

Con Edison's decommissioning plan provides a short discussion of the plant history, a description of the unit's radiological conditions, and a description and schedule of planned decommissioning activities. This decommissioning plan and the NRC's safety evaluation associated with the plan is available for public inspection at the White Plains Public Library, 100 Martie Avenue, White Plains, NY 10601. For more information contact John L. Minns, Non-Power Reactors and Decommissioning Project Directorate, Division of Reactor Program Management, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone 301-415-3166.

Dated at Rockville, Maryland, this 3rd day of September 1998.

For The Nuclear Regulatory Commission.

Seymour H. Weiss,

*Director, Non-Power Reactors and Decommissioning Project Directorate,
Division of Reactor Program Management,
Office of Nuclear Regulatory Regulation.*
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NUCLEAR REGULATORY COMMISSION

[Docket No. 50-309]

Maine Yankee Atomic Power Company, Maine Yankee Atomic Power Station; Exemption

I

Maine Yankee Atomic Power Company (MYAPCo or the licensee) is the holder of Facility Operating License No. DPR-36, which authorizes possession of Maine Yankee Atomic Power Station (Maine Yankee). The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC or the Commission) now or hereafter in effect. The facility is a pressurized-water reactor (PWR) located on the licensee's site in Lincoln County, Maine. On August 7, 1997, the licensee submitted written certifications to the Commission that it had decided to permanently cease operations at Maine Yankee and that all fuel had been permanently removed from the reactor. In accordance with 10 CFR 50.82(a)(2), upon docketing of the certifications contained in the letter of August 7, 1997, the facility operating license no longer authorizes MYAPCo to operate the reactor or to place fuel in the reactor vessel.

II

Section 50.54(q) of Title 10 of the Code of Federal Regulations (10 CFR 50.54(q)) requires power reactor licensees to follow and maintain in effect emergency plans that meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

Pursuant to 10 CFR 50.12(a), the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of the regulations that are (1) authorized by law, will not present an undue risk to public health and safety, and are consistent with the common defense and security and (2) present special circumstances. Special circumstances exist when application of the regulation in the particular circumstance would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule (10 CFR 50.12(a)(2)(ii)). The underlying purpose of Section 50.54(q) is to ensure licensees follow and maintain in effect emergency plans that provide reasonable assurance that adequate protective measures can and will be taken in the event of an emergency at a nuclear reactor. Sections 50.47(b) and (c) outline the planning standards and size of Emergency Planning Zones, respectively, that are to be considered in emergency plans and Appendix E to 10 CFR Part 50 identifies the information that must be included in emergency plans.

III

By letter dated November 6, 1997, the licensee requested exemptions from certain requirements of 10 CFR 50.54(q), 10 CFR 50.47(b) and (c), and Appendix E to Part 50; the licensee also made available a draft copy of the Maine Yankee Defueled Emergency Plan (DEP) to assist the staff in its review of the exemption request. The exemptions would allow Maine Yankee to discontinue certain aspects of offsite planning and reduce the scope of onsite emergency planning. The licensee stated that the remaining requirements of 10 CFR 50.54(q), 10 CFR 50.47(b) and (c), and Appendix E to Part 50 will be addressed in the DEP. The licensee plans to implement the DEP without NRC review and approval. Under the provisions of § 50.54(q), when a change to an emergency plan is made, the staff evaluates that change against the bases for commitments made in the plan to determine whether there is a decrease in effectiveness. It is not a decrease in effectiveness if the reduction in the commitment is commensurate with a

reduction in the bases for that commitment. In this instance, the staff has determined that there has been a reduction in the bases that require offsite emergency planning. The revised DEP will be reviewed by the NRC after implementation. By letter dated March 25, 1998, the licensee submitted the Emergency Action Levels that it proposes to use with the Defueled Emergency Plan. By letter dated June 29, 1998, the licensee submitted additional information that revised the exemption request. By letters dated January 20, May 15, and June 18, 1998, MYAPCo submitted the results of an assessment of the Maine Yankee spent fuel heatup in the absence of water in the spent fuel pool. By letters dated July 9 and August 5, 1998, the licensee provided the results of radiological analyses applicable to Maine Yankee in the permanently shutdown condition.

