Yucca Mountain by the end of the current fiscal year, September 30, 2011.

48. On September 12th Nuclear Regulatory Commissioner, William Magwood, issued his views on his decision to support the DOE's motion to withdraw its Yucca Mountain license application. Commissioner presented his rationale for his views on what he considered appropriate before the Commission. He agreed with the NRC's ASLB decision implementing a change in national policy would require Congressional approval. However, he believed the motion to withdraw the license application did not rise to the same level as national policy and therefore, voted to overturn the ASLB ruling that denied the DOE's motion to withdraw.

49. On September 12th, on behalf of all petitioners, the senior counsel for the State of Washington sent a letter to the NRC's Office of the General Counsel expressing concerns that the NRC Order issued on September 9th was contradictory. The letter specifically requests the NRC's Office of General Counsel to confirm if the directive to close all activities by the end of September would direct the NRC's ASLB to issue another decision on the Yucca Mountain license application and whether the NRC will make a final decision on the license application as mandated by the Nuclear Waste Policy Act.

50. On September 13th the NRC issued a news release indicating that they had released its third and final Technical Evaluation Report describing the administrative and programmatic activities of the DOE's Yucca Mountain Repository License Application. The NRC's conclusions were that the DOE's information was reasonable in regards to the:

    d. Program descriptions on research and development, performance confirmation, quality assurance, training, records, tests, and inspections,
    e. Descriptions of the organizational structure, key positions, and personnel qualifications,
    f. Descriptions of plans for startup testing, conduct of normal activities, responding to and recovering from radiological emergencies, and uses of the geologic repository operations area for purposes other than disposal of radioactive wastes, and
    g. Controls to restrict access and regulate land use and noted that the DOE does not currently have ownership of the land or water rights.

51. On September 16th plaintiffs from the states of Washington and South Carolina, Aiken County in South Carolina, Nye County in Nevada, and the three business leaders from the Tri-City area near the Hanford site in Washington, and the National Association of Regulatory Utility Commissioners filed their response to the NRC's "Notice of Underlying Decision" that directed the NRC staff and its ASLB to complete their review of the Yucca Mountain license application by September 30th. In addition, the petitioners also made a motion for expedited consideration of their petition in light of the NRC's dismantling of the Yucca Mountain license process by September 30th.

52. On September 20th the NRC held a public meeting to discuss the indirect license transfer request relative to the pending merger of Northeast Utilities and NSTAR and the extent of its impact on the three decommissioned sites in New England: Maine Yankee, Connecticut Yankee and Yankee Rowe. The concern revolved on the extent of foreign ownership of the stored spent nuclear fuel and its potential implications on such topics as security and safeguards information at the three storage facilities. Central Maine Power (CMP), which directly owns a 38% share of Maine Yankee's spent fuel storage facility in Wiscasset, is owned by Iberdrola SA of Spain. Bangor Hydro and Maine Public Service collectively, directly own 12% of Maine Yankee, and are owned by subsidiaries, which are owned by Emera, Inc., a Canadian firm. The Northeast Utilities and NSTAR will merge into Northeast Utilities (NU), which will indirectly own 24% of Maine Yankee. Maine Yankee maintained that, since all of the post merger NU Trustees will be U.S. citizens, NU will not be subject to foreign ownership, control or domination

(FOCD). In addition, Northeast Utilities intends that all members of the Maine Yankee Board that are appointed by subsidiaries of the post merger NU will also be U.S. citizens to preclude FOCD.

53. On September 28th the NRC held its first of three public meetings to inform stakeholders of its extended storage and waste confidence activities for spent nuclear fuel storage and transportation. The NRC's Waste Confidence Rule enacted in December of 2010 allowed storage of spent fuel up to 60 years beyond the licensed life of a nuclear reactor. Reactors are typically licensed for up to 60 years. The NRC is evaluating the potential for extended storage of used nuclear fuel in dry storage casks out to 300 years.

54. On September 30th the NRC's ASLB issued an Order suspending its Yucca Mountain license proceedings due to uncertain funding. At the time of suspension there were fourteen intervenors, two interested parties, and 288 admitted contentions still pending.

55. On October 4th the NRC held its second public meeting in Oakbrook Terrace, Illinois to inform and seek stakeholder input on the NRC's spent nuclear fuel activities over their Waste Confidence Rule for long-term on-site storage (up to 120 years), extended on-site storage (up to 300 years), and transportation of the used nuclear fuel. The NRC was expected to provide information on its research plans for extended storage. On October 6th the BRC held its third and final public meeting on these topics in San Luis Obisco, California.

56. On November 1st the NRC held a technical exchange to discuss technical issues on two topics related to spent nuclear fuel. The first dealt with the interfaces between storage and transportation casks. The NRC presented their views on such topics as nuclear criticality safety, high burn-up, (a measure of how much energy is extracted from the nuclear fuel), and retrievability of the cask contents. The nuclear industry presented their perspectives on the same issues. The second topic focused on seismic issues for dry storage casks with industry updates on existing technical issues, such as computer codes and how the dry casks stored at the North Anna nuclear power plant performed during the August 2011 Virginia earthquake.

57. On November 2nd-3rd the NRC held its annual Spent Fuel Storage and Transportation Regulatory Conference. The two day Conference concentrated on regulatory issues such as licensing improvements, rules and guidance updates, improvements to storage programs, inspection improvement activities, and regulatory challenges in the transportation of radioactive materials used in radiography, fresh fuel, waste, and medical facilities.

58. On November 29th the NRC issued an Order denying the NRC staff's requests to reverse two previous ASLB Orders issued on April 11th and June 9th that had directed the parties involved in the Yucca Mountain licensing application proceedings to submit their Yucca Mountain document collections to the Secretary of the NRC for preservation. The Staff had opposed both Orders since it imposed significant financial burdens without addressing budgetary and administrative issues. The Commission noted that the NRC staff's documents were available through the NRC's public document system and all the other parties, including the DOE which possessed 98.8% of the Yucca Mountain documents, complied with the ASLB's Orders. Therefore, the Commission upheld the Board's original Orders and denied the staff's requests.

59. On December 7th the NRC Chairman sent a letter to the White House's Chief of Staff responding to the issues raised by the four Commissioners. The Chair disputed and rebutted the accusations. He expressed his willingness to improve communications with the other Commissioners.

60. On December 22nd the NRC issued an order declining to decide the Timbisha Shoshone Tribal's Council petition to be recognized as the sole authorized representative of the Timbisha Shoshone Tribe in the Yucca Mountain license proceedings. Since the Yucca Mountain proceedings have been suspended the Commission declined but did note that if the proceedings are reactivated then the Tribal Council could reinstate its petition.

Appendix E

Congressional Reactions and Responses

1. On January 18th the House of Representatives Committee on Energy and Commerce issued their key issues report that they plan to address in the 112th Congress.

2. On February 10th the Chair and Vice-Chair of the House of Representatives Committee on Science, Space and Technology, the Chair of the Subcommittee on Investigations and Oversight and the Chair of the Subcommittee on Energy and Environment sent a letter to the NRC Chairman, Dr. Jaczko, requesting in a spirit of openness the un-redacted version of the NRC's Volume III of the Safety Evaluation Report on Yucca Mountain.

3. On February 24th the Chair of the House's Committee on Energy and Commerce and the Chair of the Subcommittee on Environment and Economy co-signed a letter sent to Energy Secretary Chu requesting a response to six questions they posed. The Chairs expressed their fiduciary responsibility to consumers paying into the Nuclear Waste Fund while "receiving nothing in return" and a "moral obligation to stop the flow of taxpayer dollars from the U.S. Treasury" due to the Department of Energy's "failure to meet its obligations".

4. On March 1st the NRC Chairman responded to Washington's Representative Doc Hastings' October 21, 2010, letter requesting a copy of the NRC staff's Volume III of the Safety Evaluation Report on Yucca Mountain. Dr. Jaczko trusted that the redacted drafts of Volumes II and III satisfied Representative Hastings' October 21st request.

5. On March 10th the Chair and three members of the House Committee on Science, Space, and Technology responded to NRC Chairman Jaczko's March 4th letter refusing to release an unredacted copy of the Nuclear Regulatory Commission's Volume III of the Safety Evaluation Report (SER) on Yucca Mountain because it was a preliminary draft as opposed to a circulated draft. The four members repeated their call to Chairman Jaczko to release the SER and to respond to six questions that focused mostly on the SER.

6. On March 30th NRC Chairman Jaczko responded to the March 11th letter from the Chairman of the House Committee on Oversight and Government Reform. Dr. Jaczko considered the release of the draft pre-decisional partial Safety Evaluation Report, Volume III requested by Representative Darrell ISSA as inappropriate. However, he would release it under the condition the document is not available for public disclosure.

7. On March 31st four of the five Commissioners for the NRC jointly sent a letter to Representative Darrell Issa, Chair of the House's Committee on Oversight and Government Reform, relating that they had voted on March 24th-25th to direct the NRC staff to send a letter in response to his request.

