414 Nicollet Mall
Minneapolis, MN 55401

June 14, 2024

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

—Via Electronic Filing—

RE: EMERGENCY PLANS
PRAIRIE ISLAND NUCLEAR GENERATING PLANT CERTIFICATE OF NEED
DOCKET NO. E002/CN-24-68

Dear Mr. Seuffert:

Consistent with its commitment to supplement the record in response to a request made during a public hearing, Northern States Power Company, doing business as Xcel Energy (Xcel Energy or the Company), submits the below-listed Emergency Plans into the record in the above-noted docket.

We noted in Sections 12.2.4 and 13.2 of the Certificate of Need for Additional Dry Cask Storage at the Prairie Island Nuclear Generating Plant (PINGP) Independent Spent Fuel Storage Installation Application filed in this docket on February 7, 2024 that an emergency plan is required for the PINGP spent fuel storage facility, in accordance with 10 CFR 72.32(c). The 10 CFR 50.47 emergency plan already in effect for PINGP is applied to the Independent Spent Fuel Storage Installation (ISFSI). The emergency plan "describes the organization, assessment actions, activation of the emergency organization, notification procedures, emergency facilities, training, provisions for maintaining emergency preparedness, and recovery criteria for off-normal and accident conditions."[1]

Minnesota Administrative Rules 7855.0230 through 7855.0670 do not require that the emergency plan be included as a component of a certificate of need application.

The Company is therefore providing the plans listed below as an accommodation to a request made by a member of the public during the Department of Commerce, Energy

[1] *In the Matter of the Application of Northern States Power Company, Minnesota D/B/A Xcel Energy for a Certificate of Need for Additional Dry Cask Storage at the Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation*, Docket No. E002/CN-24-68, Certificate of Need Application, Sections 12.2.4 and 13.2 (February 7, 2024).

Environmental Review and Analysis (EERA) unit's April 24, 2024, Scoping Environmental Assessment Worksheet virtual public meeting. The plans provided are the following:

- ESPLAN-01: "Standard Emergency Plan" for PINGP and the Monticello Nuclear Generating Plant, maintained in accordance with license conditions 10 CFR § 50 and Nuclear Regulatory Guidance;
- ESPLAN-03: "Prairie Island Emergency Plan Annex," maintained pursuant to 10 CFR § 50.47(b)(1) and 44 CFR § 350.5(a)(1);
- ESPLAN-05: "Prairie Island Emergency Action Level (EAL) Technical Basis Document," maintained in accordance with 10 CFR § 50 and 10 CFR § 72.32.

The Company does not intend for the submission of these documents to set a precedent for future nuclear certificate of need applications and also notes that emergency response plans are potentially subject to various revisions over time.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service list. Please contact me at amanda.jepson@xcelenergy.com or (651) 212-1679 if you have any questions regarding this filing.

Sincerely,

/s/

AMANDA J. JEPSON
MANAGER, NUCLEAR REGULATORY POLICY

Encls
c: Service List

Xcel Energy® Nuclear Licensing Document	EPLAN-01	Revision: 0
	Page 1 of 116	
Title:	**Standard Emergency Plan**	
Approval: **602000030746**		

Table of Contents

1.0 INTRODUCTION

1.1 PURPOSE

The Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, in accordance with license conditions, 10 CFR Part 50, and NRC Regulatory Guidance, the Standard Emergency Plan (SEP) provides the means to protect the health and safety of the general public, persons temporarily visiting or assigned to power plants operated by Xcel Energy, and plant employees. Xcel Energy operates the Monticello Nuclear Generating Plant (MNGP) and the Prairie Island Nuclear Generating Plant (PINGP).

1.2 BACKGROUND

The Xcel Energy licensing basis for meeting the requirements of 10 CFR 50.47(b) and Appendix E include the following documents:

SEP (EPLAN-01) – The SEP outlines actions taken to prepare for and respond to a declared emergency. Planning efforts common to Xcel Energy sites are encompassed within the SEP.

Site-Specific Annexes (EPLAN-02, EPLAN-03) – The Site Annexes contain information and guidance unique to the sites. The site annexes are subject to the same review and audit requirements as the SEP.

Site-Specific Emergency Action level (EAL) Technical Basis Document (EPLAN-04, EPLAN-05) – Establishes the EAL scheme used by the sites to declare emergencies. The Technical Basis document references inputs to determine values or events that would result in event classification.

Site-Specific Evacuation Time Estimate (ETE) Studies (EPLAN-06, EPLAN-07) – The ETE study defines the site's Plume Exposure (~10 mile) Emergency Planning Zone (EPZ). It documents the population within defined areas of the zone, evacuation routes and ETEs for different scenarios.

Site-Specific On-Shift Staffing Analysis (EPLAN-08, EPLAN-09) – The NEI 10-05 On-Shift Staffing Analysis fulfills the requirements of 10 CFR50, Appendix E.IV, Subsection A.9.

Site-Specific Notification System (ANS) Design Report (EPLAN-10, EPLAN-11) – The report approved by the Federal Emergency Management Agency (FEMA) describes the public notification system that fulfills the requirements of 10 CFR 50, Appendix E, IV, Subsection D.3.

1.3 SCOPE

Detailed procedures concerning the implementation of the SEP are in the Emergency Plan Implementing Procedures (EPIPs). The EPIPs address the functional areas and actions that implement the plan and serve as the interface between the Emergency Plan, plant operations, security, and radiological control programs. Xcel Energy also has procedures in place that implement onsite protective actions and personnel accountability during hostile action threats or events that are appropriate for plant and environmental conditions. These procedures are available for use at the plants. There are supporting and complementing emergency plans, including those of federal agencies, the states of Minnesota and Wisconsin, the Prairie Island Indian Community and risk counties.

Xcel Energy Chief Nuclear Officer has overall responsibility for maintaining a state of readiness to implement this Plan for the protection of plant personnel, the general public, and property from hazards associated with nuclear power generation facilities operated by the company.

The SEP describes the organization, facilities, training, and maintenance of both onsite and offsite facilities and equipment available to implement the plan.

Site-Specific Alert and Notification System Design Report – approved by the Federal Emergency Management Agency (FEMA) describes the approved public warning system.

The SEP was developed with the guidance of NUREG-0654/FEMA-REP-1, Revision 2, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." The SEP meets the emergency planning standards of 10 CFR 50.47(b), the requirements of Appendix E, and the intent of NUREG-0654 Revision 2. The SEP is organized using the structure of NUREG-0654 Revision 2, and that structure provides the cross-reference to the base document.

2.0 PLANNING STANDARDS AND ELEMENTS

2.1 A - ASSIGNMENT OF RESPONSIBILITY

Primary responsibilities for emergency response by the facility licensee and by State and local organizations within the EPZs have been assigned, the emergency responsibilities of the various supporting organization have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

Regulatory References: 10 CFR 50.47(b)(1), 44 CFR 350.5(a)(1)

A.1	The Federal, state, local and tribal governments, licensee, and other private sector organization that comprise the overall response for the EPZs are identified

A description of the Xcel Energy Emergency Response Organization (ERO) is detailed in Section B. The subsections below identify the Offsite Response Organizations (OROs), federal, state, tribal, county and other organizations that encompass the overall response organization for an event at an Xcel Energy site.

A.1.a	The organizations having an operational role specify their concept of operations and relationship to the total effort

Xcel Energy

Emergencies or accident situations at the sites are initially coordinated by the Control Room shift crew under the direction of the Shift Manager/Emergency Director (SM/ED). When an abnormal situation occurs, the SM/ED, using operating and implementing procedures determines whether it rises to the level of a declarable emergency.

For emergencies classified as Alert, Site Area Emergency and General Emergency, the SM/ED will initiate callout of the ERO.

The augmented ERO relieves the shift personnel of emergency response functions not associated with plant operations.

Federal Organizations

- Nuclear Regulatory Commission (NRC)

  The NRC is the coordinating agency for incidents at or caused by a facility or an activity that is licensed by the NRC or an Agreement State, with the Chairman of the Commission as the senior NRC authority for response. The Chairman can transfer control of emergency response activities when deemed appropriate.

  Incident Response Centers have been established at the NRC regional offices and NRC headquarters, to centralize and coordinate NRC's emergency response. Provisions are made for NRC personnel at the plant's Technical Support Center and the Emergency Operations Facility.

- Department of Homeland Security (DHS)

  In accordance with the National Response Framework (NRF), DHS is responsible for the overall coordination of a multi-agency Federal response to a significant radiological incident.

- Federal Emergency Management Agency (FEMA)

  The primary role of FEMA is to support the states by coordinating the delivery of federal non-technical assistance. FEMA coordinates state requests for federal assistance, identifying which federal agency can best address specific needs. If deemed necessary, FEMA will establish a nearby Joint Field Office from which it will manage its assistance activities.

- Department of Energy (DOE)/Radiation Emergency Assistance Center/Training Site (REAC/TS) Support

  The DOE provides radiological assistance on request though the REAC/TS and has radiological monitoring equipment and personnel resources that it can assemble and dispatch to the scene of a radiological incident. Following a radiological incident, DOE operates as outlined in the Federal Radiological Monitoring and Assessment Plan (FRMAP).

- Federal Bureau of Investigation (FBI)

  Support from the FBI is available through its statutory responsibility, based in public law and the US code, and through a memorandum of understanding for cooperation with the NRC. Notification to the FBI of emergencies in which they would have an interest will be through the provisions of a plant security plan, or by the NRC.

- National Weather Service (NWS)

  NWS provides meteorological information during emergency situations, if required. Data available will *include* existing and forecasted wind directions, wind speeds, and ambient air temperatures.

- Environmental Protection Agency (EPA)

  The EPA can assist with field radiological monitoring, sampling, and non-plant related recovery and reentry guidance.

<u>State Organizations</u>

- State of Minnesota

  - Department of Public Safety

    The Minnesota (MN) Department of Public Safety has the responsibility for notification and coordination of MN state agencies in the event of a major emergency at Monticello and Prairie Island. When the State Emergency Operations Center (SEOC) is activated, communications between departments are initiated in order to coordinate procedure implementation. The state agencies responsible for implementing procedures have established a system of 24-hour communications.

    The state agencies and local government agencies are responsible for protecting the general public and providing logistical support such as food, temporary quarters, water, and sanitary facilities if evacuation and isolation is required.

- Health Department

  The Minnesota Department of Health (MDH) is responsible for providing radiological expertise in the State Emergency Operations Center in conjunction with the Department of Public Safety.

  The Minnesota Department of Health will interpret data and participate in recommending protective actions to the Governor's Authorized Representative.

- State of Wisconsin

  - Wisconsin Emergency Management (WEM)

    Wisconsin Emergency Management has the responsibility for notification and coordination of Wisconsin state agencies in the event of a major emergency at PINGP.

    In the event of an emergency situation at the plant, PINGP will notify WEM who coordinates the implementation of emergency procedures.

  - Wisconsin Department of Health Services (DHS)

    The Wisconsin Division of Health is responsible to prevent exposure to ionizing radiation in amounts which are detrimental to health according to nationally accepted standards.

    The Wisconsin Division of Health, Radiation Protection Section, is responsible for coordination of radiation response activities in the State of Wisconsin. In the event of an emergency at Prairie Island, the Division of Health, Radiation Protection Section will be concerned with monitoring the air and water about the plant to assure that the public is not exposed to levels of radioactive pollutants potentially detrimental to public health. The Division of Health's facilities are in Madison, Wisconsin.

County Organizations

Counties within the sites' plume exposure EPZ maintain emergency plans that address the following primary response aspects:

- Notification of their own personnel and other agencies such as, local law enforcement, fire & rescue, and the Red Cross.
- Traffic control
- Notification or warning of persons in affected areas.
- Evacuation out of the affected area, and provisions for shelter, food, accommodations, communications, medical care, etc.
- Provide support to other counties, Xcel Energy, state and federal agencies.

Select counties adjacent to the sites' plume exposure EPZ maintain emergency plans to provide assistance and logistics support if evacuation of portions of the ten-mile EPZ becomes necessary.

Plume exposure and ingestion pathway EPZ counties are listed in the site- specific annexes.

Emergency Planning Zone (EPZ) Counties

The Emergency Management Agencies representing the Minnesota counties of Sherburne, Wright, Dakota, and Goodhue and the Wisconsin County of Pierce have the responsibility for notification and providing direction to residents in the event of an emergency that affects their respective jurisdiction. The 24-hour notification points have the responsibility to notify necessary local civil support groups in the event of an accident. The County is responsible for protection of the public and can provide personnel and equipment for evacuation, relocation, and isolation.

Private Sector Organizations

Private sector organizations are not used to provide additional personnel for positions on the Xcel Energy ERO or perform an operational role. Contractor and private organizations may be requested to provide technical assistance. Those are described in element B.5.

A.1.b	Each organization's emergency plan illustrates these interrelationships in a block diagram.

Interrelationships between the Xcel Energy emergency response facilities and offsite response organizations are provided in element B.4.

A.1.c	Each organization identifies the individual, by title/position, who will be in charge of the emergency response.

The Emergency Manager in the EOF is responsible for overall event response upon activation of that facility.

A.2	References to the applicable acts, codes, or statutes that provide the legal basis for emergency response-related authorities, including those that delegate responsibility and authority to state, local, and tribal governments are included. Each emergency plan indicates who may declare a "State of Emergency" and the powers that ensue.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

A.3	Each organization specifies the key individual(s), by title/position, responsible for the following functions, as applicable to that organization: command and control, alert and notification, communications, public information, accident assessment, public health and sanitation, social services, fire and rescue, traffic control, emergency medical services, law enforcement, transportation, protective response (including authority to request Federal assistance and to initiate other protective actions), and radiological exposure control.

Refer to the list of primary responsibilities of each ERO position in element B.1.a, and to Table B-1 for the list of key individuals responsible for command and control, alerting and notification, communications, public information, accident assessment, protective response, and radiological exposure control.

A.4	Written agreements with the support organizations having an emergency response role within the EPZs are referenced. The agreements describe the concept of operations, emergency response measures to be provided, mutually acceptable criteria for their implementation, and arrangements for exchange of information.

Assistance will be provided, as necessary, by federal, state, tribal and county agencies that are mandated by charter, regulation, or law to protect public health and safety. State, tribal and county organizations cooperate with Xcel Energy and have developed radiological emergency plans and procedures in an integrated manner. LOAs are discussed further in element C and in site-specific annexes.

A.5	Each principal response organization is capable of continuous operations for a protracted period. The principal response organization specifies the individual, by title/position, who is responsible for ensuring continuity of resources (technical, administrative, and material).

Xcel Energy nuclear maintains an ERO that is capable of providing continuous, 24 hour/day, operation for an extended period of time. The shift rotations for the protracted period will be designated by the Emergency Manager.

2.2 B - EMERGENCY RESPONSE ORGANIZATION (ERO)

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

Regulatory References: 10 CFR 50.47(b)(2); 44 CFR 350.5(a)(2)
10 CFR Part 50, Appendix E.IV.A

B.1	The emergency plan specifies how the requirements of 10 CFR 50.47(b)(2) and the applicable sections of Appendix E to 10 CFR Part 50 are met.

10 CFR 50.47(b)(2) Compliance

Per Regulatory Guide 1.101, the criteria and recommendations contained in Revision 1 of NUREG-0654/FEMA- REP-1 are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47 that must be met in onsite and offsite emergency response plans.

The SEP Section B is based on the criteria provided in the Revision 2 of NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants”, Section II.B, “Emergency Response Organization” (ML19347D139) and the applicable sections of 10 CFR 50 Appendix E, as documented below.

10 CFR 50 Appendix E Compliance

Refer to the 10 CFR 50 Appendix E.IV.A cross-reference in Appendix 2 of this emergency plan.

B.1.a	The site-specific emergency response organization (ERO) is developed. Note that while other site programs, such as operations, fire response, rescue and first aid, and security, may be controlled via other licensing documents, it is only when these personnel are assigned EP functions that they become part of this regulatory standard. Consideration is given to ensure that EP functions are not assigned to individuals who may have difficulties performing their EP function(s) simultaneously with their other assigned (non-EP) duties. Appendix E to 10 CFR Part 50 requires licensees to perform an on-shift staffing analysis to ensure on-shift staff can support the EP functions assigned, as well as other assigned duties.

A description of the normal site operating organization is contained in each sites USAR.

The requirements for on-shift operations staff, security force staff, fire brigade and first aid staff are controlled by site-specific Technical Specifications and other site-specific licensing and administrative documents. Positions from these departments are contained in the emergency plan only when assigned an EP function that is performed during an event.

Site-specific on-shift staffing analysis reports are developed in accordance with 10 CFR 50 Appendix E.IV.A.9 and NEI 10-05. (EPLAN-08, EPLAN-09)

The ERO is composed of the following positions and assigned responsibilities:

<u>Main Control Room (MCR)</u>

- Shift Manager/Emergency Director (SM/ED)
    - Provide overall ERO command and control
    - Evaluate plant conditions and approve Emergency Action Level (EAL) classifications
    - Approve Protective Action Recommendations (PARs)
    - Authorize personnel dose extensions

  - Evaluate and assess plant and offsite radiological data in the development of onsite protective actions and offsite PARs
  - Direct radiation protection activities, including Field Monitoring Team (FMT) direction
  - Direct and approve notifications to state and county authorities
- Senior Reactor Operator (SRO)/Shift Technical Advisor (STA)
  - Evaluate reactor conditions and assess for core damage
  - Evaluate plant conditions and recommend EAL classifications
  - Activate or confirm activation of Emergency Response Data System (ERDS)
  - Perform Emergency Notification System (ENS) communications
- Shift Emergency Communicator
  - Notify the ERO as needed
  - Communicate required information per element E.3 to Offsite Response Organizations (ORO)
- RP Technicians
  - Provide RP coverage for responders accessing potentially unknown radiological environments
  - Provide in-plant surveys
  - Control dosimetry and radiologically controlled area (RCA) access
  - Perform dose assessments and provide input regarding PARs to the SM/ED

<u>Technical Support Center (TSC)</u>

- Emergency Director (ED)
  - Approve EAL classifications
  - Approve notifications to state/local agencies
  - Approve Protective Action Recommendations (PARs)
  - Approve personnel dose extensions
  - Approve issuance of KI
- TSC Manager
  - Supervise TSC staffing and activities
  - Assist the Emergency Director as needed
- Engineering Coordinator
  - Direct and coordinate engineering resources
- Core Thermal Engineer
  - Core damage assessment
- Mechanical Engineer
  - Provide engineering support and troubleshooting for mechanical systems
- Electrical Engineer
  - Provide engineering support and troubleshooting for electrical systems
- Operations Coordinator
  - Evaluate plant conditions and recommend emergency classifications

- ENS Communicator
  - Communicate changes in classification, PARs, protective action decisions made by offsite response organizations
  - Activate / confirm activation of the Emergency Response Data System (ERDS)
  - Perform notifications to the NRC as required by 10 CFR 50.72
- ERF Communicator(s)
  - Maintain communications and transmit key activities between the CR, TSC, OSC and EOF
- Security Coordinator
  - Coordinate security response with Local Law Enforcement and Federal officials
  - Provide oversite for the Offsite Communicator
- Offsite Communicator
  - Transmit information to state/local agencies
- Maintenance Coordinator
  - Supporting the repair and corrective actions
  - Supporting Search and Rescue efforts
- Radiological Assessment Coordinator (RAC)
  - Develop and recommend PARs
  - Communicate changes to plant radiological conditions
  - Provide oversight for facility habitability surveys
- Dose Projection Specialist
  - Perform dose assessment

- Field Monitoring Team (FMT) Monitor
  - Direct field monitoring teams for collection of dose rates and contamination levels
- Field Monitoring Team (FMT)
  - Conduct radiation surveys in areas at or beyond the Site Boundary
  - Collect environmental samples for future analysis
- HPN Communicator
  - Establish communications with the NRC on the Health Physics Network (HPN) bridge line as requested
  - Relay NRC requests for information on radiological conditions as needed

Operational Support Center (OSC)

- OSC Coordinator
  - Coordinate OSC staffing and activities
- ERF Communicator
  - Establish and maintain communications with the CR, TSC and EOF
  - Transmit information related to key activities in the OSC
- Maintenance Coordinators
  - Provide oversight for OSC activities related to mechanical, electrical and I&C work
- RP Coordinator
  - Provide oversite for OSC activities related to radiological surveys and monitoring of radiological conditions in the plant

Emergency Operations Facility (EOF)

- Emergency Manager
  - Provide overall event response and control
  - Approve notifications to state/local offsite agencies
  - Approve PARs
- EOF Manager
  - Supervise EOF staffing and activities
- Radiological Assessment Coordinator (RAC)
  - Assess and communicate offsite radiological conditions
  - Provide oversite for dose assessments and projections
  - Develop and recommend PARs
- Dose Projection Specialist
  - Develop offsite dose projections based on event conditions for development of PARs
- Offsite Communicator(s)
  - Transmit information to state/local agencies
- HPN Communicator
  - Establish communications with the NRC on the Health Physics Network bridge line as requested
  - Relate NRC requests for information on radiological conditions as needed
- Field Monitoring Team (FMT) Communicator
  - Relay FMT information to the Dose Projection Specialist and RAC
- Offsite Agency Liaison
  - Coordinate ERO and ORO activities

- Security Coordinator
    - Coordinate security response with Local Law Enforcement and Federal officials
    - Provide oversite for the Offsite Communicator
- ERF Communicator
    - Establish and maintain communications with the CR, OSC, and TSC
    - Transmit information related to key activities in the EOF

Joint Information Center (JIC)

- Executive Spokesperson
    - Serve as the Xcel Energy spokesperson for major media meetings and conferences held at the Minnesota state EOC/JIC.
    - Supply information to ERO communications personnel who develop media releases at the state EOC/JIC.
    - Represent Xcel Energy at the state EOC/JIC by interfacing with state officials.
    - Ensure adequate liaison occurs between Xcel Energy representatives and state and county management.
    - Establish 24-hour shift coverage for JIC Staff
- JIC Manager
    - Coordinate the efforts of Xcel Energy personnel at the state EOC/JIC
    - Provide oversight for public information requests
- Technical Advisor
    - Brief the Executive Spokesperson on plant conditions and technical aspects of the event

- State Liaison
    - Serve as an interface between Xcel Energy and the states of Minnesota and Wisconsin
    - Respond to state questions related to Xcel Energy response activities
- County Liaison(s)
    - Provide assistance to County Emergency Operations Center (EOC) personnel
    - Serve as an interface between County and Xcel Energy personnel
    - Resolve rumors and validate site information regarding event status
    - Coordinate response efforts with Sheriff's Offices
- Security Advisor
    - Provide pertinent security information for security related events
    - Serve as interface between Xcel Energy and State personnel

Figures B-1, B-2, B-3 and B-4 outline the organizational structure for the TSC, OSC, EOF and JIC.

B.2	An individual is designated as the on-shift emergency coordinator (individual title may vary) who has the authority and responsibility to immediately and unilaterally initiate any emergency response measures, including approving protective action recommendations (PARs) to be disseminated to authorities responsible for implementing offsite emergency response measures.

The SM/ED is the on-shift individual who has the authority and responsibility to immediately and unilaterally initiate any emergency actions, including providing PARs to authorities responsible for implementing offsite emergency measures.

The SM/ED is responsible for the provision of overall event command and control until relieved.

B.2.a	The functional responsibilities assigned to the ERO are established and the responsibilities that may not be delegated to other members of the ERO are clearly specified in the emergency plan.

Functional responsibilities for ERO positions are listed in element B.1.a. Non-delegable responsibilities include the following:

- Event classification.
- PARs for the general public.
- Notification of offsite authorities
- Emergency Exposure Controls

The SM/ED has responsibility for event recognition and performing the non-delegable responsibilities until relieved by the Emergency Director in the TSC. Upon activation of the EOF, responsibility for development of PARs and notification to state/local authorities transitions to the Emergency Manager. The transfer of these command-and-control activities is depicted in the diagram below.

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

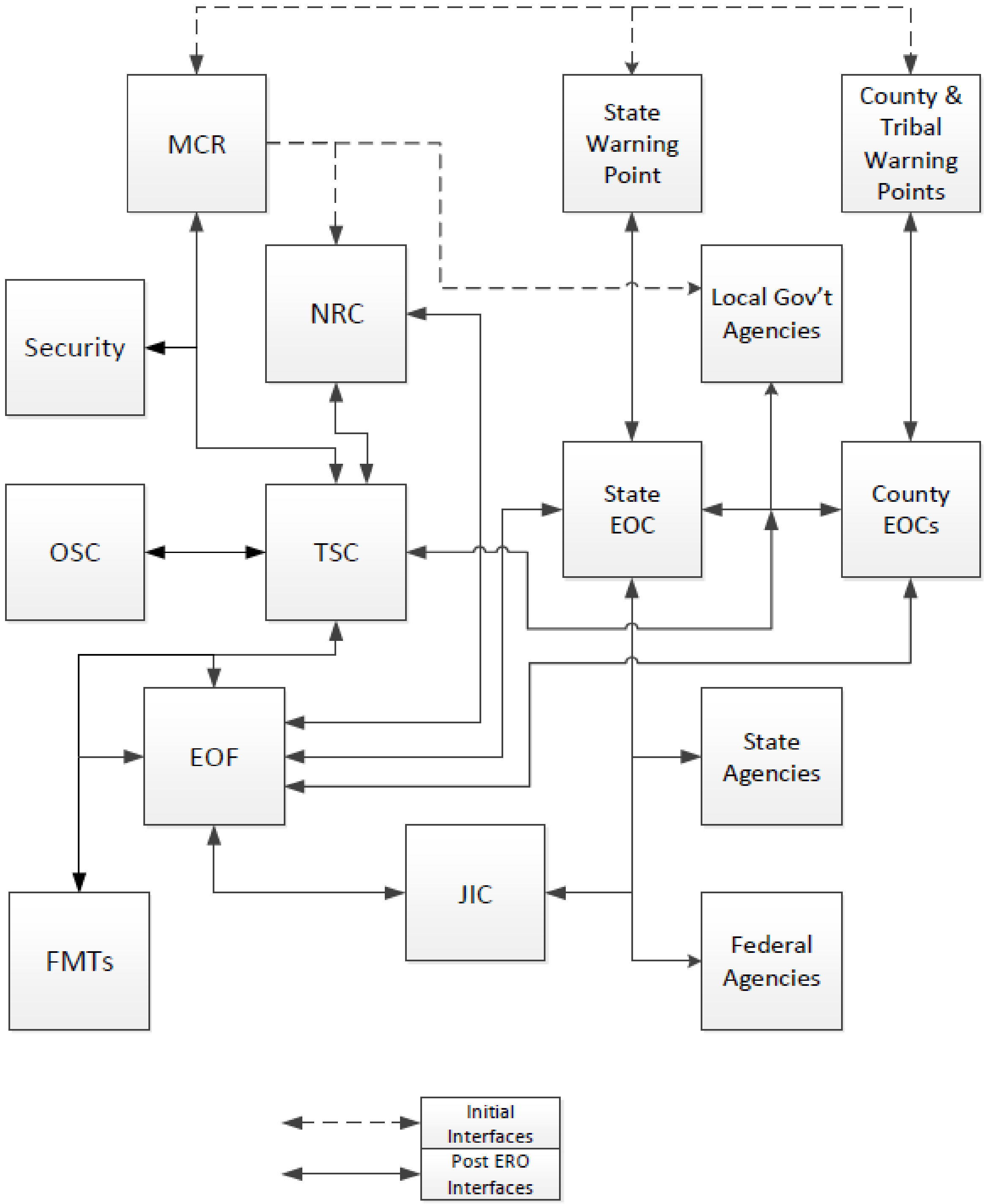
B.3	A table is developed depicting the site-specific on-shift staffing plan, as well as the ERO staffing augmentation plan. Table B-1, “Emergency Response Organization (ERO) Staffing and Augmentation Plan,” provides a model for licensees to consider.

The Xcel Energy Minimum Staff Table B-1 includes on-shift and augmented positions as identified in NUREG-0654, Revision 2, Table B-1 as well as those positions required in the TSC, OSC and EOF for facility activation.

B.4	The interfaces between and among the licensee functional areas of emergency activity, local services support, and state, local, and tribal government organizations are identified. The information includes all licensee emergency response facilities. A block diagram is preferred for ease of use, but not required.

A block diagram showing the interfaces between the licensee and state, local, tribal government organizations is located in Figure B.4-1.

Figure B.4-1
Primary Interfaces Between License, State, Local and Tribal Organizations



B.5	The external organizations, including contractors, that may be requested to provide technical assistance to and augmentation of the ERO, as applicable, are specified.

Vendors and Contractors

Major equipment providers or Architect-Engineers include Westinghouse Electric Corporation and General Electric Corporation, which can provide the following assistance in an emergency:

- Trained personnel.
- Technical analysis.
- Operational analysis.
- Accident and transient analysis.

Pooled Equipment Inventory Company (PEICo)

Contracts exist for the withdrawal of PIM PAS-1Casks for emergency response.

Table B-1
Minimum On-Shift and Augmented Staffing

Major Functional Area	Major Tasks	Position Title/Expertise		On-Shift	Capability for Additions	
					60 min	90 min
Emergency Direction and Control	Classification/Oversight	Shift Manager (SRO)		1	------	------
		TSC Emergency Director	(TSC)	------	1	------
		Operations Coordinator	(TSC)	------	1	------
		EOF Emergency Manager	(EOF)	------	------	1
Notification/ Communication	Licensee, Local/State, Federal	Shift Emergency Comm (State/local)		1	------	------
		Communications (Federal)		1*		
		Offsite Communicator	(TSC/EOF)	------	1	1
		ENS Communicator	(TSC)	------	1	------
Radiological Accident Assessment	Offsite Dose Assessment	RP Technician		1*	------	------
		Dose Projection Specialist	(TSC/EOF)	------	1	1
	Offsite Surveys	FMT Monitor	(TSC)	------	1	------
		FMT Lead		------	1	1
		FMT Member		------	1	1
	In-plant/Onsite (out-of-plant) Surveys	RP Technician		1	1	1
	Protective Actions	RP Technician		1	2	2
	RP Oversight	Rad Assessment Coordinator	(TSC/EOF)	------	1	1
Plant System Engineering	Technical Support	Shift Technical Advisor (SRO/STA)		1	------	------
		Core Hydraulic Engineer	(TSC)	------	1	------
		Electrical Engineer	(TSC)	------	1	------
		Mechanical Engineer	(TSC)	------	1	------
Repair and Corrective	Repair and Corrective Actions	MM Coordinator	(OSC)	------	------	1
		EM Coordinator	(OSC)	------	------	1
		I&C Coordinator	(OSC)	------	------	1
		OSC Coordinator	(OSC)	------	1	------
		RP Coordinator	(OSC)	------	------	1
		Mechanical Personnel	(OSC)	------	1	------
		Electrical Personnel	(OSC)	------	1	------
		Instrument & Control Personnel	(OSC)	------	------	1
Total				5	18	14

* May be performed by someone filling another position having functional qualifications.

