

July 27, 2007

Charles R. Bomberger  
General Manager, Nuclear Asset Manager  
Northern States Power Company  
DBA Xcel Energy  
414 Nicollet Mall  
Minneapolis, MS 55401-1993

SUBJECT: COMPLETION OF DECOMMISSIONING ACTIVITIES AT NORTHERN STATES  
POWER COMPANY, DBA XCEL ENERGY, PATHFINDER SITE IN SIOUX  
FALLS, SOUTH DAKOTA

Dear Mr. Bomberger:

On February 26, 2007, Northern States Power Company, dba Xcel Energy, notified the U.S. Nuclear Regulatory Commission (NRC) that it had completed decommissioning and final status surveys (FSSs) for the Pathfinder Site in Sioux Falls, South Dakota, in accordance with its approved decommissioning plan (DP). The NRC staff has completed its review of the FSS Report (FSSR) and concludes, in accordance with 10 CFR 30.36(k), that: (1) byproduct material has been properly disposed; (2) reasonable effort has been made to eliminate residual radioactive contamination; (3) the FSSR and associated documentation have been submitted to demonstrate that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR Part 20, Subpart E; and (4) records required by 10 CFR 30.51(d) and (f) have been received. Therefore, the staff concludes that Xcel Energy has completed all decommissioning activities in the approved DP for the site, and the site meets the NRC's criteria for unrestricted use. A Safety Evaluation Report (SER) which supports this conclusion is enclosed.

Accordingly, the NRC finds that Xcel Energy has discharged all of its obligations to the NRC with respect to the decommissioning of the Pathfinder Site. In accordance with 10 CFR 20.1401 (c), NRC will not require Xcel Energy to perform additional decommissioning activities at the site unless new information demonstrates that the criteria were not met and residual radioactivity at the site could result in a significant threat to public health and safety.

The NRC staff reviewed the FSSR, and compared the residual contamination levels against the trigger values for soil and groundwater in the "Memorandum of Understanding (MOU) between the U.S. Environmental Protection Agency and the NRC on Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites." The staff concluded that the trigger values for soil and groundwater were not exceeded. In accordance with Section V.C.2 of the MOU, no consultation is required.

However, in the course of conducting radiological surveys, elevated diffuse Naturally Occurring Radioactive Material (NORM) associated with the operation of the water treatment facilities which service the site's fossil-fueled combustion plant were identified at the outfall to one of the settling basins. Diffuse NORM is not NRC-licensed material and is regulated by the State. In October 2006, Xcel Energy notified the State of South Dakota and has prepared a detailed

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plan to further investigate the extent of NORM contamination at the site. A final report is due to the State in July 2007.

Enclosed please find License Amendment No. 17 (Enclosure 1); and the SER documenting the staff's review of the FSSR (Enclosure 2).

In accordance with NRC's regulations at 10 CFR 2.390, "Rules of General Applicability," a copy of this letter will be available electronically in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions on this matter, please contact Chad Glenn, Project Manager for the site, at (301) 415-6722.

Sincerely

**/RA/**

Keith I. McConnell, Deputy Director  
Decommissioning and Uranium Recovery  
Licensing Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials  
and Environmental Programs

Enclosures:

1. License Amendment No. 17
2. Safety Evaluation Report

Docket No.: 030-05004  
License No.: 22-08799-02

cc: Pathfinder Service List

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Enclosure 1:  
Terminated License

**MATERIALS LICENSE**

Amendment No. 17

Licensee	
1 Northern States Power Company . Dba Xcel Energy	3. License Number 22-08799-02
2 414 Nicollet Mall . (Ren. Sq. 8) Minneapolis, MN 55401	4. Expiration Date Terminated
	5. Docket No. 030-05004

License No. 22-08799-02 is hereby terminated.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Dated: 7/27/07

/RA/  
Keith I. McConnell, Deputy Director  
Decommissioning Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials  
and Environmental Programs

**SAFETY EVALUATION REPORT  
COMPLETION OF DECOMMISSIONING ACTIVITIES  
NORTHER STATES POWER COMPANY DBA XCEL ENERGY  
PATHFINDER SITE, SIOUX FALLS, SOUTH DAKOTA  
DOCKET NO: 030-05004**

## **1. INTRODUCTION**

This Safety Evaluation Report (SER) has been prepared as part of the U.S. Nuclear Regulatory Commission (NRC) staff's review of the Northern States Power Company, dba Xcel Energy (the licensee), request to terminate License No. 22-08799-02 and release the Pathfinder Site in Sioux Falls, South Dakota (SD) for unrestricted use. Decommissioning activities included remediation of contaminated buildings, packaging and shipment of waste for offsite disposal, and conducting final status surveys (FSS). The NRC conducted inspections and a confirmatory survey at the site.