8. On March 31st the Chair of the House Committee on Energy and Commerce sent letters to Energy Secretary Chu and NRC Chairman Jaczko notifying them that the Committee will be investigating the Administration's efforts to halt the Yucca Mountain Project. Both letters listed a number of questions and requests for information surrounding the decisions to terminate the nuclear waste repository in Nevada.

9. On April 12th the Office of Senate Majority Harry Reid issued a website letter to all Nevadans indicating that "Yucca Mountain is dead". The Senator took this opportunity to relate how he thwarted the House's efforts in slipping in a rider on the appropriations bill to fund the Yucca Mountain Project.

10. On April 21st the Acting Executive Director of the State of Nevada's Agency for Nuclear Projects sent a letter to Representative John Shimkus, Chair of the House's Committee on Energy and Commerce, requesting two representatives from Nevada to accompany him and other Representatives from the Committee on his planned site tour of the Yucca Mountain facility on April 26th.

11. On April 28th NRC Chairman Jaczko responded to the Chair of the House Committee on Science, Space, and Technology, Representative Hall, on his request for an unredacted copy of the NRC staff's draft Volume III of the Safety Evaluation Report (SER) on the Yucca Mountain license application. Chairman Jaczko ordered the release of the draft SER with reservations. In addition, Chairman Jaczko provided specific responses to Representative Hall's questions on the SER Volume III and the shutting down of support activities for the Yucca Mountain license proceedings.

12. On April 29th the House Committee on Energy and Commerce's Chair, Chair Emeritus and three Chairmen of its Subcommittees sent a letter to the Comptroller General of the Government Accountability Office (GAO) requesting that the GAO update its 2003 report on "Spent Nuclear Fuel: Options Exist to Further Enhance Security". With the termination of Yucca Mountain Project and Japan's Fukushima incident, the letter also requested that the update examine and include additional information from five areas.

13. On May 2nd the House Committee on Energy and Commerce issued a memorandum indicating that a joint hearing of the Subcommittees on Energy and Power and Environment and the Economy was held to discuss "The Role of the Nuclear Regulatory Commission in America's Energy Future". Four of the five Nuclear Regulatory Commissioners would testify regarding four major topics of interest including the NRC's review of the DOE's license to construct a geologic repository at Yucca Mountain.

14. On May 4th the House Subcommittees on Energy and Power and Environment and the Economy held a joint hearing on "The Role of the Nuclear Regulatory Commission in America's Energy Future". One of the purposes of the joint hearing was to investigate Chairman Jaczko's actions pertaining to his actions on terminating the Yucca Mountain license proceedings. The Chair of the Subcommittee on Environment and Economy, Representative John Shimkus, and Ranking Member of the House Committee on Energy and Commerce, Representative Henry Waxman, issued opening statements.

15. On May 5th Representative Henry Waxman, Ranking Member of the House Committee on Energy and Commerce, sent a letter to Representative John Shimkus, Chair of the Subcommittee on Environment and Economy, that took issue with the Chairman's remarks about his line of questioning at the joint hearing with the NRC Chairman Jaczko's actions to terminate the Yucca Mountain license review.

16. On May 9th the Chairs of the House Committee on Energy and Commerce and Subcommittee on Environment and Economy sent a letter to NRC Chairman Jaczko requesting his immediate assistance with the Committee's investigation of the DOE's license application before the NRC by ensuring that all NRC employees were notified "of their right to communicate with Congress".

17. On May 9th the House Committee on Energy and Commerce issued a press release on the Government Accountability Office's report indicating that the Administration's haste to shutdown Yucca Mountain could set back disposal of spent nuclear fuel 20 years. The report also cited the decision to terminate the project as politically motivated. Additional information on the report is presented under number 7 in Appendix H.

18. On May 12th NRC Chairman Jaczko sent a letter to Chair of the House Committee on Oversight and Government Reform responding to the Committee's investigation of Chairman Jaczko's decisions and actions to close down the Yucca Mountain license proceedings. Attempts were made to secure a copy of Chairman Issa's March 11, 2011 letter but were unsuccessful.

19. On June 1st the House Appropriations Committee released its FY 2012 Energy and Water Appropriations Bill. The Bill funds various federal agencies including the DOE, the Army Corps of Engineers and the NRC. The Bill provided $35 million to support Yucca Mountain activities, $10 million of which is for the NRC to continue their review of the license application.

20. On June 8th the Chair of the House Committee on Energy and Commerce and the Chair of the Subcommittee on Environment and the Economy sent a letter to the Ranking Members of the Committee and Subcommittee expressing their willingness to continue including the Minority staff in briefings and interviews as well as their concerns on the Yucca Investigation and the imposition of a double standard by the Minority.

21. On June 8th the House Committee on Science, Space, and Technology released its report entitled: "Yucca Mountain: The Administration's Impact on U.S. Nuclear Waste Management Policy". The report outlined the findings from numerous document requests and official correspondence between Committee members and Administration officials over the past two and half years and detailed the complete absence of scientific information and analysis used to support the shutdown decision. The report underscored the manipulation of the process and the suppression of science behind the Yucca Mountain decision.

22. On June 9th the House Committee on Energy and Commerce issued an internal memorandum to the members of the Subcommittee on Environment and the Economy on the upcoming hearing scheduled for June 14th on "The NRC Inspector General Report on the 'NRC Chairman's Unilateral Decision to Terminate NRC's Review of the DOE Yucca Mountain Repository License Application'." The Inspector General and some of his staff are slated to testify. The issues that will be examined are Chairman's Jaczko legal duties and the integrity of the Commission process.

23. On June 13th NRC Chairman Jaczko sent a letter to Senator Blumenthal of Connecticut outlining his actions in light of the Fukushima incident in Japan and his response on the Connecticut Yankee dry cask storage facility at Haddam Neck.

24. On June 14th members of the House Committee on Energy and Commerce's Subcommittee on Environment and the Economy held a hearing on the NRC's Inspector General Report on NRC Chairman Jaczko's actions in terminating the NRC review of the DOE's Yucca Mountain license application. Attached are the opening remarks of the Energy and Commerce Chairman and the Subcommittee Chairman.

25. On June 16th NRC Chairman Jaczko sent a letter to Senator Feinstein of California responding to her April 8th inquiry on dry cask storage of spent nuclear fuel and how quickly spent fuel can be moved from pools to dry casks. Her inquiry was prompted by the Fukushima events in Japan. The letter explained what measures the NRC have undertaken since September 11, 2001, to increase the safety and security of spent fuel pools across the nation.

26. On June 20th the House Committee on Energy and Commerce issued several letters to selected NRC staff that were intimately involved in the review of the NRC Yucca Mountain license application. The letter provided guidance on the Committee's expectations for testifying before their Subcommittee on

Environment and Economy. The letters were sent to the Director of the Office of Nuclear Material Safety and Safeguards (NMSS), the Acting Director of the Office of Nuclear Material Safety and Safeguards, the Acting Director of the Division of High-Level Waste Repository Safety, Senior Project Manager of the Division of High-Level Waste Repository Safety, and the Branch Chief of the Division of High-Level Waste Repository Safety. The testimonies depicted a major discord between NRC's senior management's position as outlined by the Director of NMSS and the indictment provided by the remaining staff against senior NRC management and their handling of the Yucca Mountain license application. The testimonies illustrated to what extent senior management bowed under pressure from the NRC Chairman's directives to shut down the NRC's review of the Yucca Mountain license application.

27. On June 22nd the House Committee on Energy and Commerce issued an internal memorandum to the members of the Subcommittee on Environment and the Economy on the upcoming hearing scheduled for June 24th on "NRC Repository Safety Division – Staff Perspective on Yucca License Review". The hearing featured the NRC Staff testifying on their role in the safety and technical reviews of the Yucca Mountain repository.

28. On June 24th the House Committee on Energy and Commerce's Subcommittee on Environment and the Economy held a hearing on "NRC Repository Safety Division – Staff Perspective on Yucca License Review". The hearing featured the NRC Staff testifying on their role in the safety and technical reviews of the Yucca Mountain repository. The technical experts openly criticized the NRC Chairman and senior staff members for suppressing information about a controversial decision to stop the scientific review of the Nevada waste disposal site. This was highly unusual for multiple career employees of a federal agency to publicly criticize the leadership, especially before a congressional panel.

29. On June 30th Senator Lisa Murkowski of Alaska introduced legislation to provide for the safe and secure safe storage of the nation's used nuclear fuel stockpile. The bill was co-sponsored by Senator Mary Landrieu of Louisiana. The bill, S. 1320 Nuclear Fuel Storage Improvement Act of 2011, would create two federal interim storage repositories to centralize spent nuclear fuel and provide financial incentives for state and local governments.

30. On July 8th the House Committee on Energy and Commerce sent a letter to NRC Chairman Jaczko on their investigation of the NRC's decision making process relative to the Yucca Mountain license application. The letter expressed concern over the Chairman's and other NRC staff's involvement "in the alteration of the original language in the professional staff's draft of the Technical Evaluation Report" to replace Volume III of the Safety Evaluation Report.

