



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

March 5, 2018

Mr. Christopher Church  
Site Vice President  
Northern States Power Company - Minnesota  
Monticello Nuclear Generating Plant  
2807 West County Road 75  
Monticello, MN 55362-9637

**SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT  
RE: REVISION TO THE MONTICELLO NUCLEAR GENERATING PLANT  
EMERGENCY PLAN (CAC NO. MF9467, EPID L-2017-LLA-0179)**

Dear Mr. Church:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 196 to Renewed Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant (MNGP). The amendment consists of changes to the MNGP Emergency Plan in response to your application dated March 24, 2017, as supplemented by letter dated September 20, 2017.

The amendment revises the MNGP Emergency Plan to increase the staff augmentation times for certain emergency response organization positions from 30 and 60 minutes to 60 and 90 minutes, respectively. Additionally, the amendment defines facility activation, removes references to augmenting resources from the Prairie Island Nuclear Generating Plant, removes a 30-minute Electrical Maintenance Responder, clarifies transfer of Direction and Control responsibilities, and implements various administrative changes to position titles, figures, etc.

A copy of our related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert F. Kuntz", written over a horizontal line.

Robert F. Kuntz, Senior Project Manager  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosures:

1. Amendment No. 196 to DPR-22
2. Safety Evaluation

cc: Listserv



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 196  
License No. DPR-22

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Northern States Power Company (NSPM, the licensee), dated March 24, 2017, as supplemented by letter dated September 20, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, by Amendment No. 196, Renewed Facility Operating License No. DPR-22 is hereby amended to authorize revision to the Monticello Nuclear Generating Plant Emergency Plan as set forth in the licensee's application dated March 24, 2017, as supplemented by letter dated September 20, 2017, and evaluated in the NRC staff's safety evaluation enclosed with this amendment.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*Michelle Evans for*

Brian E. Holian, Acting Director  
Office of Nuclear Reactor Regulation

Date of Issuance: March 5, 2018



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

**SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION**

**RELATED TO AMENDMENT NO. 196 TO**

**RENEWED FACILITY OPERATING LICENSE NO. DPR-22**

**NORTHERN STATES POWER COMPANY**

**MONTICELLO NUCLEAR GENERATING PLANT**

**DOCKET NO. 50-263**

**1.0 INTRODUCTION**

By application dated March 24, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17083A083), as supplemented by letter dated September 20, 2017 (ADAMS Accession No. ML17263B194), Northern States Power Company, doing business as Xcel Energy (Xcel Energy, the licensee), requested changes to the Monticello Nuclear Generating Plant (MNGP) Emergency Plan pursuant to Section 50.54(q) of Title 10 of the *Code of Federal Regulations* (10 CFR).

The proposed changes would revise the MNGP Emergency Plan to increase the staff augmentation response times for certain emergency response organization (ERO) response functions. The proposed revisions include:

- Extending augmented response time for certain ERO functions from 30 minutes from notification to 60 minutes from declaration of an Alert or higher classification;
- Extending augmented response time for certain ERO functions from 60 minutes from notification to 90 minutes from declaration of an Alert or higher classification;
- Extending dispatch of one (1) offsite survey team at 30 minutes to one (1) team at 60 minutes and one (1) team at 60 minutes to one (1) team at 90 minutes from declaration of an Alert or higher classification;
- Extending response time of the Core Thermal Engineer from 30 minutes to 60 minutes from declaration of an Alert or higher classification;
- Extending response time of the Instrument and Control (I&C) Technician from 30 minutes to 90 minutes from declaration of an Alert or higher classification;
- Removing one (1) Electrical Maintenance Responder at 30 minutes from the augmentation list;

- Defining Facility Activation criteria for the Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF);
- Removing references to additional Radiation Protection support coming from the Prairie Island Nuclear Generating Plant (PINGP) within 3 hours;
- Clarifying transfer of Direction and Control responsibilities among the TSC and EOF; and
- Implementing various administrative changes to position titles, figures, etc.

The licensee's supplemental letter dated September 20, 2017, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on May 9, 2017 (82 FR 21559).