Figure B-1
<u>TSC Organization</u>

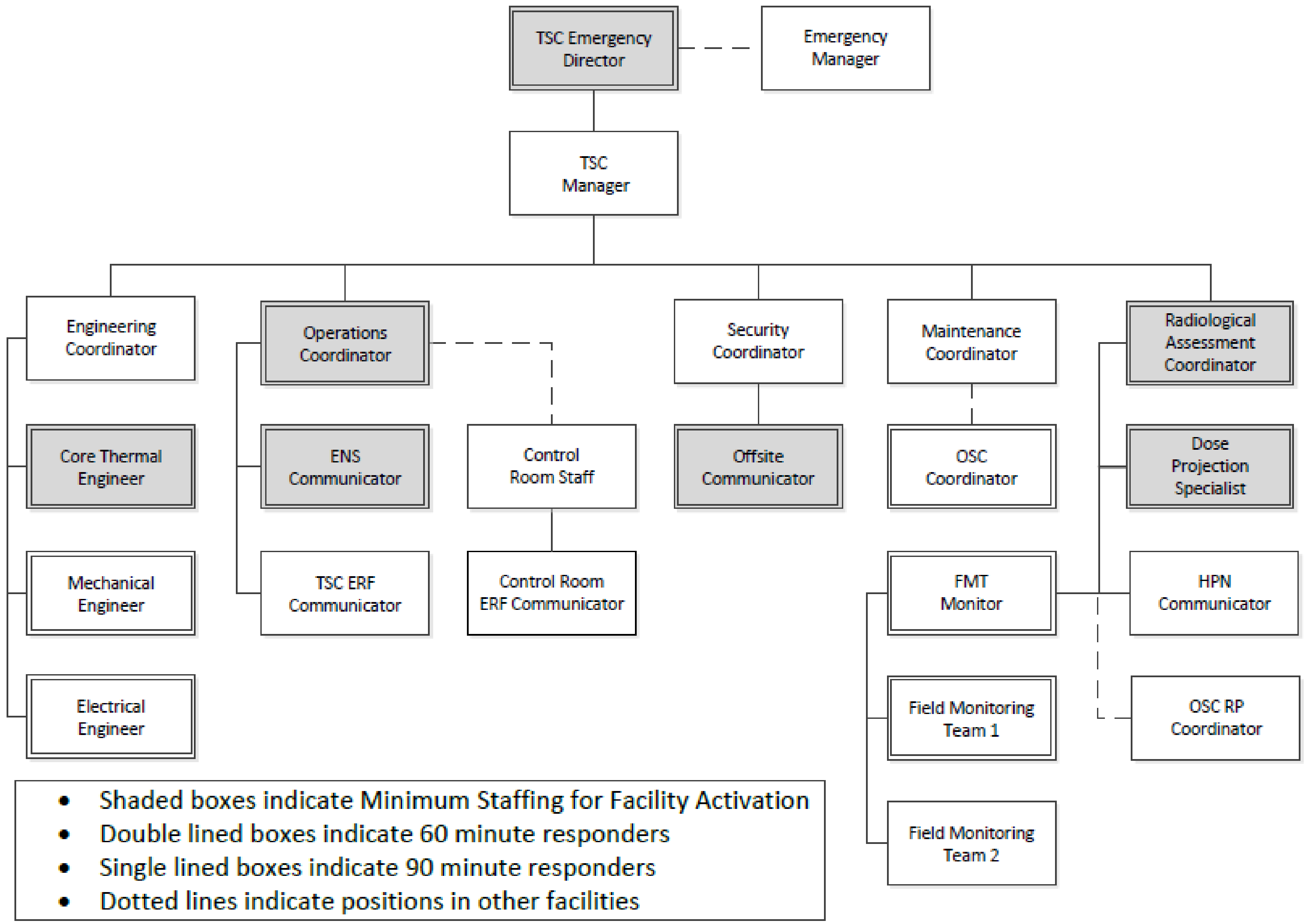
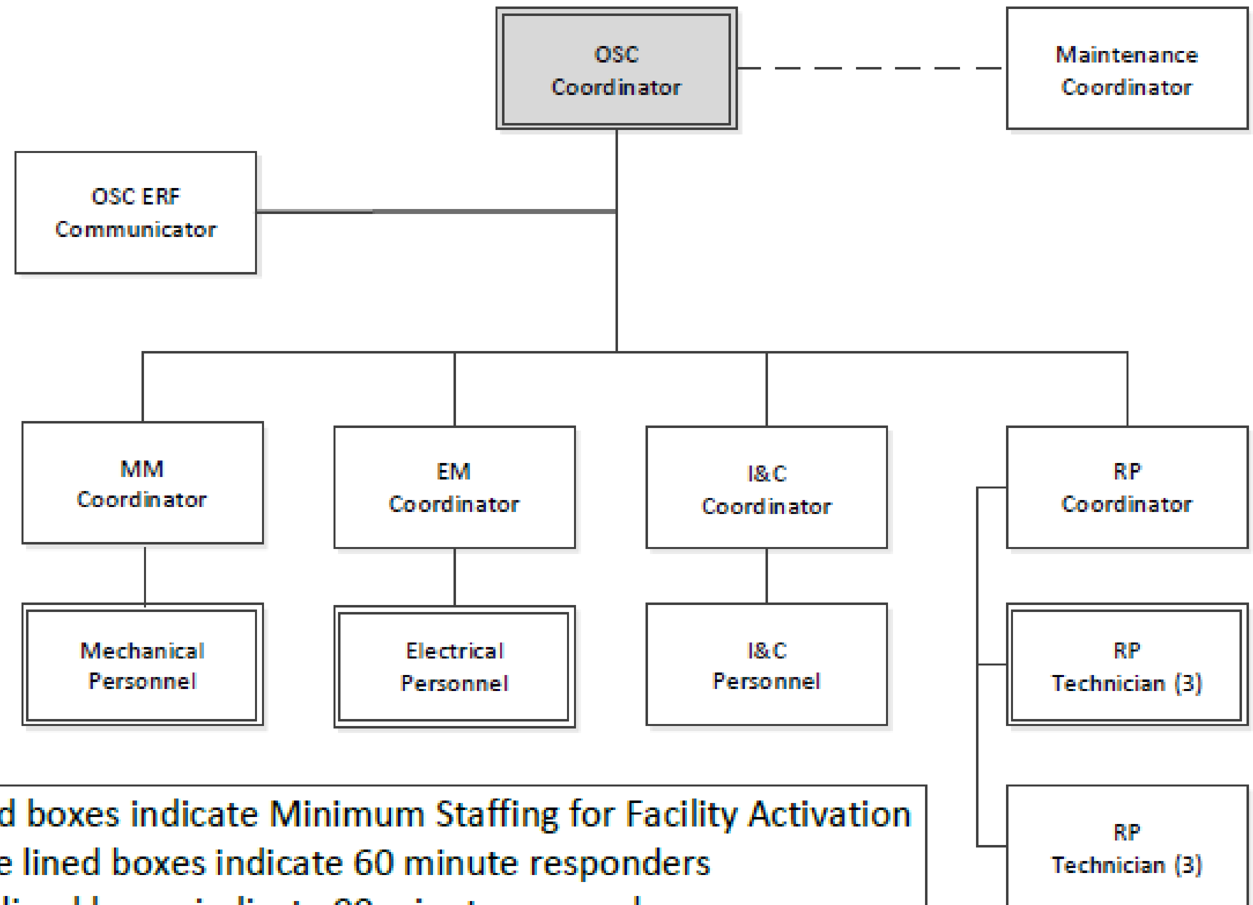
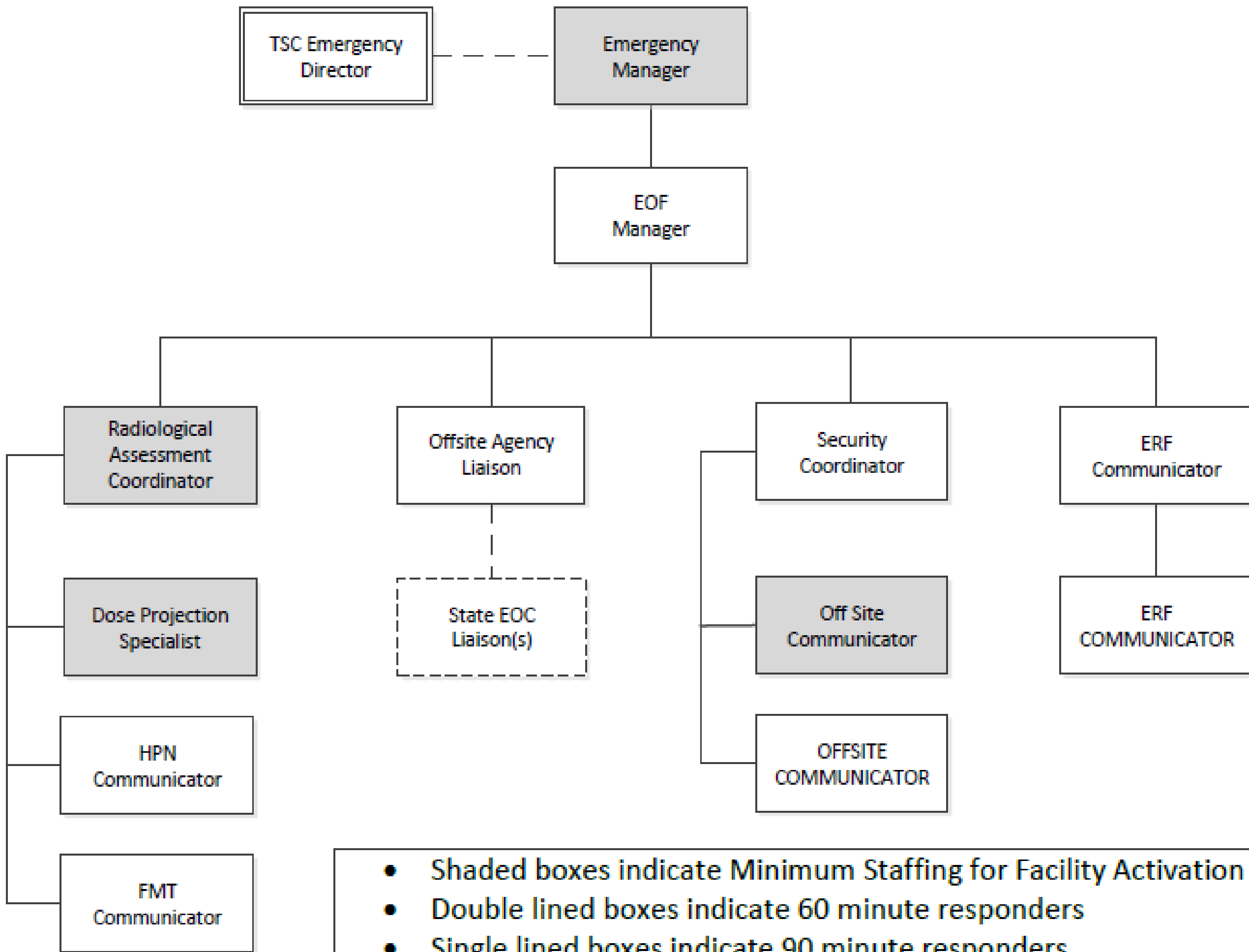


Figure B-2
OSC Organization



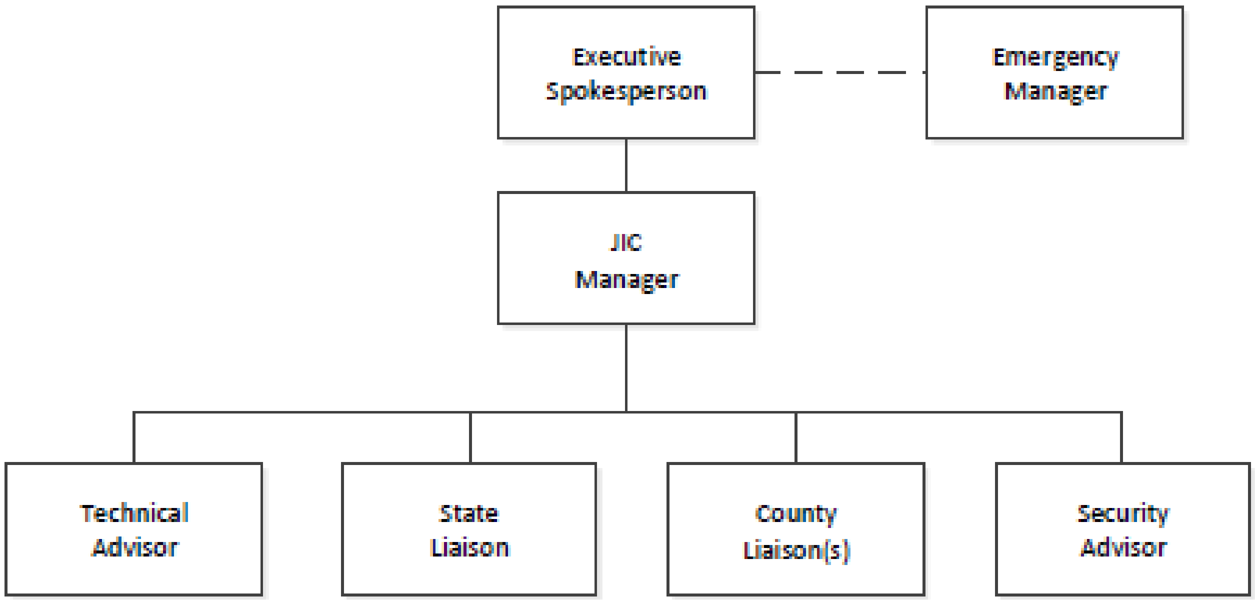
- Shaded boxes indicate Minimum Staffing for Facility Activation
- Double lined boxes indicate 60 minute responders
- Single lined boxes indicate 90 minute responders
- Dotted lines indicate positions in other facilities

Figure B-3
EOF Organization



- Shaded boxes indicate Minimum Staffing for Facility Activation
- Double lined boxes indicate 60 minute responders
- Single lined boxes indicate 90 minute responders
- Dotted lines indicate positions in other facilities
- ALL CAPS positions are those required for response to dual site events

Figure B-4
JIC Organization



2.3 C - EMERGENCY RESPONSE SUPPORT AND RESOURCES

Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's EOF have been made, and other organizations capable of augmenting the planned response have been identified.

Regulatory References: 10 CFR 50.47(b)(3); 44 CFR 350.5(a)(3); 10 CFR Part 50, Appendix E.IV.A and E

C.1	Emergency response support and resources provided to the licensee's EOF, as agreed upon, are described

The Xcel Energy EOF contains dedicated work areas and resources for federal personnel.

C.2	Provisions made for additional emergency response support and resources are described and include the following

Memorandums of Understanding (MOUs) and/or LOAs have been developed between Xcel Energy and several entities to provide emergency response support and services consistent with this plan.

MOUs and LOAs are referenced by organization and title in element A.4 of the site-specific annexes. A contract/purchase order with a private contractor is considered acceptable in lieu of a MOU or LOA for the specified duration of the contract.

Written agreements have been developed which establish the extent of operations between Xcel Energy nuclear and other support organizations that have an emergency response role consistent with this plan. These agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for the exchange of information. LOAs common to both sites include;

- Institute of Nuclear Power Operations (INPO)
- State of Minnesota, Department of Public Safety Division of Homeland Security and Emergency

- Regions Hospital
- Environmental Inc, Midwest Laboratory
- Department of Energy – REAC/TS
- North Memorial Health Care
- Pooled Equipment Inventory Co (PEICo)

The respective sites have obtained LOAs with private contractors and others who provide emergency support services. LOAs, as a minimum, state that the cooperating organization will provide its normal services in support of an emergency at the affected plant. LOAs are referenced in the site-specific Annexes and the actual letters are maintained in accordance with 10 CFR 50, Appendix E, IV.A.7.

C.2.a	The individual(s), by title/position, authorized to request emergency response support and resources from responding organizations

The individual authorized to request assistance and resources from responding organizations is the Emergency Manager who has overall authority for the Xcel Energy nuclear response.

Refer to element B.2.a, for greater detail regarding command & control.

C.2.b	(1) Each organization from which emergency response support and/or resources may be requested, (2) the circumstance(s) in which the emergency response support and/or resources would be required, (3) the process for requesting needed emergency response support and/or resources, (4) categories of capabilities and/or resources expected to be provided, (5) when the expected emergency response support and/or resources would be available once requested, and (6) how integration would occur.

Refer to elements A.1.a, and A.4 for the description and details of the provisions made for additional assistance and resources.

C.2.c	Coordination of NPP site access and support for external organizations that have agreed to provide requested emergency response support and resources

Site access is controlled by the Security organization in accordance with the site security plan and procedures. The TSC Security Coordinator is responsible for coordination with on-shift personnel when site access is needed for non-badged offsite agency and support personnel.

C.2.d	Agreements between licensees and local agencies for law enforcement, medical and ambulance services, fire, hospital support, and other support

Agreements with state and county response organizations have been established through the integrated development of their respective emergency plans.

Agreements with other entities have been formally developed and documented through memorandums of understanding (MOUs) and/or letters of agreement (LOAs).

OROs may be called to assist onsite for events requiring firefighting, medical, or law enforcement. Immediate assistance with firefighting, medical, law enforcement at the sites is initiated using the 911 emergency system. The coordination of these activities will be performed initially by CR personnel and subsequently by response personnel in the TSC or EOF when the facilities are activated.

If an event is of significant magnitude to require establishment of a near site Incident Command Post (ICP), the sites will provide liaison(s) to the ICP to assist in coordinating response efforts.

A list of applicable agreements is maintained in element A.4 of the site-specific annexes.

C.3	The capability of each principal organization to coordinate with other principal organizations leading the incident response is described

In addition to the coordination between the individuals in command and control of each organization, Xcel Energy personnel are dispatched to state or county EOCs as liaisons. The liaisons clarify information contained in emergency notifications and provide a communications link between the Xcel Energy and governmental emergency response facilities.

When NRC representatives are present at the EOF and/or TSC, coordination occurs directly between NRC and Xcel Energy nuclear personnel.

C. 4	Radiological laboratories, their general capabilities, and expected availability to provide radiological monitoring analysis services that can be used in an emergency are described. Plans to augment the identified radiological laboratories are described.

Onsite Laboratory

The onsite laboratory/counting rooms at Xcel Energy nuclear sites are the primary facility for radiation monitoring and analysis efforts. The onsite laboratory is the central point for receipt and analysis of onsite samples and includes equipment for chemical and radiological analyses. The plant laboratories have the capability of quantitative analysis of water and air samples, and qualitative analysis of terrestrial samples.

Additional facilities for counting and analyzing samples are available at the unaffected Xcel Energy nuclear site or using state and federal laboratory services. These laboratories can act as backup facilities if the affected site's counting room and laboratory become unusable or the capacity or capability of the site’s laboratory is exceeded.

Contract Laboratories

Additional outside analytical assistance may be requested from contracted vendors. These laboratories provide environmental sample analysis services and are listed in the site-specific annexes.

C.5	Arrangements are described for integrating the licensee's response with the NRC Headquarters and regional incident response centers and, when dispatched, the NRC's site response team.

The TSC Emergency Director and the EOF Emergency Manager are the initial primary contact positions for the NRC site response team personnel sent to those facilities.

Xcel Energy nuclear sites have dedicated areas within the TSCs for NRC site response teams. Communications equipment, as well as instrumentation displays are available for use by the response teams.

Near site locations for NRC and other offsite agency staff are described in element H.3 of the site-specific annexes.

C.5.a	The activation process for the NRC's emergency response data system (ERDS) during an emergency is described.

ERO personnel will activate or confirm activation of ERDS as soon as possible but not later than one hour after declaring an alert or higher emergency classification level in accordance with 10 CFR 50.72(a)(4).

C.5.b	Provisions to continuously maintain open communications lines with the NRC, when requested, are described.

The Xcel Energy ERO is staffed for and capable of maintaining continuous communications with the NRC. When requested, open communication lines will be staffed by knowledgeable personnel to ensure efficient and effective information flow.

2.4 D - EMERGENCY CLASSIFICATION SYSTEM

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Regulatory References: 10 CFR 50.47(b)(4); 44 CFR 350.5(a)(4); 10 CFR Part 50 Appendix E.IV.B and C

D.1	A standard emergency classification and action level scheme is established and maintained. The scheme provides detailed EALs for each of the four ECLs in Section IV.C.1 of Appendix E to 10 CFR Part 50.

Xcel Energy has established and maintains a standard emergency classification and emergency action level scheme. The four ECLs are described as follows:

Unusual Event (UE)

Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Alert

Events are in progress, or have occurred, which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of hostile action. Any releases are expected to be small fractions of the EPA Protective Action Guideline exposure levels.

Site Area Emergency (SAE)

Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

General Emergency (GE)

Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile actions that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

EAL schemes are site-specific and are documented in EAL Technical Basis Documents referenced in the site-specific annexes.

D.1.a	The EALs are developed using guidance provided or endorsed by the NRC that is applicable to the reactor design.

EALs at Xcel Energy nuclear sites have been developed in accordance with NEI 99- 01 Revision 6, Development of Emergency Action Levels for Non-Passive Reactors. This guidance has been approved by the NRC and is applicable to the reactor design at Xcel Energy nuclear sites.

D.1.b	The initial emergency classification and action level scheme is discussed and agreed to by the licensee and OROs and approved by the NRC. Thereafter, the scheme is reviewed with OROs on an annual basis.

The emergency classification and EAL scheme has been agreed upon by state and county governmental authorities that support Xcel Energy sites.

Changes to the classification scheme or site-specific EALs are reviewed with the sites' respective state and county EPZ governmental authorities in advance of implementation.

D.2	The capability to assess, classify, and declare the emergency condition within 15 minutes after the availability of indications to NPP operators that an EAL has been met or exceeded is described.

Xcel Energy has and maintains the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL threshold has been met or exceeded.

The 15-minute time requirement to declare events will not be construed as a grace period to attempt to restore conditions to avoid declarations.

D.3	A summary of emergency response measures to be taken for each ECL is provided. The detailed emergency response measures are described in implementing procedures.

Xcel Energy maintains procedures that include immediate actions to be taken that are consistent with any declared ECL. Those procedures describe in detail required onsite protective actions, activation of the ERO when warranted, notification to the supporting state and county governmental agencies, and notification to the NRC.

Other notifications to plant management, corporate communications staff and any other supporting agency are also described in procedures.

A summary of emergency response measures for each ECL are detailed in Table D.3-1. Additional measures not listed may be taken based on event progression.

Table D.3-1: Matrix of Emergency Response Measures by ECL

Emergency Response Measure	**Unusual Event**	**Alert**	**Site Area Emergency**	**General Emergency**
Activation of ERO	NOTE	X	X	X
Notification to OROs and NRC	X	X	X	X
Site Assembly and Accountability			X	X
Site Evacuation			X	X
Protective Action Recommendation				X

NOTE: Activation of ERO at Unusual Event may occur at SM/ED discretion.

D.4	Emergency response measures based on the ECL declared by the licensee and applicable offsite conditions are described.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

2.5 E - NOTIFICATION METHODS AND PROCEDURES

Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway EPZ have been established.

Regulatory References: 10 CFR 50.47(b)(5); 44 CFR 350.5(a)(5)

E.1	The mutually agreeable process for direct and prompt notification of response organizations, aligned with the emergency classification and action level scheme, is described.

Xcel Energy, in coordination with state and county authorities, has developed methods and procedures for notification of offsite response organizations consistent with the emergency classification and EAL scheme. When an ECL is declared or upgraded, or changes are made to PARs, an initial notification will be performed within 15 minutes. The first notification is made to designated offsite agencies listed in the site annexes. If the states and counties choose to staff their EOC, notification messages could be received at those facilities. Receipt location of the notification messages is dependent on the applicable state and county procedures.

The state and county notification process is completed using a combination of electronic document transmittal and calls using commercial phone lines.

The initial notification to the NRC is made using the Emergency Notification System (ENS). If the ENS is inoperative, the required notification will be made using a backup means, such as an alternate commercial line, cell or satellite phone.

An accelerated call to the NRC will be made following discovery of an imminent threat or attack against a plant. The accelerated NRC notification will be completed after or concurrent with notification of local law enforcement agencies. The goal will be to initiate the notification within 15 minutes of discovery of an imminent threat or attack against a site. The information provided in the accelerated notification will be limited to the following:

- Site name.

- ECL if determined prior to the accelerated notification.
- Nature of the threat and the attack status

E.1.a	Provisions for notification of response organizations are established, including the means for verification of messages.

Xcel Energy nuclear sites initially notify state and county agencies listed in the site-specific annexes under the following conditions:

- The initial ECL declaration
- An upgrade to the ECL
- The issuance of, or change to, a PAR

This notification includes a means of verification or authentication. The authentication is accomplished in accordance with the offsite agency's specific emergency plans.

Follow-up messages are provided periodically to the appropriate offsite authorities. For long duration events with little change in information between messages, the follow-up message time interval can be increased as agreed upon by affected agencies and may include items such as:

- The current ECL declaration
- Release status and type
- Offsite survey results
- Plant conditions
- Emergency response actions in progress
- Dose assessment/projection details
- Meteorological updates

Initial and follow-up notification message content and the methods used for authentication are mutually developed and agreed upon by Xcel Energy and the offsite authorities. Notification forms, methods and the message authentication technique are provided in implementing procedures.

E.1.b	The capability to notify responsible OROs within 15 minutes and the NRC within 60 minutes is described.

Xcel Energy nuclear sites notify responsible OROs within fifteen (15) minutes of event declaration.

The initial notification to the NRC is made using ENS immediately after notification to the states and counties, and not longer than 60 minutes of event declaration.

E.2	The alert and notification systems (ANS) used to alert and notify the general public within the plume exposure pathway EPZ and methods of activation are described. This description includes the administrative and physical means, the time required for notifying and providing prompt instructions to the public within the plume exposure pathway EPZ, and the organizations or titles/positions responsible for activating the system.

Xcel Energy Alert and Notification Systems (ANS) are described in site-specific annexes.

E.3	The licensee and state, local, and tribal government organizations establish the contents of the initial and follow-up emergency notifications to be sent from the NPP.

In conjunction with state and county authorities, Xcel Energy nuclear sites have established the content of the initial and follow-up notification messages to be used during an emergency. Initial notification will include the following:

- Site name
- ECL
- Release status
- PAR, if applicable

The content of the follow-up messages is detailed in implementing procedures.

E.4	Each organization establishes the contents of the initial and follow- up messages to the public including, as applicable, instructions for protective actions.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

E.5	Provisions are made to provide timely supplemental information periodically throughout the radiological incident to inform the public.

State and county procedures provide for initial and follow-up messages to the public including instructions for protective actions, if required. Xcel Energy assists with establishment of appropriate instructions and message content.

2.6 F - EMERGENCY COMMUNICATIONS

Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

Regulatory References: 10 CFR 50.47(b)(6); 44 CFR 350.5(a)(6)

F.1	Each principal response organization establishes redundant means of communication and addresses the following provisions:
F.1.a	Continuous capability for notification to, and activation of, the emergency response network, including a minimum of two independent communication links.

Xcel Energy nuclear sites maintain the capability to perform emergency communications, notifying NRC and OROs, and activating the ERO. Communication systems are designed to facilitate normal and emergency communications within the plant, between the plant and emergency facilities, and between the plant and NRC and OROs. Redundant systems are provided to ensure continuous communications between entities and personnel. At least one system used for on-site communications and one system used for offsite communications is maintained with an alternate power source to ensure continuous availability.

Site communications capabilities are described in the site-specific annexes.

F.1.b	Communication with applicable organizations to include a description of the methods that may be used when contacting each organization.

Provisions exist for communications with state, county and tribal governments, NRC, and FMTs within the EPZs

Site communications capabilities are described in the site-specific annexes.

Telephones have been designated for the following NRC communications:

- NRC Emergency Notification System (ENS) – This communications line provides a link to the NRC Operations Center in Rockville, Maryland, and is used for initial notifications and continuous communications in a classified emergency.
- NRC Health Physics Network (HPN) – This communications line provides a link with the NRC to provide radiological information.
- NRC Reactor Safety Counterpart Link (RSCL) – This communications line provides a link for the NRC to conduct internal NRC discussions on plant equipment conditions separate from the licensee.
- Protective Measures Counterpart Link (PMCL) – This communications line provides a link for the NRC to conduct internal NRC discussions on radiological releases, meteorological conditions, and the need for protective actions.
- Management Counterpart Link (MCL) (Executive Bridge Line) – This communications line provides a communications link for any NRC internal discussions between the NRC Executive Team Director or Executive Team members and the NRC response team leader or top-level licensee management at the site.
- Security Bridge – This communications line provides a link to the NRC Security bridge Line for discussions between the NRC, site and EOF personnel.

Additional Methods of Communication

- Telephones
- Satellite phones
- Mobile Devices
- Radios
- Plant Page System
- ERDS

The available communications methods and their applicable locations are illustrated in Section F.1.b of the site-specific annexes.

F.1.c	Systems for alerting or activating emergency personnel in each response organization.

Xcel Energy nuclear sites use an automated ERO Notification System to rapidly notify members of the ERO. The system can notify impacted members of the ERO simultaneously using multiple methods. The vendor supplied notification system is designed with redundant power, and with geographic separation. Activation of the ERO Notification System is performed by on-shift personnel as described in element B.1.a.

Alternate methods of ERO notification are in place via individual callouts of personnel utilizing any of the various calling methods available.

F.2	Systems for coordinated communication methods for applicable fixed and mobile medical support facilities are described.

Local medical facilities are listed in element L.2.b of the site-specific annexes.

Site communications capabilities are described in the site-specific annexes.

F.3	The testing method and periodicity for each communication system used for the functions identified in evaluation criteria E.2, F.1, and F.2 are described.

Communications tests will be conducted and documented on the frequency specified below. The tests include provisions to ensure participants in the test are able to understand the content of the messages in the test.

- Systems used to communicate with state and county government warning points within the plume exposure pathway EPZ will be tested monthly.
- Systems used to communicate from the MCR, TSC, and EOF to NRC Headquarters and NRC Regional Office Operations Center are tested monthly.

- Systems used to communicate with state and county government EOCs are tested annually.

- Systems used to communicate between Xcel Energy ERFs, and from the applicable ERF to the FMTs, are tested annually.

- Systems used to communicate with Federal emergency response organizations are tested annually.

- The ERDS is verified as connected and transmitting data on a quarterly basis.

- ANS testing frequency is described in site-specific annexes:

2.7 G - PUBLIC EDUCATION AND INFORMATION

Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency. The principal points of contact with the news media for dissemination of information during an emergency, including the physical location or locations, are established in advance, and procedures for coordinated dissemination of information to the public are established.

Regulatory References: 10 CFR 50.47(b)(7); 44 CFR 350.5(a)(7)

G.1	Provisions are made for a coordinated annual dissemination of information to the public within the plume exposure pathway EPZ, including transient populations and those with access and functional needs, regarding how they will be notified and what actions should be taken. The information is disseminated using multiple methods, to include non-English translations per current Federal Guidance.

Xcel Energy, in coordination with state and county emergency management personnel, updates and distributes site related emergency planning information annually to residents living within the plume-exposure pathway emergency planning zone (EPZ).

Xcel Energy, in coordination with state, county and local officials, annually provides the general public, including transients, with information concerning the methods of public notification and what individual actions should be taken during an emergency. This information may include:

- Methods of public notification
- Possible protective actions
- General information as to the nature and effects of radiation
- Contact points for additional information
- Special needs for the handicapped
- Registration cards for the mobility impaired.

Methods for disseminating information may include brochures, annual publications, public postings, websites and/or meetings and lake access signs. Transient locations will be identified by state and county emergency management officials. These locations may include, but are not limited to, motels, hotels, marinas, and lake access areas. Dissemination of information to the public is coordinated with state and local agencies.

G.2	Methods, consistent with JIS concepts, are established for coordinating and disseminating information to the public and media. Plans include the physical location(s) for interacting with the media.

The State of Minnesota maintains a combined JIC/EOC for use by Xcel Energy and the State of Wisconsin. The JIC/EOC has sufficient space to allow interaction with the media. The JIC is staffed at an Alert or higher classification by Xcel Energy Corporate Communications personnel to ensure coordination with affected agencies and provide public information to the media and the public. The JIC provides the necessary structure and mechanism for organizing, developing, integrating, and delivering coordinated interagency messages via established plans, procedures, and strategies.

Corporate Communications personnel may provide public information at the Unusual Event declaration using social media in accordance with Joint Information System (JIS) precepts. Interactions with the media may occur at various locations and with various agencies depending on the extent of the response.

Various means are used to share information with the public and the media, such as media briefings in person or by phone, news conferences, social media posts, web posts, blogs, interactive voice response messages, news releases/updates/advisories, etc.

G.3	Organizations designate news media points of contact and a spokesperson(s) with access to necessary information

During the initial stages of an emergency, responses to media questions relative to plant status are typically provided by the corporate communications team. When the EOF is not activated, the normal Xcel Energy media interaction and news release process is followed.

When the EOF is activated, event response procedures are implemented for gathering and disseminating information. For scheduled news conferences and media briefings, the Executive Spokesperson will provide plant and event status and company information.

G.3.a	Arrangements are made for the timely exchange of information among the designated spokespersons representing the entities involved in incident response

Arrangements are made for the timely exchange of information among the designated spokespersons that use various means and technologies as agreed upon by the applicable agencies. Xcel Energy will provide information and updates to address the emergency event to include plant conditions and associated response actions. States and counties will address public response and actions.

G.4	Organizations establish coordinated arrangements for identifying and addressing public inquiries and inaccurate information

A Corporate Communications liaison will work with state, county and federal public information officers to acknowledge rumors and determine the origin. A coordinated response will be made to address rumors or correct misinformation.

G.5	Organizations conduct programs to acquaint news media with the emergency plans at least annually

The Xcel Energy Communications Department has communications procedures to ensure prompt communications between Xcel Energy and principal media organizations.

At least once a year, both states will conduct training programs or send mailings to acquaint the news media with the emergency plans and to provide information concerning radiation and points of contact for release of public information in an emergency. Xcel Energy has input to this process.

2.8 H - EMERGENCY FACILITIES AND EQUIPMENT

H.1	A TSC is established, using current Federal guidance, from which NPP conditions are evaluated and mitigative actions are developed.

The TSC provides a location to house personnel who are responsible for management and technical support of plant operations during emergency conditions. The TSC also functions to relieve the on-shift personnel of peripheral duties and communications not directly related to reactor system manipulations and preventing congestion in the MCR.

Each Xcel Energy nuclear site has a dedicated TSC for use during emergency situations to implement emergency actions and analyze and mitigate accident conditions. The TSCs are sized to accommodate ERO responders and NRC representatives. State and county personnel are not expected to report to the TSC.

The TSC is activated within 60 minutes following the declaration of an Alert or higher classification. TSC activation at the Unusual Event emergency classification level is optional. When activated, the TSC's primary functions include:

- Prompt relief of the on-shift ERO emergency response activities
- Coordination of site emergency response actions
- Capability to display and trend plant data
- Assessment of the plant status and potential offsite impact
- Continued evaluation of event classification
- Communications with the NRC
- Communication of technical data and information to the EOF

Personnel in the TSC are protected from radiological hazards, including direct radiation and airborne contaminants under accident conditions, with radiological habitability standards similar to the MCR. To ensure adequate radiological protection, radiation monitoring equipment has been installed and periodic radiation surveys are conducted as needed during event response. These systems indicate radiation dose rates in the facility while in use. Additionally, potassium iodide (KI) is available for use.

Each TSC provides reliable voice communications to the MCR, OSC, EOF and NRC.

The TSC has the capability to display vital plant data and radiological information, in near real time, to be used by knowledgeable individuals responsible for providing technical briefings on plant conditions, event progress and for management of overall emergency response.

The TSC has access to drawings and other records, including general arrangement diagrams, piping and instrumentation diagrams (PI&Ds), electrical schematics and plant procedures.

Site specific details of the TSC are described in the site-specific annexes.

H.2	An OSC is established, using current Federal guidance, from which repair team activities are planned and teams are dispatched to implement actions.

The OSC provides a location where plant maintenance, operations, radiation protection and other plant emergency support personnel will assemble and stand by to assist as needed in order to minimize congestion in the MCR during event response.

Each Xcel Energy nuclear site has an OSC that provides an area for coordinating and planning event response activities and for staging personnel and equipment.

The OSC is activated within 60 minutes following the declaration of an Alert or higher classification. OSC activation at the Unusual Event emergency classification level is optional.

When the OSC is activated, dosimetry, respiratory protection, radiation survey equipment and Radiation Work Permits (RWPs) will be provided. Personnel decontamination is performed as discussed in Section K.1.e.

The OSC has access to drawings and other records, including general arrangement diagrams, piping and instrumentation diagrams (PI&Ds), electrical schematics, and plant procedures.

Emergency supplies are maintained in or accessible to the OSC Additional supplies and Xcel Energy resources can be obtained from the unaffected site upon request.

Each OSC provides reliable voice communications to the MCR, TSC and teams dispatched from the OSC.

If the OSC is deemed uninhabitable, the OSC may be moved to other locations as described in the site-specific annexes.

Site-specific details of the OSC are described in the site-specific annexes.

H.3	An EOF is established, using current Federal guidance, as the primary base of emergency operations for the licensee during a radiological incident. The EOF facilitates the management and coordination of the overall emergency response, including the sharing of information with Federal, state, local and tribal government authorities.

