

# **Appendix A**

## **Site Summaries for Decommissioning Power Reactors**

# Big Rock Point

## 1.0 Site Identification

Location: Charlevoix, MI  
License No.: DPR-6  
Docket No.: 50-155  
License Status: DECON  
Project Manager: Jim Shepherd

## 2.0 Site Status Summary

Big Rock Point (BRP) is located in Charlevoix County, Michigan, approximately four miles northeast of Charlevoix, Michigan, and approximately 11 miles west of Petoskey, Michigan, on the northern shore of Michigan's lower peninsula. The BRP site is owned by Consumers Energy Company (CE). The BRP Nuclear Plant was a boiling water reactor rated at 75MW electric, designed by General Electric Company.

The plant was permanently shut down on August 29, 1997. Fuel was transferred to the spent fuel pool by September 20, 1997. On September 19, 1997, CE submitted a post-shutdown decommissioning activities report (PSDAR) that identified decommissioning activities commencing in September 1997, and concluding in September 2002. The licensee selected the DECON option. On March 26, 1998, CE submitted a revised PSDAR that showed conclusion of decommissioning about August 2005. Dry fuel storage will continue through 2012 or later, depending on when the U.S. Department of Energy (DOE) accepts spent fuel.

CE submitted a license termination plan (LTP) on April 1, 2003. After negotiating a memorandum of agreement (MOA) with the Michigan State Historic Preservation Officer (SHPO), the U.S. Nuclear Regulatory Commission (NRC) approved it on March 12, 2005. CE is currently decommissioning the site for unrestricted use in accordance with the LTP. All systems and structures not needed for the independent spent fuel storage installation (ISFSI), except the intake piping and sanitary drainfield, have been removed. All remedial work has been completed and final status surveys will be completed by October, 2006.

All fuel was transferred to the ISFSI by March, 2003. Turbine building demolition and final status surveys (FSSs) were conducted during summer, 2005. The containment shell was removed in mid-2006. FSS reports and a request for partial site release are expected before the end of 2006.

After fuel is removed from the site to a DOE facility, the ISFSI will be decommissioned and the license terminated. CE plans for this to occur in 2012. DOE recently announced that it may start accepting commercial fuel at the Yucca Mountain site in 2017.

Contaminants at the site include uranium and decay products, and fission products. Low levels of ground water contamination, primarily tritium, are non-uniformly distributed at the site because of a dry, silty clay layer that underlies only the south part of the site. Boundaries between the geologic units are only approximated because of limited subsurface data. Reported radionuclide concentrations in ground water are generally less than the minimum detectable activity (MDA) except for tritium that is less than one half the U.S. Environmental

Protection Agency (EPA) drinking water standard of 20,000 pCi/l. Soil contamination is also generally below MDA.

### **3.0 Major Technical or Regulatory Issues**

There is some public interest in the decommissioning of this site. The primary parties are the State of Michigan and the City Councils of surrounding areas. CE has an effective public outreach program and open communication with these parties.

The Michigan SHPO declared the facility itself eligible for the National Historic Register. Therefore, demolition is defined as an adverse effect that requires a MOA in accordance with 40 CFR 800. The MOA was negotiated to address the issues of early notification to SHPOs of NRC plans; documentation of the site using the Historic American Engineering Record System; and post-license termination access to the site by Native Americans, for whom the Big Rock is an historic gathering place. The MOA was executed by NRC, SHPO and CE in February, 2006.

### **4.0 Estimated Date For Closure**

2007

# Dresden - Unit 1

## 1.0 Site Identification

Location: Dresden, IL  
License No.: DPR-2  
Docket No.: 50-0010  
License Status: SAFSTOR  
Project Manager: John Hickman

## 2.0 Site Status Summary

The plant shut down in October 1978 and is currently in SAFSTOR. The decommissioning plan (DP) was approved in September 1993. No significant dismantlement activities are underway. Asbestos removal, isolation of Unit 1 and Units 2 and 3, and general radiation cleanup activities are complete or in progress. The licensee will dismantle Unit 1 along with the other two units onsite, which is expected no earlier than 2011. The licensee submitted an updated PSDAR on June 1, 1998. The PSDAR public meeting was held on July 23, 1998.

