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ComEd

June 1, 1998

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Dresden Nuclear Power Station Unit 1
Post-shutdown Decommissioning Activities Report
NRC Docket No. 50-010

According to 10 CFR 50.82, for licensees who possess an approved decommissioning plan, the plan is considered to be the post-shutdown decommissioning activities report (PSDAR). The Dresden Unit 1 Decommissioning Program Plan was approved by the NRC in September, 1993. Commonwealth Edison (ComEd) is submitting the attached PSDAR update for Dresden Unit 1. It contains relevant information from the Decommissioning Program Plan in the format and content consistent with NRC guidance for a PSDAR.

Please direct any questions regarding this matter to Kenneth A. Ainger at (630) 663-5217.

Sincerely,

Richard P. Tuetken
General Manager, Decommissioning
Projects and Services

Attachment

KAA/RPT/mo

cc: Regional Administrator
NRR Project Manager
Illinois Department of Nuclear Safety

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Dresden Nuclear Power Station Unit 1

Post-Shutdown Decommissioning Activities Report

May 1998

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Introduction

In accordance with the requirements of 10 CFR 50.82(a)(4)(i), this report provides the Commonwealth Edison Company (ComEd) post-shutdown decommissioning activities report (PSDAR) for Dresden Nuclear Power Station Unit 1. On September 3, 1993, the Nuclear Regulatory Commission (NRC) approved the Dresden Unit 1 Decommissioning Program Plan and issued an Order setting forth provisions for implementation of that plan. As described in 10 CFR 50.82, the approved Decommissioning Program Plan satisfies the requirements for a PSDAR. ComEd is submitting this PSDAR to update the status of decommissioning activities for Dresden Unit 1. The Decommissioning Program Plan is being replaced by this PSDAR and a Defueled Safety Analysis Report (DSAR). The Dresden Unit 1 DSAR will be issued in June 1998.

This report is arranged into three sections that correspond to the required contents of a PSDAR as described in 10 CFR 50.82. These sections include:

- a description of the planned decommissioning activities along with a schedule for their accomplishment,
- an estimate of expected costs, and
- a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements.

In addition, this report begins with a discussion of the history and status of the decommissioning activities that have been conducted at Dresden Unit 1 in accordance with the Dresden Decommissioning Program Plan and Decommissioning Order.

Historical Activities and Existing Status

Dresden Unit 1 consists of a General Electric dual-cycle BWR and GE dual-admission turbine. Dresden Unit 1 had a gross output of 210 MWe, and produced power commercially from July 1960 to October 1978, generating approximately 15,800,000 megawatt-hours of electricity. 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 the reactor vessel and associated piping systems. In September 1984, chemical decontamination of the reactor vessel and associated piping removed 753 Curies of Cobalt-60 and 12.4 Curies of Cesium-137. While it was out of service for retrofitting, additional regulations were issued following the March 1979 accident at Three Mile Island. The estimated cost to bring Dresden Unit 1 into compliance with

those new regulations was more than $300 million. In October 1984, ComEd concluded the age of the Unit and its relatively small size did not warrant the added investment required to return the facility to operation. In July 1986, the NRC issued a license amendment to alter the Dresden Unit 1 operating license to possession only status. During the same period, ComEd requested approval of its Decommissioning Program Plan in submittals made between January 1986 and July 1993. The NRC approved the Decommissioning Program Plan on September 3, 1993.

Fuel utilized in previous Unit 1 operations is stored in pools onsite. The distribution of this fuel as of May 1998 is:

- 659 fuel assemblies and 1 fuel rod basket in the Unit 1 fuel storage pool,
- 24 fuel assemblies in the Unit 1 fuel transfer pool,
- 102 fuel assemblies in the Unit 2 fuel storage pool, and
- 104 fuel assemblies and 1 fuel rod basket in the Unit 3 fuel storage pool.

During the third quarter of 1998, the 24 assemblies in the Unit 1 fuel transfer pool will be moved to the Unit 1 fuel storage pool to accommodate future dry cask storage work.

Since 1986, ComEd has initiated work to place Unit 1 in a condition which will permit long term storage until Dresden Units 2 and 3 terminate operations and site decommissioning and restoration is conducted.

In addition to the chemical cleaning conducted in the early 1980's, portions of Dresden Unit 1 have undergone decontamination activities to support decommissioning in accordance with the approved Decommissioning Program Plan. The content of this PSDAR reflects work that has been completed, as well as activities that are planned for the future. These activities are consistent with the previously approved Decommissioning Program Plan and Decommissioning Order.