The EOF is a dedicated facility located in conjunction with Xcel Energy's general offices in Minneapolis and serves as the EOF for Xcel Energy nuclear sites. The EOF serves as a central location for management of offsite emergency response, coordination of radiological assessment and management of initial recovery operations. Access to the EOF is controlled using electronic card readers.

The EOF can accommodate designated Xcel Energy personnel as well as NRC and FEMA responders and has the capability to display vital plant data and radiological information for each site and unit, in near real time, to be used by knowledgeable individuals responsible for providing technical briefings on plant conditions, event prognosis, and for management of overall emergency response.

The EOF provides reliable voice communications to each site's MCR, TSC, OSC, the NRC, and state and county warning points and EOCs.

Normal power to the EOF is from reliable offsite sources. In the event of a loss of normal power, critical EOF loads will be powered from an uninterruptible power supply (UPS) and a generator with automatic transfer.

Because the EOF is located outside the plume exposure Emergency Planning Zone for the Xcel Energy NPPs, specialized ventilation systems and radiological monitoring are not required. The EOF ventilation system is consistent in design with standard building codes.

The EOF has access to site reference materials that may be needed for supporting emergency response.

The EOF is required to be activated within 90 minutes following the declaration of an Alert or higher classification.

The EOF provides for:

- Overall management of emergency response
- Coordination of emergency response activities with federal, state and local agencies
- Coordination of offsite radiological and environmental assessments
- Development of PARs
- Notification of state/local offsite agencies
- Management of recovery actions
- Response to and coordination of response efforts for events occurring simultaneously at both MNGP and PINGP.

H.3.a	For an EOF that is located more than 25 miles away from the NPP site, provisions are made from locating NRC and offsite responders closer to the NPP site.

The EOF is greater than 25 miles from MNGP and PINGP. Xcel Energy maintains space for members of an NRC Site Team and federal responders at the respective Training Buildings for each site. Each near site facility provides for:

- Space for an NRC site team and Federal/state/local responders
- Conference areas and presentation boards for conducting briefings with emergency response personnel
- Communication capability with other licensee and offsite emergency response facilities

- Computer access to plant data and radiological information
- Radiation monitoring capability
- Access to copying equipment and office supplies.

H.4	An alternative facility (or facilities is established, using currently provided and/or endorsed guidance, which would be accessible even if the NPP site is under threat of or experiencing hostile action.

An Alternative Emergency Facility for staging of ERO personnel has been designated for each Xcel Energy nuclear site and serves as a location for TSC and OSC personnel should those facilities become uninhabitable or in the cases where the facilities cannot be accessed such as a hostile action or natural disaster. The location of the Alternative Emergency Facility for each site is provided in the site-specific annexes.

H.5	A JIC is established, and its location is identified, to coordinate communication from Federal, state, local, and tribal government authorities and licensee personnel with the public and media.

Refer to Section G for details regarding the Xcel Energy JIC and JIS.

H.6	Each organization establishes an emergency operations center (EOC) for use in directing and controlling response functions and provides for timely EOC activation. For an EOC located within the plume exposure pathway EPZ, an alternate EOC, or location outside the plume exposure pathway EPZ, is identified to continue response functions in the event of an evacuation.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

H.7	Onsite monitoring systems used to initiate emergency response measures in accordance with the emergency classification scheme, as well as those to be used for conducting assessment, are identified. Monitoring systems consist of geophysical phenomena monitors, including meteorological, hydrologic, and seismic instrumentation; radiation monitors and sampling equipment; plant process monitors; and fire, toxic gas, and combustion products detectors.

Xcel Energy nuclear sites have installed instrumentation for seismic monitoring, radiation monitoring, fire detection and meteorological monitoring, in accordance with their USAR, Technical Specifications (TS) and Offsite Dose Calculation Manual (ODCM).

A plant computer system provides a display of plant parameters from which the safety status of operation may be assessed in the MCR, TSC, and EOF. Primary and secondary power sources are supplied to this system. Displays are available in the TSCs, OSCs, EOF and Alternative Facilities.

Instrumentation used to continuously monitor vital plant parameters in the MCR is described in the site USARs. Essential process monitoring is available in the emergency facilities through facility computer and display systems.

H.8	Provisions are made to acquire data from offsite monitoring and analysis equipment, including data on geophysical phenomena (e.g., meteorological, hydrologic, and seismic monitors) and radiological data (e.g., from FMTs, environmental dosimeters, and laboratory analyses.

Meteorological Monitoring

Meteorological information from offsite sources can be obtained from the National Weather Service. Xcel Energy can contact the National Weather Service to obtain additional synoptic scale weather data and compile a site-specific atmospheric diffusion assessment for each Xcel Energy nuclear site.

Seismic Monitoring

Seismic information from offsite sources can be obtained from the National Earthquake Information Center. A considerable array of seismometers is in the region. A central point of contact to obtain information about a seismic event is the USGS.

Radiological Monitoring

Offsite monitoring programs and processes that include the use of fixed dosimetry and air sampling capability are developed within the Radiological Environmental Assessment Program (REMP) at each site as described in the site-specific Offsite Dose Calculation Manual (ODCM).

H.9	Organizations directly responsible for offsite radiological monitoring provide for radiological monitoring equipment. This includes equipment that is located or stored near the NPP site, as well as additional equipment that may be brought to the site.

Each Xcel Energy nuclear site maintains a sufficient supply of emergency equipment to be used for environmental monitoring. Additional offsite radiological monitoring equipment and resources are available from the other Xcel Energy nuclear site.

H.10	Instrumentation is provided to obtain current meteorological information. Additional provisions are made to obtain representative meteorological information from other sources as needed by the NPP's radiological assessment models for site-specific characterization of plume dispersion and transport. Meteorological information is provided to the control room, TSC, EOF (or backup EOF), and NRC (via ERDS).

Refer to element H.7 for a description of the onsite meteorological monitoring capabilities.

Refer to element H.8 for a description of the offsite meteorological monitoring capabilities.

Site meteorological information is available directly in the MCR and is provided to the TSC and EOF.

The ERDS will supply the NRC with selected meteorological data points on a near real time basis. The selected ERDS data points are transmitted via Virtual Private Network (VPN) to the NRC at approximately 1-minute intervals.

Meteorological parameters used for input into the site-specific URI dose assessment model are described in the site-specific URI Site Annex documents.

H.11	Provisions are made to ensure that emergency equipment and supplies are tested, maintained, and available in sufficient quantities, to include reserves and replacements, when needed. This includes:

In addition to supplies of normal use equipment and instruments, emergency kits are maintained at Xcel Energy nuclear sites. Routine quarterly inventories are performed to verify contents and operationally check equipment/instruments in accordance with site procedures.

Sufficient reserves of instruments and equipment are maintained to replace those removed from emergency kits or lockers for calibration or repair.

H.11.a	Identification of the organization(s) responsible for the testing and maintenance of emergency equipment

Radiation Protection is responsible for the maintenance and storage of radiological equipment and instruments.

H.11.b	Calibration and operational checks of emergency equipment per national standards or the manufacturer’s instructions, whichever is more frequent.

Requirements to calibrate emergency equipment and instruments are specified in site or fleet procedures.

H.12	Emergency kits are identified by general category. Contents and quantity of each emergency kit are specified in the emergency plan or other document(s) referenced in the emergency plan.

Emergency kits may be assembled for radiation protection, field monitoring, first aid or other emergency use needs based on location and availability at each site.

H.13	Each organization identifies the location(s) for the receipt and analysis of field monitoring data and coordination of sample media and identifies the organization(s) responsible for assessing radiological data.

Site count rooms are the primary location for receipt and analysis of FMT samples. Sampling and analysis equipment are available for quantitative activity determination of liquid and air samples, and qualitative activity determination of terrestrial samples.

2.9 I - ACCIDENT ASSESSMENT

Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Regulatory References: 10 CFR 50.47(b)(9); 44 CFR 350.5(a)(9)

I.1	Capabilities for performing radiological assessment for all reactor core and spent fuel pool sources, individually and collectively, including response to events occurring simultaneously at all units on the NPP site, are described. These capabilities include:
I.1.a	Methods for determining the magnitude and isotopic composition of an ongoing release of radioactive material through waterborne or airborne release pathways, or estimating these parameters for a potential release

The magnitude of a release of radioactive material to the environment is primarily identified directly by effluent monitors. Survey and sample analysis may also be used to determine the magnitude of a release. Indirect means such as core damage estimates and release pathway assumptions may be used to estimate the magnitude of a release of radioactive material.

The isotopic composition of a release of radioactive material to the environment may be determined by; (1) specialized gaseous monitors that distinguish between gases, iodines and particulate, (2) survey and sample analysis, or (3) source term estimates based on core damage and release pathway assumptions.

Dose assessment model methods are capable of estimating source term and magnitude of gaseous releases from effluent monitors or plant parameter data and release rate projections.

I.1.b	A radiological assessment model for airborne releases that provides estimates of offsite radiation exposures and contamination levels using a dispersion model that is representative of the plant release points, topographical features, and meteorological regimes at the NPP site.

Xcel Energy uses site-specific versions of the Unified RASCAL Interface (URI) off-site dose projection computer model. The underlying dose assessment model in URI is the NRC RASCAL 4 model, based on the methods and equations documented in NUREG-1940.

The URI model provides off-site radiological dose and dose rate estimates based on near real time or hypothetical inputs. Projected dose is based on EPA-400 dose conversion factors and provided as; (1) the total effective dose equivalent, or TEDE (the sum of the effective dose equivalent from immersion, 4 days of ground deposition, and the committed effective dose equivalent from inhalation), and (2) the committed dose equivalent to the thyroid (CDE thyroid).

URI dose projection results are given for various locations from the site boundary to 10 miles. URI can provide dose assessment results for multiple release points from the site.

URI dose projection results and field monitoring readings are used in assessing radiological EALs and PARs.

The URI/RASCAL program may be run from terminals that are located in the Control Room, TSC, and EOF. Back-up capabilities are provided by stand-alone laptop computers using manual data entry for meteorology.

I.1.c	A capability to coordinate and implement in-field radiological assessments by FMTs and provisions to assess the data obtained.

On-site/out of plant environmental monitoring is performed by site radiation protection personnel under the direction of the OSC RP Coordinator.

Off-site environmental monitoring is performed by qualified field monitoring team personnel under the direction of the TSC Field Team Monitor.

FMTs are provided vehicles and equipment for environmental surveys. Field monitoring surveys and sampling may be performed at pre-identified locations or other geographic locations within the EPZ determined during the event. FMTs are directed to track the radioactive plume by monitoring radiation levels and by obtaining and analyzing air samples. Samples taken by the FMTs will be further evaluated by one of the available laboratory facilities described in elements C.4 and site-specific annexes.

I.2	Methods for assessing contamination of drinking water by waterborne releases for sites located on bodies of water from which public drinking water is drawn.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

I.3	The capability and responsibility for monitoring the following parameters, which provide input to radiological assessments during an emergency, are described: 1. Status of reactor fuel (e.g., no fuel damage, technical specification activity, clad failure, core melt). 2. Status of containment integrity. 3. Leakage of radioactive material from plant systems, structures, and components. 4. Status of engineered safety features used to mitigate the release of radioactive material to the environment (e.g., filters, containment spray, etc.). 5. Onset and duration of an actual release of radioactive material to the environment or estimating these parameters for a potential release.

The Xcel Energy ERO monitors plant parameters using information provided by plant data transmittal systems to assess the status of reactor fuel using core damage assessment procedures.

The ERO also monitors plant data transmittal systems to evaluate the status of containment integrity, systems used to mitigate the release of radioactive material to the environment and to identify leakage of radioactive material from plant systems, structures, and components.

By observing effluent and process monitors, the onset and duration of an actual release of radioactive material to the environment can be determined, or these parameters estimated for a potential release.

I.4	The methods and responsibility for determining the source term present in reactor coolant, containment atmosphere, and spent fuel pool area atmosphere are described.

Source term present in reactor coolant, containment atmosphere, and spent fuel pool area atmosphere are estimated using effluent, process and area radiation monitor readings, comparison of plant conditions against design basis event scenarios, sample analysis and environmental survey results, and plant parameter indications as inputs into the dose assessment and core damage assessment processes.

I.4.a	The contingency arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere and sump, and spent fuel pool storage area are described.

Details on the arrangement for obtaining and analyzing highly radioactive samples are provided in Section I.4.a of the site-specific annexes.

I.5	The organizations responsible for FMT activities, and necessary resources, are identified.

Responsibility for state FMT personnel remains with state ORO and responsibility for Xcel Energy FMT personnel remains with Xcel Energy ERO.

Xcel Energy FMT activities are coordinated with environmental monitoring efforts performed by state directed teams as appropriate for the site.

I.6	Each organization, where appropriate, provides methods, equipment, and expertise to make timely assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including development of post-plume PARs for comparison to current Federal guidance.

Xcel Energy uses an industry recognized dose assessment code to make timely assessments of the actual or potential magnitude and locations of any radiological hazards through gaseous release pathways. Personnel qualified in dose assessment are available on-shift, in the TSC and the EOF. Dose assessment results and field monitoring readings assist in evaluating appropriate ECLs based on radiological EALs and developing any related PARs.

The immediate onsite magnitude and consequences of liquid releases regarding event classification are primarily determined by liquid effluent monitors and direct area surveys.

Post-plume protective actions are developed by OROs and described in state and county radiological emergency plans. Xcel Energy FMT and laboratory personnel may assist ORO decision making with sample collection and analysis using established procedures and protocols.

I.7	The capability to detect and measure radioiodine concentrations in air in the plume exposure pathway EPZ as low as 10^{-7} μCi/cc (microcuries per cubic centimeter) under field conditions is described. The sample collection process takes into account the sample flow rate, collection efficiency of the sample media used to collect the sample, duration of the sample, counter efficiency, and background radiation, including interference from the presence of noble gases.

Xcel Energy field monitoring equipment has the capability to detect and measure airborne radioiodine concentrations as low as 1E-7 μCi/cc in the presence of noble gases. Air samples will be taken with portable air sampling equipped with a Silver Zeolite or equivalent cartridge and particulate filter. Interference from the presence of noble gas and background radiation is minimized by ensuring that monitoring teams move to areas of low background prior to analyzing the sample cartridge.

Air sample results can be estimated in the field. The samples can be analyzed for greater precision by one of the available laboratory facilities described in elements C.4 and site-specific annexes.

I.8	A means is established for relating the various measured parameters (e.g., exposure rates, contamination levels, and air activity levels) to dose or dose rates. Provisions are made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with current Federal guidance. In addition, provisions are established to validate dose projections with field data and compare projections with other organizations also calculating dose projections. The detailed provisions are described in implementing procedures.

Xcel Energy FMTs will track the plume from any radiological release by monitoring radiation levels as indicated on radiological measuring instruments and by obtaining and analyzing air samples. Environmental survey and air sample results are compared with dose assessment results to validate or adjust projections. Additionally, results can be input into the Xcel Energy URI dose assessment model to develop projections at various locations.

I.9	Arrangements to locate and track the airborne radioactive plume are made using available resources, which includes Federal, state, local, and tribal governments, and/or licensee resources. Provisions are made to characterize the plume including taking peak plume measurements. Identification of the plume includes determining a measurement that is high enough to be reasonably above background radiation readings and sufficient enough to indicate submersion within the plume.

Xcel Energy provides vehicles and equipment for the FMTs. Methods to monitor a radioactive plume include establishing peak centerline values and edges. Monitoring strategies may include the traversing of plumes when road networks and exposure rates permits. Additionally, local field sampling and monitoring points are specified to support pre-positioning of teams or use in comparison with dose projection results.

Xcel Energy personnel coordinate environmental radiological monitoring and assessment efforts with state directed teams as appropriate for the site.

Support from the DOE Radiological Assistance Team can be requested by Xcel Energy or the states.

I.10	Organizations directly responsible for radiological monitoring, analysis, and dose projections describe the capability for coordinating monitoring efforts, tracking and trending data, and sharing analytical results with other organizations performing radiological assessment functions.

Environmental radiological monitoring, analysis, and dose projections are conducted independently by Xcel Energy and OROs in accordance with their respective Emergency Plans. The OROs respond to their respective Emergency Operations Centers (EOCs). Coordination of information is performed remotely via communications links described in Section F.1.b of the site-specific annexes.

2.10 J - PROTECTIVE RESPONSE

A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. ETEs have been developed by applicants and licensees. Licensees shall update the ETEs on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

Regulatory References: 10 CFR 50.47(b)(10); 44 CFR 350.5(a)(10)

J.1	The means and time required to alert, notify, and provide a range of protective actions for onsite individuals and individuals who may be in areas controlled by the licensee (including members of the public) during a radiological incident are described.

Alarms are available for alerting personnel during a declared emergency or other hazardous conditions. Site communication methods are available for notification of Xcel Energy personnel and members of the public onsite. Instructions are provided that describe the protective action to be taken in each instance. Alerting personnel of the condition and notification of protective actions is initiated as soon as practical upon identification of an emergency or other hazardous condition. If the event warrants initiating assembly and accountability, Security personnel are dispatched to patrol buildings and structures onsite to ensure personnel have been alerted and are reporting to the designated assembly area. The dispatch of Security patrols is described in Security procedures.

The implementing procedures describe the assembly areas for personnel on-site.

J.1.a	Provisions are made for evacuation of onsite non-essential personnel at an SAE or General Emergency (GE).

Direction is provided to non-essential site personnel regarding the need to evacuate to either the off-site relocation center or to individual homes as determined by the Emergency Director or Emergency Manager.

Transportation offsite includes use of personnel vehicles and company vehicles if needed.

J.2	Provisions are made and coordinated with appropriate offsite entities for evacuation routes and transportation for onsite individuals to a suitable offsite location. Selection of location considers the potential for inclement weather, high traffic density, and potential radiological conditions. Alternate location(s) and route(s) are identified.

Evacuation routes, transportation and relocation areas are described in the site- specific annexes.

J.3	Provisions for radiological monitoring and decontamination, if necessary, of personnel evacuated from the NPP site are described.

Personnel to be evacuated from MNGP or PINGP will be directed to report to designated onsite locations for radiological monitoring and decontamination. If radiological conditions onsite do not support monitoring and decontamination, personnel will be directed to report to established offsite monitoring and decontamination locations. The movement of personnel to an offsite monitoring and decontamination location is coordinated between Xcel Energy and the applicable ORO using established communications methods.

J.4	The capability to account for all individuals inside the NPP Protected Area following declaration of an SAE or GE is described. The names of missing individuals are ascertained within 30 minutes following the emergency declaration and accountability is maintained for the duration of the incident. This capability includes provisions for prompt accountability following events that may preclude completion within 30 minutes (e.g., hostile action).

Assembly and accountability is conducted following the declaration of a Site Area or General Emergency, or at the discretion of the Emergency Director and is initiated via site assembly announcement.

Accountability of personnel within the Protected Area is accomplished within 30 minutes following emergency declaration and maintained continuously thereafter as described in the Security Plan. Accountability may be delayed during a security event if the Emergency Director, in consultation with Security, determines that performing accountability could be detrimental to the safety of plant personnel. If accountability is delayed, then accountability will be performed as soon as conditions permit.

J.5	Provisions are made for personal radiological protection for individuals arriving or remaining onsite during the incident.

During an emergency, protective actions would be taken to minimize radiological exposures or contamination affecting onsite personnel. A range of protective actions applicable to site personnel include:

- Assembly/Accountability
- Site Evacuation
- Issuance of KI
- Security event related actions

Security will control access to the site in accordance with Security Procedures to ensure only authorized personnel are allowed onsite during an emergency event at an Xcel Energy NPP. Personnel responding to the site will report to designated Emergency Response Facilities. Personnel remaining onsite will be located in the Emergency Response Facilities or other specified locations to provide for their radiological protection. Accountability of onsite personnel will be maintained throughout the incident.

Actions related to site evacuation are described in Section J.1.a.

Each site maintains an inventory of equipment and potassium iodide (KI) available for use by emergency workers. The Emergency Director has the responsibility for approval of issuing KI to site emergency workers. The issuance of KI is described in implementing procedures.

Implementing procedures provide specific protective actions to take during hostile action or severe weather events.

Radiological monitoring, decontamination, and exposure control for personnel responding to the site or remaining onsite is described in Section K of the Xcel Energy SEP.

J.6	The basis and methodology are established for the development of PARs for the responsible OROs, including evacuation, sheltering, and, if appropriate, radioprotective drug use, for the plume exposure pathway EPZ. Current Federal guidance is used.

PARs for preventing or minimizing exposure to the public and are based on Environmental Protection Agency (EPA) 400-R-92-001, “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents and NUREG-0654, Revision 1, Supplement 3. PARs are provided to the offsite agencies responsible for implementing protective actions for the public within the 10-mile EPZ. Protective actions that can be recommended to the state and counties include the following:

- Evacuation.
- Shelter in place.
- Thyroid blocking agent in accordance with state plans and policy.

Additional precautionary protective actions for PINGP are included in the site-specific annex.

PAR decision-making flowcharts are site-specific in nature and are provided in implementing procedures. Sites have the capability to provide state and local agencies an ad hoc PAR for beyond the 10-mile EPZ.

J.7	A site-specific protective action strategy or decision-making process, informed by the ETE study, is coordinated between the licensee and OROs. Current Federal guidance is used.

Plant conditions, projected dose and dose rates and field monitoring data are communicated to offsite agencies responsible for dose assessment/PARs to assist them in developing parallel assessments.

Site-specific protective action strategies, informed by the site-specific ETEs, have been developed using guidance provided in NUREG-0654. Rev 1. Supplement 3, Guidance for Protective Action Strategies, in coordination between Xcel Energy and the site-specific Offsite Response Organizations (OROs) and are included in implementing procedures.

J.8	The latest ETEs are:
J.8.a	Incorporated either by reference or in their entirety into the emergency plan.

Refer to the site-specific annexes for reference to ETEs.

ETE analyses are maintained as described in element P.4.

J.8.b	Incorporated either by reference or as a summary of the latest ETE analysis into the emergency plan.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

J.9	PARs are provided, in a timely manner, directly to the designated ORO(s) responsible for making protective action decisions (PADs) within the plume exposure pathway EPZ.

Applicable plume exposure pathway EPZ PARs are developed at the General Emergency classification level and provided to the ORO personnel responsible for making protective action decisions as noted in element E.1.

Prior to ERF activation, the SM/ED is responsible for making these notifications. Following ERF activation, the TSC Emergency Director and subsequently the EOF Emergency Manager assumes the responsibility for PAR notification.

PARs are communicated using the initial notification form and process. See section E for a discussion of emergency notification.

J.10	Plans include maps, charts, or other information that demonstrate the following for the plume exposure pathway EPZ:
J.10.a	Evacuation routes, evacuation areas, reception centers in host areas, and shelter areas.

Maps and other information showing site-specific evacuation routes, evacuation areas, reception centers in host areas, and shelter areas are contained in the ETE study reports as noted in the site-specific annexes.

J.10.b	Population distribution around the NPP site by evacuation areas.

Maps and other information showing population distribution around each Xcel Energy nuclear site, by evacuation area, are contained in the ETE.

The following elements are not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

J.11	A capability for implementing protective actions based on current Federal guidance is established. The process ensures coordinated implementation of PADs with all appropriate jurisdictions. The process for implementing protective actions for the plume exposure pathway EPZ is described and includes the following:

J.11.a	Means for identifying and protecting residents who would have difficulty in implementing protective actions without assistance. This includes those with access and functional needs, transportation- dependent residents, those in special facilities, and those in correctional facilities. These means include notification, support, and assistance in implementing protective actions where appropriate.

J.11.b	The decision-making methodologies for use of radioprotective drugs and the provisions for administration to the general public, emergency workers, and institutionalized persons within the plume exposure pathway EPZ. This includes the means of determining quantities, maintaining and managing supplies, communicating recommendations, and distributing.

J.11.c	Means of evacuation informed by the updated ETEs. The evacuation routes and transportation resources to be utilized are described and include projected traffic capacities of evacuation routes and implementation of traffic control schemes during evacuation.

J.11.d	The locations of pre-identified reception centers beyond the boundaries of the plume exposure pathway EPZ, organizations responsible for managing reception centers, arrangements for handling service animals and pets, and provisions for radiological monitoring/decontamination.

J.11.e	Means for the initial and ongoing control of access to evacuated areas and organizational responsibilities for such control, including identifying pre-selected control points.

J.11.f	Identification of and means for dealing with potential impediments to the use of evacuation routes (e.g., seasonal impassability of roads) and contingency measures. The resources available to clear impediments and responsibility for re-routing traffic, as necessary, are described.

J.11.g	Identification of and means to implement precautionary protective actions (e.g., actions taken at an SAE).

J.12	Protective actions to be used for the ingestion exposure pathway EPZ are specified, including the methods for protecting the public from consumption of contaminated foodstuffs, and are based on current Federal guidance.

J.13	The means for registering, monitoring, and decontaminating evacuees, service animals, pets, vehicles, and possessions at reception centers in host areas are described. The personnel and equipment available are capable of monitoring 20 percent of the plume exposure pathway EPZ population, including transients, assigned to each facility within a 12-hour period.

J.14	General plans for the removal or continued exclusion of individuals from restricted areas are developed. Relocation plans include:

J.14.a	Process for implementing current Federal guidance for relocation.

J.14.b	Means to identify and determine the boundaries of relocation areas, including a buffer zone.

J.14.c	Prioritization of relocation based on projected dose to an individual and the timeframe for relocation.

J.14.d	Control of access to and egress from relocation areas and security provisions for evacuated areas.

J.14.e	Contamination control during relocation.

J.14.f	Means for coordinating and providing assistance during relocation.

2.11 K - RADIOLOGICAL EXPOSURE CONTROL

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Regulatory References: 10 CFR 50.47(b)(11); 44 CFR 350.5(a)(11)

K.1	The radiation protection controls for emergency workers to be implemented during emergencies are described. These controls address the following aspects:

K.1.a	Onsite emergency exposure guidelines for emergency workers consistent with their assigned duties and current Federal guidance and the conditions under which the guidelines apply

Plant management approval is required before emergency workers are allowed to exceed the maximum administrative radiation dose.

The Emergency Director has responsibility for authorizing personnel exposure levels under emergency conditions using the guidance in Environmental Protection Agency (EPA) 400-R-92-001, “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.

Table K.1-a
Emergency Worker Dose Limits

Dose (TEDE)	Applicability	Conditions
5 rem	All	N/A
10 rem	Protecting valuable property or equipment	Lower dose not practicable
25 rem	Lifesaving or protection of large populations	Lower dose not practicable
>25 rem	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

K.1.b	The capability to evaluate emergency worker dose (i.e., the sum of the effective dose equivalent and the committed effective dose equivalent) at the time of exposure when direct measurement is not feasible.

Emergency worker dose when direct measurement is not feasible will be determined by the sum of the effective dose equivalent and the committed effective dose equivalent.

K.1.c	The capability to monitor and assess the radiation doses received by emergency workers for the duration of the incident.

Personnel monitoring equipment is issued to and worn by personnel as required in 10 CFR 20 and RP procedures as a record of radiation exposure. Other radiation detection devices are available for use by emergency workers to allow real time measurement of exposure.

K.1.d	The capability to implement onsite contamination control measures.

Radiation safety controls are established to contain the spread of loose surface radioactive contamination. Contamination control limits are defined in radiation protection procedures.

K.1.e	The capability to decontaminate emergency workers, equipment, and vehicles.

Guidelines as established in radiation protection procedures will be used to determine action levels for decontamination. Radiation protection procedures have been established for decontamination of emergency workers and equipment. The means for disposal of contaminated waste are also established.

K.1.f	Appropriate radiation protection briefings for repair teams that are being dispatched into the plant and FMTs being sent onsite and offsite, the scope of which is consistent with the expected risk to the team.

Emergency response teams, including FMTs, that must enter areas where they might be expected to receive higher than normal doses will be briefed on the task assigned, risks associated with the task, the planned route to destination, allowed dose and dose rates, stay time, protective clothing/equipment and other hazards or conditions as applicable.

K.1.g	The process for NPP site access and dosimetry issuance to personnel from OROs arriving to assist with the onsite response.

ORO personnel supporting on-site activities will be issued dosimetry and/or be monitored by radiation protection personnel when responding to areas where exposure could occur. This process will be implemented by radiation protection and site security personnel.

K.2	Individual(s) who can authorize personnel to receive radiation doses in excess of the occupational dose limits in accordance with the minimum standards set forth in 10 CFR Part 20 or 29 CFR 1910.1096, as applicable to the organization, are identified by title/position. Such authorizations are documented.

The Emergency Director may authorize emergency workers to receive doses in excess of the occupational dose limits set forth in 10 CFR 20.

K.2.a	The process for allowing onsite volunteers to receive radiation exposures in the course of carrying out lifesaving and other emergency activities is described.

Personnel dispatched into radiation areas or areas of unknown radiation levels are briefed on the task and environmental conditions and are provided appropriate monitoring and personnel protective equipment. Decisions to accept doses in excess of occupational limits are on a volunteer basis and prospective volunteers shall be made aware of the risks.

Refer to element K.1.a., for appropriate emergency exposure limits.

The following elements are not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

K.2.b.	The process for authorizing emergency workers to incur exposures that may result in doses in excess of the current Federal guidance is described

K.3	The capability to determine the doses received by emergency workers involved in any commercial NPP radiological incident is described. Each organization makes provisions for distribution of direct-reading dosimeters (DRDs) and permanent record dosimeters (PRDs).

K.3.a	Provisions to ensure that DRDs are read at designated intervals and dose records are maintained for emergency workers are described.

K.4	Action levels for determining the need for decontamination are specified and the means for radiological decontamination are established for emergency workers and the general public, as well as equipment, vehicles, and personal possessions. The means for disposal of contaminated waste created by decontamination efforts are also established.

2.12 L - MEDICAL AND PUBLIC HEALTH SUPPORT

Arrangements are made for medical services for contaminated injured individuals.

Regulatory Reference: 10 CFR 50.47(b)(12); 44 CFR 350.5(a)(12)

L.1	Arrangements are established with primary and backup hospitals (one hospital is located outside the plume exposure pathway EPZ) and medical services. These facilities have the capability for evaluation of radiation exposure and uptake. The persons providing these services are adequately trained and prepared to handle contaminated, injured emergency workers and members of the general public.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

L.2	Arrangements for the medical treatment of contaminated, injured onsite personnel and those onsite personnel who have received significant radiation exposures and/or significant uptakes of radioactive material are described. These arrangements include the following components:

Refer to element L.2.e for arrangements for personnel who have received significant radiation exposures and/or significant uptakes of radioactive material.

L.2.a	An onsite first aid capability with adequate medical equipment and supplies.

First aid capability is maintained as part of the site’s administrative procedures.

L.2.b	Primary and backup offsite medical facilities.

Arrangements have been made with local hospitals for the medical treatment of contaminated injured personnel.

Primary and backup offsite medical facilities to treat contaminated injured personnel are described in the site-specific annexes.

L.2.c	Radiological controls capability, including the isolation of contamination, assessment of contamination levels, radiation exposure monitoring for medical facility staff, collection of contaminated waste, and decontamination of treatment areas.

Xcel Energy personnel are available to assist medical personnel with decontamination, radiation exposure and contamination control. Hospitals are equipped and hospital personnel trained to address contaminated injured individuals and basic training on the nature of radiological emergencies. Radiological controls capability, including the isolation of contamination, assessment of contamination levels, radiation exposure monitoring for medical facility staff, collection of contaminated waste, and decontamination of treatment areas are described in licensee radiation protection department and hospital procedures.

L.2.d	Provisions to evaluate for radiological contamination either prior to transport to a medical facility or after arrival.

Injured personnel are evaluated for radiological contamination prior to transport to a medical facility in accordance with radiation protection procedures.

L.2.e	Contact information for facilities capable of treating overexposure to radioactive material.

Contact of the Radiation Emergency Assistance Center/Training Site (REAC/TS) is maintained per LOA.

L.3	Supplemental lists are developed that indicate the location of the closest public, private, and military hospitals, and other emergency medical facilities within the state or contiguous states considered capable of providing medical support for any contaminated, injured individual.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

L.4	Each organization arranges for the transportation of contaminated, injured individuals and the means to control contamination while transporting victims of radiological incidents to medical support facilities and the decontamination of transport vehicle following use.

In addition to the information provided in element L.2, radiation monitoring is provided by Xcel Energy personnel whenever it becomes necessary to use an ambulance service for the transportation of contaminated persons. Injured personnel are evaluated for radiological contamination using contamination control practices to transport to a medical facility per radiation protection procedures. Xcel Energy personnel will assist with decontamination of transport vehicles if necessary. Ambulance services are described in the site-specific annexes.

2.13 M - RECOVERY AND REENTRY PLANNING AND POST-ACCIDENT OPERATIONS

General plans for recovery and reentry are developed.

Regulatory Reference: 10 CFR 50.47(b)(13); 44 CFR 350.5(a)(13)

M.1	General recovery, reentry, and return plans for radiological incidents are developed, as appropriate. These plans address re-occupancy, as appropriate. The plans should include:
M.1.a	Provisions for allowing reentry into areas controlled by the licensee. Reentry planning includes evaluation of the controls necessary for reentry under post-incident conditions.

Site reentry criteria and actions are established by recovery procedures.

M.1.b	Provisions for reentry into restricted areas, including exposure and contamination control, as appropriate. A method for coordinating and implementing decisions regarding temporary reentry into restricted areas is addressed.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

M.2	Individuals who will comprise the licensee’s recovery organization are identified by title/ position. The recovery organization includes technical personnel with responsibilities to develop, evaluate, and direct recovery and reentry operations.

Figure M.2-1 illustrates the Recovery Organization structure. Recovery activities are required for the transition from a Site Area Emergency with long- term plant damage or General Emergency classification to an outage organization. The primary positions in the Recovery Organization are described as follows:

- Recovery Manager
    - Overall management of recovery activities.
    - Interface with federal, state and county agencies during the recovery process
- Operations Manager
    - Direct interface with outage organization
    - Provides oversight of work orders/priorities for repairs
- RP Manager
    - Coordinates radiological and environmental assessment with federal and state agencies.
    - Coordinates offsite radwaste management and decontamination activities with OROs as needed.
- Engineering Manager
    - Provides oversight for repairs and modification requires as part of recovery efforts
- Maintenance Manager
    - Provides oversight for equipment repair and replacement work
- Communications/Public Affairs
    - Directs the Public Information Program during the recovery process.
    - Supports communications with federal, state and local OROs

M.3	The process for initiating recovery actions is described and includes the criteria for terminating the emergency.