Dresden Unit 1 produced power commercially from 1960 to October 1978, generating approximately 15,800,000 Megawatt-hours of electricity. The licensed power of the Unit was increased from 630 MWt to 700 MWt in September of 1962. The unit had a history of minor steam leaks and erosion in steam piping in the early and mid-1960s. There were also fuel failures during the period of September through December of 1964 and other times which, although not leading to off-gas releases above limits, did cause redistribution of radionuclides from the fuel to other parts of the primary system. Several systems in the plant used admiralty brass (Cu-Ni) heat exchange surfaces, including the Main Condenser. Most of these were taken out of service and replaced with stainless steel tubing. In the sixth partial refueling, the condenser was re-tubed from admiralty brass to 304L stainless steel. The use of Cu-Ni surfaces did lead to translocation and deposition of corrosion products throughout the operating systems. The use of carbon steel in the Secondary Feedwater System may have also contributed to the elevated corrosion radionuclide levels. These foregoing events led to the need to perform a chemical decontamination of the Primary System. The Unit was taken off-line on October 31, 1978, to backfit it with equipment to meet new federal regulations and to perform a chemical decontamination of major piping systems. While it was out of service for retrofitting, additional regulations were issued as a result of the March 1979 incident at Three Mile Island. The estimated cost to bring Dresden Unit 1 into compliance with these regulations was more than \$300 million. Commonwealth Edison concluded that the age of the unit and its relatively small size did not warrant the added investment. In 1984, chemical decontamination of the primary system was performed and 753 curies of Cobalt-60 and 12.4 curies of Cesium-137 were removed. This decontamination was completed and activities began shortly thereafter to prepare the facility for decommissioning. In July of 1986, the NRC revised the Dresden Unit 1 license to possess-but-not-operate status. NRC approved Revision 3 to the Dresden Unit 1 DP on September 3, 1993. Subsequent revisions to the DP were reviewed and approved based on criteria similar to the criteria of Section 50.59 of Title 10 of the Code of Federal Regulations (10 CFR 50.59). In 1998, the DP was revised to the current Defueled

Safety Analysis Report (DSAR) format. The NRC approved the transfer of the facility licenses from Commonwealth Edison (ComEd) Company to Exelon Generation Company, LLC (Exelon) on January 12, 2001.

### **3.0 Major Technical or Regulatory Issues**

The licensee is using the Holtec HISTAR 100 dual purpose cask and the HISTORM concrete overpack to store spent fuel. Casks have been loaded with Unit 1 spent fuel from the Unit 2 spent fuel pool, along with Unit 2 spent fuel, to address the Unit 2 spent fuel storage issue. In January 2002, the licensee completed transferring fuel from the Unit 1 spent fuel pool to dry storage.

### **4.0 Estimated Date For Closure**

TBD

# Fermi

## 1.0 Site Identification

Location: Newport, MI  
License No.: DRP-9  
Docket No.: 50-16  
License Status: SAFSTOR  
Project Manager: Ted Smith

## 2.0 Site Status Summary

The licensee's initial stage of decommissioning is complete, and bulk sodium has been removed from the site. There is no spent fuel onsite and the facility is currently in SAFSTOR condition. The licensee is currently performing occupational safety enhancement activities; concentrating in non-radioactive areas, such as asbestos removal, and trace sodium cleanup. The trace sodium remediation effort is about 50 percent complete. The facility will be dismantled under the provisions of 10 CFR 50.59. The licensee plans to submit an LTP in 2007.