The licensee stated that special circumstances are present at Maine Yankee because (1) application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule, (2) compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or are significantly in excess of those incurred by others in similar circumstances, and (3) there is a material circumstance present, that was not considered when the regulation was adopted, for which it would be in the public interest to grant an exemption.

With the plant in a permanently shutdown and defueled condition, the applicable design-basis accidents are limited to a fuel handling incident, spent fuel cask drop, and radioactive liquid waste system leak and failure. The calculated maximum offsite dose from these postulated releases is less than the U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAGs). The licensee also estimated that, by March 1998, a beyond-design-basis event, involving fuel damage (caused by a loss of spent fuel pool water and a subsequent overheating of the stored fuel) and the release of radioactive materials sufficient to exceed EPA PAGs at the site boundary is not credible.

Revision 14 to the Maine Yankee Defueled Safety Analysis Report (DSAR) includes revised analyses of postulated accidents at Maine Yankee in its permanently shutdown status. Chapter 5 of the DSAR describes the radiological consequences of accidents that could release radioactive materials and the consequences of a spent fuel pool

draindown event. The staff reviewed the licensee's analyses, as modified in licensee submittals dated July 9 and August 5, 1998, to determine whether the radiological impact of these events would require an offsite emergency plan.

Decontamination of systems during decommissioning and dismantlement operations will generate significant quantities of radioactive waste in the form of contaminated demineralizer resins. The licensee has postulated a bounding accident for the release of radioactivity: the dropping of a highly loaded spent resin liner within the low-level-waste storage building (LLWSB), resulting in the liner failure and a release of a fraction of its radioactive materials in an airborne cloud. The analysis indicates that an individual at the exclusion area boundary (EAB) could receive up to 0.11 rem total effective dose equivalent (TEDE) from this event.

The licensee stated that this event was considered to have higher offsite consequences than the mishandling of resin during resin liner filling and dewatering operations since these activities are performed in containment. Hold-up and confinement of radioactive materials in a containment that is isolated would significantly decrease the potential for offsite release. In addition, the licensee committed in the DSAR to establish administrative controls to ensure that calculated offsite doses from potential decommissioning accidents do not exceed those calculated for a spent resin cask drop accident.

The licensee did not postulate a fire concurrent with the resin mishandling event owing to the low flammability of the resin itself and the absence of flammable material in the LLWSB. However, the analysis did assume that 1.0 percent of the radioactivity in the liner became airborne during the event. This assumption is the same fraction of material expected to be released by a fire, and is consistent with the release fractions listed in Schedule C to 10 CFR 30.72 for mixed fission and corrosion products. The calculational methods and assumptions used in this analysis are acceptable to the staff.

Wet storage of spent fuel possesses inherently large safety margins because of the simplicity and robustness of the spent fuel pool design. The design basis includes the ability to withstand an earthquake and to retain sufficient water to adequately cool and shield the stored spent fuel. Specifically, in the DSAR, the licensee states that the spent fuel pool structure is designed to Seismic Class I requirements and is capable of

performing its intended safety function under the licensee's design-basis hypothetical earthquake with a 0.1-g peak ground acceleration. The pool has 6-foot reinforced-concrete walls and floor with a 1/4-inch steel liner. To add to the robustness of the design, the pool is founded on bedrock and is embedded 12.5 feet below grade level, which is at the 20 foot, 1 inch elevation. Since the analyses used in designing the capability of structures, systems, and components (SSCs) to perform their safety function under a hypothetical earthquake have significant margin in them, it is expected that an SSC built to withstand the hypothetical design-basis earthquake actually will be able to withstand a larger earthquake. Thus, the loss of coolant from the Maine Yankee spent fuel pool, which partially or completely uncovers the fuel, is a beyond-design-basis event with a very low probability of occurrence.