Based on this safety evaluation and review of the FSS report (FSSR), NRC has determined that the licensee has provided sufficient information to terminate License No. 22-08799-02. The NRC concludes that the site meets the NRC's radiological criteria for unrestricted use set forth in 10 CFR 20.1402.

## **2. FACILITY OPERATING HISTORY**

The licensee obtained an operating license (DPR-11) for the Pathfinder Atomic Power Plant in 1964. The plant was designed to generate 66 MW of electrical energy. The plant achieved initial criticality in March 1964 and commenced commercial operation in August 1966. Economic and other factors resulted in the licensee's decision to permanently shutdown the nuclear plant in September 1967.

During the final shutdown of the plant, a condenser tube leak occurred resulting in contamination in the service water system and cooling tower basin located outside of the Reactor Building. The area outside the Reactor Building is referred to herein as the Balance of Plant (BOP). The main contribution of radioactivity from this incident was from radionuclides with short half lives (Zn-65 and Na-24). Immediately following the condenser tube leak, the cooling tower basin was decontaminated and the steam, reactor feedwater, and other nuclear process piping were isolated and capped.

In 1968, the BOP systems were decontaminated and disconnected from the reactor side of the plant. The BOP systems were then integrated into a fossil-fueled plant for generating electricity to meet peak electrical demands. Three new gas/oil package boilers supplied steam to the original turbine. Commercial operation of the Pathfinder Peaking Plant commenced in May 1969 and continued until July 2000.

In 1970, the reactor fuel associated with the operation of the Pathfinder Atomic Power Plant was shipped offsite to a licensed facility. Xcel Energy's operating license was terminated, and a possession only byproduct materials license was issued in August 1972. This license was subsequently amended to allow for the decommissioning of the reactor building and fuel storage facilities.

In 1991, the Reactor Building, Fuel Handling Building, and Temporary Loading and Storage Building were decommissioned in accordance with an NRC-approved DP. The radiological release criteria for the 1991 decommissioning was based on NRC Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors." NRC staff reviewed the licensee's final radiation survey results, performed confirmatory surveys and determined that these facilities could be released for unrestricted use. On November 10, 1992, NRC authorized the

unrestricted release of the reactor building, fuel handling building and waste storage building as well as the demolition of the reactor building.

The licensee subsequently constructed two additional fossil-fueled combustion turbines, outside the 7-acre fenced and secured area of the former Pathfinder Atomic Power Plant, to meet peak electrical demands. In 1994, the Pathfinder Site was renamed the Angus Anson Generating Station when these fossil-fueled combustion turbines initiated commercial operation. This fossil-fueled plant is not a NRC-licensed facility and is not included in the decommissioning and final status survey of the Pathfinder Site.

In 2003, the licensee notified NRC that it had permanently ceased operations at the Pathfinder Peaking Plant. In February 2004, the licensee submitted a decommissioning plan (DP) and license amendment request to authorize decommissioning activities at the Pathfinder Site. In December 2004, the licensee responded to NRC's request for additional information and submitted a revised DP. In May 2005, NRC approved the DP and issued a license amendment authorizing decommissioning activities.

### **3. FACILITY DESCRIPTION**

The Pathfinder site is located in Minnehaha County, SD. The Pathfinder facility is located at 7100 East Rice Street in Sioux Falls, SD. The facility is approximately 6.5 miles northeast of the Sioux Falls city center and 2 miles east of the town of Brandon. As indicated above, the Pathfinder facility is principally situated within a 7-acre fenced and secured area. Four settling basins occupy another 5 acres outside of the secured area. The buildings and areas enclosed within the secured area and the influent and effluent pathways to the Big Sioux River outside the secured areas (e.g., settling basins and diversion ditch) are the subject of this final decommissioning action. The current land use in the area is primarily agricultural with some industrial and urban components.