31. On July 13th Representative Heck from Nevada introduced an amendment to the House's Appropriations Bill to divert the $25 million earmarked for the DOE to support its Yucca Mountain license application before the NRC to research and development on fuel reprocessing and recycling technologies. His amendment provided $20 million for research with the remaining $5 million split evenly between the State of Nevada and local counties. The amendment did not pass the House as it was ruled out of order.

32. On July 14th the House Appropriations Committee approved an amendment to increase the FY 2012 funding from $10 Million to $20 million for the NRC to complete its review of the Yucca Mountain license application.

33. On July 15th the House passed a $30.6 billion energy bill that has a provision blocking the Administration from closing the Yucca Mountain Project in Nevada.

34. On July 22nd the NRC Chairman Jaczko responded to the Chair of the House's Committee on Energy and Commerce on their request for a reversible Volume III of the NRC's Safety Evaluation Report (SER). Chairman Jaczko clarified some misunderstandings on the status of the SER and provided other documents for the Committee's review. Since the documents had not been publicly released, Chairman Jaczko requested that the Committee not release them.

35. On August 3rd the Chair of the House Energy and Commerce Committee's Environment and the Economy Subcommittee issued a press release emphasizing that 400 days have elapsed with no decision from the NRC on their ASLB's decision to deny the DOE's motion to withdraw its Yucca Mountain license application before the NRC. The Chair called upon the NRC Chairman to issue a decision. .

36. On September 15th the Sustainable Fuel Cycle Task Force issued a press release and a letter to the U.S. Senate noting that "26 Organizations Call for the Resumption of Yucca Mountain Review". The letter quoted some of the BRC's draft report's findings on how the nation's failure has proved damaging and costly, emphasized a sense of urgency to resolve the back end of the nuclear fuel cycle since further delays will become more damaging and costly, and left numerous states, communities, and ratepayers wondering "if the federal government will ever deliver on its promises". The host county in Nevada and five other counties bordering the Yucca Mountain Project were signatories to the letter.

37. On October 27th the House's Subcommittees on Investigation and Oversight and Energy and Environment held a joint meeting to discuss the BRC's draft recommendations. Both Subcommittee Chairs questioned the Administration's claims on making decisions based on sound science in their opening remarks. The Subcommittees questioned six witnesses on science and technology issues associated with spent nuclear fuel management.

38. On October 27th Maine Representatives Michael Michaud and Chellie Pingree forwarded a letter to the Co-Chairs of the Blue Ribbon Commission expressing their concerns over the stranded used nuclear fuel at the Wiscasset storage facility and its financial impacts on ratepayers and the local community. They endorsed the Commission's draft recommendation of "placing a priority on moving spent nuclear fuel at shutdown reactor sites".

39. On November 9th the BRC responded to the South Carolina's Congressional delegation's October 27th letter to the BRC. The BRC letter reaffirmed that they were not a siting Commission and will not recommend specific disposal locations or discuss the merits of the shuttered Yucca Mountain Project.

40. On November 18th Senator Mark Kirk of Illinois avoided an appropriation showdown over Yucca Mountain with Senate Majority Leader Harry Reid from Nevada when he and thirty other Senators signed a letter that was sent to the Chairs of the Senate's and House's Subcommittees on Energy and Water Development encouraging bipartisan support for the House's Appropriations of $45 million from the Nuclear Waste Fund for the continuation of the Yucca Mountain licensing proceedings. $25 million was earmarked for the Department of Energy with the Nuclear Regulatory Commission receiving the remainder. Maine's Senators Snowe and Collins were both signatories to Senator's Kirk letter.

41. On December 9th the Chair of the House's Committee on Oversight and Government Reform sent a letter to the White House's Chief of Staff raising serious concerns over the NRC Chairman's leadership ability and management style. The letter listed five allegations raised by four Commissioners against the NRC Chairman. The Committee Chair requested that the White House appear at a December 14th Committee hearing to relate what actions the White House took upon discovery.

42. On December 12th the Chief of Staff for the White House sent a letter to the Chair of the House Committee on Oversight and Government Reform responding to the Chair's December 9th letter on

management issues at the NRC. The Chief of Staff outlined his actions since being made aware of the discord between the Commissioners and the NRC Chairman. The Chief of Staff admitted that, while there were tensions and disagreements amongst the NRC Commissioners, the management differences had not jeopardized the "Commission's ability to fulfill its mission" of safety and security. On the same day the Chief of Staff also sent a letter to the NRC Commissioners urging the Commissioners to improve internal communications.

43. On December 12th the NRC Chairman responded to the Chair of the House Committee on Oversight and Government Reform's December 5th letter. The NRC Chairman's response addressed two questions posed in the initial December 5th letter on the Commission's values and culture. In both responses Chairman Jaczko provided concrete examples to support his position.

44. On December 15th the Chair of the House Committee on Energy and Commerce and the Chairs of the Committee's three Subcommittees (Energy and Power, Oversight and Investigations, and Environment and the Economy) co-signed a letter sent to the NRC Chairman requesting that he provide documentation in connection with the Committee's on-going investigation of the NRC.

45. On December 16th the House passed a 2012 catch-all spending bill that contained no funding for the Yucca Mountain repository site. When House Republicans attempted to prevent the NRC from closing out its Yucca licensing activities, the attempt was blocked by Senate Majority Leader Harry Reid from Nevada. This is the second consecutive year that funding for Yucca mountain has been zeroed out.

Appendix F

Other Stakeholder and Interested Party Responses

1. On January 4th the Nuclear Waste Strategy Coalition sent a letter to Energy Secretary Chu requesting when the Department of Energy will issue their financial and budget report that illustrates how the Nuclear Waste Fund fees are being administered.

2. On January 12th the Nevada Commission on Nuclear Projects issued their 2010 Report and Recommendations. Besides highlighting actions of the NRC, the DOE and the BRC, the report lists the key lessons learned from the Yucca Project, lessons for siting future facilities, implications for Nevada and recommendations going forward.

3. On January 12th the Sustainable Fuel Cycle Task Force issued a Science Panel Statement on nuclear waste management and scientific integrity. The statement questions the Administration's actions in light of the President's March 9, 2009 memorandum clearly expressing the need for preservation and promotion of scientific integrity and furthered by Dr. John Holdren's December 17, 2010 memorandum on scientific integrity. The statement was forwarded to NRC officials.

4. On January 12th the U.S. Nuclear Waste Technical Review Board issued a news release that it will hold a February 16th meeting in Las Vegas, Nevada to consider technical lessons learned from developing a geologic repository for used nuclear fuel and high-level waste. The Board was formed by Congress when the Nuclear Waste Policy Act was amended in 1987 to independently oversee the DOE's repository activities and provide expert advice to Congress and the Energy Secretary.

5. On February 9th the Sustainable Fuel Cycle Task Force sent a letter to Dr. Holdren, Assistant to the President for Science and Technology and Director of the Office of Science Technology Policy. The letter takes issue with the President's March 9, 2009 memorandum on "the preservation and promotion of scientific integrity" and Dr. Holdren's December 17, 2010 memorandum on scientific integrity and their applicability to the Yucca Mountain repository program. The updated version highlights that five of the nine affected counties in Nevada support Yucca Mountain, especially Nye County in which Yucca Mountain is located.

6. On February 14th the U.S. Chamber of Commerce issued a Key Vote Alert on the House of Representatives H.R. 1, the "Full Year Continuing Appropriations Act" emphasizing strong support for Section 1419 of the bill which would restrict the NRC's ability on terminating the Yucca Mountain Project until the Commission overrules its ASLB's decision to deny the DOE's motion to withdraw its Yucca Mountain license application.

7. On February 16th the U.S. Nuclear Waste Technical Review Board held a meeting in Las Vegas to consider technical lessons that can be gained from the DOE's efforts to develop a permanent repository for spent fuel and high-level radioactive waste over the last two decades. The Board will also review presentations on geologic disposal options for used nuclear fuel including deep borehole disposal.

8. On February 16th the National Association of Regulatory Utility Commissioners issued a resolution calling for the federal government to honor its obligations under the Nuclear Waste Policy Act and that storage of spent nuclear fuel at reactor sites up to 100 years is inconsistent with the Act.

9. On March 1st Wisconsin Electric settled its lawsuit against the federal government on the Department of Energy's failure to take possession of its spent nuclear fuel in January 1998. Wisconsin originally filed the lawsuit in November of 2000. In December 2009 the Court of Federal Claims in Washington, D.C. awarded the company $50 million. The Department of Justice (DOJ) appealed the decision, which is pending before the U.S. Court of Appeals. The DOJ offered to settle the lawsuit with the federal government paying $45.5 million. A copy of the news release is attached.

10. On March 23rd the U.S. Nuclear Waste Technical Review Board announced that it will hold a meeting in Amherst, New York, to discuss the management and disposition of long term storage of vitrified high-level radioactive waste. The Board's visit will culminate a series of visits to government-owned facilities and how they manage and store high-level waste and used nuclear fuel. A copy of the notification is attached.