In a letter dated May 15, 1998, the licensee submitted analyses for a complete loss of inventory and several partial loss-of-inventory events within the spent fuel pool. That analysis showed that a partial draindown was more severe than a complete draindown for the licensee's plant. For this case, only 5.5 feet of the active fuel is covered by water. The licensee calculated that it would take 30 hours for the cladding to heat up to 827 °C. However, the staff reviewed the calculations and determined that the bounding scenario would be one with the active fuel totally uncovered and water blocking the assembly lower inlet so that no natural circulation flowpath exists. The staff calculated that, for this case, as of August 1, 1998, it would take approximately 10 hours for the hottest location in the highest power assembly to reach 900 °C. The heatup time was calculated assuming an adiabatic heatup of a fuel rod and using conservative decay heat assumptions. An adiabatic heatup is defined as one in which all heat generated is retained in the system, with no heat loss to the surroundings. This definition corresponds to a physical situation in which the spent fuel pool water is lost, no cooling mechanism is available, and the fuel is surrounded by a perfect insulator. The staff considers that this scenario would be bounding for any loss-of-inventory scenario since any other scenario would have some heat removal from the assembly and a longer heatup time. Consequently, the staff determined that, in view of the low likelihood of the bounding scenario, and the time elapsed since the shutdown of the facility, there would be sufficient time for mitigative

actions and, if necessary, offsite protective measures to be initiated after a postulated loss of water and before a postulated release of radioactivity resulting from spent fuel overheating.

In the event that spent fuel pool water inventory is lost more gradually through the method discussed above or through some other means, such as a siphon or liner leak, plant personnel have various methods for detecting the loss of inventory. The staff reviewed these methods, which include indicators to alert and assist in identifying any loss of coolant inventory. The design includes a low coolant level indicator and an area radiation monitor, both of which alarm in the control room. Although not credited for accident mitigation, these alarms provide methods to alert the operators to a loss-of-inventory event. In the DSAR, the licensee also states that there are several sources of makeup water to the spent fuel pool. Among these sources are the normal sources of makeup water from the refueling water storage tank, demineralizer water from the primary water storage tank, emergency sources from the fire water system, and potable water from the town of Wiscasset water supply system. On the basis of indicators and alarms available to plant personnel and the availability of makeup sources to restore a gradual loss of coolant, the staff finds it reasonable to expect that fuel uncover as a result of a gradual loss of coolant scenario is highly unlikely.

Although the event is unlikely, the licensee evaluated the dose consequences of both partial and complete spent fuel pool draindown. Water and the concrete pool structure provide radiation shielding on the sides of the pool. However, water alone accounts for most of the shielding above the spent fuel. A loss of shielding above the fuel could increase the radiation levels at the exclusion area boundary (EAB) due to the scattering of gamma rays streaming up out of the pool. The licensee postulated a partial pool draindown event resulting from a break in the pool cooling system piping, concurrent with a failure of the associated anti-siphon device. The licensee assumed that additional pool water was lost through pool boiling for the following four days before effective corrective actions could be taken to reestablish adequate pool water level. The licensee calculated that the dose rate was 0.00076 rem per hour at the EAB. In addition the licensee calculated the postulated offsite dose rates in the event of a complete draindown of the spent fuel pool (a beyond-design-basis event). Assuming only one year of

radioactive decay and a site boundary distance of 610 meters, the complete draindown resulted in a postulated dose rate of 0.01 rem per hour. The licensee's calculated dose rate indicates it would take 4.1 days for this event to exceed the EPA early-phase PAG of 1 rem.

The staff concludes that the licensee's request for an exemption from certain requirements of 10 CFR 50.54(q), 10 CFR 50.47(b) and (c), and Appendix E to Part 50 is acceptable in view of the greatly reduced offsite radiological consequences associated with the current plant status. The staff finds that the postulated dose to the general public from any reasonably conceivable accident would not exceed EPA PAGs and, for the bounding accident, the length of time available gives confidence that offsite measures for the public could be taken without preplanning. The staff finds acceptable the licensee's commitment in the DSAR to establish administrative controls to ensure that calculated offsite doses from potential decommissioning accidents do not exceed those determined for a spent resin cask drop accident. Therefore, the staff concludes that the requirement that emergency plans meet all of the standards of 10 CFR 50.47(b) and all of the requirements of Appendix E to Part 50 is not now warranted at Maine Yankee and an exemption from the requirements for offsite emergency planning is acceptable.