### **4. RADIOLOGICAL STATUS OF FACILITY**

#### **5. Evaluation**

Xcel Energy's decommissioning activities are conducted under 10 CFR Part 30 Byproduct Materials License Number 22-08799-02. Therefore, consistent with 10 CFR 30.36(k), Xcel Energy decommissioning activities will be complete when the Commission determines that: (1) byproduct material has been properly disposed; (2) reasonable effort has been made to eliminate residual radioactive contamination; (3) the FSSR and associated documentation demonstrate that the facility and site are suitable for release in accordance with the criteria for decommissioning in 10 CFR Part 20, Subpart E; and (4) records required by 10 CFR 30.51 (d) and (f) have been received. The following is the staff's evaluation of this information.

#### **5.1 Disposal of Nuclear Material**

The Pathfinder DP and FSSR describe the decommissioning activities, including plans for the disposal of contaminated material above the unrestricted release criteria at a facility licensed to receive the material. Xcel Energy submitted a Certificate of Disposition of Materials - NRC Form 314 which provides the disposition of waste shipments generated during decommissioning. This form certifies that all radioactive waste has been removed and shipped to Energy Solutions (formerly Duratek) facility in Kingston, Tennessee for processing and/or disposal. Approximately 34,000 pounds of radioactive waste was generated and shipped to Energy Solutions licensed facility in Kingston, Tennessee for processing and/or disposal.

The NRC staff has reviewed the licensee's Certificate of Disposition of Materials (NRC Form 314) and determined that Xcel Energy has properly disposed of its byproduct material in accordance with its approved DP.

## 5.2 Elimination of Residual Radioactive Contamination

Xcel Energy intends to release the site for unrestricted use in compliance with the requirements of 10 CFR Part 20 Subpart E. The results of the FSS of the Pathfinder Site documented in the FSSR demonstrates that the site meets the criteria for unrestricted use. Xcel Energy based the criteria for release for unrestricted use on the screening values listed in Appendix B of NUREG-1757, or on screening values calculated using the NRC's DandD Code. The use of these screening values also demonstrate that remediation is As Low As Reasonably Achievable (ALARA). Appendix N of NUREG-1757 states that "In light of conservatism in the building surfaces and surface soil screening generic screening levels developed by NRC, NRC staff presumes absent information to the contrary, that licensees who remediate building surfaces or soil to the generic screening levels do not need to provide analyses to demonstrate that these screening levels are ALARA."

Based on this information, the NRC staff concludes that a reasonable effort has been made to eliminate residual radioactivity.

## 5.3 Final Status Survey

On February 26, 2007, Xcel Energy submitted the FSSR documenting the radiological status of the Pathfinder Site. The staff reviewed the FSSR and conducted on-site inspections and confirmatory surveys. All survey units, with the exception of two survey units, met the screening criteria for unrestricted use. An NRC inspection and confirmatory survey identified elevated readings in remote areas within the two survey units. After several attempts to decontaminate, a dose assessment was conducted for these areas. The dose assessment showed that the estimated annual dose was substantially less than the requirements of 10 CFR 20 Subpart E and no further evaluation was necessary. Therefore, the review of the FSSR and the results of the NRC inspection surveys confirmed that Xcel Energy has met the release criteria, and that the Pathfinder site can be released for unrestricted use.

Diffuse Naturally Occurring Radioactive Material (NORM) was detected outside in the settling basin, and inside in the Fuel Handling Building (FHB). The origin of the diffuse NORM, specifically Radium-226 (Ra-226), was determined to be the groundwater which was processed and concentrated by the water treatment system in the FHB. The water treatment system is used to purify groundwater servicing the fossil-fueled Angus Anson Generating Station. Periodic flushing of the water treatment facility is discharged to the settling basin. This NORM is not NRC-licensed material. The State of South Dakota has jurisdiction over this NORM. The licensee is working with the State Department of Environment and Natural Resources (DENR) to address the disposition of NORM. NRC staff has contacted the State DENR to confirm that the State is aware of this NORM, and that it accepts regulatory responsibility of this material.

## 5.4 Documents Required to Complete Decommissioning

10 CRF 30.36 requires licensees to forward specific records to NRC as the last step in decommissioning. These requirements include:

- NRC Form 314, disposition of materials, or equivalent;
- FSSR;

- Records of disposal of licensed material made under 20.2002 (including burials authorized before January 28, 1981) 20.2003, 20.2004, 20.2005; and
- Records required by 20.2103(b)(4).