The Enrico Fermi Atomic Power Plant, Unit 1 (Fermi 1) was a fast breeder reactor power plant cooled by sodium and operated at essentially atmospheric pressure. The reactor plant was designed for a maximum capacity of 430 Mwt; however, the maximum reactor power with the first core loading (Core A) was 200 Mwt. The primary system was filled with sodium in December of 1960 and criticality was achieved in August 1963. Power ascension testing above 1 Mwt commenced in December 1965, immediately following receipt of the high power operating license. In November 1972, the Power Reactor Development Company made the decision to decommission Fermi 1. The fuel and blanket subassemblies were shipped offsite in 1973. The non-radioactive secondary sodium system was drained and the sodium sent to Fike Chemical Company. The radioactive primary sodium was stored in storage tanks and in 55 gallon drums until the sodium was shipped offsite in 1984. Decommissioning of the Fermi 1 plant was originally completed in December 1975. The site has been in a SAFSTOR status, awaiting final decommissioning. The license for Fermi 1 expires in 2025.

Current decommissioning cost estimate is \$28-31 million (1998 dollars). Current amount in trust fund is \$32 million.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

05/01/2008

# Haddam Neck - Connecticut Yankee

## 1.0 Site Identification

Location: East Hampton, CT  
License No.: DPR-61  
Docket No.: 50-213  
License Status: DECON  
Project Manager: Ted Smith

## 2.0 Site Status Summary

Steam generators, reactor coolant pumps, the pressurizer, the reactor vessel, and shield wall blocks from the Reactor Building shielding have been disposed offsite. All 1016 spent fuel assemblies and 2 casks of greater than Class C (GTCC) waste are stored at the ISFSI. The administration, primary auxiliary, and turbine buildings have been demolished. Removal of groundwater affecting soil near the former tank farm and containment building is complete. The containment structure and spent fuel building have been demolished, and only the radwaste reduction facility remains. The licensee's current plans will remove all structures from the site down to four feet below grade. This will leave concrete structures in only a few areas of the site, such as the reactor building basement, the discharge canal tunnel and part of the spent fuel building.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

2007

# Humboldt Bay

## 1.0 Site Identification

Location: Eureka, CA  
License No.: DPR-7  
Docket No.: 50-133  
License Status: SAFSTOR  
Project Manager: John Hickman

## 2.0 Site Status Summary

The plant was shut down in July 1976. A DP was approved in July 1988. Subsequent to the 1996 decommissioning rule, the licensee converted the DP into its DSAR which is now updated every two years. A PSDAR was issued by the licensee in February 1998. The plant is currently in SAFSTOR with incremental decommissioning activities ongoing. Decommissioning work at Humboldt Bay involves recently completed asbestos removal, currently in progress systems and structures radiological characterization, and future work on reactor and internals activation analysis, low-level waste (LLW) management plan development, developing of a work, cost, and scheduling process, and the developing of a facilities and staffing plan. This work phase will likely continue until a decision is made on accelerated decommissioning.

Humboldt Bay, Unit 3 is a 65 MWe boiling water reactor plant located 4 miles southwest of Eureka, CA. The plant operated commercially from 1963 to 1976 when it shut down for seismic modifications. In 1983, with the plant still shut down, PG&E determined that required seismic modifications and the requirements imposed as a result of the TMI-2 accident made continued operations no longer economically feasible, and therefore decided to decommission the plant. All fuel was placed in the spent fuel pool. A possess-but-not-operate license amendment was issued in 1985. In December of 2003, the licensee submitted an application to the NRC seeking regulatory approval for on-site dry cask storage of the fuel that is currently in the spent fuel pool. The licensee is evaluating a plan that would have all spent fuel in dry cask storage by 2008. Although the current license expires in 2015, the licensee is evaluating a plan that would have the plant dismantled, the Part 50 license terminated and site restoration completed in the 2009-2011 time frame. Humboldt Bay, Units 1 and 2 are fossil plants located immediately adjacent to Unit 3 and are still in commercial operation. The current decommissioning cost estimate is \$333.6 million. There is currently \$213.9 million in the decommissioning trust fund. The licensee estimates that an additional \$41.5 million in revenue will be added to the decommissioning fund over the next 2.5 years. The remaining balance of \$78.2 million to fully fund the decommissioning liability is presumed to accrue from fund investments, interest, and tax advantages during the next 10 years.