Implementing procedures provide guidance to directly terminate from an Unusual Event, Alert or Site Area Emergency with no long-term plant damage classifications when a normal outage organization is able to address any plant issues, or to transition to a recovery organization.

The Emergency Director in consultation with the Emergency Manager, determines when conditions warranting an emergency declaration have passed and steps will be taken to terminate directly from the event or transition to a recovery organization.

Recovery from an emergency situation is guided by the following principles:

- The protection of the public health and safety is the foremost consideration in formulating recovery plans.
- Public officials would be kept informed of recovery plans so that they can properly carry out their responsibilities to the public,
- Periodic information would be provided to the news media so that they can provide information to the public regarding recovery plans and progress made.
- Periodic status reports would be given to company employees at other locations and to government and industry representatives.

The Emergency Manager will take the following steps to inform members of the EOF, site organization, and off-site agencies that recovery operations are being initiated and that activities associated with bringing the plant to a safe shutdown condition are completed:

- Develop a brief message as to the time and date of recovery operations initiation as well as any necessary organizational realignments.

M.4	The process for initiating recovery actions is described and includes provisions to ensure continuity during transfer of responsibility between phases. The chain of command is established.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

M.5	The framework for relaxing protective actions and allowing for return are described. Prioritization is given to restoring access to vital services and facilities.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

M.6	The organization(s) responsible for developing and implementing cleanup operations offsite is identified.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

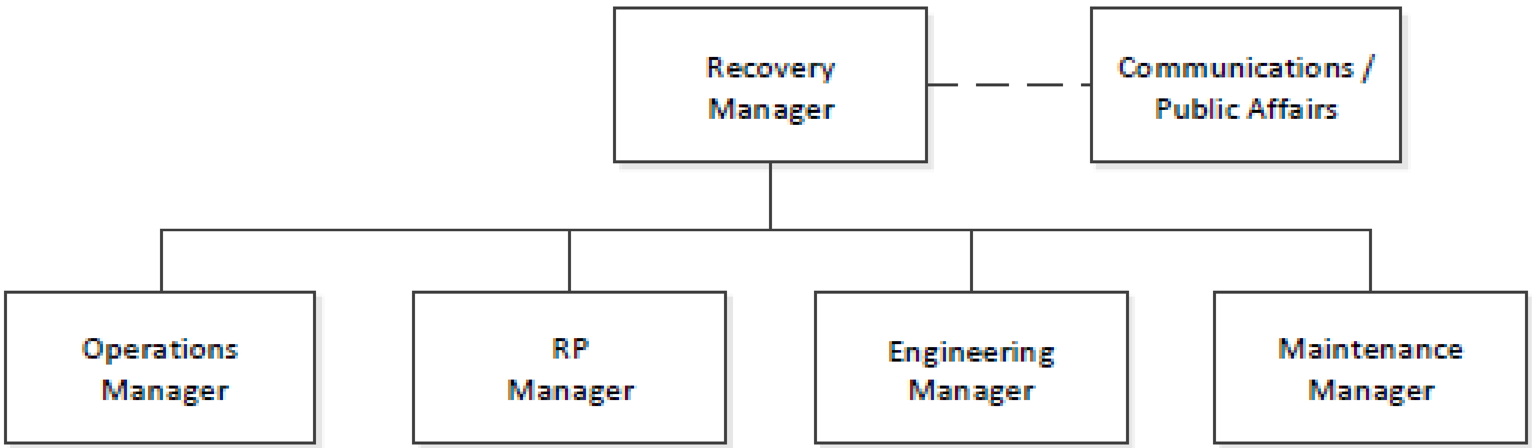
M.7	Provisions for developing and modifying sampling plans are established. Provisions for laboratory analysis of samples are included in the plan.

The recovery organization will coordinate Xcel Energy environmental sampling activities with the state agencies. Refer to elements C.4 and H.8 for a description of laboratory capabilities.

M.8	A method for periodically conducting radiological assessments of public exposure is established

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element

Figure M.2-1
Typical Long Term Recovery Organization



2.14 N - EXERCISES AND DRILLS

Periodic exercises are conducted to evaluate major portions of emergency response capabilities, periodic drills are conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are corrected.

Regulatory References: 10 CFR 50.47(b)(14); 44 CFR 350.5(a)(14).

N.1	Exercises and drills are conducted, observed, and critiqued/evaluated as set forth in NRC and FEMA regulations and guidance.

An exercise tests the integrated capability and a major portion of the elements of the emergency plan and organizations. Over the period of the exercise cycle, exercises will test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public alert and notification system, and ensure that emergency organization personnel are familiar with their duties.

Drills are supervised instructional periods aimed at testing, developing and maintaining skills in a particular operation and are a part of the continuous training program and is often a component of an exercise.

Drills and Exercises may be comprised of combinations of the criteria described below.

N.1.a	The process to critique/evaluate exercises and drills is described.

Following exercises and drills, a critique is conducted by qualified Xcel Energy individuals to evaluate areas and identify issues with ERO performance, response procedures, facility and equipment adequacy. The critique is performed as soon as possible following the conclusion of a drill or exercise using preselected drill and exercise performance objectives that are evaluated against measurable demonstration criteria. Provisions are made for federal, state, and county representatives to observe and participate in drill and exercise critiques.

A critique report is prepared by the EP group following a drill or exercise documenting objective demonstration. Failed or degraded performance objectives are entered into the corrective action program (CAP).

N.1.b	The process used to track findings and associated corrective actions identified by drill and exercise critiques/evaluations, including their assignment and completion, is described.

The Xcel Energy CAP process provides for tracking and trending of issues in accordance with 10 CFR 50 Appendix B, Criterion XVI.

N.1.c	A drill or exercise starts between 6:00 p.m. and 4:00 a.m. at least once every eight-year exercise cycle.

Each Xcel Energy nuclear site will conduct at least one drill or exercise between 6:00 pm and 4:00 am within an eight-year exercise cycle.

This requirement may be satisfied by an actual event provided it meets the above criteria and the objectives are evaluated and documented in a critique report for the augmentation of the ERO.

N.1.d	A drill or exercise is unannounced at least once every eight-year exercise cycle.

Each Xcel Energy nuclear site will conduct at least one unannounced drill or exercise within an eight-year cycle.

This requirement may be satisfied by an actual event provided objectives are evaluated and documented in a critique report for the augmentation of the ERO.

N.2	Exercises are designed to enable the response organizations' demonstration of the key skills and capabilities necessary to implement the emergency plan. The following two types of exercises are conducted at the frequency noted:
N.2.a	Plume Exposure Pathway Exercises. Plume exposure pathway exercises are conducted biennially. These exercises include mobilization of licensee and state, local, and tribal government personnel and resources and implementation of emergency plans to demonstrate response capabilities within the plume exposure pathway EPZ.

Each Xcel Energy nuclear site will conduct a Plume Exposure Pathway (PEP) Exercise biennially. This exercise includes mobilization of licensee state, local, and tribal government personnel, as applicable, and resources and implementation of emergency plans to demonstrate response capabilities.

State, county and tribal authorities are invited to participate in PEP exercises. If a state, county or tribal organization chooses not to participate it will be documented that they were given the opportunity to participate.

Exercise scenarios are submitted in accordance with 10 CFR50, Appendix E, IV.F(2)b.

N.2.b	Ingestion Exposure Pathway Exercises. Ingestion exposure pathway exercises are conducted at least once every eight years. These exercises include mobilization of state, local, and tribal government personnel and resources and implementation of emergency plans to demonstrate response capabilities to a release of radioactive materials requiring post-plume phase protective actions within the ingestion exposure pathway EPZ.

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

N.3	Exercise Scenario Elements. During each eight-year exercise cycle, biennial, evaluated exercise scenario content is varied to provide the opportunity to demonstrate the key skills and capabilities necessary to respond to the following scenario elements:
N.3.a	Hostile Action-Based (HAB). Hostile action directed at the NPP site. This scenario element may be combined with either a radiological release scenario or a no/minimal radiological release scenario, but a no/minimal radiological release scenario should not be included in consecutive HAB exercises at an NPP site.

During each eight-year exercise cycle, scenario content will address the following elements;

Each Xcel Energy nuclear site will conduct at least one HAB scenario in a drill or exercise within an eight-year cycle. The HAB scenario will include either a radiological release scenario or no/minimal radiological release scenario. HAB scenarios combined with a no/minimal radiological release scenario will not be used consecutively in exercises.

N.3.b	Rapid Escalation. An initial classification of, or rapid escalation to, an SAE or GE.

Each Xcel Energy nuclear site will conduct at least one rapid escalation scenario in a drill or exercise within an eight-year cycle. The rapid escalation scenario will begin with an initial classification of or rapidly escalate to the Site Area Emergency or General Emergency level.

N.3.c	No/Minimal Release of Radioactive Materials. No release or an unplanned minimal release of radioactive material which does not require public protective actions. This scenario element is used only once during each eight-year exercise cycle.

Each Xcel Energy nuclear site will conduct at least one No/Minimal radiological release scenario that escalates to a Site Area Emergency but does not require escalation to the General Emergency classification level with PARs in a drill or exercise within an eight-year cycle.

N.3.c.1	The licensee is required to demonstrate the ability to respond to a no/minimal radiological release scenario. State, local, and tribal government response organizations have the option, and are encouraged, to participate jointly in this demonstration. If the offsite organizations elect not to participate in the licensee's required minimal or no release exercise, the OROs will still be obligated to meet the exercise requirements as specified in 44 CFR 350.9.

State and county agencies located within the plume exposure pathway EPZ are invited to participate in No/Minimal radiological release scenarios.

N.3.c.2	When planning for a joint no/minimal radiological release exercise, affected state, local, and tribal government jurisdictions, the licensee, and FEMA will identify offsite capabilities that may still need to be evaluated and agree upon appropriate alternative evaluation methods to satisfy FEMA's biennial criteria requirements. Alternative evaluation methods that could be considered during the extent of play negotiations include expansion of the exercise scenario, out of sequence activities, plan reviews, staff assistance visits, or other means as described in FEMA guidance.

When planning for a joint no/minimal radiological release exercise, affected parties will identify offsite capabilities that may still need to be evaluated.

N.3.d	Resource Integration. Integration of offsite resources with onsite response.

Each Xcel Energy nuclear site will conduct at least one scenario that integrates offsite resources with onsite response in an exercise within an eight-year cycle.

Demonstration of resource integration includes briefings, offsite response to the site and coordination of worker protection, as appropriate to the scenario.

N.3.e	10 CFR 50.155(b)(2) Mitigation of Beyond-Design-Basis Events. Demonstration of the use of equipment, procedures, and strategies developed in compliance with 10 CFR 50.155(b)(2).

Each Xcel Energy nuclear site will conduct at least one scenario in a drill or exercise within an eight-year cycle to demonstrate strategies and guidelines to maintain or restore core cooling, containment, or spent fuel pool cooling capabilities under the circumstances associated with the loss of large area due to explosions or fire. Strategies to be demonstrated may include one or more of the following:

- Fire fighting
- Operations to mitigate fuel damage
- Actions to minimize radiological release

N.4	Drills are designed to enable an organization’s demonstration and maintenance of key skills and capabilities necessary to fulfill functional roles. Drills include, but are not limited to, the following at their noted frequencies:
N.4.a	Emergency Medical Drills. Emergency medical drills are conducted annually. These drills involve a simulated, contaminated individual and contain provisions for participation by support services agencies (i.e., ambulance and offsite medical treatment facility).

Each Xcel Energy nuclear site will conduct an emergency medical drill once per calendar year.

The scope of the emergency medical drill will include a simulated contaminated individual and invitation for participation by support services agencies.

N.4.b	Medical Services Drills. Medical services drills are conducted annually at each medical facility designated in the emergency plan. These drills involve a simulated, contaminated emergency worker and/or member of the general public and contain provisions for participation by support services agencies (i.e., ambulance and offsite medical treatment facility).

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

N.4.c	Laboratory Drills. Laboratory drills are conducted biennially at each laboratory designated in the emergency plan. These drills involve demonstration of handling, documenting, provisions for record keeping, and analyzing air, soil, and food samples, as well as quality control and quality assurance processes. These drills also involve an assessment of the laboratory's capacity to handle daily and weekly samples and the volume of samples that can be processed daily or weekly

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

N.4.d	Environmental Monitoring Drills. Environmental monitoring drills are conducted annually. These drills include direct radiation measurements in the environment, collection and analysis of all sample media (e.g., water, vegetation, soil, and air), and provisions for record keeping.

Each Xcel Energy nuclear site will conduct an environmental monitoring drill once per calendar year. The scope of the environmental monitoring drill will include performance objectives for direct radiation measurements in the environment, collection and analysis of sample media including water, vegetation, soil, and air, provisions for communications and record keeping.

N.4.e	Ingestion Pathway and Post-Plume Phase Drills. Ingestion pathway and post-plume phase drills are conducted biennially. These drills involve sample plan development, analysis of lab results from samples, assessment of the impact on food and agricultural products, protective decisions for relocation, and food/crop embargos

This element is not applicable to the licensee. See state and county radiological emergency plans for specific information related to this element.

N.4.f	Communications Drills. Communications amongst and between emergency response organizations, including those at the state, local, and Federal level, the FMTs, and nuclear facility within both the plume and ingestion exposure pathway EPZs, are tested at the frequencies determined in evaluation criterion F.3. Communications drills include the aspect of understanding the content of messages and can be done in conjunction with the testing described in evaluation criterion F.3.

Communications Drills are accomplished during testing described in element F.3.

N.4.g	Post-Accident Sampling Drills. Post-accident sampling drills are conducted annually. These drills address capabilities including analysis of liquid and containment atmosphere samples with simulated elevated radiation levels. This criterion is not applicable if the NPP unit(s) does (do) not have licensing basis requirements for post-accident sampling.

Testing of Post-Accident sampling systems are described in the site-specific annexes.

N.4.h	Off-Hours Report-In Drills. Off-hours report-in drills are conducted biennially and are unannounced.

Each Xcel Energy nuclear site will conduct an off-hours unannounced ERO report-in augmentation drill biennially. The EOF will participate concurrent with either of the Xcel Energy nuclear sites.

N.4.i	Off-Hours Call-In Drills. Off-hours call-in drills are conducted quarterly, such that each ERO member's normally expected response time is assessed at least biennially based on call-in drill responses or an alternate means for determining response time. Some drills are unannounced.

Each Xcel Energy nuclear site and the EOF will conduct an off-hours call-in drill quarterly. Some call-in drills will be unannounced.

The scope of the off-hours call-in drill will require ERO member's response regarding ability to respond to their applicable facility within the required augmentation time. Each Table B-1 ERO member's ability to respond within the required augmentation time will be assessed at least biennially.

N.4.j	Onsite Personnel Protective Action Drills. Onsite personnel protective action drills are conducted during every eight-year exercise cycle. These drills demonstrate the NPP site's ability to implement and coordinate protective actions for onsite personnel during hostile action.

Each Xcel Energy nuclear site will conduct a protective action drill within an eight-year cycle.

The scope of the protective actions drill will demonstrate the ability to implement and coordinate protective actions for onsite personnel during a hostile action.

N.4.k	Aircraft Threat/Attack Response Drills. Aircraft threat/attack response drills are conducted during every eight-year exercise cycle. These drills demonstrate the use of procedures and protective measures developed for responding to hostile action involving an aircraft threat or attack.

Each Xcel Energy nuclear site will conduct an aircraft threat/attack response drill within an eight-year cycle.

N.4.l	Consolidated EOF Drill. A Consolidated EOF Drill is conducted during every eight-year exercise cycle. This drill demonstrates the ability to provide coordinated response to multi-site events.

Xcel Energy will conduct a Consolidated EOF response drill involving both nuclear sites within an eight-year cycle.

2.15 O - RADIOLOGICAL EMERGENCY RESPONSE TRAINING

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

Regulatory References: 10 CFR 50.47(b)(15); 44 CFR 350.5(a)(15)

O.1	Each organization ensures the training of emergency responders and other appropriate individuals with an operational role described in the emergency plan. Initial training and at least annual retraining are provided.

Initial training and annual retraining will be conducted for members of the ERO and offered to those offsite organizations that may be called upon to assist the site in the event of an emergency.

Details on the content and conduct of ERO training are maintained in the Xcel Energy EP Training Program Description.

O.1.a	Site-specific emergency response training is developed and conducted for those offsite organizations that may be called upon to provide onsite assistance in the event of an emergency.

Xcel Energy offers emergency response training annually for those offsite organizations that may be called upon to provide onsite assistance in the event of an emergency. They are invited to attend training applicable to the Xcel Energy nuclear site or sites where they could provide assistance.

Training of state and county offsite response organizations is described in their respective radiological emergency plans, with support provided by Xcel Energy, if requested.

O.2	The ERO training program consists of learning objectives that are used to develop and maintain key skills. This includes a systematic analysis of jobs and tasks to be performed from which learning objectives are derived.

The EP Training Program Description identifies the training requirements for initial qualification, continuing training, and requalification of the ERO.

Training will be evaluated in accordance with the principles of the Systematic Approach to Training (SAT) practices to ensure effectiveness and in order to identify areas that need improvement or correction.

O.2.a	The ERO training program is reviewed at least annually and revised as necessary.

Revisions to the training program are identified with feedback from trainees in training and critique items during drills. EP training is also reviewed during EP assessments at the Xcel Energy nuclear sites. During assessments, ERO and EP staff performance is reviewed and appropriate revisions to the training program are made.

O.2.b	Training sessions that provide performance opportunities to develop, maintain, or demonstrate key skills are evaluated in order to identify weak or deficient areas that need correction.

Training sessions providing performance enhancing opportunities for key positions are evaluated in order to identify weak or deficient areas that need correction for the key skills demonstrated.

2.16 P - RESPONSIBILITY FOR THE PLANNING EFFORT: DEVELOPMENT, PERIODIC REVIEW, AND DISTRIBUTION OF EMERGENCY PLANS

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Regulatory References: 10 CFR 50.47(b)(16); 44 CFR 350.5(a)(16)

P.1	The training program, including initial training and periodic retraining, of individuals responsible for the planning effort is described.

EP staff responsible for the planning effort complete initial and continuing training on regulatory requirements, applicable guidance documents and industry operating experience.

P.2	The individual with the overall authority and responsibility for radiological emergency planning is identified by title/position

The Xcel Energy Chief Nuclear Officer has the overall authority and responsibility for Xcel Energy Emergency Plan.

P.3	The individual(s) with the responsibility for the development, maintenance, review, updating, and distribution of emergency plans, as well as the coordination of these plans with other response organizations, is identified by title/position.

The Xcel Energy EP Staff is responsible for the development, maintenance, review, and updating of the emergency plan and site-specific annexes, as well as the coordination of the plan with other response organizations.

P.4	The process for reviewing annually, and updating as necessary, the emergency plan, implementing procedures, maps, charts, and agreements is described. The process includes a method for recording changes made to the documents and, when appropriate, how those changes are retained.

The SEP and associated documents as identified herein, are reviewed on an annual basis and updated if necessary. Changes due to regulatory revisions, issues identified by drills and exercises, or other updates will be incorporated.

Agreements with supporting organizations will be reviewed and certified to be current on an annual basis and updated, if necessary. Changes to agreements may be coordinated with the annual review of the SEP.

Emergency Plan changes will be processed in accordance with 10 CFR 50.54(q) requirements and fleet document control/records management procedures. ETE updates are completed in accordance with 10 CFR 50, Appendix E, IV.4, 5 & 6.

P.5	Provisions for distributing the emergency plan and implementing procedures to all organizations and appropriate individuals with responsibility for implementation of the plan/procedures are described.

Approved changes to the SEP, associated documents and implementing procedures will be transmitted in accordance with the distribution list maintained in the Electronic Document Management System (EDMS).

P.6	A listing of annexes, appendices, and supporting plans and their originating agency is included in the emergency plan.

A listing of emergency plan extension documents is included in the Introduction of this SEP.

External emergency plans specific that support the SEP are listed in Section A.1.a. Supporting plans for organizations that support individual sites are listed in the site-specific annexes.

P.7	An appendix containing a listing by title of the procedures required to maintain and implement the emergency plan is included. The listing includes the section(s) of the emergency plan to be implemented by each procedure.

Appendix C of the SEP provides a listing by title of the procedures required to maintain and implement the emergency plan and the section(s) of the emergency plan to be implemented by each procedure.

P.8	A table of contents and a cross-reference index to each of the NUREG-0654/FEMA-REP-1, Rev. 2 evaluation criteria are included. The evaluation criteria that do not apply are identified.

SEP contains a specific table of contents. The SEP and Annexes are numbered corresponding to the NUREG-0654/FEMA-REP-1, Rev.2 evaluation criteria. Evaluation criteria which do not apply to utilities are listed and identified.

P.9	Provisions for addressing the requirements of 10 CFR 50.54(t) are described.

An independent review will be conducted in accordance with the requirements of 10 CFR50.54(t)(2). The review findings will be submitted to the appropriate corporate and site management. The part of the review involving the evaluation of the adequacy of interface with state and county governments will be reported to the appropriate state and county governments. Corporate or site management, as appropriate, will evaluate the findings affecting their area of responsibility and ensure effective corrective actions are taken. The results of the review, along with recommendations for improvements, will be documented, and retained.

P.10	The administrative process for the periodic review and updating of contact information identified in the emergency plan and implementing procedures is described.

The Emergency Preparedness Emergency Telephone Directory contains contact numbers for ORO, ERF, and support organizations identified in the emergency plan and implementing procedures.

The directory is reviewed quarterly and updated as needed. EP staff update call out information in the ERO Notification System quarterly.

P.11	The process for entering EP program-related issues that could reduce the effectiveness of the emergency plan into the site-wide corrective action program is described.

Xcel Energy CAP is used to capture conditions that do not meet program regulations, requirements, or expectations, or are otherwise adverse to quality.

P.12	The process to evaluate changes in plant configuration for their impact on the effectiveness of the emergency plan is described.

Changes in plant configuration are evaluated for their impact on the effectiveness of the emergency plan through the Applicability Determination process specified in Regulatory Affairs procedures and, if required, the 10 CFR 50.54(q) process specified in EP procedures.

3.0 APPENDICES

Appendix A
DEFINITIONS

The following are definitions of terms commonly used in this Emergency Plan and each site-specific annex:

Accountability

Accountability is the list of individuals missing within the protected area after a site assembly has been called.

Assembly

The process of relocating personnel onsite to pre-designated locations as a personnel protective measure during an event.

Committed Dose Equivalent (CDE)

CDE is the dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

Committed Effective Dose Equivalent (CEDE)

CEDE is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the CDE to these organs or tissues.

Dose Equivalent (DE)

DE is the product of the absorbed dose in tissue, quality factor and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert (Sv).

Effective Dose Equivalent (EDE)

EDE is the sum of the products of the dose equivalent to each organ or tissue and a weighting factor applicable to each of the body organs or tissues that are irradiated.

Emergency Action Levels (EALs)

A pre-determined, site-specific, observable threshold for a plant Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.

Appendix A CONT'D
DEFINITIONS

Emergency Planning Zones (EPZ)

A defined area around the plant to facilitate emergency planning by state and local authorities, to assure that prompt and effective actions are taken to protect the public in the event of a release of radioactive material. It is defined for:

- Plume Exposure Pathway – A 10-mile radius around the plant where the principal exposure source is: (1) whole body exposure to gamma radiation from the plume and from deposited material; and (2) inhalation exposure from the passing radioactive plume (Short Term Exposure).
- Ingestion Exposure Pathway – A 50-mile radius around the plant where the principal exposure would be from the ingestion of contaminated water or foods such as milk or fresh vegetables (Long Term Exposure).

Emergency Worker

Any individual involved in mitigating the consequences of an emergency situation and/or minimizing or preventing exposure to the offsite population.

Facility Activation

An Emergency Response Facility is activated when the minimum staff per Figures B- 1, B-2 and B-3 are available and the facility is ready to assume its assigned Emergency Plan functions and relieve the on-shift staff of those functions. Although the facility may be ready, the on-shift staff relief may be postponed in the interests of completing critical tasks prior to turnover.

Hostile Action

An act towards a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. Hostile action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorist based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner- controlled area).

Appendix A CONT'D
DEFINITIONS

Offsite Survey

The area located beyond the confines of the Protected Area.

Onsite Survey

The area located within the confines of the Protected Area.

Owner Controlled Area

The area owned by the licensee and located within the confines of the Site Boundary.

Protective Actions

Emergency measures taken to avoid or reduce radiation dose. These commonly include sheltering, evacuation, and prophylaxis.

Protective Action Decision (PADs)

Protective actions determined and implemented by offsite agencies for protection of the health and safety of the general public.

Protective Action Recommendations (PARs)

Protective actions recommended by a plant to offsite agencies to protect the health and safety of the public within the plume exposure pathway.

Protective Action Guides (PAGs)

Projected dose to individuals, that warrants protective action prior to and/or following a radioactive release.

Site Boundary

The boundary of a reactor site beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

Total Effective Dose Equivalent (TEDE)

TEDE is the sum of the Deep-Dose Equivalent (for external exposures) and the CEDE (for internal exposures).

Appendix A CONT'D
DEFINITIONS

Vital Areas

Areas within the protected area that contain equipment vital to the operations of the plant.

Appendix B
CROSS REFERENCE TO 10 CFR 50 APPENDIX E.IV – CONTENT OF EMERGENCY PLANS

Regulatory Criteria	E-Plan Reference
1. The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiological emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, recovery, and onsite protective actions during hostile action.	N/A
2. This nuclear power reactor license applicant shall also provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date the applicant submits its application to the NRC.	Annex J.8.a
3. Nuclear power reactor licensees shall use NRC approved evacuation time estimates (ETEs) and updates to the ETEs in the formulation of protective action recommendations and shall provide the ETEs and ETE updates to state and local governmental authorities for use in developing offsite protective action strategies.	Annex J.8.a J.7
4. Within 365 days of the later of the date of the availability of the most recent decennial census data from the U.S. Census Bureau or December 23, 2011, nuclear power reactor licensees shall develop an ETE analysis using this decennial data and submit it under § 50.4 to the NRC. These licensees shall submit this ETE analysis to the NRC at least 180 days before using it to form protective action recommendations and providing it to state and local governmental authorities for use in developing offsite protective action strategies.	SEP Section P.4
5. During the years between decennial censuses, nuclear power reactor licensees shall estimate EPZ permanent resident population changes once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and state/local government population data, if available. These licensees shall maintain these estimates so that they are available for NRC inspection during the period between decennial censuses and shall submit these estimates to the NRC with any updated ETE analysis.	Annex J.8.a SEP Section P.4

Appendix B CONT'D
CROSS REFERENCE TO 10 CFR 50 APPENDIX E.IV – CONTENT OF EMERGENCY PLANS

Regulatory Criteria	E-Plan Reference
6. If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the nuclear power reactor licensee's currently NRC approved or updated ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase.	Annex J.8.a SEP Section P.4
The licensee shall submit the updated ETE analysis to the NRC under § 50.4 no later than 365 days after the licensee's determination that the criteria for updating the ETE have been met and at least 180 days before using it to form protective action recommendations and providing it to state and local governmental authorities for use in developing offsite protective action strategies.	Annex J.8.a SEP Section P.4
7. After an applicant for a combined license under part 52 of this chapter receives its license, the licensee shall conduct at least one review of any changes in the population of its EPZ at least 365 days prior to its scheduled fuel load. The licensee shall estimate EPZ permanent resident population changes using the most recent U.S. Census Bureau annual resident population estimate and state/local government population data, if available. If the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ, to increase by 25 percent or 30 minutes, whichever is less, from the licensee's currently approved ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase. The licensee shall submit the updated ETE analysis to the NRC for review under § 50.4 of this chapter no later than 365 days before the licensee's scheduled fuel load.	N/A

Appendix B CONT'D
CROSS REFERENCE TO 10 CFR 50 APPENDIX E.IV – CONTENT OF EMERGENCY PLANS

10 CFR 50 Appendix E.IV.A – Organization

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 and the means for notification of such individuals in the event of an emergency. Specifically, the following shall be included:

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
1.	B.1.a	3.	B.1.a	7.	Annex A.4
2.a	B.1.a, B.2, B.2.a	4.	B.1.a, I.6, E.3	8.	A.1.a
2.b	B.1.a	5.	B.1.a, B.5	9.	B.1.a, Annex B.1.a
2.c	B.1.a, B.2, B.2.a	6.	A.1.a, C.2, C.2.d		

10 CFR 50 Appendix E.IV.B – Assessment Actions

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
1.	I.6, D.1.a, D.1.b	2.	D.1.a		

10 CFR 50. Appendix E.IV.C – Activation of Emergency Organization

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
1.	F.1.c, E.1.a D.1, D.1.b	2.	D.2		

Appendix B CONT'D

CROSS REFERENCE TO 10 CFR 50 APPENDIX E.IV – CONTENT OF EMERGENCY PLANS

10 CFR 50, Appendix E.IV.D – Notification Procedures

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
1.	Annex E.2, E.3	3.	E.1, Annex E.2		
2.	G.1	4.	NA		

10 CFR 50, Appendix E.IV.E – Emergency Facilities and Equipment

Adequate provisions shall be made and described for emergency facilities and equipment, including:

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
1.	K.1.c	8.b	H.3, Annex H.3.a	8.d	Annex H.4
2.	I.8, I.9	8.b (1)	Annex H.3.a	8.e	NA
3.	K.1.e	8.b (2)	Annex H.3.a	9.	F.1, Annex F.1.a, E.1
4.	L.2.e	8.b (3)	Annex H.3.a	9.a	E.1, Annex F.1.b, F.3
5.	L.2.b	8.b (4)	Annex H.3.a	9.b	E.1, Annex F.1.b, F.3
6.	L.4	8.b (5)	Annex H.3.a	9.c	Annex F.1.a, Annex F.1.b
7.	L.2.b	8.c (1)	H.3	9.d	E.1, Annex F.1.b, F.3
8.a (i)	H.1, H.3	8.c (2)	H.3		
8.a.(ii)	H.2	8.c (3)	H.3		

Appendix B CONT'D
CROSS REFERENCE TO 10 CFR 50 APPENDIX E.IV – CONTENT OF EMERGENCY PLANS

10 CFR 50, Appendix E.IV.F – Training

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
1.(a)	N.1	1.(b).ix	O.1, O.1.a	2.c (3)	NA
1.(b)	N.4, N.4.a, N.4.d, F.3, N.4.h – k, O.1	2.	N.1	2.c (4)	NA
1.(b).i	O.1	2.a	N.2.a	2.c (5)	NA
1.(b).ii	O.1	2.a (i)	NA	2.d	NA
1.(b).iii	O.1	2.a (ii)	NA	2.e	N.4
1.(b).iv	O.1	2.a (iii)	NA	2.f	N.1.a
1.(b).v	O.1	2.b	N.2.a, N.4	2.g	N.1.a, N.1.b
1.(b).vi	O.1	2.c	NA	2.h	N.2.a
1.(b).vii	O.1	2.c (1)	NA	2.i	N.1, N.3, N.3.a-e, N.4
1.(b).viii	O.1	2.c (2)	NA		

10 CFR 50, Appendix E.IV.G – Maintaining Emergency Preparedness

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
IV.G	P.2, P.3, P.4				

Appendix B CONT'D
CROSS REFERENCE TO 10 CFR 50 APPENDIX E.IV – CONTENT OF EMERGENCY PLANS

10 CFR 50, Appendix E Section IV.H – Recovery

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
IV.H	M.1.a				

10 CFR 50, Appendix E.IV.I – Onsite Protective Actions During Hostile Action

Criteria	E-Plan	Criteria	E-Plan	Criteria	E-Plan
IV.I	J.5				

Appendix C
NUREG 0654, REV 2, SEP, SITE-SPECIFIC ANNEX AND EPIP CROSS WALK

NUREG-0654 Rev 2, SEP and Site-Specific Annex Section	Applicable EPIP
Assignment of Responsibility	FP-EP-EPIP-01
Emergency Response Organization	FP-EP-EPIP-01, FP-EP-EPIP-06
Emergency Response Support and Resources	FP-EP-EPIP-01, FP-EP-EPIP-04
Emergency Classification System	FP-EP-EPIP-01, FP-EP-EPIP-03
Notification Methods and Procedures	FP-EP-EPIP-01, FP-EP-EPIP-04
Emergency Communications	FP-EP-EPIP-01, FP-EP-EPIP-04
Public Education and Information	FG-EP-WI-15
Emergency Facilities and Equipment	FP-EP-EPIP-01, FP-EP-EPIP-06,
Accident Assessment	FP-EP-EPIP-01, FP-EP-EPIP-02
Protective Response	FP-EP-EPIP-01, FP-EP-EPIP-05
Radiological Exposure Control	FP-EP-EPIP-01, FP-EP-EPIP-05
Medical and Public Health Support	FP-EP-WI-28
Recovery and Reentry Planning and Post-Accident Operations	FP-EP-EPIP-01, FP-EP-EPIP-07
Exercises and Drills	FP-EP-WI-14
Radiological Emergency Response Training	PI-BEP TPD MT-BEP TPD
Responsibility for Planning Effort: Development, Periodic Review and Distribution of Emergency Plans	CD 10.1

Appendix D
CHANGES FROM PREVIOUS REVISION

Revision #	Description	Date

Nuclear Licensing Document	EPLAN-03	Revision: 0
	Page 1 of 19	
Title:	**PRAIRIE ISLAND EMERGENCY PLAN ANNEX**	
Approval: **602000030748**		

Table of Contents

Page

1.0 ASSIGNMENT OF RESPONSIBILITY

Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the EPZs have been assigned, the emergency responsibilities of the various supporting organization have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

Regulatory References: 10 CFR 50.47(b)(1); 44 CFR 350.5(a)(1)

A.1	The Federal, state, local, and tribal governments, licensee, and other private sector organizations that comprise the overall response for the EPZs are identified.
A.1.a	The organizations having an operational role specify their concept of operations and relationship to the total effort.