On February 26, 2007, Xcel Energy submitted NRC Form 314 Certificate of Disposition of Materials, and the FSSR. The FSSR and associated documentation demonstrate that the facility and site are suitable for decommissioning and release in accordance with the criteria for decommissioning in 10 CFR Part 20, Subpart E. In Section 2.2.3 and Appendix G (Response to RAI No. 2) of the DP, the licensee states that there are no known instances of spills or burials of radioactive materials from the plant. Section 6.1 of the DP describes Xcel Energy's effluent monitoring program at the Pathfinder Site. On October 12, 2004, NRC conducted an inspection of the Pathfinder facility that included the collection of groundwater and surface water samples to determine whether licensed material was present in these media. The resulting inspection report found no evidence of licensed material in these media.

Based on the above information, the NRC staff concludes that Xcel Energy has submitted all of these records for NRC review and approval.

## **6.0 State Consultation**

This SER was prepared by the NRC staff without input from the State of South Dakota. However, NRC staff consulted with the State in the development of the Environmental Assessment for the license amendment to authorize decommissioning activities. The State is also on distribution for all correspondence between NRC and Xcel Energy, and has observed several NRC inspections, and thus has been informed of NRC's intention to approve the completion of decommissioning at the Pathfinder Site.

## **7.0 Environmental Considerations**

Pursuant to 10 CFR Parts 51, an environmental assessment (EA) and a finding of no significant impact (FONSI) was published in the Federal Register on May 25, 2005, (70 FR 30150), for approval of the Pathfinder DP (as revised and supplemented in December 2004). This SER documents Xcel Energy's acceptable implementation of the approved DP. Accordingly, no EA or FONSI will be prepared for the termination of License No. 22-08799-02.

## **8.0 Conclusion**

The Commission has concluded, based on the considerations discussed above, that: (i) the remaining decommissioning has been performed in accordance with the approved DP; (ii) the FSS and associated documentation demonstrate that Xcel Energy Pathfinder Site meets the criteria for decommissioning and release of the site for unrestricted use that are stipulated in the DP; and (iii) Xcel Energy has met the Part 30 requirements for forwarding of specific records to NRC prior to completion of decommissioning.

NRC staff finds that the licensee has completed decommissioning in accordance with its approved DP. Therefore, the staff concludes that the site is acceptable for unrestricted use with no further action, and the license can be terminated.

## 9.0 Principle Contributors

Chad Glenn, Senior Project Manager  
 James Webb, Senior Health Physicist  
 Anita Gray, System Performance Analyst  
 Robert Evans, Inspector, Region IV  
 Katherine Streit, Health Physicist

## 10.0 References

- Xcel Energy License Amendment Request to Authorize Decommissioning Activities at Pathfinder, dated February 17, 2004 (ADAMS Accession Nos. ML040620520; ML040630125; ML040630513).
- NRC Request for Additional Information Regarding Pathfinder DP Review, dated September 30, 2004 (ADAMS Accession No. ML042660547).
- NRC Inspection Report 030-05004/04-001, dated December 15, 2004 (ADAMS Accession No. ML043500229).
- Xcel Energy Response to NRC Request for Additional Information, (Supplement to the Decommissioning Plan) dated December 21, 2004, (ADAMS Accession No. ML050100054).
- NRC Environmental Assessment Related to License Amendment to Authorize Decommissioning Activities in accordance with the Pathfinder DP, dated May 19, 2005 (ADAMS Accession No. ML050960256).
- NRC License Amendment No. 15", dated May 27, 2005, (ADAMS Accession Nos. ML051430478; ML051430507; ML051430520).
- NRC Inspection Report 030-05004/06-001, dated November 27, 2006 (ADAMS Accession No. ML063320446).
- Xcel Energy Response to Unresolved Items Identified in NRC Inspection Report 030-05004/06-001, dated December 15, 2006 (ADAMS Accession No. ML063530097).
- NRC Letter Regarding Xcel Energy's Response to NRC Inspection Report 030-05004/06-001, dated January 18, 2007 (ADAMS Accession No. ML070190497).
- Xcel Energy letter Submitting NRC Form 314 and Final Status Survey Report in Support of the Termination of the pathfinder Byproduct Material License, Books 1 - 5, dated February 26, 2007 (ADAMS Accession Nos. ML070650214; ML070650200; ML070650203; ML070650205; ML070650219; ML070650382).
- NRC Request for Additional Information (RAI) regarding License Termination of Pathfinder Facility Located in Sioux Falls, South Dakota, dated April 19, 2007, (ADAMS Accession No. ML071070445).
- Excel Energy Response to Request for Additional Information Regarding License Termination of Pathfinder Facility Located in Sioux Falls, South Dakota, dated May 17, 2007, (ADAMS Accession No. ML071420207).

Pathfinder Service List

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