11. On April 6th the Governor of Massachusetts, the Senate President and the Speaker of the House sent a letter to NRC Chairman Jaczko requesting assurances about the operational safety of the Pilgrim nuclear power station and its storage of spent nuclear fuel, an assessment of seismic vulnerabilities and providing information on relicensing activities. The letter also alluded to a list of specific questions from the Massachusetts Legislative leadership. A third of the twenty-two questions posed were on spent fuel management.

12. On April 19th the Chair of the Maine Yankee Community Advisory Panel (CAP) on Spent Nuclear Fuel Storage and Removal sent a letter to the Co-Chairs of the BRC's Subcommittee on Transportation and Storage on their portion of the BRC's report "What We've Heard". The letter commended the Subcommittee for capturing the CAP's core principles, but was disappointed that the Subcommittee did not make the removal of spent nuclear fuel from single-unit, decommissioned reactor sites to a centralized storage facility a priority, which was a central theme at the August 10, 2010 BRC Subcommittee meeting in Wiscasset.

13. On April 22nd the U.S. Nuclear Waste Technical Review Board issued a news release that they will hold a workshop on waste streams for various nuclear fuel cycle options.

14. On April 27th the U.S. Nuclear Waste Technical Review Board held a meeting in Amherst, New York to discuss the management and disposition of West Valley Demonstration Project's nuclear wastes. West Valley was the site of the nation's only commercial venture to reprocess spent nuclear fuel. The meeting focused on the decommissioning of the site, the vitrification (embedding in a glassy matrix) and the storage of the high-level liquid wastes.

15. On May 3rd the Energy Communities Alliance sent a letter to Energy Secretary Chu requesting:
    - a review of the safety and security of defense-related high-level-waste and spent fuel storage due to the recent Fukushima event in Japan,
    - a review of the impacts on local communities of long term storage of high-level waste and spent fuel, and
    - an analysis of the costs and impacts on cleanup budgets of storing and securing waste at DOE sites.

    The Alliance is an organization of local governments adjacent to and impacted by DOE activities.

16. On May 3rd the Nuclear Waste Strategy Coalition sent a letter to the BRC Co-Chairs commenting further on the BRC's "What We've Heard" Report. The letter raised a couple points of contentions with the BRC's Report, such as Energy Secretary Chu's termination of the Yucca Mountain Program was more

for political rather than scientific considerations and that local Nevada communities where Yucca Mountain is located were more supportive than opposed to the project.

17. On May 3rd-5th the Nuclear Energy Institute held a Used Fuel Management Conference with several sessions and panels devoted to regulating spent fuel dry storage and transportation, spent fuel management in the aftermath of the Fukushima events, extended spent fuel storage, and improving regulatory predictability. One of the presentations discussed stress corrosion cracking in dry cask storage canisters exposed to a marine atmosphere under laboratory conditions. The presentation by the NRC advocated developing screening criteria, performing screening evaluations and developing management techniques to determine when and where stress corrosion cracking could exist under actual environmental conditions.

18. On June 10th The Washington Examiner published an article indicating that the NRC Inspector General's (IG) Report "found no instance in which he *(NRC Chairman Jaczko)* broke the law." The IG Report, however, also portrayed the Chairman in a less favorable light. The Report noted that he hid information from the other Commissioners and "badgered staff members who disagreed with his positions."

19. On June 22nd the U.S. Nuclear Waste Technical Review Board sent a letter to the House, the Senate and the Department of Energy stating that it submitted its report "Technical Advancements and Issues Associated with the Permanent Disposal of High-Activity Waste." The report provided insights and lessons learned from the Yucca Mountain Project. The Board's purpose was "to extract knowledge while it is still available" on Yucca Mountain and other high level waste programs. The Nuclear Waste Policy Act established the Board as an independent federal agency to evaluate the technical validity of the DOE's activities and to provide objective expert advice to Congress and the Secretary of Energy. The Board is required by law to report its findings and recommendations at least twice yearly to Congress and the Secretary of Energy.

20. On July 5th the Chief Nuclear Officer for Maine Yankee sent separate but similar letters to Senators' Snowe and Collins highlighting the BRC's Transportation and Storage Subcommittee's draft recommendations to the full Committee on centralized interim storage with a first in line priority for decommissioned reactor sites. In addition, the letter also mentioned the language from the House's Energy and Water Appropriations Bill directing the DOE to develop interim storage capacity with a priority to decommissioned sites.

21. On July 8th the Nuclear Waste Strategy Coalition sent a letter to the Chairs of the Subcommittees on Energy and Power and Environment and Economy and their Ranking Members expressing their discontent with the DOE's systematic dismantling of the Yucca Mountain Project, with the DOE's demand for ratepayers to continue funding the Nuclear Waste Fund despite DOE's shuttering of the Yucca Mountain Project, and with the manipulation of Chairman Jaczko of his fellow Nuclear Regulatory Commissioners on the termination of the NRC's Yucca Mountain licensing review process.

22. On July 8th Xcel Energy of Minnesota announced that they had reached a $100 million settlement with the Department of Energy through 2008 on the storage of used nuclear fuel at their Prairie Island and Monticello nuclear power plants. In addition, the settlement also provides about another $100 million to cover the actual costs incurred to store the spent fuel from 2009 through 2013. After 2013 future storage costs could be subject to litigation.

23. On July 8th the Nuclear Waste Strategy Coalition sent a letter to the Chair and Ranking Member of the House's Appropriations Subcommittee on Energy and Water Development praising the Subcommittee's actions to reinstate $25 million from the Nuclear Waste Fund for the nation's nuclear waste disposal

program, to recommend that the nuclear spent fuel stranded at decommissioned sites will be the first to removed and to appropriate $10 million to the NRC to continue their review of the Yucca Mountain Project.

24. On July 14th the U.S. Nuclear Waste Technical Review Board sent a letter to the Co-Chairs of the BRC's Reactor and Fuel Cycle Technology Subcommittee recommending that any evaluation of advancements in nuclear reactor technology also consider the potential impacts on waste streams and final waste forms for disposal. The Board also concurred with the Subcommittee's conclusion that there were no current or foreseeable technologies that would alter the nation's waste management challenge for the next several decades and the requirement for a geologic repository to address the stockpiling of the used nuclear fuel.

25. On July 15th Energy Northwest issued a news release indicating that the U.S. Federal Court of Claims awarded the company $48.7 million in damages associated with the construction of a used fuel storage facility at their Columbia Power Plant just north of Richland, Washington. The award covered costs incurred through August 2006.

26. On July 15th Consumers Energy of Michigan announced that the federal government will pay $120 million over spent nuclear fuel to settle its 2002 lawsuit filed against the DOE for breach its contract with the company.

27. On July 15th the Nebraska Public Power District (NPPD) announced that it had reached a settlement with the U.S. DOE over its costs to construct and operate an on-site storage facility for used nuclear fuel at the Cooper Nuclear Station. The settlement has resulted in an initial payment of $60.5 million to cover NPPD's costs through 2009. Storage costs for 2010 through 2013 will be submitted annually to the DOE.

28. On July 22nd the Nuclear Waste Strategy Coalition updated the status of judgments and settlements on the 70+ lawsuits filed by the nation's nuclear utilities against the federal government for breaching their contracts and not taking possession of the spent nuclear fuel by January 31, 1998 as prescribed by the Nuclear Waste Policy Act of 1982 as amended. The $75.8 million award to Maine Yankee was increased last year by the Courts to $81.7 million.

29. In July Energy Northwest, which was awarded $48.7 million earlier this month by the U.S. Court of Federal Claims, filed a second lawsuit seeking damages for its costs of storing spent nuclear fuel since August of 2006.

30. On September 13th-14th the U.S. Nuclear Waste Technical Review Board held a meeting in Salt Lake City, Utah to discuss the Department of Energy's plans for research and development related to its Used Fuel Disposition Program. The two day meeting focused on such areas as research on transportation and long term storage of spent nuclear fuel, studies of various potential geologic media for disposing of spent nuclear fuel and high-level waste, and DOE's Used Fuel Disposition research and development Roadmap. In addition, the Board issued a statement on the importance they attach to the radiation source term in a geologic repository.

31. On October 26th the Nevada Commission on nuclear projects held a meeting to discuss the current status of the Yucca Mountain program, pending litigation and legal issues, the status of the NRC's licensing proceedings, and Yucca Mountain technical issues.

32. On October 31st the Nuclear Waste Strategy Coalition sent a letter to the Blue Ribbon Commission commenting on Commission's July 29th draft report. The Coalition supported the Commission's

recommendations on a consent-based approach for siting a disposal facility, the formation of a new "single-purpose organization" to manage the nation's nuclear wastes, and the prompt development of consolidated interim storage and disposal facilities starting with the nation's decommissioned reactor sites. The Coalition also expressed their disappointment with the Commission's avoidance to weigh in on the Yucca Mountain licensing process and respectfully requested for the Commission to lend its perspective on this important issue in their final report.

33. On November 12th the Savannah River Site Community Reuse Organization ran an advertisement in the Aiken Standard identifying the need for Yucca Mountain. The timing of the ad coincided with the Republican presidential debate in South Carolina. The ad illustrated the federal government's current nuclear waste storage policy and the extent and magnitude of the issue.