Currently, ISFSI licensing related activities are the major focus of the site. During the fall of 2003, the licensee began a detailed examination of the contents of its spent fuel pool in preparation for eventual removal of the fuel assemblies stored in the pool to a dry-cask-storage ISFSI. In the process of performing the spent fuel pool examination, the licensee discovered fuel rod fragments that could not be accounted for by records maintained at the facility. While in the process of performing a record review related to the fragment investigation, the licensee identified a discrepancy on June 23, 2004, that called into question the location of three

segments of a portion of a single spent fuel rod removed from an assembly (designated A-49) in 1968. Records from 1968 indicate that a single fuel rod from assembly A-49 was cut into three 18-inch segments that were placed in a small container with an intention to ship them to an off-site lab for analysis. The records indicate that the off-site shipment never occurred and that the three 18-inch segments in their special storage container were placed somewhere in the spent fuel pool without identifying the specific location. The licensee has been unable to locate these three 18-inch rod segments in the spent fuel pool and has not found any records documenting their shipment off site. On May 27, 2005, PG&E issued their special nuclear material (SNM) Control and Accountability Project Final Report. This report provided the conclusions and results of the licensee's investigation into the location of the missing fuel rod segments and incore detectors, as well as overall control and accountability of SNM at Humboldt Bay. On June 20-24, 2005, a team of inspectors from NRC Headquarters and Region IV conducted the final onsite portion of the special inspection to review the licensee's efforts and details of the Project Final Report. The inspectors concluded that the SNM Control and Accountability Project was generally complete and thorough in its search for the missing fuel segments and incore detectors. The licensee concluded that the most likely location of the missing fuel segments was in the SFP, in an altered configuration while the NRC concluded that the most likely location of the missing fuel segments was at LLW disposal site. Both the licensee and the NRC concluded that the most likely location of the missing incore detectors was a LLW disposal site.

### **3.0 Major Technical or Regulatory Issues**

The licensee submitted an ISFSI application in December 2003. The ISFSI dry storage cask will be unique due to the short length of the Humboldt fuel assemblies. Furthermore, the casks will be stored below-grade to accommodate regional seismicity issues, security concerns, and site boundary dose limits. The license for the ISFSI was issued on November 18, 2005. The NRC issued a proposed fine of \$96,000 on December 21, 2005, related to the licensee's SNM Control and Accountability Project investigation. Currently, the licensee does not anticipate submitting an LTP until 2009 at the earliest.

### **4.0 Estimated Date For Closure**

2011

# Indian Point - Unit 1

## 1.0 Site Identification

Location: Buchanan, NY  
License No.: DPR-5  
Docket No.: 50-3  
License Status: SAFSTOR  
Project Manager: Michael Webb

## 2.0 Site Status Summary

Indian Point-1 operated commercially from August 1962 until October 31, 1974. The plant was shutdown in October 1974 because the emergency core cooling system did not meet regulatory requirements. By January 1976, all spent fuel was removed from the reactor vessel. Some decommissioning work associated with spent fuel storage was performed from 1974 through 1978. The order approving SAFSTOR was issued in January 1996. The PSDAR public meeting was held on January 20, 1999. The licensee plans to decommission Unit 1 with Unit 2, which is currently in operation. The licensee does not plan to begin active decontamination and decommissioning until 2013, when the Indian Point 2 license expires. Since purchasing the Indian Point facility, Entergy has been reviewing its long-term spent fuel storage options for Unit 1, and although it has not finalized its plans it intends to store the Unit 1 fuel in dry storage at the Indian Point Energy Center ISFSI.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