Decommissioning Activities and Schedule

Activities

ComEd is decommissioning Dresden Unit 1 by placing the facility in a safe storage condition (SAFSTOR) until Dresden Units 2 and 3 are ready for decommissioning, currently scheduled to begin no earlier than 2011. As that time approaches, preparation for Unit 1 decontamination and dismantlement will occur. Unit 1 decontamination and dismantlement activities are planned to occur in 2011 and 2012. ComEd plans to request the Unit 1 license be terminated concurrent with the termination of Units 2 and 3 licenses. After the Department of Energy (DOE) takes possession of the spent fuel and any greater-than-Class C waste which may exist, the onsite independent spent fuel storage installation (ISFSI) and remaining storage areas will be decontaminated and dismantled.

Based on this overall plan, the decommissioning of Dresden Unit 1 has been divided into five periods.

SAFSTOR operations - activities following unit shutdown that are needed to prepare for SAFSTOR dormancy and ensure the continued safe storage of spent fuel. This period also involves activities in preparation for and removal of Unit 1 fuel, and transfer to an ISFSI that is planned for construction onsite. During SAFSTOR operations, systems no longer required will be secured and isolated as necessary to prepare the unit for SAFSTOR dormancy. Radioactive and hazardous materials will be dispositioned as necessary to ensure for the continued safety of the personnel onsite and the public.

SAFSTOR dormancy - the extended period of safe storage of the facility. During this period, spent fuel will be stored in the ISFSI onsite, currently planned to be a dry cask storage (DCS) system licensed in accordance with 10 CFR 72, Subpart K. At this time, a license amendment request may be submitted to remove technical specifications no longer applicable to the safe storage of spent nuclear fuel.

Preparation for decontamination and dismantlement - the period during which activities in preparation for dismantlement will occur.

Decommissioning operations - the actual decontamination and dismantlement of the facilities. At the end of decommissioning operations, the operating license will be terminated.

Site restoration - the demolition of non-radioactive structures and back filling of any excavations remaining after decommissioning operations.

During SAFSTOR operations, activities have been and continue to be performed resulting in the removal of low level radioactive waste materials. Wastes generated during SAFSTOR operations are shipped to licensed facilities for disposal or processing. Licensed facilities that have been used for disposal include the Barnwell site in South Carolina and Envirocare in Clive, Utah. Licensed facilities used for processing of wastes include Hake in Memphis, Tennessee, American Ecology in Oak Ridge, Tennessee, and SEG located near Oak Ridge, Tennessee. If greater-than-Class C wastes are identified in accordance with 10 CFR 61, it will be retained onsite pending resolution of disposal options.

Dresden Unit 1 shares its site with Dresden Units 2 and 3, which continue to operate. Limited systems and components associated with Unit 1 continue to support or interact with the operation of Units 2 and 3. These include but are not limited to portions of the fire protection system, portions of the 138 kV switchyard, and portions of lower voltage (4kV, 480VAC, 125VDC and 120VAC) systems. The Unit 1 Defueled Safety Analysis Report and the Units 2 and 3 UFSAR provide additional details regarding the interacting systems between the facilities.

Monitoring of the facility will be conducted in accordance with the facility technical specifications, operating license, DSAR and Offsite Dose Calculation Manual. The resources supporting operation of Dresden Units 2 and 3 are also available to support monitoring activities during the SAFSTOR dormancy period. Some Unit 1 systems will be maintained available during the dormancy period, with support resources and skills available from the operating units if needed. Programs and procedures have been and continue to be established to assure Unit 1 is properly monitored and maintained in a manner that will support decontamination and dismantlement following SAFSTOR dormancy.

Schedule

Major milestones established for decommissioning Dresden Unit 1 are listed in the table below. Further schedule details are provided in the discussion which follows and the enclosed GAANT chart.

SAFSTOR OPERATIONS	**1985 – 2001**
SAFSTOR DORMANCY	**2002 – 2009**
PREPARATION FOR DECONTAMINATION AND DISMANTLEMENT	**2009 – 2011**
DECOMMISSIONING OPERATIONS	**2011 – 2012**
SITE RESTORATION	**2013 - 2017**
ONSITE MONITORED STORAGE OF SPENT FUEL	**2017 - 2044**

Completed Activities

Since the decision to permanently shutdown Unit 1 in 1984, substantial work to prepare for SAFSTOR dormancy has been completed. These activities include:

- maintenance and modification of systems, structures, and components needed to support operation of Units 1, 2, and 3.
- securing non-essential systems, structures, and components to limit maintenance, prevent deterioration, and ensure there will be no potential for release of contamination or radioactivity.
- disposal of radioactive and other wastes including lead, asbestos, and PCBs remaining onsite.
- minimizing contaminated areas in Unit 1.
- minimizing radioactive source terms in accordance with station ALARA objectives.