1.1 County Organizations

The county and municipal governments with an operational role within the Prairie Island Nuclear Generating Plant (PINGP) 10-mile EPZ as depicted in Figure 1 are:

- Goodhue County, Minnesota
- Dakota County, Minnesota
- City of Red Wing, Minnesota
- Pierce County, Wisconsin

The county governments having an operational role within the PINGP 50-mile Ingestion Pathway Zone (IPZ) as depicted in Figure 2 are:

Table 1

Minnesota					Wisconsin	
Anoka	Dodge	Olmsted	Steele	Winona	Barron	Pepin
Carver	Goodhue	Ramsey	Wabasha		Buffalo	Pierce
Chisago	Hennepin	Rice	Waseca		Dunn	Polk
Dakota	Le Sueur	Scott	Washington		Eau Claire	St Croix

1.2 Tribal Organizations

The Prairie Island Indian Community (PIIC) is located within the PINGP 10-mile EPZ, as depicted in Figure 1, and has an Emergency Operations Plan that includes the description of tribal responsibilities during a nuclear plant declared event.

Figure 1 – PINGP 10-Mile Plume Exposure Pathway Zone (EPZ)

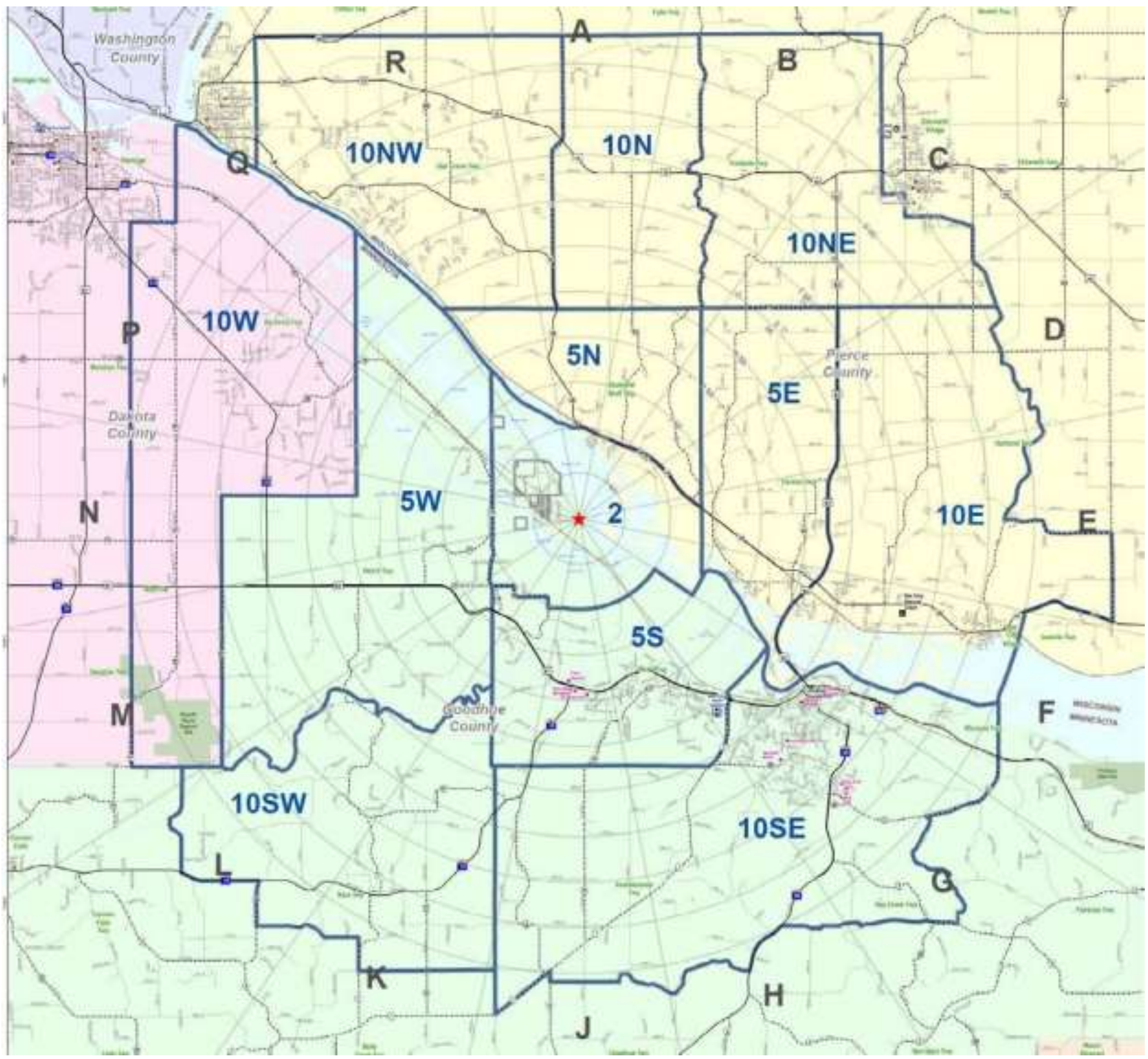
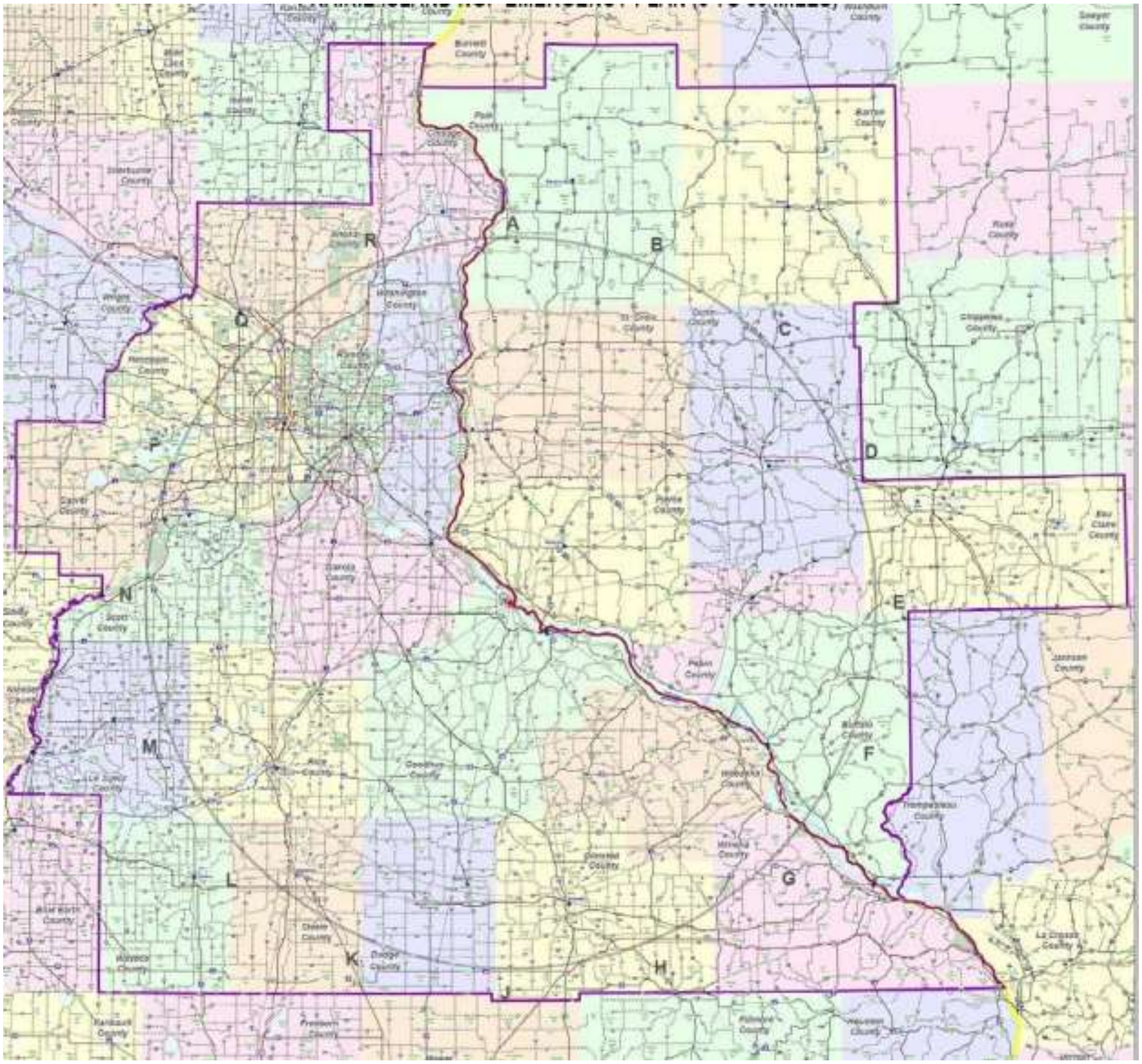


Figure 2 – PINGP 50-Mile Ingestion Pathway Zone (IPZ)



A.4	Written agreements with the support organizations having an emergency response role within the EPZs are referenced. The agreements describe the concept of operations, emergency response measures to be provided, mutually acceptable criteria for their implementation, and arrangements for exchange of information.

Site-specific letters of agreement (LOAs) are maintained by PINGP with the following organizations:

- State of Wisconsin
- Goodhue County Emergency Management
- Dakota County Emergency Services
- Pierce County Emergency Management
- City of Redwing
- Prairie Island Indian Community
- Mayo Clinic Health System – Red Wing
- Sacred Heart Hospital
- Westinghouse Electric Company
- Environmental, Inc. Midwest Laboratory
- Canadian Pacific Railway

2.0 EMERGENCY RESPONSE ORGANIZATION (ERO)

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

Regulatory References: 10 CFR 50.47(b)(2); 44 CFR 350.5(a)(2);
10 CFR Part 50, Appendix E.IV.A

B.1	The emergency plan specifies how the requirements of 10 CFR 50.47(b)(2) and the applicable sections of Appendix E to 10 CFR Part 50 are met.

B.1.a	The site-specific emergency response organization (ERO) is developed. Note that while other site programs, such as operations, fire response, rescue and first aid, and security, may be controlled via other licensing documents, it is only when these personnel are assigned EP functions that they become part of this regulatory standard. Consideration is given to ensure that EP functions are not assigned to individuals who may have difficulties performing their EP function(s) simultaneously with their other assigned (non-EP) duties. Appendix E to 10 CFR Part 50 requires licensees to perform an on-shift staffing analysis to ensure on-shift staff can support the EP functions assigned, as well as other assigned duties.

The PINGP on-shift staffing analysis has been developed in accordance with 10 CFR 50 Appendix E.IV.A.9 and NEI 10-05.

The PINGP on-shift staffing analysis is documented in EPLAN-09, On-Shift Staffing Analysis Report, and is maintained in the Document Records Management System.

B.5	The external organizations, including contractors, that may be requested to provide technical assistance to and augmentation of the ERO, as applicable, are specified.

2.1 Contractor Support

- Westinghouse will provide technical support upon request.
- Environmental, Inc. Midwest Laboratory will provide laboratory support services for PINGP as needed.

3.0 EMERGENCY CLASSIFICATION SYSTEM

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Regulatory References:10 CFR 50.47(b)(4); 44 CFR 350.5(a)(4);
10 CFR Part 50 Appendix E.IV.B and C

D.1	A standard emergency classification and action level scheme is established and maintained. The scheme provides detailed EALs for each of the four ECLs in Section IV.C.1 of Appendix E to 10 CFR Part 50.

The PINGP EAL scheme is documented in EPLAN-05, Prairie Island Nuclear Generating Plant Emergency Action Levels.

4.0 NOTIFICATION METHODS AND PROCEDURES

Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by organization; the content of initial and follow up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway EPZ have been established.

Regulatory References: 10 CFR 50.47(b)(5); 44 CFR 350.5(a)(5)

E.1	The mutually agreeable process for direct and prompt notification of response organizations, aligned with the emergency classification and action level scheme, is described.
E.1.a	Provisions for notification of response organizations are established, including the means for verification of messages.

The site-specific state and county entities are notified of a declared emergency at PINGP are as follows:

- Minnesota Division of Homeland Security (HSEM)
- State of Wisconsin Emergency Management
- Goodhue County Sheriff
- Dakota County Sheriff
- Pierce County Sheriff
- Prairie Island Indian Community - Treasure Island Security Dispatch

E.2	The alert and notification systems (ANSs) used to alert and notify the general public within the plume exposure pathway EPZ and methods of activation are described. This description includes the administrative and physical means, the time required for notifying and providing prompt instructions to the public within the plume exposure pathway EPZ, and the organizations or titles/positions responsible for activating the system.

PINGP maintains an ANS that provides the administrative and physical means to complete the initial alerting and initiate notification of the public within the plume exposure pathway EPZ within about 15 minutes of the time that State and local officials are notified.

The PINGP ANS system consists of a fixed siren system providing 100% coverage of the populated area within the 10-mile EPZ with primary and backup activation and monitoring of capability; Emergency Alert System (EAS) with primary and backup initiation capability; Integrated Public Alert and Warning System (IPAWS) with primary and backup initiation capability; Wireless Emergency Alert (WEA) System; and county auto-dial notification systems.

Additional ANS capabilities are provided by PINGP at the Prairie Island Indian Community. An EAS Radio Receiver maintained by Xcel Energy is provided at the Prairie Island Indian Community Administrative Building. In addition, the ANS Siren located near the Prairie Island Indian Community Center can be activated from the TSC at a Site Area Emergency (SAE) with a special “stutter tone” for the purpose of quickly notifying Prairie Island’s Indian tribal leaders.

Activation of the ANS begins with a protective action recommendation (PAR) by the PINGP Emergency Director/Manager. The Minnesota Division of Homeland Security and Emergency Management (HSEM) is responsible for coordinating the recommendation and making it a decision with appropriate approvals from Pierce, Goodhue and Dakota Counties and the Wisconsin Emergency Management and assigning siren activation times and EAS activation times. The Dakota, Goodhue and Pierce County Sheriff’s Offices are responsible for activation of the outdoor warning sirens.

Detailed information on the FEMA approved system used to alert and notify the general public is maintained in EPLAN-11, Prairie Island Nuclear Generating Plant ANS Design Report.

5.0 EMERGENCY COMMUNICATIONS

Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

Regulatory References: 10 CFR 50.47(b)(6); 44 CFR 350.5(a)(6).

F.1	Each principal response organization establishes redundant means of communication and addresses the following provisions:
F.1.b	Communication with applicable organizations to include a description of the methods that may be used when contacting each organization.

Provisions exist for communications with applicable onsite and offsite emergency organizations. The available communications systems are illustrated in Table 2, PINGP Communications Matrix.

Table 2 - PINGP Communications Matrix

	Commercial Telephones	Plant/Xcel Energy Phones	Mobile Devices	Plant Page System	NAWAS	ERDS	Facsimile and/or Scan/E-mail	Xcel Radio Network	Auto Ring Direct Dialing Phone	ERO Notification System	Satellite Phones	USNRC - Communications
Control Room	X	X		X		X		X	X	X	X	X
TSC	X	X	X	X	X	X	X	X	X	X	X	X
OSC	X	X	X	X				X			X	
EOF	X	X	X				X	X			X	X
NRC Near Site Facility	X	X										
PINGP Alternative Facility	X	X	X					X		X		X
Monticello NGP	X	X					X					
Plant Areas	X	X		X				X				
Field Monitoring Teams			X					X			X	
PINGP Security	X	X	X	X				X				
Xcel Energy System Dispatcher	X	X						X	X			
PINGP Key Personnel	X		X							X		
MN/HSEM – EOC	X						X	X	X			
MN Duty Officer/State Patrol	X							X			X	
Goodhue Co. Sheriff	X						X	X			X	
Goodhue-Red Wing EOC	X						X	X			X	
Red Wing Police/Fire	X											
Red Wing Hospital	X						X					
PIIC	X						X	X			X	
Dakota Co. Sheriff	X						X	X			X	
Dakota Co. EOC	X						X	X			X	
WI/WEM – EOC	X				X		X					
WI/WEM – Eau Claire	X				X							
Pierce Co. Sheriff	X				X		X	X			X	
Pierce Co. EOC	X				X		X	X				
WI/State Patrol	X				X						X	
USNRC/HQ	X					X	X					X
USNRC/REG III	X											X
USNRC/Resident Insp.	X	X	X	X								
National Weather Service	X											

F.3	The testing method and periodicity for each communication system used for the functions identified in evaluation criteria E.2, F.1, and F.2 are described.

Systems used to communicate with the states of Minnesota and Wisconsin, Goodhue, Dakota and Pierce County, and Prairie Island Indian Community warning points will be tested monthly.

ANS siren silent testing is completed on a weekly frequency, activation testing is completed on a monthly frequency, and Prairie Island Indian Community stutter tone testing is on a monthly frequency in accordance with EPLAN-11, Prairie Island Nuclear Generating Plant ANS Design Report.

6.0 EMERGENCY FACILITIES AND EQUIPMENT

Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

Regulatory References: 10 CFR 50.47(b)(8); 44 CFR 350.5(a)(8)

H.1	A TSC is established, using current Federal guidance, from which NPP conditions are evaluated and mitigative actions are developed.

The Technical Support Center (TSC) is located within the Protected Area across the Turbine Building from Units 1 & 2 Control Room. The facility provides working space for about twenty-five people on the main floor and working space for additional people on the other floor.

The TSC is provided reliable power from offsite sources. In the event of a loss of normal power, critical TSC components will be powered from an uninterruptible power supply (UPS) and a generator with automatic transfer capability.

The TSC has been designed to have the similar habitability as the MCR. The TSC structure provides shielding for TSC personnel. The TSC ventilation system provides filtered and temperature controlled air to the TSC. The ventilation system design maintains a slight positive pressure in the TSC with filtration provided by HEPA filters and charcoal absorbers. Radiological monitoring of the TSC is provided by an airborne and an area radiation monitor.

If the TSC becomes uninhabitable, responders will report to the Alternative facility described in Section H.4.

H.2	An OSC is established, using current Federal guidance, from which repair team activities are planned and teams are dispatched to implement actions.

The Operational Support Center (OSC) is located in the New Administration Building and is provided with the necessary equipment and communications links to support OSC emergency response actions.

If determined to be uninhabitable, the OSC will be moved to the Alternative Facility described in H.4 or to another location as deemed appropriate by the OSC Manager.

H.3	An EOF is established, using current Federal guidance, as the primary base of emergency operations for the licensee during a radiological incident. The EOF facilitates the management and coordination of the overall emergency response, including the sharing of information with Federal, state, local, and tribal government authorities.
H.3.a	For an EOF that is located more than 25 miles away from the NPP site, provisions are made for locating NRC and offsite responders closer to the NPP site.

The PINGP Training Center has been designated for use as a near site location for the NRC and other off-site agency staff.

H.4	An alternative facility (or facilities) is established, using currently provided and/or endorsed guidance, which would be accessible even if the NPP site is under threat of or experiencing hostile action.

The Red Wing Service Center (RWSC) has been designated as the Alternative Facility.

H.8	Provisions are made to acquire data from offsite monitoring and analysis equipment, including data on geophysical phenomena (e.g., meteorological, hydrologic, and seismic monitors) and radiological data (e.g., from FMTs, environmental dosimeters, and laboratory analyses).

6.1 Laboratory Facilities

PINGP environmental sampling is performed in accordance with the PINGP ODCM and Technical Specifications.

Additional offsite laboratory services are available through an LOA established with Environmental, Inc. Midwest Laboratory.

7.0 ACCIDENT ASSESSMENT

Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Regulatory References: 10 CFR 50.47(b)(9); 44 CFR 350.5(a)(9)

I.4.a	The contingency arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere and sump, and spent fuel pool storage area are described

A post-accident sampling system (PASS) is installed at Prairie Island with associated procedures to provide the capability to obtain and analyze highly radioactive RCS liquid samples and containment atmosphere samples. The PASS incorporates exposure reduction capabilities to include a shielded sample panel, shielded sample lines and drains, shielded sample carriers, shielded work area with filtered exhaust hood, remote analysis lab, and remote counting labs with geometries for counting extremely high-level radioactivity samples.

8.0 PROTECTIVE RESPONSE

A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. ETEs have been developed by applicants and licensees. Licensees shall update the ETEs on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

Regulatory References: 10 CFR 50.47(b)(10); 44 CFR 350.5(a)(10)

J.2	Provisions are made and coordinated with appropriate offsite entities for evacuation routes and transportation for onsite individuals to a suitable offsite location. Selection of location considers the potential for inclement weather, high traffic density, and potential radiological conditions. Alternate location(s) and route(s) are identified.

Evacuation of onsite personnel to a suitable offsite location is accomplished using Xcel Energy vehicles and/or personal vehicles and is coordinated with the OROs. Primary and alternate routes have been established and are maintained in implementing procedures.

J.6	The basis and methodology are established for the development of PARs for the responsible OROs, including evacuation, sheltering, and, if appropriate, radioprotective drug use, for the plume exposure pathway EPZ.

PINGP, in coordination with impacted OROs, has developed site specific precautionary measures for specific EPZ populations that may result in precautionary Protective Action Recommendations prior to reaching a General Emergency.

Precautionary measures may be warranted for the near site Treasure Island Casino and/or residents within a 2 mile radius under the following conditions:

- At an Alert or SAE declared for an HAB event, PINGP will make a recommendation that the Casino staff, Patrons, and residents within a 2- mile radius to stay indoors and continue to monitor radio/tv broadcasts for further information.

- At an SAE declared based on radiological effluents, PINGP will make a recommendation for Casino Shutdown and Dismissal of Staff and Patrons.

At an SAE, where the station will not deescalate in less than 2 hours and there is a potential for escalating to a General Emergency, PINGP will make a recommendation to implement a precautionary relocation of the population within a 10-mile radius of the plant for areas of restricted egress due to flooding.

J.8	The latest ETEs are:
J.8.a	Incorporated either by reference or in their entirety into the emergency plan.

The PINGP ETE Report is documented in EPLAN-09, Prairie Island Nuclear Generating Plant Evacuation Time Estimates.

J.10	Plans include maps, charts, or other information that demonstrate the following for the plume exposure pathway EPZ:
J.10.a	Evacuation routes, evacuation areas, reception centers in host areas, and shelter areas.

Maps and other information showing site-specific evacuation routes, evacuation areas, reception centers in host areas, and shelter areas are contained in EPLAN-09, Prairie Island Nuclear Generating Plant Evacuation Time Estimates.

J.10.b	Population distribution around the NPP site by evacuation areas.

Maps and other information showing population distribution around PINGP, by evacuation area, are contained in EPLAN-09, Prairie Island Nuclear Generating Plant Evacuation Time Estimates.

9.0 MEDICAL AND PUBLIC HEALTH SUPPORT

Arrangements are made for medical services for contaminated injured individuals.

Regulatory Reference: 10 CFR 50.47(b)(12); 44 CFR 350.5(a)(12)

L.2	Arrangements for the medical treatment of contaminated, injured onsite personnel and those onsite personnel who have received significant radiation exposures and/or significant uptakes of radioactive material are described. These arrangements include the following components:
L.2.b	Primary and backup offsite medical facilities.

The primary and backup offsite medical facilities to treat contaminated, injured personnel from PINGP are:

Primary - Mayo Clinic Health System located in Red Wing, Minnesota

Backup – Regions Hospital in St. Paul, Minnesota

L.4	Each organization arranges for the transportation of contaminated, injured individuals and the means to control contamination while transporting victims of radiological incidents to medical support facilities and the decontamination of transport vehicle following use.

Arrangements for the transportation of radiologically contaminated casualties have been made with Red Wing Ambulance Service in Red Wing, Minnesota.

10.0 EXERCISES AND DRILLS

Periodic exercises are conducted to evaluate major portions of emergency response capabilities, periodic drills are conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are corrected.

Regulatory References: 10 CFR 50.47(b)(14); 44 CFR 350.5(a)(14).

N.4.g	Post-Accident Sampling Drills. Post-accident sampling drills are conducted annually. These drills address capabilities including analysis of liquid and containment atmosphere samples with simulated elevated radiation levels. This criterion is not applicable if the NPP unit(s) does (do) not have licensing basis requirements for post-accident sampling.

Post-accident sampling drills are conducted annually. These drills address capabilities including analysis of liquid and containment atmosphere samples with simulated elevated radiation levels.

11.0 RESPONSIBILITY FOR THE PLANNING EFFORT: DEVELOPMENT, PERIODIC REVIEW AND DISTRIBUTION OF EMERGENCY PLANS

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Regulatory References: 10 CFR 50.47(b)(16); 44 CFR 350.5(a)(16)

P.6	A listing of annexes, appendices, and supporting plans and their originating agency is included in the emergency plan.

External emergency plans specific to the support of PINGP include the following:

- Goodhue County/Red Wing City Emergency Response Plan for the Prairie Island Nuclear Generating Plant
- Dakota County Emergency Response Plan for the Prairie Island Nuclear Generating Plant
- Pierce County Emergency Response Plan for the Prairie Island Nuclear Generating Plant
- Prairie Island Indian Community Emergency Response Plan for the Prairie Island Nuclear Generating Plant

P.7	An appendix containing a listing by title of the procedures required to maintain and implement the emergency plan is included. The listing includes the section(s) of the emergency plan to be implemented by each procedure.

The Standard Emergency Plan (SEP), Appendix C contains a listing of the PINGP implementing/administrative procedures required to maintain and implement the emergency plan, and the section(s) of the emergency plan implemented by each procedure.

12.0 REFERENCE DOCUMENTS

12.1 SOURCE DOCUMENTS

12.1.1 10 CFR 50, Appendix E; Emergency Planning and Preparedness for Production and Utilization Facilities

12.1.2 10 CFR 50.47; Emergency Plans

12.1.3 NUREG-0654/FEMA-REP-1, REV. 2; Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

12.2 REFERENCE DOCUMENTS

12.2.1 None

12.3 COMMITMENTS

None

Xcel Energy	EPLAN-05	Revision: 0
Nuclear Licensing Document		Page 1 of 171
Title: **Prairie Island Emergency Action Level (EAL) Technical Basis Document**		
Approval: **602000030750**		

Table of Contents

1.0 REGULATORY BACKGROUND

1.1 OPERATING REACTORS

Title 10, Code of Federal Regulations (CFR), Energy, contains the U.S. Nuclear Regulatory Commission (NRC) regulations that apply to nuclear power facilities. Several of these regulations govern various aspects of an emergency classification scheme. A review of the relevant sections listed below will aid the reader in understanding the key terminology provided in Section 3.0 of this document.

- 10 CFR § 50.47(a)(1)(i)
- 10 CFR § 50.47(b)(4)
- 10 CFR § 50.54(q)
- 10 CFR § 50.72(a)
- 10 CFR § 50, Appendix E, IV.B, Assessment Actions
- 10 CFR § 50, Appendix E, IV.C, Activation of Emergency Organization

The above regulations are supplemented by various regulatory guidance documents. Three documents of particular relevance to NEI 99-01 are:

- NUREG-0654/FEMA-REP-1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, October 1980. [Refer to Appendix 1, Emergency Action Level Guidelines for Nuclear Power Plants]
- NUREG-1022, Event Reporting Guidelines 10 CFR § 50.72 and § 50.73
- Regulatory Guide 1.101, Emergency Response Planning and Preparedness for Nuclear Power Reactors

1.2 INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)

Selected guidance in NEI 99-01 is applicable to Prairie Island Nuclear Generating Plant’s (PINGP) emergency plan and fulfills the requirements of 10 CFR 72.32 for a stand-alone ISFSI. The emergency classification levels applicable to an ISFSI are consistent with the requirements of 10 CFR § 50 and the guidance in NUREG 0654/FEMA-REP-1. The initiating conditions germane to a 10 CFR § 72.32 emergency plan (as described in NUREG-1567) are subsumed within the classification scheme for a 10 CFR § 50.47 emergency plan.

The PINGP ICs and EALs for an ISFSI are presented in Section 8.0, ISFSI ICs/EALs. IC EU1 covers the spectrum of credible natural and man-made events included within the scope of the ISFSI design. In addition, appropriate aspects of IC HU1 and IC HA1 should also be included to address a HOSTILE ACTION directed against the ISFSI.

The analysis of potential onsite and offsite consequences of accidental releases associated with the operation of an ISFSI is contained in NUREG-1140, A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees. NUREG-1140 concluded that the postulated worst-case accident involving an ISFSI has insignificant consequences to public health and safety. This evaluation shows that the maximum offsite dose to a member of the public due to an accidental release of radioactive materials would not exceed 1 rem Effective Dose Equivalent.

Regarding the above information, the expectations for an offsite response to an Alert classified under a 10 CFR § 72.32 emergency plan are generally consistent with those for a Notification of Unusual Event in a 10 CFR § 50.47 emergency plan (e.g., to provide assistance if requested). Also, the licensee's Emergency Response Organization (ERO) required for 10 CFR § 72.32 emergency plan is different than that prescribed for a 10 CFR § 50.47 emergency plan (e.g., no emergency technical support function).

1.3 NRC ORDER EA-12-051

The Fukushima Daiichi accident of March 11, 2011, was the result of a tsunami that exceeded the plant's design basis and flooded the site's emergency electrical power supplies and distribution systems. This caused an extended loss of power that severely compromised the key safety functions of core cooling and containment integrity, and ultimately led to core damage in three reactors. While the loss of power also impaired the spent fuel pool cooling function, sufficient water inventory was maintained in the pools to preclude fuel damage from the loss of cooling.

Following a review of the Fukushima Daiichi accident, the NRC concluded that several measures were necessary to ensure adequate protection of public health and safety under the provisions of the backfit rule, 10 CFR 50.109(a)(4)(ii). Among them was to provide each spent fuel pool with reliable level instrumentation to significantly enhance the ability of key decision-makers to allocate resources effectively following a beyond design basis event. To this end, the NRC issued Order EA-12-051, Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, on March 12, 2012, to all US nuclear plants with an operating license, construction permit, or combined construction and operating license.

NRC Order EA-12-051 states, in part, "All licensees … shall have a reliable indication of the water level in associated spent fuel storage pools capable of supporting identification of the following pool water level conditions by trained personnel: (1) level that is adequate to support operation of the normal fuel pool cooling system, (2) level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck, and (3) level where fuel remains covered and actions to implement make-up water addition should no longer be deferred." To this end, all licensees must provide:

- A primary and back-up level instrument that will monitor water level from the normal level to the top of the used fuel rack in the pool;
- A display in an area accessible following a severe event; and
- Independent electrical power to each instrument channel and provide an alternate remote power connection capability.

NEI 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation", provides guidance for complying with NRC Order EA-12-051.

This document includes three EALs that reflect the availability of the enhanced spent fuel pool level instrumentation associated with NRC Order EA-12-051. These EALs are included within existing IC RA2, and new ICs RS2 and RG2. Associated EAL notes and bases are also provided.

2.0 PINGP TERMINOLOGY USED IN NEI 99-01

There are several key terms that appear throughout the emergency classification methodology for PINGP. These terms are introduced in this section to support understanding of subsequent material. As an aid to the reader, the following table is provided as an overview to illustrate the relationship of the terms to each other.

<table>
<tr><td colspan="4">Emergency Classification Level</td></tr>
<tr><td>GE</td><td>SAE</td><td>Alert</td><td>Unusual Event</td></tr>
<tr><td>↓</td><td>↓</td><td>↓</td><td>↓</td></tr>
<tr><td>Initiating Condition</td><td>Initiating Condition</td><td>Initiating Condition</td><td>Initiating Condition</td></tr>
<tr><td>↓</td><td>↓</td><td>↓</td><td>↓</td></tr>
<tr><td>Emergency Action Level (1)
• Operating Mode Applicability
• Notes
• Basis</td><td>Emergency Action Level (1)
• Operating Mode Applicability
• Notes
• Basis</td><td>Emergency Action Level (1)
• Operating Mode Applicability
• Notes
• Basis</td><td>Emergency Action Level (1)
• Operating Mode Applicability
• Notes
• Basis</td></tr>
<tr><td colspan="4">(1) - When making an emergency classification, the Emergency Director must consider all information having a bearing on the proper assessment of an Initiating Condition. This includes the Emergency Action Level (EAL) plus the associated Operating Mode Applicability, Notes and the informing Basis information. In the Recognition Category F matrices, EALs are referred to as Fission Product Barrier Thresholds; the thresholds serve the same function as an EAL.</td></tr>
</table>

2.1 EMERGENCY CLASSIFICATION LEVEL (ECL)

One of a set of names or titles established by the US Nuclear Regulatory Commission (NRC) for grouping off-normal events or conditions according to (1) potential or actual effects or consequences, and (2) resulting onsite and offsite response actions. The emergency classification levels, in ascending order of severity, are:

- Notification of Unusual Event (NUE)
- Alert
- Site Area Emergency (SAE)
- General Emergency (GE)

2.1.1 Notification of Unusual Event (NUE)

Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Purpose: The purpose of this classification is to assure that the first step in future response has been carried out, to bring the operations staff to a state of readiness, and to provide systematic handling of unusual event information and decision-making.

2.1.2 Alert

Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA PAG exposure levels.

Purpose: The purpose of this classification is to assure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring if required, and provide offsite authorities current information on plant status and parameters.

2.1.3 Site Area Emergency (SAE)

Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

Purpose: The purpose of the Site Area Emergency declaration is to assure that emergency response centers are staffed, to assure that monitoring teams are dispatched, to assure that personnel required for evacuation of near-site areas are at duty stations if the situation becomes more serious, to provide consultation with offsite authorities, and to provide updates to the public through government authorities.

2.1.4 General Emergency (GE)

Events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Purpose: The purpose of the General Emergency declaration is to initiate predetermined protective actions for the public, to provide continuous assessment of information from the licensee and offsite organizational measurements, to initiate additional measures as indicated by actual or potential releases, to provide consultation with offsite authorities, and to provide updates for the public through government authorities.

2.2 INITIATING CONDITION (IC)

An event or condition that aligns with the definition of one of the four emergency classification levels by virtue of the potential or actual effects or consequences.

Discussion: An IC describes an event or condition, the severity or consequences of which meets the definition of an emergency classification level. An IC can be expressed as a continuous, measurable parameter (e.g., RCS leakage), an event (e.g., an earthquake) or the status of one or more fission product barriers (e.g., loss of the RCS barrier).