TBD

# La Crosse

## 1.0 Site Identification

Location: Genoa, WI  
License No.: DPR-45  
Docket No.: 50-409  
License Status: SAFSTOR  
Project Manager: Kristina Banovac

## 2.0 Site Status Summary

The La Crosse Boiling Water Reactor (LACBWR) is owned and was operated by the Dairyland Power Cooperative (DPC). LACBWR was a nuclear power plant of nominal 50 MW electrical output which utilized a forced-circulation, direct-cycle boiling water reactor as its heat source. The plant is located on the east bank of the Mississippi River in Vernon County, Wisconsin. The plant was one of a series of demonstration plants funded, in part, by the U.S Atomic Energy Commission (AEC). The nuclear steam supply system and its auxiliaries were funded by the AEC, and the balance of the plant was funded by DPC. The Allis-Chalmers Company was the original licensee; the AEC later sold the plant to DPC and provided them with a provisional operating license.

LACBWR was shut down on April 30, 1987. The SAFSTOR DP was approved August 7, 1991. The DP is considered the PSDAR. The PSDAR public meeting was held on May 13, 1998. DPC has been conducting gradual dismantlement and decommissioning activities. DPC is planning to remove and dispose of its reactor pressure vessel (RPV) in Spring 2007, to take advantage of a disposal window at the Barnwell disposal site. DPC has completed engineering and technical evaluations related to removal and disposal of the RPV. The current decommissioning cost estimate is \$84.6 million. The licensee has accumulated approximately \$77.3 million in decommissioning funds, as of December 31, 2005.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

TBD

# Millstone - Unit 1

## 1.0 Site Identification

Location: Waterford, CT  
License No.: DPR-21  
Docket No.: 50-245  
License Status: SAFSTOR  
Project Manager: Alan Wang

## 2.0 Site Status Summary

Millstone - Unit 1 was shut down on November 4, 1995, and transfer of the spent fuel to the pool was completed on November 19, 1995. On July 17, 1998, the licensee decided to cease operations. Certifications per 10 CFR Part 50.82(a) were submitted July 21, 1998. The owner's current plan is to leave the plant in SAFSTOR until the Unit 2 license expires. The owner submitted its required PSDAR on June 14, 1999, and has chosen a combination of the DECON and SAFSTOR options. NRC conducted public meetings in Waterford, CT, on the decommissioning process on February 9, 1999, and on the PSDAR on August 25, 1999. Owner responsibility for the Millstone site was transferred from Northeast Utilities to Dominion Nuclear Connecticut on March 31, 2001. Unit 1 has established a spent fuel pool island including those systems required to support safe storage of spent fuel. The balance of systems not required to support the facility have been abandoned. Irradiated reactor vessel components not able to eventually being disposed of with the reactor vessel have been removed. The reactor cavity and vessel will be drained and abandoned with a radiation shield installed to limit dose to workers.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

TBD

# Nuclear Ship Savannah

## 1.0 Site Identification

Location: Washington, DC  
License No.: NS-1  
Docket No.: 50-238  
License Status: SAFSTOR  
Project Manager: Al Adams

## 2.0 Site Status Summary

The Nuclear Ship (NS) Savannah was removed from service 1970. The reactor is currently in SAFSTOR. All fuel was removed from the ship in October 1971. The ship is moored in the Maritime Administration Reserve Fleet in the James River, Virginia. As needed, the NS Savannah is towed into dry dock for hull maintenance. Because the reactor is portable, the location of decommissioning has not been determined.

## 3.0 Major Technical or Regulatory Issues

The licensee is exploring the possibility of obtaining funding for total decommissioning and disposal of the NS Savannah. Licensee is planning decommissioning activities. Ship will be drydocked for maintenance in the near future.