A number of fuel building systems required modification to support the SAFSTOR operation and dormancy periods. The fuel building ventilation system was upgraded and an airborne radioactivity monitoring system installed in the building. In 1994, fuel pool cleanup efforts were completed. A demineralizer was installed to control fuel storage pool water quality. Piping systems interfacing with the fuel pool and transfer pool were modified to preclude the potential for inadvertent siphoning of water to a level that would expose spent fuel. Also, portions of the fuel transfer system between the sphere and the fuel storage pool were modified to permanently isolate the storage pool from the sphere. Piping systems that interfaced with the sphere and had the potential to cause flooding have been isolated and drained. In addition, the fuel handling bridge was upgraded to support the future movement of irradiated fuel.

In preparation for SAFSTOR dormancy, a number of systems that are no longer pertinent to safe storage of irradiated fuel or operations of Units 2 and 3 have been isolated. Isolations consist of capping piping systems and de-energizing power supplies. Several tanks that are no longer used were also removed, and a significant amount of asbestos has been removed from structures and systems. The Unit 1 control room and equipment have been removed, with those few components and controls remaining applicable to the Unit incorporated into the Units 2 and 3 control room. Selective decontamination and cleaning of plant areas and components has been performed to reduce dose levels in the facility. This includes significant portions of the Unit 1 liquid radwaste system and associated tanks and sumps.

Unit 1 systems required to support Units 2 and 3 operations have been modified to reflect their new functions. This includes conversion of portions of the Unit 1 chemical cleaning building into an interim radwaste storage facility. Also, the Unit 1 HPCI building has been converted into the Units 2 and 3 station blackout power supply building. The Unit 1 turbine floor has been changed into a site-wide tool room and machine shop.

In 1995, ComEd began a project to place the Unit 1 spent fuel in a dry cask storage system. Following certification of the cask design by the NRC, the general license of 10 CFR 72 subpart K will be used to store fuel at the onsite ISFSI.

Planned Activities

During the remainder of 1998, routine ongoing activities related to clean-up and normal radiation protection good practices will be performed. For example, asbestos removal, decontamination of localized contamination and removal of localized high radiation sources will be performed.

Through the remainder of 1998 and during the first quarter of 1999, chemical cleaning and turbine building systems will be drained and closure of the sphere will be completed.

Beginning in June 1998, implementation of Unit 1 fuel characterization will occur. A visual inspection of fuel assemblies utilized in previous Unit 1 operations will be documented. The inspection will provide information necessary to transition from wet to dry cask storage.

From August 1998 through November 1998, Unit 1 120VAC electrical distribution system loads which power components no longer required for station operations will be isolated from the system. Beginning in July 1998, extending through the first quarter of 1999, the circulating water discharge line will be isolated and placed in a safe condition for SAFSTOR dormancy.

During the first quarter of 1999, chemical cleaning control room panel components no longer required will be de-energized and the secondary steam generator blow-down line will be isolated and placed in a safe condition for SAFSTOR dormancy.

Construction of the ISFSI storage pad is scheduled for late 1998 or Spring 1999, depending upon weather. The cask transportation system will be completed during the fourth quarter of 1998. A new Unit 1 fuel building crane will be installed for fuel handling operations during the Spring of 1999. The prototype fuel storage cask is scheduled to arrive onsite in the fourth quarter of 1998, and dry run fuel movement operations using the prototype will be in the fourth quarter of 1999. The Certificate of Compliance for the final cask design is expected to be received in the third quarter of 1999. The first certified fuel storage cask is scheduled to arrive in the first quarter of 2000. Plans are to begin unloading the spent fuel pools during the second quarter of 2000 and to be completed during the fourth quarter of 2001.

Unit 1 spent fuel stored in the Unit 1 spent fuel pool will be transferred directly to the proposed ISFSI casks. Unit 1 spent fuel is also currently stored in the Units 2 and 3 spent fuel pools. This spent fuel will also be transferred to the ISFSI, either via intermediate transfer to the Unit 1 spent fuel pool using a separate transfer cask or directly to the ISFSI dry storage/transfer casks. Upon completion of the transfer of all Unit 1 spent fuel to the planned ISFSI, the facility will enter the SAFSTOR dormancy period.

During SAFSTOR dormancy, the facility will be subjected to periodic inspection and monitoring as required by the applicable regulations and licenses. These will include monitoring of the condition of the ISFSI, ongoing environmental surveys, and maintenance of equipment required to support the dormancy condition. Security will be maintained through the continued operation of the site protected area boundary.