## 2.0 REGULATORY EVALUATION

The regulatory requirements and guidance on which NRC staff based its acceptance are as follows.

### 2.1 Regulatory Requirements

The regulation at 10 CFR Part 50, Section 50.47, "Emergency plans," sets forth emergency plan requirements for nuclear power reactors. The planning standards in 10 CFR 50.47(b) establish the requirements that the onsite and offsite emergency response plans must meet for the NRC staff to make a finding that there is reasonable assurance that the licensee can, and will, take adequate protective measures in the event of a radiological emergency. Specifically, on-shift and augmented emergency response staffing is addressed under:

- 10 CFR 50.47(b)(1), which states, in part, that "...each principal response organization has staff to respond and to augment its initial response on a continuous basis," and
- 10 CFR 50.47(b)(2), which states, in part, that the emergency response plan must ensure that, "...adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available...."

In addition, Appendix E to 10 CFR Part 50, Section IV, Part A, "Organization," states, in part, that "The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization...."

### 2.2 Guidance

Regulatory Guide (RG) 1.101, Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors" (ADAMS Accession No. ML090440294), provides guidance on methods acceptable to the NRC staff for implementing specific parts of the NRC's regulations—in this case, 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. RG 1.101 endorses Revision 1 to NUREG-0654/FEMA-REP-1 (NUREG-0654), "Criteria for Preparation and Evaluation of

Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (ADAMS Accession No. ML040420012), which provides specific acceptance criteria for complying with the standards set forth in 10 CFR 50.47(b). These criteria provide a basis for NRC licensees and state and local governments to develop acceptable radiological emergency plans and improve emergency preparedness.

NUREG-0654, Section II, "Planning Standards and Evaluation Criteria," Evaluation Criteria II.B.1 and II.B.5 address the 10 CFR 50.47(b)(2) planning standard. Evaluation Criteria II.B.1 specifies the onsite emergency organization of plant staff personnel for all shifts, and its relation to the responsibilities and duties of the normal shift complement. Evaluation Criteria II.B.5, states, in part:

Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.

Regulatory Issue Summary 2016-10, "License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation," dated August 5, 2016 (ADAMS Accession No. ML16124A002), provides examples of the scope and detail of information that should be provided in license amendment requests to facilitate NRC review.

### 3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of the proposed changes to the MNGP Emergency Plan as described in the application dated March 24, 2017, as supplemented by letter dated September 20, 2017. An evaluation based upon the major functional areas of the MNGP ERO was performed, and many of the changes are supported by enhancements to equipment (technology), procedural improvements, training, process improvements (i.e., dose assessments), and increases in staffing levels in excess of NUREG-0654, Table B-1 levels. These enhancements compensate for the increases in augmentation timing and the reduction in available on-shift maintenance expertise. The NRC staff's technical evaluation is detailed below.

#### 3.1 Enhancements

*Process Computer System (PCS) and the Safety Parameter Display System (SPDS):* Xcel Energy states that the PCS provides the process monitoring, calculations, and data presentation necessary for effective evaluation of normal and emergency plant operation. The PCS is an integrated system designed for monitoring, analysis, and display of plant process parameters obtained from instrumentation connected to plant equipment and systems. Data are collected via an interface with the Data Acquisition System. The PCS processes the data (analog, digital, and pulse) and provides meaningful displays, logs and plots of historical, current and predicted plant performance. The SPDS consists of three primary displays that are designed to support the information needs of the Emergency Procedure Guidelines. These displays, Reactor Pressure Vessel Control Display, Containment Control Display, and Critical Plant Variables

Display are elaborated in special function displays. The PCS and SPDS have multiple power source options available.