34. On December 1st the U.S. Nuclear Waste Technical Review Board issued a news release of a January 9th meeting over the integration of the DOE's Offices of Nuclear Energy and Environmental Management. Speakers from the two DOE offices discussed a range of fuel cycle alternatives, the present work undertaken to ensure spent nuclear fuel in storage can be safely transported to a centralized storage facility or a geologic repository, and describe current efforts for preparing DOE-owned spent nuclear fuel and high-level radioactive waste for disposition.

35. On December 4th the Union of Concerned Scientists (UCS) sent a letter to the NRC commenting on the NRC's draft guide for the security associated with spent fuel , high-level waste and greater than Class C storage facilities. The letter was a supplement to the original set of comments presented by the UCS on October 25, 2011. The UCS emphasized their belief that the security measures should not be bound by current design basis threats but rather anticipate future threats, especially with dry cask storage for decades. The UCS also affirmed their support for a dose based approach to radiological sabotage as opposed to limiting the sabotage based on public doses being below regulatory limits at a specified distance.

36. On December 8th the Nuclear Waste Technical Review Board issued a letter to the Department of Energy (DOE) on their comments on a technical report prepared for the DOE. The Board had earlier issued a report which had highlighted the lack of data with certain spent nuclear fuel. The Board believed the gap issue needed to be addressed to establish a technical basis for safely extending dry cask storage and spent nuclear fuel retrieval. The Board provided additional comments on such topics as hydride cracking degradation, transportation of the spent nuclear fuel, the need for more cask demonstration and fuel inspection projects, establishing baselines prior to dry cask storage for future comparative purposes, factoring in international experience, cladding oxidation, degradation mechanisms that interact or occur simultaneously, and internal as well as external monitoring of the used fuel conditions.

37. On December 25th the Duluth News Tribune published an article that indicated with the closing of the Yucca Mountain Project scientists from the Sandia National Laboratory were now looking at granite rock formations in northern Minnesota and Wisconsin as potential hosts for a future nuclear waste repository. The report also eyed the granite deposits from Georgia to Maine as potential sites for long term nuclear waste disposal. Both the East and Midwest areas exhibit geological stability and low permeability, favorable characteristics for siting a nuclear waste repository. Of the twelve foreign countries with spent nuclear fuel or high-level waste nine are considering hosting nuclear waste repositories in granite.

Appendix G

Federal Court Proceedings

1. On January 3rd the federal government filed with the U.S. Court of Appeals for the District of Columbia Circuit its response and an addendum to the petitioners' (Aiken County, South Carolina, the states of Washington and South Carolina, the three business leaders from the Tri-City area near Hanford, Washington, and the National Association of Regulatory Utility Commissioners) mandamus petitions and petitions for review and injunctive relief. The respondents opposed the mandamus and the injunctive relief petitions on the basis that the petitioners have available remedies and have not demonstrated irreparable harm in the absence of an injunction. This is part of the Court's expedited briefing schedule in preparation for the March 22nd oral arguments on the Yucca Mountain license application.

2. On January 3rd the State of Nevada filed with the U.S. Court of Appeals for the District of Columbia Circuit its response brief opposing the petitions filed by Aiken County, South Carolina, the states of Washington and South Carolina, the three business leaders from the Tri-City area near Hanford, Washington, and the National Association of Regulatory Utility Commissioners. Nevada maintains that the Nuclear Waste Policy Act does not contain language that would prevent the Department of Energy to withdraw its license application to construct a repository at Yucca Mountain.

3. On January 7th Aiken County, South Carolina, the states of Washington and South Carolina, the three business leaders from the Tri-City area near Hanford, Washington, and the National Association of Regulatory Utility Commissioners filed with the U.S. Court of Appeals for the District of Columbia Circuit its motion to calendar oral arguments that were initially held in abeyance pending the Nuclear Regulatory Commission's decision to either uphold or overrule its own Board's June 29th ruling denying the DOE's request to withdraw its Yucca Mountain license application.

4. On January 10th the U.S. Court of Appeals for the District of Columbia Circuit set March 22nd as the date to hear oral arguments on the Yucca Mountain Project.

5. On January 13th the State of Nevada filed with the U.S. Court of Appeals for the District of Columbia corrections to its January 3rd response brief on the petitions seeking relief from decisions made by the President, the Secretary of Energy, the Department of Energy, and the Nuclear Regulatory Commission. The errata involved numbering the pages for the cases, statutes, and authorities cited by the State of Nevada.

6. On January 18th Aiken County, South Carolina, the states of Washington and South Carolina, the three business leaders from the Tri-City area near Hanford, Washington, and the National Association of Regulatory Utility Commissioners filed with the U.S. Court of Appeals for the District of Columbia Circuit their reply brief highlighting the Department of Energy's dismantling of the Yucca Mountain Project, the NRC's termination of their review of the Yucca Mountain license application, and the NRC's inaction on the License Application withdrawal since their earlier June 18, 2010 filing. In addition, the petitioners also filed their addendum on their reply brief in anticipation of the March 22nd oral arguments on their petitions for relief from decisions made by the President of the United States, the Secretary of Energy, the DOE, and the NRC on the Yucca Mountain license application.

7. On February 1st the petitioners from Aiken County, South Carolina, the states of Washington and South Carolina, and the business leaders from the Tri-City area near the Hanford site in Washington filed with

the U.S. Court of Appeals for the District of Columbia a motion to submit a supplemental joint appendix and revised addenda before the Court. The petitioners consulted with the respondents (the President, Energy Secretary Chu, the DOE, and the NRC) in the case and the respondents do not oppose the petitioners' submission.

8. On February 4th the Nuclear Energy Institute filed with the U.S. Court of Appeals for the District of Columbia their final amicus brief in support of the petitioners (Aiken County, South Carolina, the states of Washington and South Carolina, and the business leaders from the Tri-City area near the Hanford site in Washington, including intervenor-petitioner National Association of Regulatory Utility Commissioners) lawsuit against the federal government's actions on the Yucca Mountain license application.

9. On February 8th Aiken County, South Carolina, the states of Washington and South Carolina, and the business leaders from the Tri-City area near the Hanford Site in Washington filed with the U.S. Court of Appeals for the District of Columbia their reply brief explaining the reasons that the federal government must abide by the Nuclear Waste Policy Act. On the same day the petitioners also filed with the Court its brief requesting it to order the NRC to comply with the Act and continue its license proceedings on the Yucca Mountain license application.

10. On February 8th the federal government filed with the U.S. Court of Appeals for the District of Columbia its motion to correct their addendum submitted to the Court on January 3rd to add statutes and regulations to its January 3rd proof brief. The motion was unopposed by the petitioners.

11. On February 8th the State of Nevada filed with the U.S. Court of Appeals for the District of Columbia its final brief supporting the federal government's actions for shutting down the Yucca Mountain Project. On the same day Nevada also filed with the Court a supplemental appendix of supporting documentation to its final brief.

12. On February 8th the counsels representing the DOE, the NRC, Energy Secretary Chu and the President filed with the U.S. Court of Appeals for the District of Columbia their final brief in preparation for the Court's scheduled March 22nd date for oral arguments on the Yucca Mountain license proceedings.

13. On February 8th Aiken County, South Carolina, the states of Washington and South Carolina, the business leaders from the Tri-City area near the Hanford site in Washington, and the petitioner-intervenor the National Association of Regulatory Utility Commissioners filed with the U.S. Court of Appeals for the District of Columbia both their revised addendum to their brief and reply brief in preparation for the Court's March 22nd date for oral arguments on the Yucca Mountain license proceedings.

14. On February 10th the U.S. Court of Appeals for the District of Columbia ordered the petitioners' (Aiken County, South Carolina, et al.,) February 1st motion to include a supplemental joint appendix and revised addenda.

15. On February 14th the states of New York, Connecticut and Vermont filed a lawsuit with the U.S. Court of Appeals for the District of Columbia against the NRC's temporary storage rule for spent nuclear fuel and waste confidence rule that were issued on December 23, 2010. Both rules extend the storage of used nuclear fuel at reactor sites to 120 years. The states contend that in promulgating these rules it violated numerous rules including the National Environmental Policy Act, the Administrative Procedures Act, and the Atomic Energy Act. The states argue that the NRC needs to perform environmental impact studies before extending the storage rule.

16. On February 17th the Natural Resources Defense Council (NRDC) filed with the U.S. Court of Appeals for the District of Columbia a lawsuit against the NRC challenging the NRC's Waste Confidence and Temporary Storage Rules. The NRDC contends that the rules violate the National Environmental Policy Act, the Administrative Procedures Act and the Atomic Energy Act.

17. On February 18th the Blue Ridge Environmental Defense League, Riverkeeper, Inc. and the Southern Alliance for Clean Energy filed a joint lawsuit against the NRC and the United States of America. The petitioners contend that the Waste Confidence Update and the Temporary Storage Rule published by the NRC violate the Atomic Energy Act, the National Environmental Policy Act, and the Administrative Procedures Act. The petitioners are requesting the Court to reverse the NRC rules.