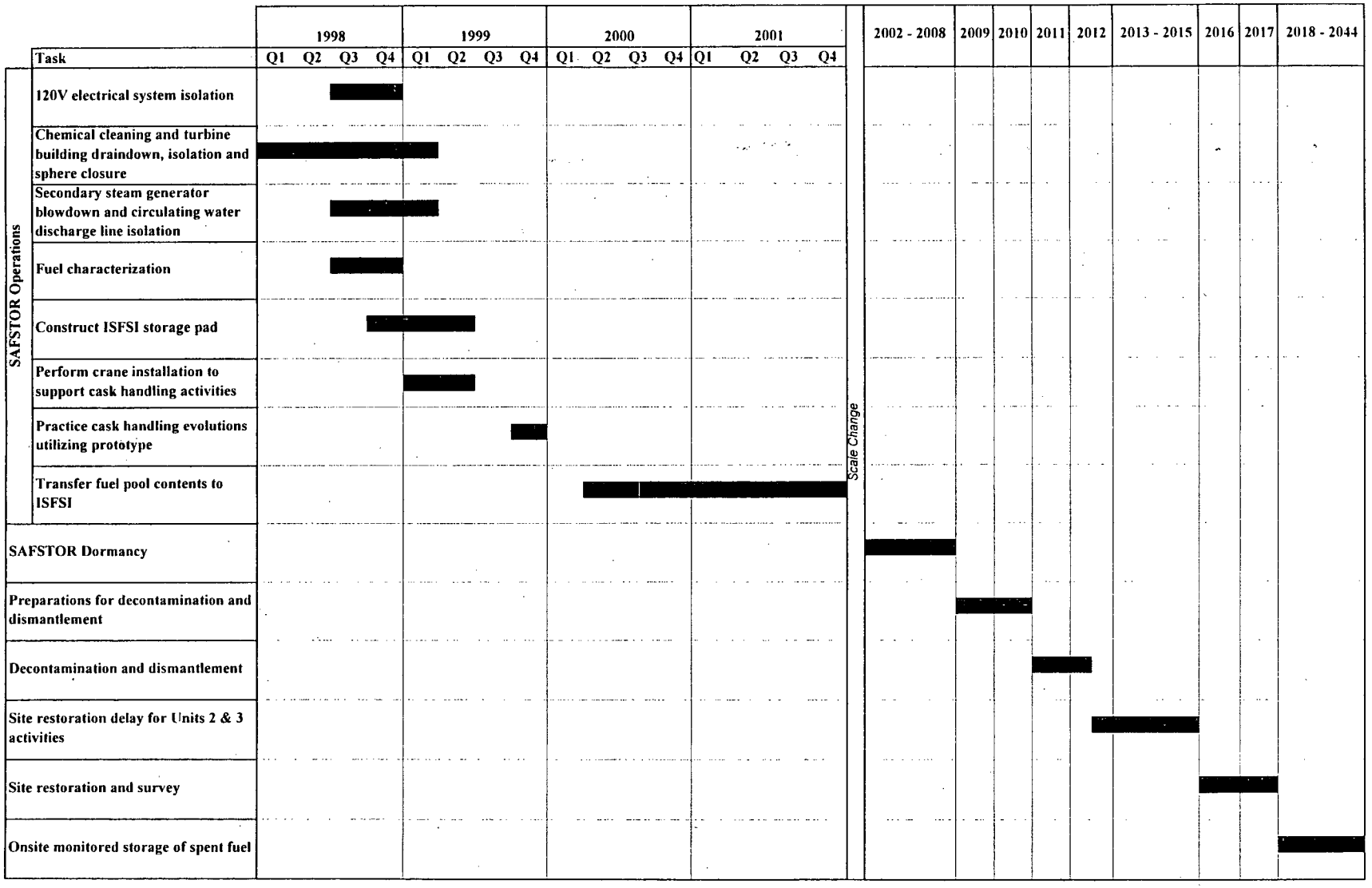
Beginning in about 2009, and continuing through 2011, the site will prepare for decontamination and dismantlement of Unit 1. This will include specification and procurement of special equipment, casks and liners, development of decontamination and dismantlement activity

specifications, procedures and sequence, and end product descriptions. During this period, plant drawings and systems will be subjected to review to ensure their readiness for the remaining activities, and a water cleanup system will be designed for use during the final decommissioning stages. A detailed radiation survey and inventory of by-product materials will be conducted. Licensing submittals will be prepared to support final dismantlement and license termination.