*Dose Assessment:* Xcel Energy provides that MNGP uses Radiological Assessment System for Consequence Analysis (RASCAL) software that was updated in 2014 to include the Unified RASCAL Interface (URI). The URI application is available on emergency response facility (ERF) dose assessment computers. The URI program greatly reduces the data entry needs and the number of program windows the user needs to access to perform a dose projection. It also incorporates a rapid dose projection option, which allows personnel to perform dose assessments during the initial phases of a rapidly evolving event. Manual release rate determination methodology is maintained for use with independent battery powered laptop computers in emergency facilities equipped with the URI system. With the use of the current dose assessment program, as well as plant status, meteorological, and radiation monitoring data, one (1) person can perform dose assessments during emergency conditions easily and rapidly.

*Automated ERO Call-Out Systems:* Xcel Energy provides that MNGP uses a pager network and an automated call-out system, which notifies a much larger group of ERO members via home phones and cell phones with a single activation phone call. The system includes a primary activation location, as well as a backup facility at a different location to ensure uninterrupted operation. An activation can also be performed using any commercial telephone, either on or off site.

*Procedure Improvements:* Xcel Energy provides that many procedural enhancements related to the MNGP Emergency Plan and response to radiological events have been implemented. These include improvements to how emergency operating procedures (EOPs) and emergency plan implementing procedures have been integrated, particularly for emergency action level (EAL) determination, which has improved the overall emergency classification process.

*Training:* Xcel Energy provides that the training of MNGP Operations staff has been improved through the application of the Systematic Approach to Training and the use of the plant simulator to provide hands on experience and practice in the operation of the control room during normal, abnormal, and emergency plant conditions. This approach evaluates the proficiency of the control room team in the areas of critical task performance, prioritization of activities, communications, accident mitigation, event classification, and teamwork, which includes response to events where implementation of the MNGP Emergency Plan is called for. In addition, the Shift Technical Advisor (STA) training was enhanced based on Institute of Nuclear Power Operations' guidelines. The STA assists the Shift Manager with operability, risk, and reportability determinations, including EAL classifications.

*On-Shift Staffing Levels:* Xcel Energy provides that the current MNGP on-shift staffing consists of 13 positions, which is an increase from the 10 positions identified in Table B-1 to NUREG-0654 and an increase from 9 positions identified in Revision 2 to the MNGP Emergency Plan. This robust on-shift staff provides additional personnel to support MNGP Emergency Plan functions, while also allowing for the on-shift staff to perform mitigative strategies to limit the consequences to the public from a radiological event. In particular, the ability to dedicate an on-shift communicator removes the need for an on-shift position needing to be responsible for offsite communications while also being responsible for other collateral functions.

### 3.2 Major Functional Areas

In the license amendment request dated March 24, 2017, Xcel Energy provided a justification for the proposed MNGP Emergency Plan changes that included a functional analysis of each Major Functional Area and task described in NUREG-0654, Table B-1.

The current MNGP Emergency Plan describes the ERO as consisting of personnel staffing in the control room, TSC, OSC, and EOF. Xcel Energy proposes to activate the OSC and TSC within 60 minutes of declaration of Alert or higher EAL classification, and the EOF activated within 90 minutes of declaration of Alert or higher EAL classification. Although activation of the EOF is not required until a Site Area Emergency or higher classification, as discussed in the guidance in NUREG-0654, the proposed changes to the MNGP Emergency Plan will require the OSC, TSC and the EOF to be activated at the Alert level or higher classification.

The NRC staff's review of the proposed changes to the MNGP Emergency Plan is described below.

#### 3.2.1 Plant Operations and Assessment of Operational Aspects

The licensee is not requesting changes to this Major Functional Area. The current on-shift staffing for Plant Operations and Operations Aspects consists of:

<u>Position</u>	<u>Number of On-Shift Operations Personnel</u>
• Shift Manager	1
• Control Room Supervisor	1
• Senior Reactor Operator (SRO)	1
• Nuclear Lead Primary Equipment (PE) & Reactor Operator (RO)	1
• Nuclear PE & RO	2
• Nuclear Assistant PE Operator	3

#### 3.2.2 Emergency Direction and Control

NUREG-0654, Table B-1 guidance indicates that the Shift Supervisor, STA, or designated facility manager should be assigned the Emergency Direction and Control function, and they may be assigned other collateral functions. The overall direction of facility response may be transferred to the EOF Director when all centers are fully manned. NUREG-0654, Table B-1, designates an augmentation time of 60 minutes for the EOF Director.