18. On February 23rd the petitioners from Aiken County, South Carolina, the states of Washington and South Carolina, the business leaders from the Tri-City area near the Hanford site in Washington, and the intervenor-petitioner - National Association of Regulatory Utility Commissioners, filed with the U.S. Court of Appeals for the District of Columbia a proposed format for the presentation of the petitioners' oral arguments scheduled for March 22nd. The counsels representing the federal government took no position on the petitioners' motion.

19. On February 28th Aiken County, South Carolina, the states of Washington and South Carolina, and the business leaders from the Tri-City area near the Hanford Site in Washington filed with the U.S. Court of Appeals for the District of Columbia an amended motion for the Court to consider on the format for the oral arguments set for March 22nd. The federal government had no position on the petitioners' motion.

20. On March 7th the National Association of Regulatory Utility Commissioners filed with the U.S. Court of Appeals for the District of Columbia Circuit requesting relief from the imposition of a Nuclear Waste Fund fee for a non-existent disposal program.

21. On March 8th the U.S. Court of Appeals for the District of Columbia Circuit issued an Order granting the petitioner's motion on the format of the oral arguments for the Yucca Mountain proceedings.

22. On March 8th the Nuclear Energy Institute (NEI) and sixteen of its member utilities across the country filed suit in the U.S. Court of Appeals for the District of Columbia Circuit requesting the Court to direct the DOE to suspend its collection of the one-tenth of a cent per kilowatt-hour surcharge on electric bills. The Institute contends the fee is not necessary since the Nuclear Waste Fund has a balance of more than $24 billion and the Administration budgets for FY 2011 and 2012 did not include any funding for the disposal and management of the used nuclear fuel program.

23. On March 8th the Nuclear Energy Institute filed with the U.S. Court of Appeals for the DC Circuit a motion to leave and intervene in support of the federal government against the states of Connecticut, New York and Vermont lawsuit. The states' filed their lawsuit in February over the federal government's implementation of the NRC's Waste Confidence Decision Update and Temporary Storage Rule claiming the rules would violate the Atomic Energy Act, the Administration Procedures Act and the National Environmental Policy Act. The motion provided numerous reasons why the NEI has a clear interest and how they would be affected.

24. On March 14th the state of Washington filed with the U.S. Court of Appeals for the D.C. Circuit additional information in preparation for the March 22nd oral arguments date set by the Court on the Yucca Mountain license proceedings.

25. On March 15th the counsel for the three business leaders from the Tri-City area of the Hanford Site in Washington sent a letter to U.S. Court of Appeals for the District of Columbia Circuit requesting permission for his clients to listen in on the oral arguments through a telephone hook-up.

26. On March 17th the U.S. Department of Justice (DOJ) sent a letter to the Clerk of the U.S. Court of Appeals for the D.C. Circuit taking issue with the March 14th letter from the petitioners stating that newspaper articles do not constitute authorities under the Court's rules. The DOJ also filed their attachments in preparation for oral arguments scheduled for March 22nd.

27. On March 22nd the U.S. Court of Appeals for the District of Columbia Circuit heard oral arguments on the Department of Energy's plan to withdraw its license application before the Nuclear Regulatory Commission (NRC) to construct a high-level waste repository at Yucca Mountain in Nevada. The petitioners were represented by the State of Washington's Attorney General's Office and the Counsel for the Tri-City leaders near the Hanford Reservation in Washington. The Department of Justice represented the federal government. The Court questioned the petitioners' contentions on ripeness and why they should not wait for the NRC to act. On the defense side the Court questioned as to why the NRC's inaction should not be considered as a de facto decision and therefore challengeable by the petitioners.

28. On April 1st the Attorney General's Office from the State of Washington filed with the U.S. Court of Appeals for the District of Columbia in behalf of the petitioner's, (the states of Washington and South Carolina, Aiken County South Carolina, the three business leaders from the Tri-City area near Hanford Washington, and the National Association of Regulatory Utility Commissioners), provided supplemental information to their March 22nd oral arguments to counter the questions raised by the Court.

29. On April 6th counsels for the Nuclear Regulatory Commission and the Department of Energy filed a letter with the U.S. Court of Appeals for the District of Columbia Circuit stating that the petitioners' (Aiken County South Carolina, et al.) request should be dismissed for their "failure to challenge a final agency action".

30. On July 1st the Washington, D.C. Circuit Court of Appeals dismissed the lawsuit that argued the Obama Administration acted illegally in shutting down the Yucca Mountain Project. In a unanimous decision the three judge panel ruled that the lawsuit was premature until the Nuclear Regulatory Commission (NRC) makes a final decision. However, Chief Judge Sentelle did say "Should the Commission fail to act within the deadline specified, petitioners would have a new cause for action. We will not permit an agency to insulate itself from judicial review by refusing to act." The expected date for this decision is September 15th since the license application was formally registered at the NRC in September of 2008 and the NRC is required by the Nuclear Waste Policy Act to either approve or disapprove the Yucca Mountain license application. As Judge Kavanaugh stated, "The President does not have the final word in the Executive Branch about whether to terminate the Yucca Mountain project. For now, therefore, the ball in this case rests in the Executive Branch not with the President, but rather with the Nuclear Regulatory Commission."

31. On July 29th Aiken County, South Carolina, the Tri-City business leaders from Hanford, Washington, the states of South Carolina and Washington, the National Association of Regulatory Utility Commissioners, and Nye County, Nevada filed a petition for writ of mandamus with the U.S. Court of Appeals for the District of Columbia Circuit against the U.S. NRC and Chairman Jaczko requesting the Court to compel the NRC to issue a final merits-based decision approving or disapproving the Department of Energy's application for a repository construction authorization at Yucca Mountain in Nevada. The basis for the lawsuit was that NRC action on the license application was unreasonably

delayed. According to the Nuclear Waste Policy Act of 1982 as amended the NRC has three years to act on DOE's license application to construct a repository at Yucca Mountain.

32. On July 29th the National Association of Regulatory Utility Commissioners issued a press release stating that they joined the States of Washington and South Carolina and local governments from Nevada in filing a lawsuit against the Nuclear Regulatory Commission for withholding a decision on the Yucca Mountain license application. The Association believed that it had to take this action in order to force the NRC to act.

33. In August Nye County in Nevada, the host county for the Yucca Mountain Project, joined the States of Washington and South Carolina, Aiken County in South Carolina, and three business leaders from the Tri-City area near the Hanford site in Washington in a lawsuit to prevent the dismantling of the Yucca Mountain nuclear repository.

34. On August 23rd the U.S. Court of Appeals for the Federal Circuit issued a decision in favor of the Court of Federal Claims which ruled that Southern California Edison (SCE) was entitled to monetary damages for the federal government's breach of its contract to take possession of the spent nuclear fuel compelling SCE to build and operate an ISFSI. The Court of Federal Claims awarded SCE $142 million for the construction of their ISFSI.

35. On October 20th the National Association of Regulatory Utility Commissioners, the Nuclear Energy Institute and seventeen nuclear utilities filed their reply brief with the U.S. Court of Appeals for the District of Columbia Circuit to their petition for Court review of the final actions or failures to act by the DOE on the annual fee assessment for the Nuclear Waste Fund. The petitioners contended that DOE's fee determination failed to meet the Nuclear Waste Policy Act's explicit statutory requirements.

36. On November 4th the U.S. Court of Appeals for the District of Columbia issued an Order granting the petitioners' (the states of South Carolina and Washington, Aiken County in South Carolina, Nye County in Nevada, the three business leaders from the Tri-City area near the Hanford site in Washington, and the National Association of Regulatory Utility Commissioners) motion to expedite the review of the DOE's and the NRC's dismantling of the Yucca Mountain Project and license application proceedings. Besides establishing the expedited briefing schedule, the Order also granted the State of Nevada the right to intervene.

37. On December 5th the states of Washington and South Carolina, Aiken County in South Carolina, Nye County in Nevada, the three business leaders from the Tri-City area near Hanford, Washington, and the National Association of Regulatory Utility Commissioners filed a writ of mandamus (mandate) with the U.S. Court of Appeals for the District of Columbia over the NRC's unreasonable withholding of agency action on the Yucca Mountain license proceedings. The petition requested the Court to direct the NRC to resume the licensing proceedings within 30 days and to approve or disapprove the license application within 14 months.

38. On December 12th the Nuclear Energy Institute filed an amicus brief (friends of the court) in support of the petitioners lawsuit against the NRC and its Chairman, Gregory Jaczko. The petitioners from the states of Washington and South Carolina, Aiken County in South Carolina, Nye County in Nevada, the three business leaders from the Tri-City area near Hanford Washington, and the National Association of Regulatory Utility Commissioners filed suit against the NRC for unreasonably withholding agency action on the Yucca Mountain licensing proceedings.