## 4.0 Estimated Date For Closure

TBD

# Peach Bottom - Unit 1

## 1.0 Site Identification

Location: Delta, PA  
License No.: DPR-12  
Docket No.: 50-171  
License Status: SAFSTOR  
Project Manager: Kristina Banovac

## 2.0 Site Status Summary

Peach Bottom Atomic Power Station, Unit 1 was a 200 Mwt, high temperature, gas cooled reactor that was operated from June of 1967 to its final shutdown on October 31, 1974. All spent fuel has been removed from the site, and the spent fuel pool is drained and decontaminated. The reactor vessel, primary system piping, and steam generators remain in place.

The facility is currently in a SAFSTOR condition. The PSDAR meeting was held on June 29, 1998. Final decommissioning is not expected until 2034 when Units 2 and 3 are scheduled to shut down. The current decommissioning cost estimate is \$146.5 million. The utility will collect approximately \$2.6 million annually through 2034 to accumulate sufficient funding. The current amount of decommissioning funds accumulated through December 31, 2005, is \$29.8 million.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

TBD

# Rancho Seco

## 1.0 Site Identification

Location: Herald, CA  
License No.: DPR-54  
Docket No.: 50-312  
License Status: DECON  
Project Manager: John Hickman

## 2.0 Site Status Summary

The plant was shutdown in June 1989. The SAFSTOR DP was approved in March 1995. The licensee revised its DP in use an incremental dismantlement approach. Currently, the licensee is dismantling the secondary side of the plant. Wastes generated during decommissioning will be shipped to Envirocare. In July 1999, the owner decided to continue in DECON, with the goal of completing decommissioning by 2008. On October 4, 1991, the owner submitted a site-specific Part 72 ISFSI application using the VECTRA NUHOMS-MP187 dual purpose cask design. The license was granted on June 30, 2000. The owner has transferred all of the spent fuel from the pool to the onsite ISFSI.

The current estimated cost to decommissioning Rancho Seco is \$518.6 million (2002 dollars). The licensee has completed dismantlement of the secondary side equipment in the turbine building. Wastes generated during decommissioning are being shipped to Envirocare. The licensee is now dismantling equipment in the auxiliary building. FSSs will then be conducted to verify that structures and open land areas meet the release criteria. Finally, an independent NRC contractor will conduct a verification survey, thereby allowing unrestricted release of the site. After FSSs and NRC verification, individual surveyed structures and open land areas will be released as non-radiologically controlled material for conventional demolition and disposal. Sacramento Municipal Utility District (SMUD) will maintain control over the site until termination of its 10CFRPart 50 license.

## 3.0 Major Technical or Regulatory Issues

SMUD submitted a LTP for NRC review on April 12, 2006. The LTP is currently under review.

## 4.0 Estimated Date For Closure

2008

# San Onofre - Unit 1

## 1.0 Site Identification

Location: San Clemente, CA  
License No.: DPR-13  
Docket No.: 50-206  
License Status: DECON  
Project Manager: Jim Shepherd

## 2.0 Site Status Summary

The San Onofre Nuclear Generating Station (SONGS), operated by Southern California Edison (SCE) is approximately 100 km (60 mi) south of Los Angeles, 6.5 km (4 mi) south of San Clemente, CA. It is located between I-5 and the Pacific Ocean, within the boundary of the Camp Pendleton military reserve. SONGS-1, a Westinghouse 3-loop pressurized water reactor constructed by Bechtel and rated at 1347 MWt, began commercial operation on January 1, 1968. It ceased operation on November 30, 1992. Defuelling was completed on March 6, 1993. The licensee has transferred Unit 1 spent fuel to an onsite generally licensed ISFSI.