The current and proposed MNGP Emergency Plan provide that the Shift Manager will initially perform the Emergency Direction and Control function as the Emergency Director until relieved. In the current MNGP Emergency Plan, the Emergency Manager in the EOF will relieve the Emergency Director of all offsite responsibilities within 60 minutes and assume the responsibility for the management of the overall response to the emergency. Xcel Energy requested a change to allow the transfer of Major Functional Area of Emergency Direction and Control from the control room to the TSC within 60 minutes of an Alert or higher declaration. Offsite functions, such as notification and protective action recommendations (PARs), would subsequently transfer to the EOF upon activation within 90 minutes of an Alert or higher classification.



The transition of command and control functions are depicted below:

CONTROL ROOM	TSC	EOF
<u>Shift Manager</u> (On-Shift Emergency Director)	<u>Emergency Director</u>	<u>Emergency Manager</u>
Classification ----->	Classification	
Notifications ----->	Notifications ----->	Notifications
PARs ----->	PARs ----->	PARs
Emergency Exposure -----> Controls	Emergency Exposure Controls	

The proposed revision to MNGP Emergency Plan, Figure 13.1, "Monticello Plant Emergency Organization," identifies the following minimum staff positions in the TSC needed to support activation of that facility within 60 minutes of an Alert or higher classification:

- Emergency Director,
- ERF Communicator,
- Operations Group Leader,
- Radiological Emergency Coordinator,
- Core Thermal Engineer,
- Offsite Communicator, and
- Emergency Notification System (ENS) Communicator.

Xcel Energy provides that the proposed revision to the MNGP Emergency Plan would reduce the amount of time that the Shift Manager/On-Shift Emergency Director maintains responsibility for Emergency Direction and Control as the 60-minute TSC activation criteria would be initiated at the time of declaration rather than from the point of notification as is done currently.

The NRC staff finds that the extension in activation time for the EOF from 60 to 90 minutes from a declaration of an Alert or higher is acceptable due to the transfer of roles and responsibilities to the TSC as described above. Therefore, with the proposed changes, the MNGP Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

### 3.2.3 Notification and Communications

The guidance in NUREG-0654, Table B-1, provides that one communicator be assigned on-shift with a dedicated communicator augmenting the on-shift communicator within 30 minutes. The current and proposed MNGP Emergency Plan assign an on-shift individual designated as the Shift Emergency Communicator (SEC) to perform the Notification/Communication function with no other functions assigned. The SEC position is staffed by a dedicated security force individual on-shift that is not credited as part of the armed response force. The licensee states that there are no conflicts between the SEC duties and any security activities associated with the Physical Security Plan.

Xcel Energy proposed to extend the 30-minute augmented responder to 60 minutes and add a second 60-minute responder position, such that State/local and Federal notifications are completed by separate positions in the TSC. The proposed change also extends the two 60-minute responders to 90 minutes and designates them as reporting to the EOF.

Xcel Energy states that the proposed change impacts the staffing of the notification function by extending the response time of the 30-minute responder to 60 minutes. The proposed MNGP Emergency Plan maintains the SEC position on-shift to ensure that notification functions are completed without conflicts. The State/local notifications will transition from the SEC in the control room to the Offsite Communicator in the TSC upon activation of the TSC within 60 minutes under the proposed revision. ENS notifications will continue to transition from the control room to the TSC within 60 minutes as required under the current Emergency Plan.

Xcel Energy further states that the notification of licensee personnel is initiated through an automated call-out process, which is initiated by the SEC. The proposed change does not impact the call-out process or the notification of licensee personnel.