Appendix H

Notable Reports and Documents

1. On March 4th the Congressional Research Service issued a report, entitled "Closing of Yucca Mountain: Litigation Associated with Attempts to Abandon the Planned Nuclear Waste Repository". The report provided a historical legal summary of:
    - the Administration's budgets to defund and terminate the Yucca Mountain Project,
    - the DOE's initiatives to withdraw their Yucca Mountain license application and to reprogram congressional appropriations for closure of the project,
    - the appointment of and directives provided to the Blue Ribbon Commission,
    - the Nuclear Regulatory Commission's licensing proceedings and the halting of those proceedings,
    - the subsequent litigation in the D.C. Circuit Court of Appeals over the license withdrawal and the suspension of the Nuclear Waste Fund fee, and
    - the congressional reaction to the proposed termination of the Yucca Mountain facility.

2. On April 26th the Massachusetts Institute of Technology released a report on the nuclear fuel cycle recommending regional centralized storage sites for 100 years starting with used nuclear fuel from decommissioning reactor sites. The report suggested the spent fuel should be placed in medium-term repositories using dry casks and above ground silos. The report recommended storage over reprocessing since the existing uranium supply was adequate and long term storage would maintain the reprocessing option.

3. On March 23rd U.S. Government Accountability Office issued a report entitled: "DOE NUCLEAR WASTE: Better Information Needed on Waste Storage at DOE Sites as a Result of Yucca Mountain Shutdown". The DOE is responsible for managing and storing its own and the Department of Defenses' used nuclear fuel and high-level waste in five states. The report evaluated:
    1. the termination of the Yucca Mountain Project and its impact on the agreements DOE has with five states,
    2. the impacts on the DOE's and the Navy's operations and costs to store the waste; and
    3. the DOE's and the Navy's plans for mitigating the potential effects.

    Two of the states have legal deadlines for the federal waste to be removed from the DOE sites. If the milestones were not met then the government would face significant penalties, up to $75,000 per day, or $27.4 million annually. If a repository's opening was delayed 20 years beyond the January 1, 2035 deadlines, then the analysis showed that DOE would need nearly $1 billion in additional funds in order to extend storage at the DOE sites. The Navy's greatest concern was if Idaho decided to suspend the Navy's shipment of their spent fuel. A suspension would interfere with the Navy's ability to refuel its nuclear warships. The report recommended that the "DOE (1) assess existing nuclear waste storage facilities and the resources and information needed to extend their useful lifetimes and (2) identify any additional research needed to address DOE's unique needs for long-term waste storage".

4. In March the Board of Eureka County Commissioners issued a report entitled: "Lessons Learned: Summary of Findings and Recommendations for the Blue Ribbon Commission on America's Nuclear Future". The report listed four major concerns the County believed resulted in the federal government's failure at Yucca Mountain. They were:

a) Public trust and confidence were not established and sustained,
b) Adequacy of funding was limited or restricted hindering effective participation in decisions,
c) Government information was not accurate and publicly accessible, and
d) Government failed to respond to transportation and emergency response concerns.

Each major concern was further subdivided into more specific concerns. For example, under public trust and confidence, the concerns were divided into four subcategories: congressional action, fairness of the DOE's actions, lack of clarity in procedures for redress of concerns, and distortion of the National Environmental Policy Act (NEPA) process. Each subcategory usually had additional specifics with recommendations. The Board recommended that the Blue Ribbon Commission endorse an approach "that

- respects the local governments and the host State,
- encourages volunteer siting,
- promotes a coordinated and transparent NEPA process,
- considers the challenges of transportation and emergency response to be integral to the project,
- recognizes the broadened involvement of parties in the licensing process, and
- supports on-going, publicly accessible, responsible stewardship of public information related to the repository program, adapting to new technology for the life of the project."

5. On April 15th the U.S. Nuclear Waste Technical Review Board sent a letter to the Speaker of the House, Senate President Pro Tempore and Energy Secretary Chu submitting their report: "Experience Gained From Programs to Manage High-Level Radioactive Waste and Spent Nuclear Fuel in the United States and Other Countries" as part of their legislative directive to report their findings and recommendations to Congress and the Secretary of Energy. The report examined "the efforts of 13 countries to find a permanent solution for isolating" spent nuclear fuel and high-level waste from the biosphere. The report not only updated a previous report's findings but was timely considering the current deliberations and drafting of recommendations from the BRC. The report highlighted major summary points in eight broad categories such as:

   - Process Considerations
   - Development, Assessment, and Adoption of Waste Management Options
   - Institutional Arrangements for Executing Waste Management Programs
   - Technical Basis for Developing Disposal Concepts and Supporting a Safety Case
   - Substance and Adoption of Health and Safety Standards and Regulations
   - Strategies for Identifying Candidate Sites for a Deep-Mined Geologic Repository
   - Site Selection for a Deep-Mined Geologic Repository
   - Approval to Construct a Deep-Mined Geologic Repository

   The report also included technical reviewers from Germany, Italy, United Kingdom, Sweden and France. The report had four general conclusions.

6. In April the U.S. Nuclear Waste Technical Review Board issued a report on deep borehole disposal of spent nuclear fuel and high-level waste. The report discussed safety, capacity, technical feasibility and challenges, and international investigations.

7. On May 10th the Government Accountability Office (GAO) released its April 8th report: "COMMERCIAL NUCLEAR WASTE Effects of a Termination of the Yucca Mountain Repository Program and Lessons Learned". The report examined:

   a) the reasoning for the DOE's decision to discontinue the Yucca Mountain program,

b) the shutdown steps DOE took and their effects,
c) the major impacts if the repository were shuttered, and
d) the principal lessons learned.

The GAO report recommended that "Congress consider whether a more predictable funding mechanism would enhance future efforts and whether an independent organization would be more effective". The GAO report also recommended that "DOE assess remaining risks of the shutdown; create a plan to resume licensing if necessary; and report on federal property and its disposition". The NRC and the DOE were allowed to comment on a draft report. The NRC had no significant comments on the draft whereas the DOE had 14 pages of comments that strongly disagreed with the draft and its recommendations, and questioned the integrity of GAO's information. GAO maintained that its findings and recommendations were sound.

8. On May 19th the NRC's Office of Inspector General (OIG) released its Audit Report: "Audit of the NRC's Oversight of Independent Spent Fuel Storage Installations Safety". With the termination of the Yucca Mountain repository program it was expected that by the year 2025 all commercial nuclear power plants in the United States would have operating ISFSIs. In addition, the NRC's Waste Confidence Rule, published on December 23, 2010, allowed for longer on-site storage of spent nuclear fuel. Consequently, the NRC has been reviewing the issues associated with long-term storage. The OIG found that inspection frequencies of ISFSIs were not clearly defined between the four NRC Regions, which resulted in inspections varying from one to almost six years. OIG also noted that there was no formalized agency wide training program, which resulted in safety inspectors having inconsistent understandings of agency requirements, of ISFSI inspection requirements, of ISFSI enforcement requirements and of the role of resident inspectors at operating sites with ISFSIs. Although there have been no significant issues at ISFSIs, without consistent "inspection requirements oversight can be compromised, which could result in an increased risk to public health and safety." Therefore, OIG identified ISFSI safety inspector training and frequency of routine inspections as improvement opportunities.

9. On May 31st the BRC's Subcommittee on Transportation and Storage issued its draft report to the full Commission on its findings and recommendations. The seven recommendations are essentially the same as those presented at the May 13th BRC meeting but were expanded to better frame the recommendations. The report addressed five broad categories:

   - Technical and Regulatory Considerations for Extended Interim Storage and Transport
   - Consolidated Interim Storage
   - Management and Financing Considerations
   - Existing Potential Interim Storage Sites: Process Issues
   - Transportation Issues

   There were several key findings in each category.

10. On June 1st the Disposal Subcommittee of the BRC issued its draft report to the full Commission. The Subcommittee focused their efforts on a central question: "How can the United States go about establishing one or more disposal sites for high-level nuclear wastes in a manner and within a timeframe that is technically, socially, economically, and politically acceptable?" The report listed seven recommendations for the ultimate disposal of the nation's civilian and defense-related used nuclear fuel. They are in abbreviated form:

    - Develop one or more geologic disposal facilities.
    - Establish a new federally chartered corporation to administer the nation's high-level waste program.

- Have access to the Nuclear Waste Fund balance and revenues generated by the fee assessed rate payers.
- Develop a "consent-based, transparent, phased, adaptive, and standards- and science-based" geologic siting process.
- Maintain the division of regulatory responsibilities between the Nuclear Regulatory Commission and the Environmental Protection Agency.
- Integrate affected state, local and tribal governments into the decision process.
- Retain the Nuclear Waste Technical Review Board for independent technical advice and review.

11. On June 1st the U.S. Government Accountability Office issued a report entitled "NUCLEAR WASTE – Disposal Challenges and Lessons Learned from Yucca Mountain". The report related the status of the Yucca Mountain repository and discussed the two storage options available, on-site storage and interim storage at a centralized facility. Each option offered benefits but also posed challenges including high costs. The report concluded with principal lessons learned that could facilitate future nuclear waste storage or disposal efforts. There were two broad lessons. The first "overcoming social and political opposition and gaining public acceptance is crucial." The second was "in developing storage or disposal options, it is important to have consistent policy, funding, and leadership, since any effort will take decades."