Appendix 1 of NUREG-0654 does not contain example Emergency Action Levels (EALs) for each ECL, but rather Initiating Conditions (i.e., plant conditions that indicate that a radiological emergency, or events that could lead to a radiological emergency, has occurred). NUREG-0654 states that the Initiating Conditions form the basis for establishment by a licensee of the specific plant instrumentation readings (as applicable) which, if exceeded, would initiate the emergency classification. Thus, it is the specific instrument readings that would be the EALs.

Considerations for the assignment of a particular Initiating Condition to an emergency classification level are discussed in Section 3.0.

2.3 EMERGENCY ACTION LEVEL (EAL)

A pre-determined, site-specific, observable threshold for an Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.

Discussion: EAL statements may utilize a variety of criteria including instrument readings and status indications; observable events; results of calculations and analyses; entry into particular procedures; and the occurrence of natural phenomena.

2.4 FISSION PRODUCT BARRIER THRESHOLD

A pre-determined, site-specific, observable threshold indicating the loss or potential loss of a fission product barrier.

Discussion: Fission product barrier thresholds represent threats to the defense in depth design concept that precludes the release of radioactive fission products to the environment. This concept relies on multiple physical barriers, any one of which, if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. The primary fission product barriers are:

- Fuel Clad
- Reactor Coolant System (RCS)
- Containment

Upon determination that one or more fission product barrier thresholds have been exceeded, the combination of barrier loss and/or potential loss thresholds is compared to the fission product barrier IC/EAL criteria to determine the appropriate ECL.

In some accident sequences, the ICs and EALs presented in the Abnormal Radiation Levels/ Radiological Effluent (R) Recognition Category will be exceeded at the same time, or shortly after, the loss of one or more fission product barriers. This redundancy is intentional as the former ICs address radioactivity releases that result in certain offsite doses from whatever cause, including events that might not be fully encompassed by fission product barriers (e.g., spent fuel pool accidents, design containment leakage following a LOCA, etc.).

3.0 DESIGN OF THE NEI 99-01 EMERGENCY CLASSIFICATION SCHEME ADOPTED BY PINGP

3.1 ASSIGNMENT OF EMERGENCY CLASSIFICATION LEVELS (ECLS)

An effective emergency classification scheme must incorporate a realistic and accurate assessment of risk, both to plant workers and the public. There are obvious health and safety risks in underestimating the potential or actual threat from an event or condition; however, there are also risks in overestimating the threat as well (e.g., harm that may occur during an evacuation). The NEI 99-01 emergency classification scheme attempts to strike an appropriate balance between reasonably anticipated event or condition consequences, potential accident trajectories, and risk avoidance or minimization. NSPM has adopted the NEI 99-01 scheme, adding site-specific information as appropriate. This section discusses the background for development of the NEI 99-01 scheme and adds PINGP specific details where appropriate.

There are a range of “non-emergency events” reported to the US Nuclear Regulatory Commission (NRC) staff in accordance with the requirements of 10 CFR § 50.72. Guidance concerning these reporting requirements, and example events, are provided in NUREG-1022. Certain events reportable under the provisions of 10 CFR § 50.72 may also require the declaration of an emergency.

In order to align each Initiating Conditions (IC) with the appropriate ECL, it was necessary to determine the attributes of each ECL. The goal of this process is to answer the question, “What events or conditions should be placed under each ECL?” The following sources provided information and context for the development of ECL attributes.

- Assessments of the effects and consequences of different types of events and conditions

- Typical abnormal and emergency operating procedure setpoints and transition criteria

- Typical Technical Specification limits and controls
- Radiological Effluent Technical Specifications (RETS)/Offsite Dose Calculation Manual (ODCM) radiological release limits
- Review of selected Updated Final Safety Analysis Report (UFSAR) accident analyses
- Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs)
- NUREG 0654, Appendix 1, Emergency Action Level Guidelines for Nuclear Power Plants
- Industry Operating Experience
- Input from industry subject matter experts and NRC staff members

The following ECL attributes were created to aid in the development of ICs and Emergency Action Levels (EALs). These attributes may be useful in briefing and training settings (e.g., helping an Emergency Director understand why a particular condition is classified as an Alert).

The attributes of each ECL are presented below.

3.1.1 NOTIFICATION OF UNUSUAL EVENT (NUE)

A Notification of Unusual Event, as defined in Section 2.1.1, includes but is not limited to an event or condition that involves:

1. A precursor to a more significant event or condition.
2. A minor loss of control of radioactive materials or the ability to control radiation levels within the plant.
3. A consequence otherwise significant enough to warrant notification to local, State and Federal authorities.

3.1.2 ALERT

An Alert, as defined in Section 2.1.2, includes but is not limited to an event or condition that involves:

1. A loss or potential loss of either the fuel clad or Reactor Coolant System (RCS) fission product barrier.
2. An event or condition that significantly reduces the margin to a loss or potential loss of the fuel clad or RCS fission product barrier.
3. A significant loss of control of radioactive materials resulting in an inability to control radiation levels within the plant, or a release of radioactive materials to the environment that could result in doses greater than 1% of an EPA PAG at or beyond the site boundary.
4. A HOSTILE ACTION occurring within the OWNER CONTROLLED AREA, including those directed at an Independent Spent Fuel Storage Installation (ISFSI).

3.1.3 SITE AREA EMERGENCY (SAE)

A Site Area Emergency, as defined in Section 2.1.3, includes but is not limited to an event or condition that involves:

1. A loss or potential loss of any two fission product barriers - fuel clad, RCS and/or containment.
2. A precursor event or condition that may lead to the loss or potential loss of multiple fission product barriers within a relatively short period of time. Precursor events and conditions of this type include those that challenge the monitoring and/or control of multiple safety systems.
3. A release of radioactive materials to the environment that could result in doses greater than 10% of an EPA PAG at or beyond the site boundary.
4. A HOSTILE ACTION occurring within the plant PROTECTED AREA.

3.1.4 GENERAL EMERGENCY (GE)

A General Emergency, as defined in Section 2.1.4, includes but is not limited to an event or condition that involves:

1. Loss of any two fission product barriers AND loss or potential loss of the third barrier - fuel clad, RCS and/or containment.

2. A precursor event or condition that, unmitigated, may lead to a loss of all three fission product barriers. Precursor events and conditions of this type include those that lead directly to core damage and loss of containment integrity.

3. A release of radioactive materials to the environment that could result in doses greater than an EPA PAG at or beyond the site boundary.

4. A HOSTILE ACTION resulting in the loss of key safety functions (reactivity control, core cooling/RPV water level or RCS heat removal) or damage to spent fuel.

3.1.5 RISK-INFORMED INSIGHTS

Emergency preparedness is a defense-in-depth measure that is independent of the assessed risk from any particular accident sequence; however, the development of an effective emergency classification scheme can benefit from a review of risk-based assessment results. To that end, the development and assignment of certain ICs and EALs also considered insights from several site-specific probabilistic safety assessments (PSA - also known as probabilistic risk assessment, PRA). Some generic insights from this review included:

1. Accident sequences involving a prolonged loss of all AC power are significant contributors to core damage frequency. For this reason, a loss of all AC power for greater than 15 minutes, with the plant at or above Hot Shutdown, was assigned an ECL of Site Area Emergency. Precursor events to a loss of all AC power were also included as an Unusual Event and an Alert.

   A station blackout coping analyses performed in response to 10 CFR § 50.63 and Regulatory Guide 1.155, Station Blackout, may be used to determine a time-based criterion to demarcate between a Site Area Emergency and a General Emergency. The time dimension is critical to a properly anticipatory emergency declaration since the goal is to maximize the time available for State and local officials to develop and implement offsite protective actions. For PINGP, the coping analysis determined that PINGP is a four (4) hour coping plant. This provides the basis for the time-based demarcation criterion between a Site Area Emergency and a General Emergency for PINGP.

2. For severe core damage events, uncertainties exist in phenomena important to accident progressions leading to containment failure. Because of these uncertainties, predicting the status of containment integrity may be difficult under severe accident conditions. This is why maintaining containment integrity alone following sequences leading to severe core damage is an insufficient basis for not escalating to a General Emergency.

3. PSAs indicated that leading contributors to latent fatalities were sequences involving a containment bypass, a large Loss of Coolant Accident (LOCA) with early containment failure, a Station Blackout lasting longer than the site-specific coping period, and a reactor coolant pump seal failure. The generic EAL methodology needs to be sufficiently rigorous to address these sequences in a timely fashion.

3.2 TYPES OF INITIATING CONDITIONS AND EMERGENCY ACTION LEVELS

The NEI 99-01 methodology adopted by PINGP makes use of symptom-based, barrier-based and event-based ICs and EALs. Each type is discussed below.

Symptom-based ICs and EALs are parameters or conditions that are measurable over some range using plant instrumentation (e.g., core temperature, reactor coolant level, radiological effluent, etc.). When one or more of these parameters or conditions are off-normal, reactor operators will implement procedures to identify the probable cause(s) and take corrective action.

Fission product barrier-based ICs and EALs are the subset of symptom-based EALs that refer specifically to the level of challenge to the principal barriers against the release of radioactive material from the reactor core to the environment. These barriers are the fuel cladding, the reactor coolant system pressure boundary, and the containment. The barrier-based ICs and EALs consider the level of challenge to each individual barrier - potentially lost and lost - and the total number of barriers under challenge.

Event-based ICs and EALs define a variety of specific occurrences that have potential or actual safety significance. These include the failure of an automatic reactor scram/trip to shut down the reactor, natural phenomena (e.g., an earthquake), or man-made hazards such as a toxic gas release.

3.3 PINGP SPECIFIC DESIGN CONSIDERATIONS

PINGP, Units 1 and 2, each use a 2-loop pressurized water reactor (PWR). Westinghouse Electric Corporation designed and supplied the nuclear steam supply system (NSSS), the initial reactor fuel, and the turbines in both Unit 1 and Unit 2. ICs and EAL thresholds for a PWR NSSS have been appropriately incorporated into the PINGP emergency classification scheme.

The NSSS for each unit consists of a pressurized water reactor, Reactor Coolant System (RCS), and associated auxiliary fluid systems. The RCS is arranged as two closed reactor coolant loops connected in parallel to the reactor vessel, each containing a reactor coolant pump and a steam generator. An electrically heated pressurizer is connected to one of the loops.

Auxiliary systems are provided to charge the RCS and to add makeup water, purify reactor coolant water, provide chemicals for corrosion inhibition and reactor control, cool system components, remove residual heat when the reactor is shutdown, cool the spent fuel storage pool, sample reactor coolant water, provide for emergency safety injection, and vent and drain the RCS.

The reactor containment for each unit consists a cylindrical steel shell with a hemispherical dome and ellipsoidal bottom designed to withstand the internal pressure accompanying a loss-of-coolant accident. Each containment vessel is surrounded by a cylindrical shield building constructed of reinforced concrete which serves as a radiation shielding for normal operation and for the loss-of-coolant condition. In addition, the shield building acts as a secondary containment structure for control of containment leakage.

3.4 ORGANIZATION AND PRESENTATION OF GENERIC INFORMATION

The scheme's generic information is organized by Recognition Category in the following order.

- R - Abnormal Radiation Levels / Radiological Effluent – Section 6
- C - Cold Shutdown / Refueling System Malfunction – Section 7
- E - Independent Spent Fuel Storage Installation (ISFSI) – Section 8
- F - Fission Product Barrier – Section 9
- H - Hazards and Other Conditions Affecting Plant Safety – Section 10
- S - System Malfunction – Section 11

Each Recognition Category section contains a matrix showing the ICs and their associated emergency classification levels.

The following information and guidance is provided for each IC:

- **ECL** – the assigned emergency classification level for the IC.
- **Initiating Condition** – provides a summary description of the emergency event or condition.
- **Operating Mode Applicability** – Lists the modes during which the IC and associated EAL(s) are applicable (i.e., are to be used to classify events or conditions).
- **Emergency Action Level(s)** – Provides reports and indications that are considered to meet the intent of the IC.

For Recognition Category F, the fission product barrier thresholds are presented in a table applicable to PINGP, and arranged by fission product barrier and the degree of barrier challenge (i.e., potential loss or loss). This presentation method shows the synergism among the thresholds, and supports accurate assessments.

- **Basis** – Provides background information that explains the intent and application of the IC and EALs. In some cases, the basis also includes relevant source information and references.

3.5 IC AND EAL MODE APPLICABILITY

The NEI 99-01 emergency classification scheme adopted by PINGP was developed recognizing that the applicability of ICs and EALs will vary with plant mode. For example, some symptom-based ICs and EALs can be assessed only during the power operations, startup, or hot standby/shutdown modes of operation when all fission product barriers are in place, and plant instrumentation and safety systems are fully operational. In the cold shutdown and refueling modes, different symptom-based ICs and EALs will come into play to reflect the opening of systems for routine maintenance, the unavailability of some safety system components and the use of alternate instrumentation.

The following table shows which Recognition Categories are applicable in each plant mode. The ICs and EALs for a given Recognition Category are applicable in the indicated modes.

MODE APPLICABILITY MATRIX FOR PINGP

	Category					
Mode	**R**	**C**	**E**	**F**	**H**	**S**
Power Operations	X		X	X	X	X
Startup	X		X	X	X	X
Hot Standby	X		X	X	X	X
Hot Shutdown	X		X	X	X	X
Cold Shutdown	X	X	X		X	
Refueling	X	X	X		X	
Defueled	X	X	X		X	

PINGP Operating Modes

Mode	Title	Reactivity Condition (k_{eff})	% Rated Thermal Power[(a)]	Average Reactor Coolant Temperature (˚F)
1	Power Operation	≥ 0.99	> 5	NA
2	Startup	≥ 0.99	≤ 5	NA
3	Hot Standby	< 0.99	NA	≥ 350
4	Hot Shutdown[(b)]	< 0.99	NA	350 > Tavg > 200
5	Cold Shutdown[(b)]	< 0.99	NA	≤ 200
6	Refueling[(c)]	NA	NA	NA

Defueled (None): All fuel removed from the reactor vessel (i.e., full core offload during refueling or extended outage)

(a) Excluding decay heat.

(b) All reactor vessel head closure bolts fully tensioned.

(c) One or more reactor vessel head closure bolts less than fully tensioned.

4.0 PINGP SCHEME DEVELOPMENT GUIDANCE

4.1 GENERAL IMPLEMENTATION GUIDANCE

PINGP ICs and EALs were developed to be unambiguous and readily assessable.

The IC is the fundamental event or condition requiring a declaration. The EAL(s) is the pre-determined threshold that defines when the IC is met. To this end, the PINGP ICs and EALs were developed with input from key stakeholders such as Operations, Training, Radiation Protection, Chemistry, and Engineering. PINGP specific indications, parameters, and values are consistent with licensing basis documents, plant procedures, training, calculations, and drawings.

Useful acronyms and abbreviations associated with the PINGP emergency classification scheme are presented in Appendix A, Acronyms and Abbreviations. Those specific to PINGP were included to be consistent with site terminology, site procedures, and training.

Many words or terms used in the PINGP emergency classification scheme have scheme-specific definitions. These words and terms are identified by being set in all capital letters (i.e., ALL CAPS). The definitions are presented in Appendix B, Definitions.

4.2 CRITICAL CHARACTERISTICS

When crafting the scheme, PINGP ensured that certain critical characteristics have been met. These critical characteristics are listed below.

- The ICs, EALs, Operating Mode Applicability criteria, Notes and Basis information are consistent with industry guidance; while the actual wording may be different from NEI 99-01 Revision 6, the classification intent is maintained. With respect to Recognition Category F, the PINGP scheme includes a user-aid to facilitate timely and accurate classification of fission product barrier losses and/or potential losses. The user-aid logic is consistent with the classification logic presented in Section 9.0.

- The ICs, EALs, Operating Mode Applicability criteria, Notes and Basis information are technically complete and accurate (i.e., they contain the information necessary to make a correct classification).

- EAL statements use objective criteria and observable values.

- ICs, EALs, Operating Mode Applicability and Note statements and formatting consider human factors and are user-friendly.
- The scheme facilitates upgrading of the emergency classification where necessary.
- The scheme facilitates classification of multiple concurrent events or conditions.

4.3 INSTRUMENTATION USED FOR EALS

PINGP EAL thresholds utilize instrumentation that is reliable and routinely maintained in accordance with site programs and procedures. Alarms referenced in EAL statements are those that are the most operationally significant for the described event or condition.

PINGP personnel have ensured that specified values used as EAL setpoints are within the calibrated range of the referenced instrumentation, and consider any automatic instrumentation functions that may impact accurate EAL assessment. In addition, EAL setpoint values do not use terms such as “off-scale low” or “off-scale high” since that type of reading may not be readily differentiated from an instrument failure. If instrumentation failures occur that have EALs associated with them (e.g., process radiation monitors) compensatory means of implementation may be used as described in plant procedures.

4.4 PRESENTATION OF SCHEME INFORMATION TO USERS

The US Nuclear Regulatory Commission (NRC) expects licensees to establish and maintain the capability to assess, classify and declare an emergency condition promptly within 15 minutes after the availability of indications to plant operators that an emergency action level has been, or may be, exceeded. The PINGP emergency classification procedure and user aid (Emergency Action Level Matrix) have been developed to facilitate accurate and timely classification. To this end, the following points have been considered.

- The first users of an emergency classification procedure are the operators in the Control Room. During the allowable classification time period, they may have responsibility to perform other critical tasks, and will likely have minimal assistance in making a classification assessment.

- As an emergency situation evolves, members of the Control Room staff are likely to be the first personnel to notice a change in plant conditions. They can assess the changed conditions and, when warranted, recommend a different emergency classification level to the Technical Support Center (TSC) and/or Emergency Operations Facility (EOF).

- Emergency Directors in the TSC and/or EOF will have more opportunity to focus on making an emergency classification, and will probably have advisors from Operations available to help them.

The PINGP emergency classification scheme information for end users is presented in a manner with which licensed operators are most comfortable. Input from the Operations and Operations Training Departments has been used to assist in the development of readily usable and easily understood classification tools (e.g., a procedure and wallboard).

The PINGP Emergency Action Level Matrix contains all the information necessary to make a correct emergency classification. PINGP Emergency Action Level Matrix information includes the ICs, Operating Mode Applicability criteria, EALs and Notes. Notes are adequately captured on the Emergency Action Level Matrix and pointed to by each applicable EAL. Basis information is not included on the PINGP Emergency Action Level Matrix but it is readily available to emergency classification decision-makers.

PINGP has developed two matrices - one for use during power operations, startup and hot conditions, and another for cold shutdown and refueling conditions.

4.5 INTEGRATION OF ICS/EALS WITH PLANT PROCEDURES

A rigorous integration of IC and EAL references into plant operating procedures is not recommended. This approach would greatly increase the administrative controls and workload for maintaining procedures. On the other hand, performance challenges may occur if recognition of meeting an IC or EAL is based solely on the memory of a licensed operator or an Emergency Director, especially during periods of high stress.

Visual cues (e.g., a step, note, caution, etc.) are included in plant procedures (including emergency operating procedures, abnormal operating procedures, alarm response procedures and/or normal operating procedures), as appropriate, alerting the reader/user to consult the site emergency classification procedure.

4.6 BASIS DOCUMENT

A basis document is an integral part of an emergency classification scheme. The material in this document supports proper emergency classification decision-making by providing informing background and development information in a readily accessible format. It can be referred to in training situations and when making an actual emergency classification, if necessary. The document is also useful for establishing configuration management controls for EP-related equipment and explaining an emergency classification to offsite authorities. The content of the PINGP basis document includes, at a minimum, the following:

- A PINGP Mode Applicability Matrix and description of operating modes (Section 3.5).
- A discussion of the emergency classification and declaration process (Section 5.0).
- Each Initiating Condition along with the associated EALs or fission product barrier thresholds, Operating Mode Applicability, Notes and Basis information.
- A listing of acronyms and defined terms, similar to that presented in Appendices A and B, respectively. This material may be edited as needed to align with site-specific characteristics.

The PINGP Basis section does not contain information that could modify the meaning or intent of the associated IC or EAL. Information in the Basis is used only to clarify and inform decision-making for an emergency classification.

Basis information is readily available to be referenced, if necessary, by the Emergency Director. A copy of the PINGP basis document is maintained in the appropriate emergency response facilities.

Because the information in a basis document can affect emergency classification decision-making (e.g., the Emergency Director refers to it during an event), changes to the PINGP basis document will be evaluated in accordance with the provisions of 10 CFR 50.54(q).

4.7 EAL/THRESHOLD REFERENCES TO PINGP AOP AND EOP SETPOINTS/CRITERIA

The criteria/values used in several EALs and fission product barrier thresholds were derived from PINGP's AOPs and EOPs. This approach is intended to maintain good alignment between operational diagnoses and emergency classification assessments. PINGP has appropriate administrative controls in place to ensure that a subsequent change to an AOP or EOP is screened to determine if an evaluation pursuant to 10 CFR 50.54(q) is required.

5.0 GUIDANCE ON MAKING EMERGENCY CLASSIFICATIONS

5.1 GENERAL CONSIDERATIONS

When making an emergency classification, the Emergency Director must consider all information having a bearing on the proper assessment of an Initiating Condition (IC). This includes the Emergency Action Level (EAL) plus the associated Operating Mode Applicability, Notes and the informing Basis information. In the Recognition Category F matrices, EALs are referred to as Fission Product Barrier Thresholds; the thresholds serve the same function as an EAL.

NRC regulations require the licensee to establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and to promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. The NRC staff has provided guidance on implementing this requirement in NSIR/DPR-ISG-01, Interim Staff Guidance, Emergency Planning for Nuclear Power Plants.

All emergency classification assessments should be based upon valid indications, reports or conditions. A valid indication, report, or condition, is one that has been verified through appropriate means such that there is no doubt regarding the indicator's operability, the condition's existence, or the report's accuracy. For example, validation could be accomplished through an instrument channel check, response on related or redundant indicators, or direct observation by plant personnel. The validation of indications should be completed in a manner that supports timely emergency declaration.

For ICs and EALs that have a stipulated time duration (e.g., 15 minutes, 30 minutes, etc.), the Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time. If an ongoing radiological release is detected and the release start time is unknown, it should be assumed that the release duration specified in the IC/EAL has been exceeded, absent data to the contrary.

A planned work activity that results in an expected event or condition which meets or exceeds an EAL does not warrant an emergency declaration provided that 1) the activity proceeds as planned and 2) the plant remains within the limits imposed by the operating license. Such activities include planned work to test, manipulate, repair, maintain or modify a system or component. In these cases, the controls associated with the planning, preparation and execution of the work will ensure that compliance is maintained with all aspects of the operating license provided that the activity proceeds and concludes as expected. Events or conditions of this type may be subject to the reporting requirements of 10 § CFR 50.72.

The assessment of some EALs is based on the results of analyses that are necessary to ascertain whether a specific EAL threshold has been exceeded (e.g., dose assessments, chemistry sampling, RCS leak rate calculation, etc.); the EAL and/or the associated basis discussion will identify the necessary analysis. In these cases, the 15-minute declaration period starts with the availability of the analysis results that show the threshold to be exceeded (i.e., this is the time that the EAL information is first available). The NRC expects licensees to establish the capability to initiate and complete EAL-related analyses within a reasonable period of time (e.g., maintain the necessary expertise on-shift).

While the EALs have been developed to address a full spectrum of possible events and conditions which may warrant emergency classification, a provision for classification based on operator/management experience and judgment is still necessary. The PINGP scheme provides the Emergency Director with the ability to classify events and conditions based upon judgment using EALs that are consistent with the Emergency Classification Level (ECL) definitions (refer to Category H). The Emergency Director will need to determine if the effects or consequences of the event or condition reasonably meet or exceed a particular ECL definition. A similar provision is incorporated into the Fission Product Barrier Tables; judgment may be used to determine the status of a fission product barrier.

5.2 CLASSIFICATION METHODOLOGY

To make an emergency classification, the user will compare an event or condition (i.e., the relevant plant indications and reports) to an EAL(s) and determine if the EAL has been met or exceeded. The evaluation of an EAL(s) must be consistent with the related Operating Mode Applicability and Notes. If an EAL has been met or exceeded, then the IC is considered met and the associated ECL is declared in accordance with plant procedures.

When assessing an EAL that specifies a time duration for the off-normal condition, the "clock" for the EAL time duration runs concurrently with the emergency classification process "clock." For a full discussion of this timing requirement, refer to NSIR/DPR-ISG-01.

5.3 CLASSIFICATION OF MULTIPLE EVENTS AND CONDITIONS

When multiple emergency events or conditions are present, the user will identify all met or exceeded EALs. The highest applicable ECL identified during this review is declared. For example:

- If an Alert EAL and a Site Area Emergency EAL are met, whether on one unit or on either unit, a Site Area Emergency should be declared.

There is no "additive" effect from multiple EALs meeting the same ECL. For example:

- If two Alert EALs are met, whether on one unit or on both units, an Alert should be declared.

Related guidance concerning classification of rapidly escalating events or conditions is provided in Regulatory Issue Summary (RIS) 2007-02, Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events.

5.4 CONSIDERATION OF MODE CHANGES DURING CLASSIFICATION

The mode in effect at the time that an event or condition occurred, and prior to any plant or operator response, is the mode that determines whether or not an IC is applicable. If an event or condition occurs, and results in a mode change before the emergency is declared, the emergency classification level is still based on the mode that existed at the time that the event or condition was initiated (and not when it was declared). Once a different mode is reached, any new event or condition, not related to the original event or condition, requiring emergency classification should be evaluated against the

ICs and EALs applicable to the operating mode at the time of the new event or condition.

For events that occur in Cold Shutdown or Refueling, escalation is via EALs that are applicable in the Cold Shutdown or Refueling modes, even if Hot Shutdown (or a higher mode) is entered during the subsequent plant response. In particular, the fission product barrier EALs are applicable only to events that initiate in the Hot Shutdown mode or higher.

5.5 CLASSIFICATION OF IMMINENT CONDITIONS

Although EALs provide specific thresholds, the Emergency Director must remain alert to events or conditions that could lead to meeting or exceeding an EAL within a relatively short period of time (i.e., a change in the ECL is IMMINENT). If, in the judgment of the Emergency Director, meeting an EAL is IMMINENT, the emergency classification should be made as if the EAL has been met. While applicable to all emergency classification levels, this approach is particularly important at the higher emergency classification levels since it provides additional time for implementation of protective measures.

5.6 EMERGENCY CLASSIFICATION LEVEL UPGRADING AND DOWNGRADING

Once a classification level is declared, no downgrade to a lower classification will be allowed. The PINGP Emergency Plan and classification EPIP provide the applicable guidance for transition to Termination and/or Recovery.

Guidance concerning classification of rapidly escalating events or conditions is provided in RIS 2007-02.

5.7 CLASSIFICATION OF SHORT-LIVED EVENTS

Event-based ICs and EALs define a variety of specific occurrences that have potential or actual safety significance. By their nature, some of these events may be short-lived and, thus, over before the emergency classification assessment can be completed. If an event occurs that meets or exceeds an EAL, the associated ECL must be declared regardless of its continued presence at the time of declaration. Examples of such events include a failure of the reactor protection system to automatically trip the reactor followed by a successful manual trip or an earthquake.

5.8 CLASSIFICATION OF TRANSIENT CONDITIONS

Many of the ICs and/or EALs contained in this document employ time-based criteria. These criteria will require that the IC/EAL conditions be present for a defined period of time before an emergency declaration is warranted. In cases where no time-based criterion is specified, it is recognized that some transient conditions may cause an EAL to be met for a brief period of time (e.g., a few seconds to a few minutes). The following guidance should be applied to the classification of these conditions.

<u>EAL momentarily met during expected plant response</u> - In instances where an EAL is briefly met during an expected (normal) plant response, an emergency declaration is not warranted provided that associated systems and components are operating as expected, and operator actions are performed in accordance with procedures.

<u>EAL momentarily met but the condition is corrected prior to an emergency declaration</u> – If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the applicable EAL is not considered met and the associated emergency declaration is not required. For illustrative purposes, consider the following example.

> An ATWS occurs and the auxiliary feedwater system fails to automatically start. Steam generator levels rapidly decrease and the plant enters an inadequate RCS heat removal condition (a potential loss of both the fuel clad and RCS barriers). If an operator manually starts the auxiliary feedwater system in accordance with an EOP step and clears the inadequate RCS heat removal condition prior to an emergency declaration, then the classification should be based on the ATWS only.

It is important to stress that the 15-minute emergency classification assessment period is not a “grace period” during which a classification may be delayed to allow the performance of a corrective action that would obviate the need to classify the event; emergency classification assessments must be deliberate and timely, with no undue delays. The provision discussed above addresses only those rapidly evolving situations where an operator is able to take a successful corrective action prior to the Emergency Director completing the review and steps necessary to make the emergency declaration. This provision is included to ensure that any public protective actions resulting from the emergency classification are truly warranted by the plant conditions.

5.9 AFTER-THE-FACT DISCOVERY OF AN EMERGENCY EVENT OR CONDITION

In some cases, an EAL may be met but the emergency classification was not made at the time of the event or condition. This situation can occur when personnel discover that an event or condition existed which met an EAL, but no emergency was declared, and the event or condition no longer exists at the time of discovery. This may be due to the event or condition not being recognized at the time or an error that was made in the emergency classification process.

In these cases, no emergency declaration is warranted; however, the guidance contained in NUREG-1022 is applicable. Specifically, the event should be reported to the NRC in accordance with 10 CFR § 50.72 within one hour of the discovery of the undeclared event or condition. The licensee should also notify appropriate State and local agencies in accordance with the agreed upon arrangements.

5.10 RETRACTION OF AN EMERGENCY DECLARATION

Guidance on the retraction of an emergency declaration reported to the NRC is discussed in NUREG-1022.

6.0 R - ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENT ICS/EALS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
RG1 Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE. *Op. Modes: All*	**RS1** Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE. *Op. Modes: All*	**RA1** Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE. *Op. Modes: All*	**RU1** Release of gaseous or liquid radioactivity greater than 2 times the ODCM limits for 60 minutes or longer. *Op. Modes: All*
RG2 Spent fuel pool level cannot be restored to at least 729.16' elevation for 60 minutes or longer. *Op. Modes: All*	**RS2** Spent fuel pool level at 729.16' elevation. *Op. Modes: All*	**RA2** Significant lowering of water level above, or damage to, irradiated fuel. *Op. Modes: All*	**RU2** UNPLANNED loss of water level above irradiated fuel. *Op. Modes: All*
		RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. *Op. Modes: All*	

RG1

ECL: General Emergency

Initiating Condition: Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE.

Operating Mode Applicability: All

Emergency Action Levels: (RG1.1 or RG1.2 or RG1.3)

NOTE:	**The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.**

NOTE:	**If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.**

NOTE:	**If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.**

NOTE:	**The pre-calculated effluent monitor values presented in EAL RG1.1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.**

RG1.1 Reading on **EITHER** of the following radiation monitors greater than the reading shown for 15 minutes or longer:

1R-50 High Range Stack Gas Monitor	45,000 mR/hr
2R-50 High Range Stack Gas Monitor	45,000 mR/hr

RG1.2 Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond the site boundary.

RG1.3 Field survey results indicate **EITHER** of the following at or beyond the site boundary:

- Closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer.
- Analyses of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation.

Basis:

This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude will require implementation of protective actions for the public.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at the EPA PAG of 1,000 mrem while the 5,000 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. GEN-PI-094, Determining Emergency Action Level Thresholds for Effluent Releases that Correspond to an Alert, Site Area and General Emergency
3. F3-20, Determination of Radioactive Release Concentrations
4. USAR Section 7.5.2.1.1, Effluent Monitoring
5. USAR Section 7.5.2.18, High Range Shield Building Vent Gas Monitor (1R-50, 2R-50)
6. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities

7. USAR Table 7.10-1, Regulatory Guide 1.97 Rev. 2 Variables - Unit #1
8. USAR Table 7.10-2, Regulatory Guide 1.97 Rev. 2 Variables - Unit #2
9. Drawings NX-19825-10, NX-19825-11, NX-19825-13, NX-19825-14
10. Drawings NE-39790-5, NE-39790-6
11. NF-39797-3
12. Drawings NF-40750-2, NF-40750-6
13. H4, Offsite Dose Calculation Manual (ODCM)
14. F3-13, Offsite Dose Calculation
15. FP-EDCM-DP-01, Offsite Dose Assessment Using RASCAL

RG2

ECL: General Emergency

Initiating Condition: Spent fuel pool level cannot be restored to at least 729.16' elevation for 60 minutes or longer.

Operating Mode Applicability: All

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the General Emergency promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded.**

RG2.1 Spent fuel pool level cannot be restored to at least 729.16' elevation for 60 minutes or longer.

Basis:

This IC addresses a significant loss of spent fuel pool inventory control and makeup capability leading to a prolonged uncovery of spent fuel. This condition will lead to fuel damage and a radiological release to the environment.

It is recognized that this IC would likely not be met until well after another General Emergency IC was met; however, it is included to provide classification diversity.

PINGP Basis Reference(s):

1. C16 AOP1, Loss Of Spent Fuel Pool Inventory
2. ERCS Alarm Setpoint, Point 1L2601A, 122 SFP Spent Fuel Pool Elev
3. EC 23555, Fukushima Response Spent Fuel Pool Instrumentation
4. L-PI-13-006, Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)

RS1

ECL: Site Area Emergency

Initiating Condition: Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE.

Operating Mode Applicability: All

Emergency Action Levels: (RS1.1 or RS1.2 or RS1.3)

NOTE:	**The Emergency Director should declare the Site Area Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.**

NOTE:	**If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.**

NOTE:	**If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.**

NOTE:	**The pre-calculated effluent monitor values presented in EAL RS1.1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.**

RS1.1 Reading on **EITHER** of the following radiation monitors greater than the reading shown for 15 minutes or longer:

1R-50 High Range Stack Gas Monitor	4,500 mR/hr
2R-50 High Range Stack Gas Monitor	4,500 mR/hr

RS1.2 Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the site boundary.

RS1.3 Field survey results indicate EITHER of the following at or beyond the site boundary:

- Closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer.
- Analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation.