Based on the SEC having no other duties that would detract from the ability to perform the notification/communication function, the NRC staff concludes that there is no loss of function or impact on the timing for performing notifications. Therefore, with the proposed changes, the MNGP Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

#### 3.2.4 Radiological Accident Assessment and Support of Operational Accident Assessment/Protective Actions (In-Plant)

The function of onsite radiological assessment is to: review radiological conditions onsite using data from available instrumentation; assess the impact of changing radiological conditions on emergency classification; assist in accident assessment based upon those changing radiological conditions; and recommend appropriate onsite protective measures. This Major Functional Area includes the following tasks:

Overall Utility Emergency Management and Offsite Agency Interface: This Major Task was discussed previously in the Emergency Direction and Control Major Functional Area.

Offsite Dose Assessment and PARs: The guidance in NUREG-0654, Table B-1 identifies one (1) person to perform the offsite dose assessment function as a 30-minute augmented position. Xcel Energy proposed to extend the Radiological Emergency Coordinator response to the TSC from 30 to 60 minutes of an Alert or higher classification.

Xcel Energy states that in the current MNGP Emergency Plan, dose assessment is performed by an on-shift Chemistry Technician and is transferred to the Radiological Emergency Coordinator in the TSC. After activation of the EOF, the Health Physics Support Supervisor will assume responsibility for the offsite activities. The result of the changes to the offsite dose assessment function would be that the on-shift Chemistry Technician would be responsible for performing dose assessment for up to 60 minutes after event declaration until relieved by the Radiological Emergency Coordinator in the TSC.

Xcel Energy stated that specifically designed displays have been developed for obtaining the necessary plant, radiological effluent, area radiation monitor, and meteorological information that is used by personnel on-shift through the RASCAL URI program. The URI application program can be run from computer stations located in the

control room, TSC, EOF, and the backup EOF. Independent battery powered laptop computers are also available in the TSC, EOF, and backup EOF. The URI program greatly reduces the data entry needs and the number of program windows the user needs to access to perform a dose projection. It also incorporates a rapid dose projection option, which allows personnel to perform dose assessments during the initial phases of a rapidly evolving event. Manual dose calculation capability is maintained as a backup to the URI system.

Based on Xcel Energy's current dose assessment capability and the use of a dedicated on-shift position to perform dose assessment, the NRC staff concludes that there is no loss of function or impact on performing dose assessment. Therefore, with the proposed changes, the MNGP Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

Offsite and Onsite Surveys, and In-Plant Surveys: The guidance in NUREG-0654, Table B-1 identifies two (2) persons to perform the offsite survey function as 30-minute augmented positions, with two (2) additional persons as 60-minute augmented positions. Additionally, the guidance in NUREG-0654, Table B-1 identifies one (1) person to perform the onsite survey (out-of-plant) function as a 30-minute augmented position, with one (1) additional person as a 60-minute augmented position. It further identifies one (1) person on-shift to perform in-plant surveys, with one (1) person augmenting in 30 and 60 minutes of an Alert or higher classification, respectively.

In the proposed MNGP Emergency Plan, the composition of the survey teams is maintained; however, augmentation would be extended such that the first team would be dispatched at 60 minutes and the second team dispatched at 90 minutes after declaration of an Alert or higher classification, rather than 30 and 60 minutes respectively at the Site Area Emergency or higher classification. Additionally, the proposed revision eliminates the commitment for survey team resources coming from the PINGP within 3 hours.

Xcel Energy states that installed plant radiological instrumentation is sufficient for monitoring of the release of radioactivity during the initial stages of an accident, and offsite survey data is used to validate the offsite dose assessment. This effectively supports event classification, as well as onsite and offsite protective actions, such that performance of this major task at 60 minutes does not adversely impact site response. Initial survey team response involves primarily environmental radiation and contamination assessments, plume tracking, and using dose assessment instrumentation. Actions include driving to and from field positions, reading dose rate instrumentation, and communicating results to the TSC and/or EOF. The first survey team can effectively track any potential plume and/or cover the necessary area to identify whether a plume exists during the early stages of an event. The second team, dispatched at 90 minutes, will support continued plume tracking capability, as well as sampling activities.