IV

The NRC staff has completed its review of the licensee's request for an exemption from the requirements of 10 CFR 50.47(c)(2) and from the requirements of 10 CFR 50.54(q), that emergency plans must meet all of the standards of 10 CFR 50.47(b) and all the requirements of Appendix E to 10 CFR part 50. The standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR part 50 that remain in effect are listed in Attachment II to the licensee's letter dated June 29, 1998. On the basis of its review, the NRC staff finds that the postulated dose to the general public from any reasonably conceivable accident would not exceed EPA PAGs and, for the bounding accident, the length of time available provides confidence that offsite measures for the public could be taken without preplanning. The analyses submitted by the licensee are consistent with the commitment made in its DSAR, which stated that any decommissioning activities will be analyzed and administrative controls will be established to ensure that the calculated offsite doses do not exceed those determined for the spent resin

cask drop accident. The staff finds the exemption from two requirements, 10 CFR 50.47(b)(9) and 10 CFR 50 Appendix E.IV.A.4, acceptable on the basis of the licensee's commitment to continue to maintain capabilities for dose assessment and personnel equivalent to those described in section 7.0 of the draft Defueled Emergency Plan provided in Attachment III to the licensee's letter dated November 6, 1997. The information developed from the capability would be used to determine whether offsite measures for the general public would be appropriate. Maine Yankee will continue to maintain an onsite emergency preparedness organization capable of responding to the consequences of radiological events still possible at the site. Thus, the underlying purpose of the regulations will not be adversely affected by eliminating offsite emergency planning activities or reducing the scope of onsite emergency planning.

For the foregoing reasons, the Commission has determined that, pursuant to 10 CFR 50.12, elimination of offsite emergency planning activities will not present an undue risk to public health and safety and is consistent with common defense and security. Further, special circumstances are present as stated in 10 CFR 50.12(a)(ii). Pursuant to 10 CFR 51.32, the Commission has determined that this exemption will not have a significant effect on the quality of the human environment (63 FR 43968, August 17, 1998).

This exemption is effective upon issuance.

Dated at Rockville, Maryland this 3rd day of September 1998.

For the Nuclear Regulatory Commission.

Samuel J. Collins,

Director, Office of Nuclear Reactor Regulation.

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NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50-280 and 50-281]

In the Matter of Virginia Electric and Power Company Surry Power Station, Unit Nos. 1 and 2; Exemption

The Virginia Electric and Power Company (VEPCO, the licensee) is the holder of Facility Operating License Nos. DPR-32 and DPR-37, which authorize operation of the Surry Power Station (SPS), Unit Nos. 1 and 2. The licenses provide, among other things, that the licensee is subject to all rules,

regulations, and orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facility consists of two pressurized-water reactors at the licensee's site located in Surry County, Virginia.

II

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 20.1703, "Use of individual respiratory protection equipment" requires in subsection (a)(1) that " * * * the licensee shall use only respiratory protection equipment that is tested and certified or had certification extended by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA)." Further, 10 CFR 20.1703(c) requires that "the licensee shall use as emergency devices only respiratory protection equipment that has been specifically certified or had certification extended for emergency use by NIOSH/MSHA," and 10 CFR Part 20, Appendix A, Protection Factors for Respirators, Footnote d.2 (d), states that " * * * the protection factors apply for atmosphere-supplying respirators only when supplied with adequate respirable air. Respirable air shall be provided of the quality and quantity required in accordance with NIOSH/MSHA certification (described in 30 CFR part 11). Oxygen and air shall not be used in the same apparatus." By letter dated March 3, 1998, as supplemented May 5, 1998, the licensee requested an exemption from certain requirements of 10 CFR 20.1703(a)(1), 10 CFR 20.1703(c) and 10 CFR Part 20, Appendix A, Footnote d.2 (d).

Pursuant to 10 CFR 20.2301, the Commission may, upon application by a licensee or upon its own initiative, grant an exemption from the requirements of the regulations in Part 20 if it determines that the exemption is authorized by law and would not result in undue hazard to life or property.

III

The SPS 1&2 containments are designed to be maintained at subatmospheric pressure during power operations. The containment pressure can range from 9.0 to 11.0 pounds per square inch absolute (psia). This containment environment could potentially impact personnel safety due to reduced pressure and resulting oxygen deficiency. Such environment requires the use of a Self-Contained Breathing Apparatus (SCBA) with enriched oxygen breathing gas. The licensee initially purchased Mine Safety Appliances, Inc. (MSA) Model 401