Current plans are for decontamination and dismantlement of Unit 1 to occur during 2011 and 2012. Major components will be decontaminated as needed and removed during this time, including the nuclear steam supply system components and the turbine-generator machinery. Contaminated building surfaces will be decontaminated. Other systems and components will also be removed, packaged and disposed of, and buildings prepared for demolition. In 2012, a survey will be initiated to demonstrate readiness for demolition of Unit 1 portions of the facility.

A four-year site restoration delay will follow the major decontamination and dismantlement to allow for the decontamination and dismantlement of Units 2 and 3, with completion of these activities tentatively planned for 2016. Site restoration will be conducted in 2016 and 2017, with the demolition of the remaining structures and removal of contaminated soil. Any subgrade remediation required will be conducted, and a final site survey is planned to be conducted in late 2017.

Current plans are for the monitoring of the ISFSI through 2044, with site security and periodic inspections continuing until final transfer of the spent fuel to the Department of Energy for disposal.


1998
1999
2000
2001
2002 - 2008
2009
2010
2011
2012
2013 - 2015
2016
2017
2018 - 2044
Task
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
SAFSTOR Operations
120V electrical system isolation
Chemical cleaning and turbine building draindown, isolation and sphere closure
Secondary steam generator blowdown and circulating water discharge line isolation
Fuel characterization
Construct ISFSI storage pad
Perform crane installation to support cask handling activities
Practice cask handling evolutions utilizing prototype
Transfer fuel pool contents to ISFSI
Scale Change
SAFSTOR Dormancy
Preparations for decontamination and dismantlement
Decontamination and dismantlement
Site restoration delay for Units 2 & 3 activities
Site restoration and survey
Onsite monitored storage of spent fuel

Decommissioning Costs

In January 1997, a study was completed for ComEd by TLG Services, Inc. which estimated the costs of decommissioning Dresden Unit 1. The study included consideration of regulatory requirements, contingency requirements, and low and high-level radioactive waste disposal availability. The methodology utilized followed the basic approach originally presented in "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates" AIF/NESP-036 dated May 1986. The methodology involved a unit cost factor approach for estimating the decommissioning activity costs. It also included use of site specific information when available (e.g. hourly labor rates) and the latest available industry experience (e.g. information from the Shippingport Station Decommissioning Project and TLG Services experience in planning and engineering for Shoreham, Yankee Rowe, Trojan, Rancho Seco, and other facilities) This estimate includes monies that have been expended through 1996.

The table below provides cost estimates from the January 1997 study and are provided in unadjusted 1996 dollars ($1000s).

Key Tasks / Milestone	Estimated Cost
Plant Dismantlement	
Staffing	70,667
LLW Burial	157,505
Equipment Removal	50,306
LLW Packaging and Shipping	6,112
Decontamination Activities	9,444
Decommissioning Planning Activities	20,117
Other Costs(1)	50,645
Subtotal	364,795
Spent Fuel Management	33,439
Total	**398,234**

(1) Other costs such as insurance, property taxes, energy, NRC and State fees, etc.

Funding for decommissioning is provided by an external trust. The cost estimate will be updated and funding adjusted as necessary in accordance with 10 CFR 50.82(a)(8)(iv).

Comparison of Environmental Impacts with Previously Issued Environmental Impact Statements

The decommissioning activities described in this PSDAR remain consistent with those previously described in the Dresden Unit 1 Decommissioning Program Plan. ComEd was granted NRC approval of the Decommissioning Program Plan on September 3, 1993. The Commission's review of the environmental impacts associated with the Dresden Unit 1 Decommissioning Program Plan was documented in the August 30, 1993 "Environmental Assessment by the Office of Nuclear Reactor Regulation Regarding Order Authorizing Facility Decommissioning and Amendment of License No. DPR-2." The Environmental Assessment provided a detailed review of the proposed decommissioning activities and evaluated them to determine whether or not the environmental effects differ significantly from those discussed in the Final Generic Environmental Impact Statement on Decommissioning Nuclear Facilities (FGEIS), NUREG – 0586. The Environmental Assessment included a Finding of No Significant Impact which concluded

> "... that the environmental impacts of decommissioning Dresden 1 as proposed are adequately bounded by the environmental impacts of decommissioning light-water reactors as analyzed in the FGEIS and that the proposed action will not have a significant impact on the quality of the human environment."

Since the decommissioning activities described in this PSDAR remain consistent with those described in the previously reviewed and approved Decommissioning Program Plan, the environmental impacts associated with the decommissioning activities in this PSDAR are bounded by previously issued environmental impact statements.