Xcel Energy states that enhancements have been made in the ability to remotely monitor overall radiological plant conditions supporting in plant emergency response. The Process Radiation Monitoring System is designed to provide continuous monitoring and readout of the radioactivity of all process lines and vents that can release radioactivity directly to the environment. In addition, this system also continuously measures, indicates, and records the radioactivity concentration levels of in-plant process streams

and vents. The Area Radiation Monitoring System provides the control room operating personnel with a continuous indication of gamma radiation levels at various selected locations throughout the plant buildings. These systems display plant radiological information so that correct decisions can be made with respect to deployment of personnel in the event of a radiation incident as well as providing local alarms at key points where substantial radiation level changes may occur.

The proposed MNGP Emergency Plan maintains the commitment for two (2) on-shift Health Physics Technicians responsible for performance of the in-plant survey function, as well as the augmented Health Physics Technician at 60 minutes, and add an additional Health Physics Technician augmented at 90 minutes. On-shift Health Physics Technicians can quickly determine radiological conditions utilizing the plant Process Radiation Monitoring System and Area Radiation Monitoring System. Data are displayed to plant desktop computers using the SPDS system. These data can be used to brief on-shift operators and response teams on area conditions. It can also be used to determine areas that may require followup radiological surveys.

Based on the licensee's current dose assessment capability, the use of installed plant radiological instrumentation, and the on-shift complement of two (2) Health Physics Technicians, the NRC staff concludes that there is no loss of function or impact on the timing for performing Offsite and Onsite Surveys, and In-Plant Surveys. Therefore, with the proposed changes, the MNGP Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

Protective Actions: The guidance in NUREG-0654, Table B-1 specifies the major task of Protective Actions (In-Plant) to be fulfilled on-shift by a total of two (2) personnel and "[m]ay be provided by shift personnel assigned other functions." Additionally, the guidance in NUREG-0654, Table B-1 identifies two (2) persons to perform this function as 30-minute augmented positions, with two (2) additional persons as 60-minute augmented positions.

In the current MNGP Emergency Plan, augmentation of the Radiation Protection Functions are met by one (1) Health Physics Technician within 30 minutes of declaration of an Alert or higher classification and one (1) Health Physics Technician within 60 minutes of an Alert or higher classification. The proposed augmentation of the Radiation Protection Functions will be met by one (1) Health Physics Technicians within 60 minutes of declaration of an Alert or higher classification and one (1) Health Physics Technician within 90 minutes of declaration of an Alert or higher classification.

Xcel Energy states that extension of the augmentation times for the Health Physics Technicians from 30 to 60 minutes is acceptable due to in part the addition of a second Health Physics Technician to the on-shift complement. Additionally, Xcel Energy provides that additional capabilities have resulted in improved efficiencies with respect to access control and dosimetry. Enhancements have been made to access control equipment and processes. These improvements have streamlined access control by automating the issuance of dosimetry and by providing Emergency Radiation Work Permits (RWPs) that program the dosimeters with dose and dose rate thresholds appropriate to post-accident conditions. Computerized radiation protection work processes require personnel to sign-in electronically on radiation work permits and obtain electronic self-reading personnel dosimetry (SRDs) to enter radiologically controlled areas (RCAs). Turnstiles are provided that verify proper dosimetry prior to

allowing RCA access further reducing burden on the Health Physics Technicians. The same dosimetry is used as a key to unlock turnstiles to allow access to the RCA. The site computer system provides process and plant radiological data needed to determine protective actions needed for in-plant work. There are two different RWP processes available that reduce the burden on Health Physics Technicians during the initial phase of an accident by bypassing or significantly reducing Health Physics planning needed by the normal process. In addition to the RWP processes, the site also maintains a stand-alone set of emergency SRDs with higher limits bypassing the RWP process and allowing immediate entry if the Shift Manager determines the need.