Significant dismantlement of Unit 1 is currently underway. Units 2 and 3 are expected to operate until approximately 2022. The licensee has completed demolition of the Unit 1 Emergency Diesel Generator building, Control Building, and Administration Building. Dismantlement and removal of the electrical generator and main turbine is also complete. The licensee has completed RPV internal segmentation and cutup. The reactor internals abrasive cutting media has been sent offsite for disposal. Most of the Containment Sphere Enclosure Building has been dismantled and most of the large reactor system components have been removed including the RPV, pressurizer and steam generators. The remaining structure inside containment is being removed, and the turbine building is being removed down to about 10 feet below grade. The steam generators and pressurizer have been shipped to disposal. The licensee was unable to make arrangements for shipping the RPV to disposal because of the size and weight of the vessel and shipping package. The licensee plans to store the vessel onsite for the foreseeable future, as long as licensed activities are ongoing.

On November 3, 1994, SCE submitted a proposed DP to place SONGS-1 in SAFSTOR until the shutdown of Units 2 and 3, at the end of their licenses in 2022. On December 15, 1998, following a change in NRC decommissioning regulations, SCE submitted a PSDAR for SONGS-1 to commence DECON in 2000. Since that time, it has been actively decommissioning the facility.

## 3.0 Major Technical or Regulatory Issues

SCE plans to leave the off-shore portions of the Unit 1 intake and outlet pipes in place, under the Pacific Ocean seabed, and release them for unrestricted use and terminate the lease it has from California. This would constitute a partial site release prior to submission of the LTP in accordance with 10 CFR 50.83. SCE has submitted an Environmental Report to the State. SCE discussed its plans with NRC during 2006 and plans to submit a request to NRC for

release of this system in 2007. During 2006, SCE will survey the intake "boxes" for this piping, conduct remediation if deemed necessary, and fill them with grout.

SCE has elected to leave the below-grade portions of the turbine building in place after grouting expansion joints and embedded pipes. Because SCE has not submitted an LTP for this unit, it is not known if the surveys done on these areas prior to grouting will meet NRC requirements for FSSs at the time of request for license termination. The PSDAR states all equipment and structures from Unit 1 will be removed from the site at the time of license termination, but SCE has stated it may reconsider this later, and possibly leave some of the below-grade structures in place. Current survey data may not support this option, in which case additional surveys, e.g. of the embedded piping, may be necessary to implement it.

#### **4.0 Estimated Date For Closure**

2045

# Three Mile Island - Unit 2

## 1.0 Site Identification

Location: Middletown, PA  
License No.: DPR-73  
Docket No.: 50-320  
License Status: SAFSTOR  
Project Manager: Kristina Banovac

## 2.0 Site Status Summary

The Three Mile Island, Unit 2 (TMI-2) operating license was issued on February 8, 1978, and commercial operation was declared on December 30, 1978. On March 28, 1979, the unit experienced an accident which resulted in severe damage to the reactor core. TMI-2 has been in a non-operating status since that time. The licensee conducted a substantial program to defuel the reactor vessel and decontaminate the facility. All spent fuel has been removed except for some debris in the nuclear steam supply system. Plant defueling was completed in April 1990. The removed fuel is currently in storage at Idaho National Engineering and Environmental Laboratory, and DOE has taken title and possession of the fuel. TMI-2 has been decontaminated to the extent the plant is in a safe, inherently stable condition suitable for long-term management. This long-term management condition is termed post-defueling monitored storage, which was approved in 1993. There is no significant dismantlement underway. The plant shares equipment with the operating TMI - Unit 1. TMI-1 was sold to Amergen in 1999. GPU Nuclear retains the license for TMI-2 and is owned by First Energy Nuclear Operating Corporation. GPU Nuclear contracts with Amergen for maintenance and surveillance activities. The licensee plans to actively decommission TMI-2 in parallel with the decommissioning of TMI-1.