12. On June 6th the NRC's Inspector General released his findings on the seven month investigation of Chairman's Jaczko's unilateral decision and actions to terminate the Commission's Yucca Mountain license proceedings. The Report's two noteworthy findings were:

    - Chairman Jaczko did not violate any laws. However, Chairman Jaczko specifically withheld information from and misled the other Commissioners on his intent to shutter the Yucca Mountain license proceedings and stop the staff from issuing Volume III of the Safety Evaluation Report (SER) on Yucca Mountain.
    - There were extenuating factors that predisposed the NRC from fulfilling its legal obligation such as the Administration's decision to terminate the Project, decreasing appropriations to the agency's high level waste program and Chairman Jaczko's directive to stop work on the SER.

13. In June the U.S. Nuclear Waste Technical Review Board sent a letter to Congress and Energy Secretary Chu on their latest Topical Report #2, "Nuclear Waste Assessment System for Technical Evaluation (NUWASTE): Status and Initial Results". NUWASTE is a computer based systems analysis tool that is capable of evaluating the management of spent nuclear fuel, "including dry storage, direct disposal in a repository, and the potential introduction of reprocessing with recycling of uranium and plutonium". The report focused its initial efforts on four scenarios:

    - Long-term Dry Storage
    - Direct Disposal of Spent Nuclear Fuel
    - Recycling of Uranium and Plutonium
    - Recycling of Plutonium Only

    The report also mentioned additional ways the computer analysis tool could be expanded for the future.

14. On September 16th the U.S. Government Accountability Office (GAO) released a report, "YUCCA MOUNTAIN – Information on Alternative Uses of the Site and Related Challenges". The report examined the "characteristics of the Yucca Mountain site, stakeholders' proposed alternative uses and experts' evaluations of them, and challenges, if any, in pursuing alternative uses". Stakeholders proposed 30 alternative uses that extend over five broad categories.

- Nuclear or radiological uses, such as reprocessing,
- Defense or homeland security activities,
- Information technology,
- Energy development or storage, such as renewable energy
- Scientific research in geology or mining.

Whatever uses are contemplated the site could face legal and administrative challenges.

15. On November 10th the DOE's Inspector General issued a Special Report: "Management Challenges at the Department of Energy". The Office of Inspector General yearly issues a report on the most significant challenges facing the Department. This year the report stated "Additionally, due to the decision to terminate the Yucca Mountain Project and the remaining uncertainty as to the path forward for disposing of spent commercial nuclear waste and high-level defense waste, we now consider Nuclear Waste Disposal to be a significant management challenge." The report went on to list other challenges such as cyber security, energy supply, clean-up of multiple nuclear weapons sites and cutting costs at the DOE's national laboratories.

16. On December 13th the House of Representatives' Committee on Oversight and Government Reform issued an investigation report, entitled, "A Crisis in Leadership". The report concentrated on the Committee's investigation of the NRC's actions during three events:

    - The termination of the NRC's technical review of the DOE's license application to construct a geologic repository at Yucca Mountain,
    - The emergency response to the reactor accidents in Japan, and
    - The assessment of the lessons learned from the Japanese incident.

    The report listed fourteen findings and how those findings led to the conclusion that the actions of Chairman Jaczko were damaging the NRC.

17. On December 30th the NRC issued a draft report for comment entitled, "Background and Preliminary Assumptions for an Environmental Impact Statement – Long-Term Waste Confidence Update". Due to the closure of the Yucca Mountain Project, the NRC anticipated that spent nuclear fuel would be stored longer than originally intended at reactor sites. The Commission updated its Waste Confidence decision and rule in December 2010 and directed the NRC staff to develop a longer-term update, supported by an environmental impact statement (EIS) that would account for the impacts of storage beyond a 120 year timeframe. The staff is seeking public feedback on the agency's preliminary plans in order to ensure the preliminary EIS scope described in the report considers the significant factors related to the longer-term storage of spent nuclear fuel and high-level waste.

Appendix I

International Highlights

1. On April 10th-14th an international high-level radioactive waste management conference was held in Albuquerque, New Mexico. Although the topics were many and varied, most focused on geologic repositories, natural analogs, engineered barriers, radiological pathway models and model uncertainties. However, some sessions were devoted to technical issues in dry storage, international experience in dry interim storage and the Department of Energy's program for long term storage. The international storage session featured presentations from France, Germany and Japan. One of the highlights was a special session devoted to Sweden's reaching a milestone in their nuclear waste management program – a license application for a repository at Fosmark.

2. On July 19th the European Union (EU) ministers agreed to a pan-European plan for disposing of the used nuclear fuel from the EU's 143 nuclear reactors. The new rules force national nuclear authorities to draw up disposal plans by 2015. Currently, the member states that use nuclear power store their spent nuclear fuel in secure bunkers or warehouses.

3. On August 1st it was reported that Japan and the United States were pressing for a deal with other countries to build a nuclear fuel repository in the Gobi Desert in southern Mongolia. The proposal would let the International Atomic Energy Agency manage the repository facility and include building a nuclear fuel production facility, nuclear reactors, a research laboratory and a storage facility.

4. In August Pacific Northwest National Laboratory issued a news release stating that the national laboratory has been working with researchers from five other countries to acquire "samples of old glass against which to test computer models that simulate nuclear waste stored for long periods". The ancient glass provides historic information on how slow glass dissolves over time. The researches are exploring ways to safely store nuclear waste by turning it into glass, a process known as vitrification.

Appendix J

Nuclear Waste Fund Balance

RATEPAYER PAYMENTS BY STATE
THROUGH 9-30-10 (MILLIONS OF DOLLARS)

STATE	PAYMENTS 1 mill/kwh, One Time+Int	RETURN ON INVESTMENTS as of 9/30/10	TOTAL (PAY+RETURN)	DEBT*	FUND ASSETS** (TOTAL + DEBT)
AL	533.9	425.7	959.6	0.0	959.6
AR	358.2	285.6	643.8	175.6	819.4
AZ	266.3	212.4	478.7	0.0	478.7
CA	1,020.3	813.6	1,833.9	0.0	1,833.9
CO	0.2	0.2	0.4	0.0	0.4
CT	295.9	236.0	531.9	358.5	890.4
DE	46.6	37.2	83.8	0.0	83.8
FL	842.4	671.8	1,514.2	0.0	1,514.2
GA	685.5	546.6	1,232.1	0.0	1,232.1
IA	249.4	198.9	448.3	45.1	493.4
IL	1,880.1	1,499.2	3,379.3	972.6	4,351.9
IN	252.1	201.0	453.1	229.9	683.0
KS	133.3	106.3	239.6	0.0	239.6
KY	152.1	121.3	273.4	0.0	273.4
LA	324.2	258.5	582.7	0.0	582.7
MA	356.1	284.0	640.1	163.4	803.5
MD	390.6	311.5	702.1	0.0	702.1
ME	48.5	38.7	87.2	116.9	204.1
MI	314.2	250.6	564.8	198.2	763.0
MN	316.6	252.5	569.1	0.0	569.1
MO	250.7	199.9	450.6	5.1	455.7
MS	161.7	128.9	290.6	0.0	290.6
NC	1,538.0	1,226.4	2,764.4	0.0	2,764.4
ND	18.0	14.4	32.4	0.0	32.4
NE	190.0	151.5	341.5	0.0	341.5
NH	82.2	65.5	147.7	23.8	171.5
NJ	732.3	584.0	1,316.3	196.8	1,513.1
NM	77.4	61.7	139.1	0.0	139.1
NY	850.8	678.4	1,529.2	505.3	2,034.5
OH	461.9	368.3	830.2	32.6	862.8
OR	75.1	59.9	135.0	0.0	135.0
PA	1,378.3	1,099.1	2,477.4	66.6	2,544.0
RI	5.3	4.2	9.5	6.1	15.6
SC	689.4	549.7	1,239.1	0.0	1,239.1
SD	7.1	5.7	12.8	0.0	12.8
TN	580.1	462.6	1,042.7	0.0	1,042.7
TX	801.1	638.8	1,439.9	0.0	1,439.9
VA	698.9	557.3	1,256.2	0.0	1,256.2
VT	100.2	79.9	180.1	141.6	321.7
WA	170.6	136.0	306.6	0.0	306.6
WI	428.2	341.5	769.7	0.0	769.7
SUBTOTAL	17,763.8	14,165.3	31,929.1	3,238.1	35,167.2
FEDERAL	19.8	15.8	35.6	0.0	35.6
INDUSTRY	16.8	13.4	30.2	0.0	30.2
TOTAL	17,800.4	14,194.5	31,994.9	3,238.1	35,233.0

* Funds owed for fuel burned before 1983 but not yet paid by utilities (as allowed by DOE contract)
** before withdrawals for expenditures by DOE
Prepared by Ron Howe, Michigan Public Service Commission, 517-241-6021, hower@michigan.gov