Basis:

This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to 10% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 10% of the EPA PAG of 1,000 mrem while the 500 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

Escalation of the emergency classification level would be via IC RG1.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. GEN-PI-094, Determining Emergency Action Level Thresholds for Effluent Releases that Correspond to an Alert, Site Area and General Emergency
3. F3-20, Determination of Radioactive Release Concentrations
4. USAR Section 7.5.2.1.1, Effluent Monitoring
5. USAR Section 7.5.2.18, High Range Shield Building Vent Gas Monitor (1R-50, 2R-50)

6. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities
7. USAR Table 7.10-1, Regulatory Guide 1.97 Rev. 2 Variables - Unit #1
8. USAR Table 7.10-2, Regulatory Guide 1.97 Rev. 2 Variables - Unit #2
9. Drawings NX-19825-10, NX-19825-11, NX-19825-13, NX-19825-14
10. Drawings NE-39790-5, NE-39790-6
11. NF-39797-3
12. Drawings NF-40750-2, NF-40750-6
13. H4, Offsite Dose Calculation Manual (ODCM)
14. F3-13, Offsite Dose Calculation
15. F3-16, Responsibilities of The Radiation Survey Teams During A Radioactive Release
16. FP-EDCM-DP-01, Offsite Dose Assessment Using RASCAL

RS2

ECL: Site Area Emergency

Initiating Condition: Spent fuel pool level at 729.16’ elevation.

Operating Mode Applicability: All

Emergency Action Levels:

RS2.1 Lowering of spent fuel pool level to 729.16’ elevation.

Basis:

This IC addresses a significant loss of spent fuel pool inventory control and makeup capability leading to IMMINENT fuel damage. This condition entails major failures of plant functions needed for protection of the public and thus warrant a Site Area Emergency declaration.

It is recognized that this IC would likely not be met until well after another Site Area Emergency IC was met; however, it is included to provide classification diversity.

Escalation of the emergency classification level would be via IC RG1 or RG2.

PINGP Basis Reference(s):

1. C16 AOP1, Loss Of Spent Fuel Pool Inventory
2. ERCS Alarm Setpoint, Point 1L2601A, 122 SFP Spent Fuel Pool Elev
3. EC 23555, Fukushima Response Spent Fuel Pool Instrumentation
4. L-PI-13-006, Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)

RA1

ECL: Alert

Initiating Condition: Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE.

Operating Mode Applicability: All

Emergency Action Levels: (RA1.1 or RA1.2 or RA1.3 or RA1.4)

NOTE:	**The Emergency Director should declare the Alert promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.**

NOTE:	**If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.**

NOTE:	**If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.**

NOTE:	**The pre-calculated effluent monitor values presented in EAL RA1.1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.**

RA1.1 Reading on **EITHER** of the following radiation monitors greater than the reading shown for 15 minutes or longer:

1R-50 High Range Stack Gas Monitor	450 mR/hr
2R-50 High Range Stack Gas Monitor	450 mR/hr

RA1.2 Dose assessment using actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the site boundary.

RA1.3 Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the site boundary for one hour of exposure.

RA1.4 Field survey results indicate **EITHER** of the following at or beyond the site boundary:

- Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer.
- Analyses of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation.

Basis:

This IC addresses a release of gaseous or liquid radioactivity that results in projected or actual offsite doses greater than or equal to 1% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude represent an actual or potential substantial degradation of the level of safety of the plant as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant uncontrolled release).

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 1% of the EPA PAG of 1,000 mrem while the 50 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

Escalation of the emergency classification level would be via IC RS1.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. GEN-PI-094, Determining Emergency Action Level Thresholds for Effluent Releases that Correspond to an Alert, Site Area and General Emergency
3. F3-20, Determination of Radioactive Release Concentrations

4. USAR Section 7.5.2.1.1, Effluent Monitoring
5. USAR Section 7.5.2.18, High Range Shield Building Vent Gas Monitor (1R-50, 2R-50)
6. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities
7. USAR Table 7.10-1, Regulatory Guide 1.97 Rev. 2 Variables - Unit #1
8. USAR Table 7.10-2, Regulatory Guide 1.97 Rev. 2 Variables - Unit #2
9. Drawings NX-19825-10, NX-19825-11, NX-19825-13, NX-19825-14
10. Drawings NE-39790-5, NE-39790-6
11. NF-39797-3
12. Drawings NF-40750-2, NF-40750-6
13. H4, Offsite Dose Calculation Manual (ODCM)
14. F3-13, Offsite Dose Calculation
15. EDCM-300, Liquid Release To River Dose Calculation

RA2

ECL: Alert

Initiating Condition: Significant lowering of water level above, or damage to, irradiated fuel.

Operating Mode Applicability: All

Emergency Action Levels: (RA2.1 or RA2.2 or RA2.3)

RA2.1 Uncovery of irradiated fuel in the REFUELING PATHWAY.

RA2.2 Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** of the following radiation monitors:

1(2)R-2 Containment Vessel Area Monitor	$1x10^{-1}$ R/hr
1(2)R-12 Containment/SBV Radio Gas Monitor	9.0E+2 cpm
R-5 Fuel Handling Area Monitor	$1x10^{-1}$ R/hr
R-25 Spent Fuel Pool Vent Rad Monitor	$2x10^{5}$ cpm
R-29 Shipping and Receiving Area Monitor	$1x10^{2}$ mR/hr
R-31 Spent Fuel Pool Vent Rad Monitor	$2x10^{5}$ cpm

RA2.3 Lowering of spent fuel pool level to 739.16' elevation.

Basis:

REFUELING PATHWAY: The reactor refueling cavity, spent fuel pool, or fuel transfer canal.

This IC addresses events that have caused IMMINENT or actual damage to an irradiated fuel assembly, *or a significant lowering of water level within the spent fuel pool*. These events present radiological safety challenges to plant personnel and are precursors to a release of radioactivity to the environment. As such, they represent an actual or potential substantial degradation of the level of safety of the plant.

This IC applies to irradiated fuel that is licensed for dry storage up to the point that the loaded storage cask is sealed. Once sealed, damage to a loaded cask causing loss of the CONFINEMENT BOUNDARY is classified in accordance with IC EU1.

Escalation of the emergency would be based on either Recognition Category R or C ICs.

EAL RA2.1

This EAL escalates from RU2 in that the loss of level, in the affected portion of the REFUELING PATHWAY, is of sufficient magnitude to have resulted in uncovery of irradiated fuel. Indications of irradiated fuel uncovery may include direct or indirect visual observation (e.g., reports from personnel or camera images), as well as significant changes in water and radiation levels, or other plant parameters. Computational aids may also be used (e.g., a boil-off curve). Classification of an event using this EAL should be based on the totality of available indications, reports and observations.

While an area radiation monitor could detect an increase in a dose rate due to a lowering of water level in some portion of the REFUELING PATHWAY, the reading may not be a reliable indication of whether or not the fuel is actually uncovered. To the degree possible, readings should be considered in combination with other available indications of inventory loss.

A drop in water level above irradiated fuel within the reactor vessel may be classified in accordance Recognition Category C during the Cold Shutdown and Refueling modes.

EAL RA2.2

This EAL addresses a release of radioactive material caused by mechanical damage to irradiated fuel. Damaging events may include the dropping, bumping or binding of an assembly, or dropping a heavy load onto an assembly. A rise in readings on radiation monitors should be considered in conjunction with in-plant reports or observations of a potential fuel damaging event (e.g., a fuel handling accident).

EAL RA2.3

Spent fuel pool water level at this value is within the lower end of the level range necessary to prevent significant dose consequences from direct gamma radiation to personnel performing operations in the vicinity of the spent fuel pool. This condition reflects a significant loss of spent fuel pool water inventory and thus it is also a precursor to a loss of the ability to adequately cool the irradiated fuel assembles stored in the pool.

Escalation of the emergency classification level would be via ICs RS1 or RS2.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. USAR Section 7.5.2.1.1, Effluent Monitoring
3. USAR Section 7.5.2.8, Spent Fuel Pool Air Monitor (R-25 and R-31)
4. USAR Section 7.5.3.1, General
5. USAR Section 7.5.3.2.1, Containment Area Monitors (1R-2, 2R-2)
6. USAR Section 7.5.3.2.2, Spent Fuel Monitor (R-5)
7. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities
8. USAR Section 12.3.2.2.3, Fuel Handling Shielding
9. C47047, 2R-2 Containment Vessel Area Monitor
10. C47047, 2R-12 Containment/Shield Bldg Vent Radio Gas Monitor
11. C47047, R-25 Spent Fuel Pool Air Monitor A
12. C47048, 1R-2 Containment Vessel Area Monitor
13. C47048, R-5 Spent Fuel Pool Area Monitor
14. C47048, 1R-12 Containment/Shield Bldg Vent Radio Gas Monitor
15. C47048, R-31 Spent Fuel Pool Air Monitor B
16. C16.1, Spent Fuel Pool Wide Range Level Monitor
17. ERCS Alarm Setpoint, Point 1L2601A, 122 SFP Spent Fuel Pool Elev
18. EC 23555, Fukushima Response Spent Fuel Pool Instrumentation
19. L-PI-13-006, Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)
20. GEN-PI-093, Determine Emergency Action Level Threshold For RA2, Uncovered Irradiated Fuel

RA3

ECL: Alert

Initiating Condition: Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability: All

Emergency Action Levels: (RA3.1 or RA3.2)

NOTE:	**If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.**

RA3.1 Dose rate greater than 15 mR/hr in EITHER of the following areas:

- Control Room (R-1)
- Central Alarm Station (R-69)

RA3.2 An UNPLANNED event results in radiation levels that prohibit or impede access to any of the Table H1 plant rooms or areas:

Table H1		
Mode	**Building**	**Area/Room**
Mode 3	Auxiliary Building	735’ General Area
Mode 4	Auxiliary Building	695’ General Area
Mode 5	Auxiliary Building	695’ General Area

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to maintain normal plant operation, or to perform a normal plant cooldown and shutdown. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

For EAL RA3.2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect at the time of the elevated radiation levels. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation increase occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.

- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).

- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

RA3.2 mode of applicability has been limited to the applicable modes identified in Table H1. If plant operating procedures or plant configuration changes result in changes to areas requiring access or modes at which access is required, a corresponding change to Table H1 areas will be required as originally evaluated under SharePoint record 01549495, PINGP Plant Specific Area Evaluation for Use in the EALs.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. F2, Radiation Safety
3. C47048 R-01 Control Room Area Monitor
4. USAR Section 7.5.3.1, General

5. USAR Section 7.5.3.2.6, Wide Range Area Monitors

6. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities

7. USAR Table 7.10-1, Regulatory Guide 1.97 Rev. 2 Variables - Unit #1

8. USAR Table 7.10-2, Regulatory Guide 1.97 Rev. 2 Variables - Unit #2

9. USAR Section 12.2.1.1, Classification of Structures and Equipment

10. USAR Table 12.2-1, Classification of Structures, Systems and Components

11. Sharepoint Record 01549495, PINGP Plant Specific Area Evaluation For Use In The EALs

RU1

ECL: Notification of Unusual Event

Initiating Condition: Release of gaseous or liquid radioactivity greater than 2 times the ODCM limits for 60 minutes or longer.

Operating Mode Applicability: All

Emergency Action Levels: (RU1.1 or RU1.2 or RU1.3)

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded.**

NOTE:	**If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes.**

NOTE:	**If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.**

RU1.1 Reading on **ANY** effluent radiation monitor in the table below greater than the listed values for 60 minutes or longer.

Gaseous Effluents		
Unit 1	1R-22 Unit 1 Shield Building Vent Rad Monitor	1×10^4 cpm
	1R-30 Unit 1 Aux Building Vent Rad Monitor	1×10^3 cpm
	1R-37 Unit 1 Aux Building Vent Rad Monitor	1.5×10^3 cpm
Unit 2	2R-22 Unit 2 Shield Building Vent Rad Monitor	1×10^4 cpm
	2R-30 Unit 2 Aux Building Vent Rad Monitor	6×10^3 cpm
	2R-37 Unit 2 Aux Building Vent Rad Monitor	2×10^3 cpm
	R-25 Spent Fuel Pool Vent Rad Monitor	1×10^4 cpm
	R-31 Spent Fuel Pool Vent Rad Monitor	1×10^4 cpm
	R-35 Radwaste Building Vent Rad Monitor	3×10^3 cpm

Liquid Effluents		
Unit 1	1R-19 SG Blowdown Radiation Monitor	2×10^4 cpm
Unit 2	2R-19 SG Blowdown Radiation Monitor	4×10^4 cpm
	R-18 Waste Effluent Liquid Monitor	5×10^4 cpm
	R-21 Circ Water Discharge Monitor	2×10^4 cpm

RU1.1 Reading on ANY effluent radiation monitor greater than 2 times the calculated limit established by a current radioactivity discharge permit for 60 minutes or longer.

RU1.2 Sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than 2 times the ODCM limits for 60 minutes or longer.

Basis:

This IC addresses a potential decrease in the level of safety of the plant as indicated by a low-level radiological release that exceeds regulatory commitments for an extended period of time (e.g., an uncontrolled release). It includes any gaseous or liquid radiological release, monitored or un-monitored, including those for which a radioactivity discharge permit is normally prepared.

Nuclear power plants incorporate design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, and to control and monitor intentional releases. The occurrence of an extended, uncontrolled radioactive release to the environment is indicative of degradation in these features and/or controls.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

Releases should not be prorated or averaged. For example, a release exceeding 4 times release limits for 30 minutes does not meet the EAL.

EAL RU1.1 - This EAL addresses normally occurring continuous radioactivity releases from monitored gaseous or liquid effluent pathways. The radiation monitor values listed in the table are equivalent to 2 times the ODCM limits.

EAL RU1.2 - This EAL addresses radioactivity releases that cause effluent radiation monitor readings to exceed 2 times the limit established by a radioactivity discharge permit. This EAL will typically be associated with planned batch releases from non-continuous release pathways (e.g., radwaste, waste gas). For batch releases a calculated limit is determined based on the isotopic mix and provided to operations personnel. A release that exceeds 2x this value meets this EAL threshold.

EAL RU1.3 - This EAL addresses uncontrolled gaseous or liquid releases that are detected by sample analyses or environmental surveys, particularly on unmonitored pathways (e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.).

Escalation of the emergency classification level would be via IC RA1.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. H4, Offsite Dose Calculation Manual (ODCM)
3. GEN-PI-095, Determining Emergency Action Level Thresholds For Effluent References That Correspond To A Notification Of Unusual Event (UE) For RU1
4. USAR Section 7.5.2.1.1, Effluent Monitoring
5. USAR Section 7.5.2.14, Circulating Water Monitor (R-21)
6. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities
7. NE-39790-5, Interlock Logic Diagram NF-40750, Channel No. 1-R-22
8. NE-39790-6, Interlock Logic Diagram NF-40750, Channel No. 2-R-22
9. NF-39797-3, Radiation Monitoring System Piping Details Channels 1-R-22 & 2-R-22
10. NF-40750-2, Interlock Logic Diagram, B.O.P. Radiation Monitoring System, Units 1&2

RU2

ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED loss of water level above irradiated fuel.

Operating Mode Applicability: All

Emergency Action Levels:

RU2.1 a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by ANY of the following:

- Level less than SFP low water level alarm (752.5 feet elevation)
- Refueling Canal Level (365" on Control Board)
- Visual Observation (752.5 feet elevation)

AND

b. UNPLANNED rise in area radiation levels as indicated by **ANY** of the following radiation monitors:

- R-5 Fuel Handling Area Monitor
- 1(2)R-2 Containment Vessel Area Monitor
- Other Portable Area Radiation Monitoring Instrumentation

Basis:

REFUELING PATHWAY: The reactor refueling cavity, spent fuel pool, or fuel transfer canal.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses a decrease in water level above irradiated fuel sufficient to cause elevated radiation levels. This condition could be a precursor to a more serious event and is also indicative of a minor loss in the ability to control radiation levels within the plant. It is therefore a potential degradation in the level of safety of the plant.

A water level decrease will be primarily determined by indications from available level instrumentation. Other sources of level indications may include reports from plant personnel (e.g., from a refueling crew) or video camera observations (if available). A significant drop in the water level may also cause an increase in the radiation levels of adjacent areas that can be detected by monitors in those locations.

The effects of planned evolutions should be considered. For example, a refueling bridge area radiation monitor reading may increase due to planned evolutions such as lifting of the reactor vessel head or movement of a fuel assembly. Note that this EAL is applicable only in cases where the elevated reading is due to an UNPLANNED loss of water level.

A drop in water level above irradiated fuel within the reactor vessel may be classified in accordance Recognition Category C during the Cold Shutdown and Refueling modes.

Escalation of the emergency classification level would be via IC RA2.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. C16 AOP1, Loss of SFP Inventory
3. D5.2 AOP3, Decreasing Refueling Water Level During Refueling
4. C47016, Annunciator Window 47016-0101, 121 Spent Fuel Pit Lo LVL
5. C47016, Annunciator Window 47016-0401, 122 Spent Fuel Pit Lo LVL
6. C47516, Annunciator Window 47516-0101, 121 Spent Fuel Pit Lo LVL
7. C47516, Annunciator Window 47516-0401, 122 Spent Fuel Pit Lo LVL
8. USAR Section 7.5.3.1, General
9. USAR Section 7.5.3.2.2, Spent Fuel Monitor (R-5)
10. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities
11. RPIP 1405, RD System Monitor Alarm Response
12. Technical Specification 3.9.2, Refueling Cavity Water Level
13. FIG C1-40, Refueling Water Levels
14. D5.2, Reactor Refueling Operations

7.0 C - COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION ICS/EALS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
CG1 Loss of RPV inventory affecting fuel clad integrity with containment challenged. *Op. Modes: Cold Shutdown, Refueling*	**CS1** Loss of RPV inventory affecting core decay heat removal capability. *Op. Modes: Cold Shutdown, Refueling*	**CA1** Loss of RPV inventory. *Op. Modes: Cold Shutdown, Refueling*	**CU1** UNPLANNED loss of RPV inventory for 15 minutes or longer. *Op. Modes: Cold Shutdown, Refueling*
		CA2 Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer. *Op. Modes: Cold Shutdown, Refueling, Defueled*	**CU2** Loss of all but one AC power source to emergency buses for 15 minutes or longer. *Op. Modes: Cold Shutdown, Refueling, Defueled*
		CA3 Inability to maintain the plant in cold shutdown. *Op. Modes: Cold Shutdown, Refueling*	**CU3** UNPLANNED increase in RCS temperature. *Op. Modes: Cold Shutdown, Refueling*
			CU4 Loss of Vital DC power for 15 minutes or longer. *Op. Modes: Cold Shutdown, Refueling*
			CU5 Loss of all onsite or offsite communications capabilities. *Op. Modes: Cold* Shutdown, *Refueling, Defueled*
		CA6 Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. *Op. Modes: Cold Shutdown, Refueling*	

CG1

ECL: General Emergency

Initiating Condition: Loss of RPV inventory affecting fuel clad integrity with containment challenged.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels: (CG1.1 or CG1.2)

NOTE:	**The Emergency Director should declare the General Emergency promptly upon determining that 30 minutes has been exceeded, or will likely be exceeded.**

CG1.1 a. RPV level less than 56% RVLIS Full Range (Mode 5) for 30 minutes or longer.

AND

b. **ANY** indication from the Containment Challenge Table C1.

CG1.2 a. RPV level cannot be monitored for 30 minutes or longer in Mode 5 or 6.

AND

b. Core uncovery is indicated by **ANY** of the following:

- 1(2)R-2, Containment Vessel Area Monitor, reading greater than 1R/hr (10^0 R/hr)
- Erratic source range monitor indication
- UNPLANNED increase in Containment Sumps A or C, or Waste Holdup Tank levels of sufficient magnitude to indicate core uncovery

AND

c. **ANY** indication from the Containment Challenge Table C1.

Containment Challenge Table C1
■ CONTAINMENT CLOSURE not established*
■ H_2 concentration greater than or equal to 6% inside containment
■ UNPLANNED increase in containment pressure

* If CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute time limit, then declaration of a General Emergency is not required.

Basis:

CONTAINMENT CLOSURE: No open containment penetrations exist as identified in C19.9, Containment Boundary Control during Mode 5, Cold Shutdown and Mode 6, Refueling. The definition of an open containment penetration is a penetration that provides direct access from the containment atmosphere to the outside environment with no automatic closure available.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses the inability to restore and maintain reactor vessel level above the top of active fuel with containment challenged. This condition represents actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Following an extended loss of core decay heat removal and inventory makeup, decay heat will cause reactor coolant boiling and a further reduction in reactor vessel level. If RPV level cannot be restored, fuel damage is probable.

With CONTAINMENT CLOSURE not established, there is a high potential for a direct and unmonitored release of radioactivity to the environment. If CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute time limit, then declaration of a General Emergency is not required.

The existence of an explosive mixture means, at a minimum, that the containment atmospheric hydrogen concentration is sufficient to support a hydrogen burn (i.e., at the lower deflagration limit). A hydrogen burn will raise containment pressure and could result in collateral equipment damage leading to a loss of containment integrity. It therefore represents a challenge to Containment integrity.

In the early stages of a core uncovery event, it is unlikely that hydrogen buildup due to a core uncovery could result in an explosive gas mixture in containment. If all installed hydrogen gas monitors are out-of-service during an event leading to fuel cladding damage, it may not be possible to obtain a containment hydrogen gas concentration reading as ambient conditions within the containment will preclude personnel access. During periods when installed containment hydrogen gas monitors are out-of-service, operators may use the other listed indications to assess whether or not containment is challenged.

In EAL CG1.1.a, RVLIS is used to determine when reactor water level is less than TOAF. RVLIS indication is only available during Mode 5 up to the point of reactor head disassembly prior to Mode 6 entry. Once RVLIS becomes unavailable classification of IC CG1is accomplished in accordance with EAL CG1.2.

In EAL CG1.2.a, the 30-minute criterion is tied to a readily recognizable event start time (i.e., the total loss of ability to monitor level), and allows sufficient time to monitor, assess and correlate reactor and plant conditions to determine if core uncovery has actually occurred (i.e., to account for various accident progression and instrumentation uncertainties). It also allows sufficient time for performance of actions to terminate leakage, recover inventory control/makeup equipment and/or restore level monitoring.

The inability to monitor RPV level may be caused by instrumentation and/or power failures, or water level dropping below the range of available instrumentation. If water level cannot be monitored, operators may determine that an inventory loss is occurring by observing changes in sump and/or tank levels. Sump and/or tank level changes must be evaluated against other potential sources of water flow to ensure they are indicative of leakage from the RPV.

These EALs address concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal; SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues; NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States; and NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management.

PINGP Basis Reference(s):

1. B10, Incore Instrumentation System
2. C19.9, Containment Boundary Control during Mode 5, Cold Shutdown, and Mode 6, Refueling
3. FIG C1-40, Refueling Water Levels
4. GEN-PI-091, Determining Radiation Monitor Reading For Emergency Action Levels CS1 and CG1
5. 5AWI 15.6.1, Shutdown Safety Assessment
6. NF-39248, Flow Diagram, Unit 1&2 Aux & Reactor Building Floor & Equipment Drain Systems
7. NX-27806-1, Inadequate Core Cooling Monitor – 86 Vol. 1
8. USAR Section 7.5.3.1, General
9. USAR Section 7.5.3.2.1, Containment Area Monitors (1R-2, 2R-2)

10. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities
11. RPIP 1405, RD System Monitor Alarm Response
12. B21B, Liquid Waste System
13. EC28159, Correlation of RVLIS Full Range Level to RCS and Vessel Features
14. 1(2)FR-C.1, Response to Inadequate Core Cooling

CS1

ECL: Site Area Emergency

Initiating Condition: Loss of RPV inventory affecting core decay heat removal capability.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels: (CS1.1 or CS1.2 or CS1.3)

CS1.1 a. CONTAINMENT CLOSURE not established.

AND

b. RPV level less than 65% RVLIS Full Range (Mode 5).

CS1.2 a. CONTAINMENT CLOSURE established.

AND

b. RPV level less than 56% RVLIS Full Range (Mode 5):

NOTE:	**The Emergency Director should declare the Site Area Emergency promptly upon determining that 30 minutes has been exceeded, or will likely be exceeded.**

CS1.3 a. RPV level cannot be monitored for 30 minutes or longer in Mode 5 or 6.

AND

b. Core uncovery is indicated by **ANY** of the following:

- 1(2)R-2, Containment Vessel Area Monitor, reading greater than 1 R/hr (10^0 R/hr)
- Erratic source range monitor indication
- UNPLANNED increase in Containment Sumps A or C, or Waste Holdup Tank levels of sufficient magnitude to indicate core uncovery

Basis:

CONTAINMENT CLOSURE: No open containment penetrations exist as identified in C19.9, Containment Boundary Control during Mode 5, Cold Shutdown and Mode 6, Refueling. The definition of an open containment penetration is a penetration that provides direct access from the containment atmosphere to the outside environment with no automatic closure available.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses a significant and prolonged loss of RPV inventory control and makeup capability leading to IMMINENT fuel damage. The lost inventory may be due to a RCS component failure, a loss of configuration control or prolonged boiling of reactor coolant. These conditions entail major failures of plant functions needed for protection of the public and thus warrant a Site Area Emergency declaration.

Following an extended loss of core decay heat removal and inventory makeup, decay heat will cause reactor coolant boiling and a further reduction in reactor vessel level. If RPV level cannot be restored, fuel damage is probable.

In EALs CS1.1.b and CS1.2.b RVLIS is used to determine the specified reactor water level. RVLIS indication is only available during Mode 5 up to the point of reactor head disassembly prior to Mode 6 entry. Once RVLIS becomes unavailable classification of IC CS1 is accomplished in accordance with EAL CS1.3.

Outage/shutdown contingency plans typically provide for re-establishing or verifying CONTAINMENT CLOSURE following a loss of heat removal or RPV inventory control functions. The difference in the specified RPV levels of EALs CS1.1.b and CS1.2.b reflect the fact that with CONTAINMENT CLOSURE established, there is a lower probability of a fission product release to the environment.

In EAL CS1.3.a, the 30-minute criterion is tied to a readily recognizable event start time (i.e., the total loss of ability to monitor level), and allows sufficient time to monitor, assess and correlate reactor and plant conditions to determine if core uncovery has actually occurred (i.e., to account for various accident progression and instrumentation uncertainties). It also allows sufficient time for performance of actions to terminate leakage, recover inventory control/makeup equipment and/or restore level monitoring.

The inability to monitor RPV level may be caused by instrumentation and/or power failures, or water level dropping below the range of available instrumentation. If water level cannot be monitored, operators may determine that an inventory loss is occurring by observing changes in sump and/or tank levels. Sump and/or tank level changes must be evaluated against other potential sources of water flow to ensure they are indicative of leakage from the RPV.

These EALs address concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal; SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues; NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States; and NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management.

Escalation of the emergency classification level would be via IC CG1 or RG1.

PINGP Basis Reference(s):

1. B10, Incore Instrumentation System
2. C19.9, Containment Boundary Control during Mode 5, Cold Shutdown, and Mode 6, Refueling
3. FIG C1-40, Refueling Water Levels
4. GEN-PI-091, Determining Radiation Monitor Reading For Emergency Action Levels CS1 and CG1
5. 5AWI 15.6.1, Shutdown Safety Assessment
6. NF-39248, Flow Diagram, Aux & Reactor Building Floor & Equipment Drain Systems
7. NX-27806-1, Inadequate Core Cooling Monitor – 86 Vol. 1
8. USAR Section 7.5.3.1, General
9. USAR Section 7.5.3.2.1, Containment Area Monitors (1R-2, 2R-2)
10. USAR Table 7.5-1, Radiation Monitor System Channel Sensitivities
11. RPIP 1405, RD System Monitor Alarm Response
12. B21B, Liquid Waste System
13. EC28159, Correlation of RVLIS Full Range Level to RCS and Vessel Features
14. 1(2)FR-C.1, Response to Inadequate Core Cooling

CA1

ECL: Alert

Initiating Condition: Loss of RPV inventory.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels: (CA1.1 or CA1.2)

CA1.1 Loss of RPV inventory as indicated by level less than **ANY** of the following:

- 10” Refueling Canal
- 10” ERCS DP
- 69% RVLIS Full Range (Mode 5).

NOTE:	**The Emergency Director should declare the Alert promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

CA1.2 a. RPV level cannot be monitored for 15 minutes or longer

AND

b. UNPLANNED increase in Containment Sumps A or C, or Waste Holdup Tank levels due to a loss of RPV inventory.

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses conditions that are precursors to a loss of the ability to adequately cool irradiated fuel (i.e., a precursor to a challenge to the fuel clad barrier). This condition represents a potential substantial reduction in the level of plant safety.

For EAL CA1.1, a lowering of water level below 10” Refueling Canal/ERCS DP **OR** 69% RVLIS Full Range in Mode 5 indicates that operator actions have not been successful in restoring and maintaining RPV water level. The heat-up rate of the coolant will increase as the available water inventory is reduced. A continuing decrease in water level will lead to core uncovery.

Although related, EAL CA1.1 is concerned with the loss of RPV inventory and not the potential concurrent effects on systems needed for decay heat removal (e.g., loss of a Residual Heat Removal suction point). An increase in RCS temperature caused by a loss of decay heat removal capability is evaluated under IC CA3.

For EAL CA1.2, the inability to monitor RPV level may be caused by instrumentation and/or power failures, or water level dropping below the range of available instrumentation. If water level cannot be monitored, operators may determine that an inventory loss is occurring by observing changes in sump and/or tank levels. Sump and/or tank level changes must be evaluated against other potential sources of water flow to ensure they are indicative of leakage from the RCS.

The 15-minute duration for the loss of level indication was chosen because it is half of the EAL duration specified in IC CS1.

If the RPV inventory level continues to lower, then escalation to Site Area Emergency would be via IC CS1.

PINGP Basis Reference(s):

1. B10, Incore Instrumentation System
2. FIG C1-40, Refueling Water Levels
3. 5AWI 15.6.1, Shutdown Safety Assessment
4. NF-39248, Flow Diagram, Aux & Reactor Building Floor & Equipment Drain Systems
5. NX-27806-1, Inadequate Core Cooling Monitor – 86 Vol. 1
6. B21B, Liquid Waste System
7. EC28159, Correlation of RVLIS Full Range Level to RCS and Vessel Features
8. 1(2)E-4, Core Cooling Following Loss Of RHR Flow

CA2

ECL: Alert

Initiating Condition: Loss of all Offsite and all Onsite AC power to emergency buses for 15 minutes or longer.

Operating Mode Applicability: Cold Shutdown, Refueling, Defueled

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Alert promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

CA2.1 Loss of **ALL** Offsite and **ALL** Onsite AC Power to both Safeguards Buses 15 and 16 (25 and 26) for 15 minutes or longer.

Basis:

This IC addresses a total loss of AC power that compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink.

When in the cold shutdown, refueling, or defueled mode, this condition is not classified as a Site Area Emergency because of the increased time available to restore an emergency bus to service. Additional time is available due to the reduced core decay heat load, and the lower temperatures and pressures in various plant systems. Thus, when in these modes, this condition represents an actual or potential substantial degradation of the level of safety of the plant.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation of the emergency classification level would be via IC CS1 or RS1.

PINGP Basis Reference(s):

1. 1(2)C1.6 AOP3, Shutdown Loss of Power
2. USAR Section 8.2, Transmission System
3. USAR Section 8.3, Auxiliary Power System

4. USAR Figure 8.2-2, Prairie Island Plant And Substation Operating One Line Diagram

5. USAR Figure 8.3-1, Unit 1 – Unit 2 Safeguards Consolidated Circuit Diagram

CA3

ECL: Alert

Initiating Condition: Inability to maintain the plant in cold shutdown.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels: (CA3.1 or CA3.2)

NOTE:	**The Emergency Director should declare the Alert promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.**

CA3.1 UNPLANNED increase in RCS temperature to greater than 200˚F for greater than the duration specified in Table C2.

Table C2: RCS Heat-up Duration Thresholds		
RCS	**CONTAINMENT CLOSURE**	**Heat-up Duration**
Not intact or in RCS Reduced Inventory	Not Established	0 minutes
	Established	20 minutes*
Intact (capable of being pressurized)	N/A	60 minutes*
* If RHR (or at least 1 S/G when RCS intact) is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.		

CA3.2 UNPLANNED RCS pressure increase greater than 25 psig. (This Threshold does not apply during water-solid plant conditions.)

Basis:

CONTAINMENT CLOSURE: No open containment penetrations exist as identified in C19.9, Containment Boundary Control during Mode 5, Cold Shutdown and Mode 6, Refueling. The definition of an open containment penetration is a penetration that provides direct access from the containment atmosphere to the outside environment with no automatic closure available.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses conditions involving a loss of decay heat removal capability or an addition of heat to the RCS in excess of that which can currently be removed. Either condition represents an actual or potential substantial degradation of the level of safety of the plant.

A momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit when the heat removal function is available does not warrant a classification.

The RCS Heat-up Duration Thresholds table addresses an increase in RCS temperature when CONTAINMENT CLOSURE is established but the RCS is not intact, or RCS inventory is reduced (e.g., mid-loop operation in PWRs). The 20-minute criterion was included to allow time for operator action to address the temperature increase.

The RCS Heat-up Duration Thresholds table also addresses an increase in RCS temperature with the RCS intact. The status of CONTAINMENT CLOSURE is not crucial in this condition since the intact RCS is providing a high pressure barrier to a fission product release. The 60-minute time frame should allow sufficient time to address the temperature increase without a substantial degradation in plant safety.

Finally, in the case where there is an increase in RCS temperature, the RCS is not intact or is at reduced inventory, and CONTAINMENT CLOSURE is not established, no heat-up duration is allowed (i.e., 0 minutes). This is because 1) the evaporated reactor coolant may be released directly into the Containment atmosphere and subsequently to the environment, and 2) there is reduced reactor coolant inventory above the top of irradiated fuel.

EAL CA3.2 provides a pressure-based indication of RCS heat-up. 25 psig is the smallest increment that can be read on control room instrumentation.

Escalation of the emergency classification level would be via IC CS1 or RS1.