The Emergency RWP requires entrants to use telemetry on their SRDs. Transmitters relay dose and dose rate information to receivers connected to the plant local area computer network. Plant computers (PCs) with the software installed are used to monitor, track, and trend SRD telemetry data. Remote monitoring software, accessible from designated computers allows real-time monitoring of workers wearing an SRD equipped with a transmitter. PCs with this software are located throughout the RP office, main access control, technicians' workstations, and the OSC. Workers wearing a transmitting SRD appear to the remote monitoring software user after they log into the access control software and are removed after log out. Administrative set points, which are lower than RWP alarm set points on the electronic dosimeter, may be set by Radiation Protection personnel. The administrative alarms can assist health physics job coverage by providing early notice of accumulating dose and dose rates. Use of the remote monitoring software allows the Health Physics Technician to monitor multiple workers simultaneously reducing the time and effort required for job coverage while maintaining adequate protection for workers.

Based on technological improvements for dose assessment, access control to RCAs, the assignment of an additional Health Physics Technician on-shift for a total of two (2), and the extensive installed radiation monitoring system at MNGP, the NRC staff concludes that there is no loss of function or impact on the timing for performing protective actions. Therefore, with the proposed changes, the MNGP Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

### 3.2.5 Plant System Engineering, Repair and Corrective Actions

This Functional Area includes the following tasks:

Technical Support: The guidance in NUREG-0654, Table B-1 identifies one (1) on-shift STA, core/thermal hydraulics engineering expertise to be available in 30 minutes of an Alert or higher classification, and electrical and mechanical engineering expertise to be available in 60 minutes of an Alert or higher classification. The current MNGP Emergency Plan maintains three (3) on-shift SROs, as augmented by a Core Thermal Engineer within 30 minutes of declaration of an Alert or higher classification and by Mechanical and Electrical Engineers reporting to the TSC within 60 minutes of declaration of an Alert or higher classification. One of the three SRO's continues to perform the STA function on-shift.

The proposed MNGP Emergency Plan extends the augmentation timing of the Core Thermal Engineer to 60 minutes of an Alert or higher classification and maintains the augmentation by Mechanical and Electrical Engineers reporting to the TSC within 60 minutes of declaration of an Alert or higher classification.

Xcel Energy provides that enhancements in the STA's ability to perform required actions on-shift have resulted from improvements in training, adoption of symptom-based EOPs and significant improvements in the ability to use computer parameters to efficiently monitor core conditions.

Xcel Energy provides that upgrades in plant computer capability have also contributed to the reduction in burden for the performance of STA related activities. Power Range Monitor equipment has been replaced by a digital Power Range Neutron Monitor (PRNM) System. PRNM provides a functional replacement of the Local Power Range Monitor, Average Range Monitor, and Rod Block Monitor functions, and upgrades the interfaces to the Rod Worth Minimizer and Automated Traversing In-Core Probe. This new capability is available via displays in the control room located above the control panels, at the EOP/Control Room Supervisor desk, the RO desk, and at the Shift Manager desk. The SPDS consists of three primary displays that are designed to support the information needs of the Emergency Procedure Guidelines. These displays: Reactor Pressure Vessel Control Display, Containment Control Display, and Critical Plant Variables Display are elaborated in special function displays. The special function displays provide: 1) two dimensional plots of the limiting conditions defined in the EOPs (e.g., Drywell Design Pressure Curve); 2) trend plots of all control parameters, showing data from the most recent 30 minutes; 3) the validation status of SPDS input data, and 4) radiation monitoring displays. These display capabilities enhance the STA's ability to monitor core thermal conditions and provide advice to the operating crew.

Based on the improvements in training, adoption of symptom-based EOPs, and significant improvements in the ability to use computer parameters to efficiently monitor core conditions available to the STA, and the continued addition of the Electrical and Mechanical Engineers responding to the TSC within 60 minutes of an Alert or higher classification (which is unchanged by this amendment), the NRC staff concludes that there is no loss of function or impact on the timing for performing technical support. Therefore, with the proposed changes, the MNGP Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

Repair and Corrective Actions: The guidance in NUREG-0654, Table B-1 specifies the major task of "Repair and Corrective Actions" to be fulfilled on-shift by a total of two (2) personnel and "[m]ay be provided by shift personnel assigned other functions." One (1) person would perform the function of a mechanic and one (1) person would perform the function of an electrician. One (1) electrician and one (1) I&C technician would respond within 30 minutes to augment the ERO. One (1) mechanic/Rad Waste Operator and one (1) additional electrician/I&C technician would respond within 60 minutes to augment the ERO.