The current radiological decommissioning cost estimate is \$753 million and \$25 million for non-radiological funds, as of December 31, 2005. The current amount in the decommissioning trust fund is \$494 million, as of December 31, 2005.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

2014

# Vallecitos Boiling Water Reactor

## 1.0 Site Identification

Location: Sunol, CA  
License No.: DPR-1  
Docket No.: 50-18  
License Status: SAFSTOR  
Project Manager: Marvin Mendonca

## 2.0 Site Status Summary

The VBWR was shutdown in 1963 and NRC issued a possession only license in 1965. The license was renewed in 1973 and the license has remained effective under the provisions of 10 CFR 50.51(b). The facility has been maintained in SAFSTOR condition. The site has an operating research reactor, and has hot cells that are used for power reactor fuel post irradiation examination. The licensee plans to maintain the facility in SAFSTOR until ongoing nuclear activities are terminated and the entire site can be decommissioned. General Electric has a self-guarantee instrument. The spent fuel has been removed from the site.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

TBD

# Yankee Rowe

## 1.0 Site Identification

Location: Rowe, MA  
License No.: DPR-3  
Docket No.: 50-29  
License Status: DECON  
Project Manager: John Hickman

## 2.0 Site Status Summary

The plant was permanently shut down on October 1, 1991. The DECON DP was approved in February 1995, and the plant is undergoing dismantlement. The steam generators were shipped to the Barnwell, North Carolina LLW facility in November 1993. The reactor vessel was shipped to Barnwell in April 1997. The owner has removed all of the primary systems, secondary side components, and switch yard equipment from the site. The plant is about 80 percent dismantled. The containment and other major structures remain. The owner has completed construction of an onsite ISFSI. An LTP was submitted in May 1997, and a public meeting was held to discuss the LTP in January 1998. A public hearing was requested on the LTP but was cancelled after the owner withdrew the plan in May 1999. The licensee resubmitted portions of the revised LTP in November 2003, and the remainder in March 2004. The staff completed its review in April 2005. All of the fuel from the spent fuel pool has been transferred to the onsite ISFSI.

## 3.0 Major Technical or Regulatory Issues

FSS reports and the Groundwater Compliance Plan for License Termination are currently under review.

## 4.0 Estimated Date For Closure

2007

# Zion - Units 1 & 2

## 1.0 Site Identification

Location: Warrenville, IL  
License No.: DPR-39 & DPR-48  
Docket No.: 50-295 & 50-304  
License Status: SAFSTOR  
Project Manager: John Hickman

## 2.0 Site Status Summary

Zion Units 1 and 2 were permanently shut down on February 13, 1998. The fuel was transferred to the spent fuel pool, and the owner submitted the certification of fuel transfer on March 9, 1998. The owner has converted the turbine-generators into synchronous condensers and has isolated the spent fuel pool within a fuel building "nuclear island." The plant has been placed in SAFSTOR, where it will remain until about 2013 when the decommissioning trust fund will be sufficient to conduct DECON activities. The owner submitted the PSDAR, site-specific cost estimate, and fuel management plan on February 14, 2000.

Zion's operating license was issued April 6, 1973, for Unit 1, and November 14, 1973, for Unit 2. Commercial operations achieved, December 1973, for Unit 1 and September 1974, for Unit 2. Reactor shutdown occurred on February 21, 1997, for Unit 1, and September 19, 1996, for Unit 2. All fuel was removed from the reactor and placed in the spent fuel pool on April 27, 1997, for Unit 1, and February 25, 1998, for Unit 2. On January 14, 1998, the Unicom Corporation and ComEd Boards of Directors authorized the permanent cessation of operations at ZNPS for economic reasons. The NRC approved the transfer of the facility licenses from ComEd Company to Exelon on January 12, 2001.

The SAFSTOR approach is the intended decommissioning method to be utilized for Zion which involves removal of all radioactive material from the site following a period of dormancy. Preparations for decontamination and dismantlement are scheduled to commence at the original license expiration date for ZNPS Unit 2 on November 14, 2013. FSS and license termination is currently planned for 2025 - 2026.

## 3.0 Major Technical or Regulatory Issues

None.

## 4.0 Estimated Date For Closure

2026