The current MNGP Emergency Plan has one (1) I&C technician and one (1) electrical maintenance technician reporting to the OSC within 30 minutes of declaration of an Alert or higher classification. Additionally, one (1) mechanical maintenance technician and

one (1) electrical maintenance technician reporting to the OSC within 60 minutes of an Alert or higher classification

The proposed MNGP Emergency Plan would change the timing and composition of the augmenting maintenance responders reporting to the OSC at 60 minutes and 90 minutes of an Alert or higher classification. The requested change will result in one (1) mechanical maintenance technician and one (1) electrical maintenance technician reporting to the OSC within 60 minutes of declaration of an Alert or higher classification, and one (1) I&C technician reporting to the OSC within 90 minutes of declaration of an Alert or higher classification.

Xcel Energy stated that the on-shift operators have the necessary training and expertise to perform troubleshooting and minor repairs during plant operations, and would be available to perform any minor troubleshooting and repair activities that may be needed. Due to the time needed to stabilize the plant and assess the event, the initial phase of accidents is not expected to involve a significant need for maintenance personnel. Once plant status is understood and the plant is in a stable condition, attention can be focused on corrective maintenance that may be needed to restore plant capabilities.

Additionally, Xcel Energy credited the robust emergency core cooling systems (ECCS) capability through redundant and diverse system design and protection against loss of ECCS capability due to a single component failure, which provides the basis for the position that no ECCS repair and corrective actions are necessary for on-shift personnel prior to augmentation of maintenance personnel. However, in the unlikely event of an ECCS failure, on-shift licensed and non-licensed personnel will respond to restore ECCS functions as directed by Abnormal Operating Procedures and EOPs. Licensed and non-licensed personnel are trained to perform these actions as part of their assigned duties, as such they would not be considered a collateral duty. The robust ECCS capability also provides the basis for the proposed changes to the augmentation times for maintenance personnel as ECCS repair and corrective actions performed by augmented personnel would address restoration of redundant equipment as opposed to restoration of minimum required equipment to provide core cooling capabilities. Therefore, Xcel Energy states that the proposed change will not result in a reduction in response capability for performance of technical support, repair activities, or corrective actions.

Based on the availability of on-shift operators with the necessary training and expertise to perform minor maintenance actions to mitigate an event until augmented, the redundant and diverse ECCS system design and protection against loss, and the augmenting maintenance personnel, the NRC staff concludes that there is no loss of function or impact on the timing for performing repair and corrective actions. Therefore, with the proposed changes, the MNGP Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.



### 3.2.6 Fire Fighting

Xcel Energy is not requesting a change for the Fire Fighting Major Functional Area.

### 3.2.7 Rescue Operations and First Aid

Xcel Energy is not requesting a change for the Rescue Operations and First Aid Major Functional Area.

### 3.2.8 Site Access Control and Personnel Accountability

Xcel Energy is not requesting a change for the Site Access and Personnel Accountability Major Functional Area.

## 3.3 Summary

The NRC staff performed a technical and regulatory review of the proposed changes to the MNGP Emergency Plan and finds that the proposed emergency plan changes meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50, and provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Therefore, the NRC staff concludes that the proposed changes to the MNGP Emergency Plan, as described in the application dated March 24, 2017, as supplemented by the letter dated September 20, 2017, are acceptable.

## 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Minnesota State official was notified of the proposed issuance of the amendment on December 14, 2017. The State official had no comments.

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change the site emergency plan. The amendments relate to changes in recordkeeping, reporting, or administrative procedures or requirements. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: M. Norris, NSIR

Date: March 5, 2018



SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT  
RE: REVISION TO THE MONTICELLO NUCLEAR GENERATING PLANT  
EMERGENCY PLAN (CAC NO. MF9467, EPID L-2017-LLA-0179)  
DATED MARCH 5, 2018

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MNorris, NSIR

**ADAMS Accession No. ML17349A916**

\*-via memo

\*\*via e-mail w/comments

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