PINGP Basis Reference(s):

1. Technical Specifications Table 1.1-1, Modes Definition for Cold Shutdown
2. C19.9, Containment Boundary Control during Mode 5, Cold Shutdown, and Mode 6, Refueling
3. 5AWI 15.6.1, Shutdown Safety Assessment

CA6

ECL: Alert

Initiating Condition: Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels:

NOTE:	**If the affected SAFETY SYSTEM train was already inoperable or out of service before the hazardous event occurred, then this emergency classification is not warranted.**

NOTE:	**If the hazardous event only resulted in VISIBLE DAMAGE, with no indications of degraded performance to at least one train of a SAFETY SYSTEM, then this emergency classification is not warranted.**

CA6.1 a. The occurrence of **ANY** of the following hazardous events:

- Seismic event (earthquake)
- Internal or external flooding event
- High winds or tornado strike
- FIRE
- EXPLOSION
- Low River Water Level
- Other events with similar hazard characteristics as determined by the Shift Manager

AND

b. 1. Event damage has caused indications of degraded performance on one train of a SAFETY SYSTEM needed for the current operating mode.

AND

2. **EITHER** of the following:

- Event damage has caused indications of degraded performance to a second train of the SAFETY SYSTEM needed for the current operating mode.
- Event damage has resulted in VISIBLE DAMAGE to the second train of the SAFETY SYSTEM needed for the current operating mode.

Basis:

EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or overpressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an explosion. Such events may require a post-event inspection to determine if the attributes of an explosion are present.

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS.

VISIBLE DAMAGE: Damage to a SAFETY SYSTEM train that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected SAFETY SYSTEM train.

This IC addresses a hazardous event that causes damage to SAFETY SYSTEMS needed for the current operating mode. In order to provide the appropriate context for consideration of an ALERT classification, the hazardous event must have caused indications of degraded SAFETY SYSTEM performance in one train, and there must be either indications of performance issues with the second SAFETY SYSTEM train or VISIBLE DAMAGE to the second train such that the potential exists for this second SAFETY SYSTEM train to have performance issues. In other words, in order for this

EAL to be classified, the hazardous event must occur, at least one SAFETY SYSTEM train must have indications of degraded performance and the second SAFETY SYSTEM train must have indications of degraded performance or VISIBLE DAMAGE such that the potential exists for performance issues. Note that this second SAFETY SYSTEM train is from the same SAFETY SYSTEM that has indications of degraded performance for criteria CA6.1.b.1 of this EAL; commercial nuclear power plants are designed to be able to support single system issues without compromising public health and safety from radiological events.

Indications of degraded performance address damage to a SAFETY SYSTEM train that is in service/operation since indications for it will be readily available. The indications of degraded performance should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

Operators will make a determination of VISIBLE DAMAGE based on the totality of available event and damage report information. This is intended to be a brief assessment not requiring lengthy analysis or quantification of the damage. This VISIBLE DAMAGE should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

Escalation of the emergency classification level would be via IC CS1 or RS1.

PINGP Basis Reference(s):

1. AB-2, Tornado/Severe Thunderstorm/High Winds
2. AB-3, Earthquakes
3. AB-4, Flood
4. C47023-0603, Seismic Monitoring Panel
5. C47020-0106, 11 Cooling Water Pump Locked Out
6. C47520-0101, 21 Cooling Water Pump Locked Out
7. C47041 AR 26, River Intake Canal L High Delta-H
8. USAR Section 2.4, Hydrology
9. EC 23659, Evaluation of Turbine Building Internal Flooding With the External Flood Barriers Installed

CU1

ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED loss of RPV inventory for 15 minutes or longer.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels: (CU1.1 or CU1.2)

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

CU1.1 UNPLANNED loss of reactor coolant results in RPV level less than a procedurally required lower limit for 15 minutes or longer.

CU1.2 a. RPV level cannot be monitored.

AND

b. UNPLANNED increase in Containment Sumps A or C, or Waste Holdup Tank levels.

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses the inability to restore and maintain water level to a required minimum level (or the lower limit of a level band), or a loss of the ability to monitor RPV level concurrent with indications of coolant leakage. Either of these conditions is considered to be a potential degradation of the level of safety of the plant.

Refueling evolutions that decrease RCS water inventory are carefully planned and controlled. An UNPLANNED event that results in water level decreasing below a procedurally required limit warrants the declaration of an Unusual Event due to the reduced water inventory that is available to keep the core covered.

EAL CU1.1 recognizes that the minimum required RPV level can change several times during the course of a refueling outage as different plant configurations and system lineups are implemented. This EAL is met if the minimum level, specified for the current plant conditions, cannot be maintained for 15 minutes or longer. The minimum level is typically specified in the applicable operating procedure but may be specified in another controlling document.

The 15-minute threshold duration allows sufficient time for prompt operator actions to restore and maintain the expected water level. This criterion excludes transient conditions causing a brief lowering of water level. If the EAL is briefly met during an expected (normal) plant response, an emergency declaration is not warranted provided that associated systems and components are operating as expected, and operator actions are performed in accordance with procedures. If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the EAL is not considered met and the associated emergency declaration is not required.

EAL CU1.2 addresses a condition where all means to determine RPV level have been lost. In this condition, operators may determine that an inventory loss is occurring by observing changes in sump and/or tank levels. Sump and/or tank level changes must be evaluated against other potential sources of water flow to ensure they are indicative of leakage from the RPV.

Continued loss of RPV inventory may result in escalation to the Alert emergency classification level via either IC CA1 or CA3.

PINGP Basis Reference(s):

1. 1(2)C4.1, RCS Inventory Control – Pre-Refueling
2. 1(2)D2, RCS Reduced Inventory Operation
3. FIG C1-40, Refueling Water Levels
4. NF-39248, Flow Diagram, Aux & Reactor Building Floor & Equipment Drain Systems
5. D5.2, Reactor Refueling Operations
6. D5.2 AOP3, Decreasing Refueling Water Level During Refueling
7. 1(2)C1.6, Shutdown Operations – Unit 1(2)

CU2

ECL: Notification of Unusual Event

Initiating Condition: Loss of all but one AC power source to emergency buses for 15 minutes or longer.

Operating Mode Applicability: Cold Shutdown, Refueling, Defueled

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

CU2.1 a. AC power capability to both Safeguards Buses 15 and 16 (25 and 26) is reduced to a single power source (Table S1) for 15 minutes or longer.

AND

b. Any additional single power source failure will result in loss of all AC power to SAFETY SYSTEMS.

Table S1	
Unit 1	**Unit 2**
1R Transformer	2RY Transformer
CT11 Transformer	CT12 Transformer
D1 Diesel Generator	D5 Diesel Generator
D2 Diesel Generator	D6 Diesel Generator
Aligned Available Cross-Ties	

Basis:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS.

This IC describes a significant degradation of offsite and onsite AC power sources (Table S1) such that any additional single failure would result in a loss of all AC power to SAFETY SYSTEMS. In this condition, the sole AC power source may be powering one, or more than one, train of safety-related equipment.

When in the cold shutdown, refueling, or defueled mode, this condition is not classified as an Alert because of the increased time available to restore another power source to service. Additional time is available due to the reduced core decay heat load, and the lower temperatures and pressures in various plant systems. Thus, when in these modes, this condition is considered to be a potential degradation of the level of safety of the plant.

An “AC power source” is a source recognized in AOPs and EOPs, and capable of supplying required power to an emergency bus. Some examples of this condition are presented below.

- A loss of all offsite power with a concurrent failure of all but one emergency power source (e.g., an onsite diesel generator or aligned available cross-tie).
- A loss of emergency power sources (e.g., onsite diesel generators or aligned available cross-tie) with a single train of emergency buses being fed from an offsite power source.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of power.

The subsequent loss of the remaining single power source would escalate the event to an Alert in accordance with IC CA2.

PINGP Basis Reference(s):

1. 1(2) C1.6 AOP3, Shutdown Loss of Power
2. USAR Section 8.2, Transmission System
3. USAR Section 8.3, Auxiliary Power System
4. USAR Figure 8.2-2, Prairie Island Plant And Substation Operating One Line Diagram
5. USAR Figure 8.3-1, Unit 1 – Unit 2 Safeguards Consolidated Circuit Diagram

CU3

ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED increase in RCS temperature.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels: (CU3.1 or CU3.2)

CU3.1 UNPLANNED increase in RCS temperature to greater than 200 ˚F.

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

CU3.2 Loss of ALL RCS temperature and RPV level indication for 15 minutes or longer.

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses an UNPLANNED increase in RCS temperature above the Technical Specification cold shutdown temperature limit, or the inability to determine RCS temperature and level, represents a potential degradation of the level of safety of the plant. If the RCS is not intact and CONTAINMENT CLOSURE is not established during this event, the Emergency Director should also refer to IC CA3.

A momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit when the heat removal function is available does not warrant a classification.

EAL CU3.1 involves a loss of decay heat removal capability, or an addition of heat to the RCS in excess of that which can currently be removed, such that reactor coolant temperature cannot be maintained below the cold shutdown temperature limit specified in Technical Specifications. During this condition, there is no immediate threat of fuel damage because the core decay heat load has been reduced since the cessation of power operation.

During an outage, the level in the reactor vessel will normally be maintained above the reactor vessel flange. Refueling evolutions that lower water level below the reactor vessel flange are carefully planned and controlled. A loss of forced decay heat removal at reduced inventory may result in a rapid increase in reactor coolant temperature depending on the time after shutdown.

EAL CU3.2 reflects a condition where there has been a significant loss of instrumentation capability necessary to monitor RCS conditions and operators would be unable to monitor key parameters necessary to assure core decay heat removal. During this condition, there is no immediate threat of fuel damage because the core decay heat load has been reduced since the cessation of power operation.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of indication.

Escalation to Alert would be via IC CA1 based on an inventory loss or IC CA3 based on exceeding plant configuration-specific time criteria.

PINGP Basis Reference(s):

1. Technical Specifications Table 1.1-1, Modes Definition for Cold Shutdown
2. Technical Specifications Bases B.3.9.2, Refueling Cavity Water Level
3. FIG C1-40, Refueling Water Levels

CU4

ECL: Notification of Unusual Event

Initiating Condition: Loss of Vital DC power for 15 minutes or longer.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

CU4.1 Indicated voltage is less than 111 VDC on required 125 VDC Panels 11 and 12 (21 and 22) for 15 minutes or longer.

Basis:

This IC addresses a loss of Vital DC power which compromises the ability to monitor and control operable SAFETY SYSTEMS when the plant is in the cold shutdown or refueling mode. In these modes, the core decay heat load has been significantly reduced, and coolant system temperatures and pressures are lower; these conditions increase the time available to restore a vital DC bus to service. Thus, this condition is considered to be a potential degradation of the level of safety of the plant.

As used in this EAL, “required” means the Vital DC buses necessary to support operation of the in-service, or operable, train or trains of SAFETY SYSTEM equipment. For example, if Train A is out-of-service (inoperable) for scheduled outage maintenance work and Train B is in-service (operable), then a loss of Vital DC power affecting Train B would require the declaration of an Unusual Event. A loss of Vital DC power to Train A would not warrant an emergency classification.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Depending upon the event, escalation of the emergency classification level would be via IC CA1 or CA3, or an IC in Recognition Category R.

PINGP Basis Reference(s):

1. Technical Specifications 3.8.5, DC Sources - Shutdown
2. 1(2)C20.9 AOP1, Loss of Unit 1(2) Train “A” DC
3. 1(2)C20.9 AOP2, Loss of Unit 1(2) Train “B” DC
4. USAR Section 8.5, DC Power Supply Systems
5. USAR Figure 8.5-1A/B, 125 VDC & 120 VAC Instrument Supply – Unit 1 – Train A/B
6. USAR Figure 8.5-2A/B, 125 VDC & 120 VAC Instrument Supply – Unit 2 – Train A/B
7. Calc No. 91-02-11, NSP-PI Battery 11 Calculation
8. Calc No. 91-02-12, NSP-PI Battery 12 Calculation
9. Calc No. 91-02-21, NSP-PI Battery 21 Calculation
10. Calc No. 91-02-22, NSP-PI Battery 22 Calculation

CU5

ECL: Notification of Unusual Event

Initiating Condition: Loss of all onsite or offsite communications capabilities.

Operating Mode Applicability: Cold Shutdown, Refueling, Defueled

Emergency Action Levels: (CU5.1 or CU5.2 or CU5.3)

CU5.1 Loss of **ALL** of the following onsite communication methods:

- Sound Powered Phones
- Plant Paging System
- Plant Telephone Network
- Plant Radio System

CU5.2 Loss of **ALL** of the following Offsite Response Organization (ORO) communications methods:

- Plant Telephone Network
- Plant Radio System (dedicated offsite channels)

CU5.3 Loss of **ALL** of the following NRC communications methods:

- Plant Telephone Network
- ENS Network

Basis:

This IC addresses a significant loss of on-site or offsite communications capabilities. While not a direct challenge to plant or personnel safety, this event warrants prompt notifications to OROs and the NRC.

This IC should be assessed only when extraordinary means are being utilized to make communications possible (e.g., use of non-plant, privately owned equipment, relaying of on-site information via individuals or multiple radio transmission points, individuals being sent to offsite locations, etc.).

EAL CU5.1 addresses a total loss of the communications methods used in support of routine plant operations.

EAL CU5.2 addresses a total loss of the communications methods used to notify all OROs of an emergency declaration. The OROs referred to here are the states of Minnesota and Wisconsin, Goodhue, Pierce, and Dakota counties, and the Prairie Island Tribal Community.

EAL CU5.3 addresses a total loss of the communications methods used to notify the NRC of an emergency declaration.

PINGP Basis Reference(s):

1. PINGP Emergency Plan Section 7.2, Communications
2. PINGP Emergency Plan Table 6, Prairie Island Site Communications Matrix

8.0 I - INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) ICS/EALS

UNUSUAL EVENT

EU1 Damage to a loaded cask CONFINEMENT BOUNDARY.

Op. Modes: All

EU1

ECL: Notification of Unusual Event

Initiating Condition: Damage to a loaded cask CONFINEMENT BOUNDARY.

Operating Mode Applicability: All

Emergency Action Levels:

EU1.1 Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading on the surface of the spent fuel cask greater than ANY Table E1 value:

Table E1		
Location	**Gamma mrem/hr**	**Neutron mrem/hr**
Center of top protective cover	90	20
Between cask flange and side neutron shield	160	380
Mid-height of side neutron shield	80	70
Between cask bottom and side neutron shield	170	1860

Basis:

CONFINEMENT BOUNDARY: The barrier(s) between spent fuel and the environment once the spent fuel is processed for dry storage.

This IC addresses an event that results in damage to the CONFINEMENT BOUNDARY of a storage cask containing spent fuel. It applies to irradiated fuel that is licensed for dry storage beginning at the point that the loaded storage cask is sealed. The issues of concern are the creation of a potential or actual release path to the environment, degradation of one or more fuel assemblies due to environmental factors, and configuration changes which could cause challenges in removing the cask or fuel from storage.

The existence of “damage” is determined by radiological survey. The technical specification multiple of “2 times”, which is also used in Recognition Category R IC RU1, is used here to distinguish between non-emergency and emergency conditions. The emphasis for this classification is the degradation in the level of safety of the spent fuel cask and not the magnitude of the associated dose or dose rate. It is recognized that in the case of extreme damage to a loaded cask, the fact that the "on-contact" dose rate limit is exceeded may be determined based on measurement of a dose rate at some distance from the cask.

Security-related events for ISFSIs are covered under ICs HU1 and HA1.

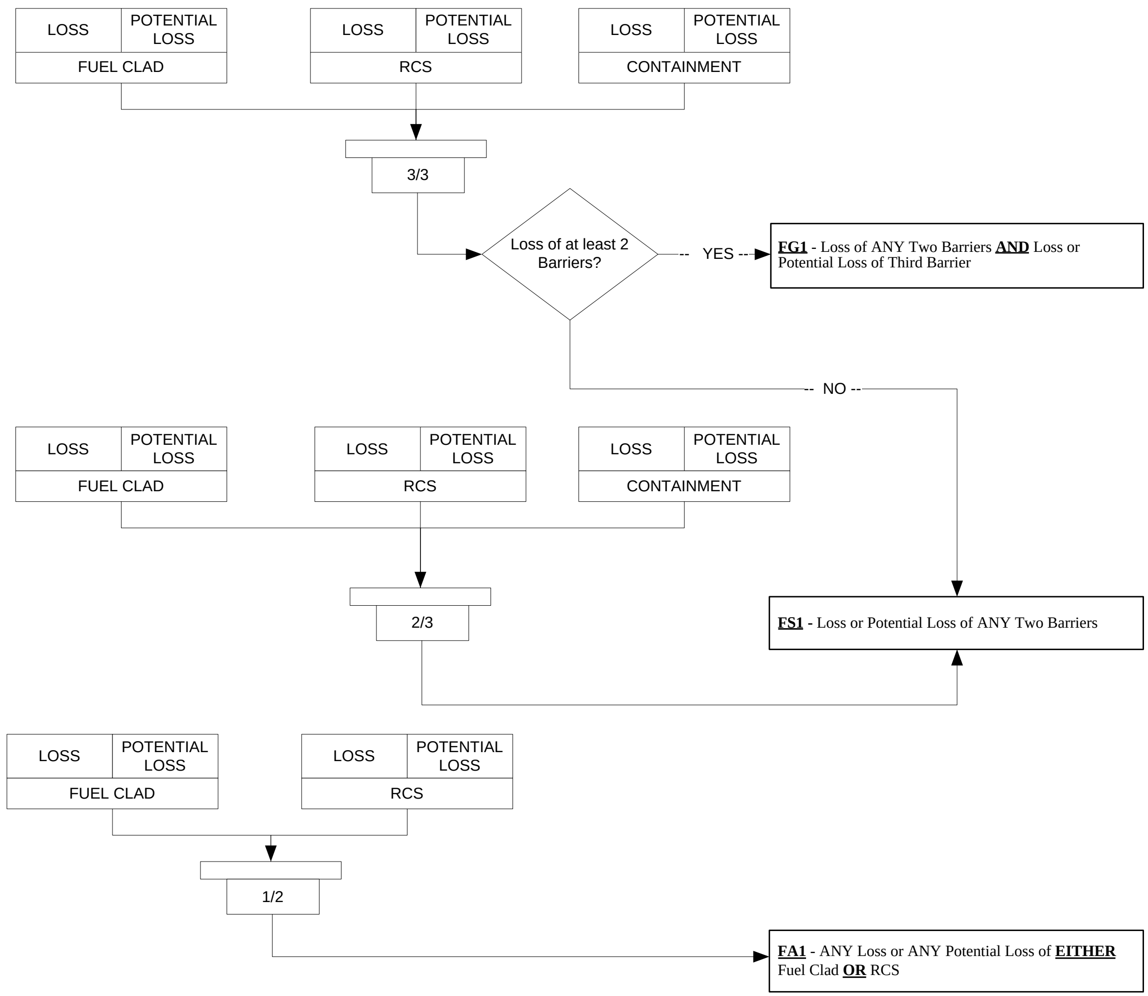
PINGP Basis Reference(s):

1. PINGP ISFSI Technical Specification 3.2.2, Cask Dose Rates

9.0 F - FISSION PRODUCT BARRIER ICS/EALS

Table F-1:
Recognition Category "F" Initiating Condition Matrix

GENERAL EMERGENCY	
FG1	Loss of any two barriers and Loss or Potential Loss of the third barrier. *Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*
SITE AREA EMERGENCY	
FS1	Loss or Potential Loss of any two barriers. *Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*
ALERT	
FA1	Any Loss or any Potential Loss of either the Fuel Clad or RCS barrier. *Op. Modes: Power Operation, Hot Standby, Startup, Hot Shutdown*



Fission Product Barrier Table

Thresholds for LOSS or POTENTIAL LOSS of Barriers

FG1 GENERAL EMERGENCY	FS1 SITE AREA EMERGENCY	FA1 ALERT
Loss of any two barriers and Loss or Potential Loss of the third barrier.	Loss or Potential Loss of any two barriers.	Any Loss or any Potential Loss of either the Fuel Clad or RCS barrier.

NOTE:	***Containment Radiation Monitors are sensitive to temperature changes which can cause thermally induced current errors. These monitors should not be used for classification in the first 5 minutes after a Steam Line Break or LOCA in Containment. Once 5 minutes has expired these monitors can be used for EAL determination.**

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
1. RCS or SG Tube Leakage		**1. RCS or SG Tube Leakage**		**1. RCS or SG Tube Leakage**	
Not Applicable	A. Core Cooling CSF – ORANGE entry conditions met.	A. An automatic or manual ECCS (SI) actuation is required by **EITHER** of the following: **1.** UNISOLABLE RCS leakage **OR** 2. SG tube RUPTURE.	A. GREATER THAN or EQUAL to 60 gpm leak rate excluding normal reductions in RCS inventory (example, letdown system or RCP seal leak-off) caused by EITHER of the following: 1. UNISOLABLE RCS leakage **OR** 2. SG tube leakage **OR** B. RCS Integrity CSF – RED entry conditions met.	A. A leaking or RUPTURED SG is FAULTED outside of containment.	Not Applicable

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
2. Inadequate Heat Removal		**2. Inadequate Heat Removal**		**2. Inadequate Heat Removal**	
A. Core Cooling CSF – RED entry conditions met.	A. Core Cooling CSF – ORANGE entry conditions met. **OR** NOTE: Heat Sink CSF should not be considered RED if total AFW flow is less than 200 gpm due to operator action. B. Heat Sink CSF – RED entry conditions met.	Not Applicable	NOTE: Heat Sink CSF should not be considered RED if total AFW flow is less than 200 gpm due to operator action. A. Heat Sink CSF – RED entry conditions met.	Not Applicable	A. Core Cooling CSF – RED entry conditions met for 15 minutes or longer.
3. RCS Activity / Containment Radiation		**3. RCS Activity / Containment Radiation**		**3. RCS Activity / Containment Radiation**	
A. *Containment radiation monitor reading greater than 5,500 R/hr on 1(2)R-48 or 49. **OR** B. Coolant activity greater than 300 µCi/gm dose equivalent Iodine-131.	Not Applicable	A. *Containment radiation monitor reading greater than 40 R/hr on 1(2)R-48 or 49.	Not Applicable	Not Applicable	A. *Containment radiation monitor reading greater than 20,000 R/hr on 1(2)R-48 or 49.

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
4. Containment Integrity or Bypass		**4. Containment Integrity or Bypass**		**4. Containment Integrity or Bypass**	
Not Applicable	Not Applicable	Not Applicable	Not Applicable	A. Containment isolation is required **AND** **EITHER** of the following: 1. Containment integrity has been lost based on Emergency Director judgment. **OR** 2. UNISOLABLE pathway from the containment to the environment exists. **OR** B. Indications of RCS leakage outside of containment.	A. Containment CSF – RED entry conditions met **OR** B. Containment H_2 concentration greater than or equal to 6% **OR** C. 1. Containment pressure greater than 23 psig **AND** 2. Less than one full train of containment spray and any two containment fan coils is operating per design for 15 minutes or longer.

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
5. Emergency Director Judgment		**5. Emergency Director Judgment**		**5. Emergency Director Judgment**	
A. **ANY** condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier.	A. **ANY** condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.	A. **ANY** condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.	A. **ANY** condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.	A. **ANY** condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.	A. **ANY** condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.

Basis Information For
PINGP EAL Fission Product Barrier Table

FUEL CLAD BARRIER Thresholds:

The Fuel Clad Barrier consists of the cladding material that contains the fuel pellets.

1. RCS or SG Tube Leakage

There is no Loss threshold associated with RCS or SG Tube Leakage.

<u>Potential Loss 1.A</u>

This reading indicates a reduction in reactor vessel water level sufficient to allow the onset of heat-induced cladding damage.

2. Inadequate Heat Removal

<u>Loss 2.A</u>

This reading indicates temperatures within the core are sufficient to cause significant superheating of reactor coolant.

<u>Potential Loss 2.A</u>

This reading indicates temperatures within the core are sufficient to allow the onset of heat-induced cladding damage.

<u>Potential Loss 2.B</u>

This condition indicates an extreme challenge to the ability to remove RCS heat using the steam generators (i.e., loss of an effective secondary-side heat sink). This condition represents a potential loss of the Fuel Clad Barrier. In accordance with EOPs, there may be unusual accident conditions during which operators intentionally reduce the heat removal capability of the steam generators; during these conditions, classification using threshold is not warranted.

Meeting this threshold results in a Site Area Emergency because this threshold is identical to RCS Barrier Potential Loss threshold 2.A; both will be met. This condition warrants a Site Area Emergency declaration because inadequate RCS heat removal may result in fuel heat-up sufficient to damage the cladding and increase RCS pressure to the point where mass will be lost from the system.

3. RCS Activity / Containment Radiation

Loss 3.A

The radiation monitor reading corresponds to an instantaneous release of all reactor coolant mass into the containment, assuming that reactor coolant activity equals 300μCi/gm dose equivalent I-131. Reactor coolant activity above this level is greater than that expected for iodine spikes and corresponds to an approximate range of 2% to 5% fuel clad damage. Since this condition indicates that a significant amount of fuel clad damage has occurred, it represents a loss of the Fuel Clad Barrier.

The radiation monitor reading in this threshold is higher than that specified for RCS Barrier Loss threshold 3.A since it indicates a loss of both the Fuel Clad Barrier and the RCS Barrier. Note that a combination of the two monitor readings appropriately escalates the emergency classification level to a Site Area Emergency.

1(2)R-48/R-49 Thermally Induced Errors: 1(2)R-48/49 Containment Radiation Monitors may experience errors due to temperature fluctuations after a DBA LOCA/MSLB. Industry testing and site technical evaluations of high range radiation monitor (HRRM) systems has shown that signal errors or a loss of signal can result from thermally induced current (TIC). During rapid thermal increases at the beginning of a DBA, these currents could be falsely interpreted as indications of the presence of ionizing radiation in containment and lead to inappropriate responses by Operators and Emergency Responders to higher than necessary Emergency Classification Levels. Based on Engineering Evaluation 608000000176, 1(2)R-48/49 monitors should not be used for EAL determination for the first 5 minutes after a Steam Line Break or LOCA in Containment.

Loss 3.B

This threshold indicates that RCS radioactivity concentration is greater than 300 μCi/gm dose equivalent I-131. Reactor coolant activity above this level is greater than that expected for iodine spikes and corresponds to an approximate range of 2% to 5% fuel clad damage. Since this condition indicates that a significant amount of fuel clad damage has occurred, it represents a loss of the Fuel Clad Barrier. It is recognized that sample collection and analysis of reactor coolant with highly elevated activity levels could require several hours to complete. Nonetheless, a sample-related threshold is included as a backup to other indications.

There is no Potential Loss threshold associated with RCS Activity / Containment Radiation.

4. Containment Integrity or Bypass

Not Applicable (included for numbering consistency)

5. Emergency Director Judgment

Loss 5.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Fuel Clad Barrier is lost.

Potential Loss 5.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Fuel Clad Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

RCS BARRIER Thresholds:

The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

1. RCS or SG Tube Leakage

Loss 1.A

This threshold is based on an UNISOLABLE RCS leak of sufficient size to require an automatic or manual actuation of the Emergency Core Cooling System (ECCS). This condition clearly represents a loss of the RCS Barrier.

This threshold is applicable to unidentified and pressure boundary leakage, as well as identified leakage. It is also applicable to UNISOLABLE RCS leakage through an interfacing system. The mass loss may be into any location – inside containment, to the secondary-side (i.e., steam generator tube leakage) or outside of containment.

A steam generator with primary-to-secondary leakage of sufficient magnitude to require a safety injection is considered to be RUPTURED. If a RUPTURED steam generator is also FAULTED outside of containment, the declaration escalates to a Site Area Emergency since the Containment Barrier Loss threshold 1.A will also be met.

Potential Loss 1.A

This threshold is based on an UNISOLABLE RCS leak that results in the inability to maintain pressurizer level within specified limits by operation of a normally used charging (makeup) pump, but an ECCS (SI) actuation has not occurred. The threshold is met when RCS leakage is GREATER THAN or EQUAL to 60 gpm leak rate excluding normal reductions in RCS inventory (example, letdown system or RCP seal leak-off).

This threshold is applicable to unidentified and pressure boundary leakage, as well as identified leakage. It is also applicable to UNISOLABLE RCS leakage through an interfacing system. The mass loss may be into any location – inside containment, to the secondary-side (i.e., steam generator tube leakage) or outside of containment.

If a leaking steam generator is also FAULTED outside of containment, the declaration escalates to a Site Area Emergency since the Containment Barrier Loss threshold 1.A will also be met.

Potential Loss 1.B

This condition indicates an extreme challenge to the integrity of the RCS pressure boundary due to pressurized thermal shock – a transient that causes rapid RCS cooldown while the RCS is in Mode 3 or higher (i.e., hot and pressurized).

2. Inadequate Heat Removal

There is no Loss threshold associated with Inadequate Heat Removal.

Potential Loss 2.A

This condition indicates an extreme challenge to the ability to remove RCS heat using the steam generators (i.e., loss of an effective secondary-side heat sink). This condition represents a potential loss of the RCS Barrier. In accordance with EOPs, there may be unusual accident conditions during which operators intentionally reduce the heat removal capability of the steam generators; during these conditions, classification using threshold is not warranted.

Meeting this threshold results in a Site Area Emergency because this threshold is identical to Fuel Clad Barrier Potential Loss threshold 2.B; both will be met. This condition warrants a Site Area Emergency declaration because inadequate RCS heat removal may result in fuel heat-up sufficient to damage the cladding and increase RCS pressure to the point where mass will be lost from the system.

3. RCS Activity / Containment Radiation

Loss 3.A

The radiation monitor reading corresponds to an instantaneous release of all reactor coolant mass into the containment, assuming that reactor coolant activity equals Technical Specification allowable limits. This value is lower than that specified for Fuel Clad Barrier Loss threshold 3.A since it indicates a loss of the RCS Barrier only.

1(2)R-48/R-49 Thermally Induced Errors: 1(2)R-48/49 Containment Radiation Monitors may experience errors due to temperature fluctuations after a DBA LOCA/MSLB. Industry testing and site technical evaluations of high range radiation monitor (HRRM) systems has shown that signal errors or a loss of signal can result from thermally induced current (TIC). During rapid thermal increases at the beginning of a DBA, these currents could be falsely interpreted as indications of the presence of ionizing radiation in containment and lead to inappropriate responses by Operators and Emergency Responders to higher than necessary Emergency Classification Levels. Based on Engineering Evaluation 608000000176, 1(2)R-48/49 monitors should not be used for EAL determination for the first 5 minutes after a Steam Line Break or LOCA in Containment.

There is no Potential Loss threshold associated with RCS Activity / Containment Radiation.

4. Containment Integrity or Bypass

Not Applicable (included for numbering consistency)

5. Emergency Director Judgment

Loss 5.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the RCS Barrier is lost.

Potential Loss 5.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the RCS Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

CONTAINMENT BARRIER Thresholds:

The Containment Barrier includes the containment building and connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side isolation valve. Containment Barrier thresholds are used as criteria for escalation of the ECL from Alert to a Site Area Emergency or a General Emergency.

1. RCS or SG Tube Leakage

Loss 1.A

This threshold addresses a leaking or RUPTURED Steam Generator (SG) that is also FAULTED outside of containment. The condition of the SG, whether leaking or RUPTURED, is determined in accordance with the thresholds for RCS Barrier Potential Loss 1.A and Loss 1.A, respectively. This condition represents a bypass of the containment barrier.

FAULTED is a defined term within the NEI 99-01 methodology; this determination is not necessarily dependent upon entry into, or diagnostic steps within, an EOP. For example, if the pressure in a steam generator is decreasing uncontrollably [part of the FAULTED definition] and the faulted steam generator isolation procedure is not entered because EOP user rules are dictating implementation of another procedure to address a higher priority condition, the steam generator is still considered FAULTED for emergency classification purposes.

The FAULTED criterion establishes an appropriate lower bound on the size of a steam release that may require an emergency classification. Steam releases of this size are readily observable with normal Control Room indications. The lower bound for this aspect of the containment barrier is analogous to the lower bound criteria specified in IC SU3 for the fuel clad barrier (i.e., RCS activity values) and IC SU4 for the RCS barrier (i.e., RCS leak rate values).

This threshold also applies to prolonged steam releases necessitated by operational considerations such as the forced steaming of a leaking or RUPTURED steam generator directly to atmosphere to cooldown the plant, or to drive an auxiliary (emergency) feed water pump. These types of conditions will result in a significant and sustained release of radioactive steam to the environment (and are thus similar to a FAULTED condition). The inability to isolate the steam flow without an adverse effect on plant cooldown meets the intent of a loss of containment.

Steam releases associated with the expected operation of a SG power operated relief valve or safety relief valve do not meet the intent of this threshold. Such releases may occur intermittently for a short period of time following a reactor trip as operators process through emergency operating procedures to bring the plant to a stable condition and prepare to initiate a plant cooldown. Steam releases associated with the unexpected operation of a valve (e.g., a stuck-open safety valve) do meet this threshold.

Following an SG tube leak or rupture, there may be minor radiological releases through a secondary-side system component (e.g., air ejectors, glad seal exhausters, valve packing, etc.). These types of releases do not constitute a loss or potential loss of containment but should be evaluated using the Recognition Category R ICs.

The emergency classification levels resulting from primary-to-secondary leakage, with or without a steam release from the FAULTED SG, are summarized below.

	Affected SG is FAULTED Outside of Containment?	
P-to-S Leak Rate	**Yes**	**No**
Less than or equal to 25 gpm	No classification	No classification
Greater than 25 gpm	Unusual Event per SU4	Unusual Event per SU4
GREATER THAN or EQUAL to 60 gpm leak rate excluding normal reduction in RCS inventory (example, letdown system or RCP seal leak-off) (RCS Barrier Potential Loss)	Site Area Emergency per FS1	Alert per FA1
Requires an automatic or manual ECCS (SI) actuation (*RCS Barrier Loss*)	Site Area Emergency per FS1	Alert per FA1

There is no Potential Loss threshold associated with RCS or SG Tube Leakage.

2. Inadequate Heat Removal

There is no Loss threshold associated with Inadequate Heat Removal.

Potential Loss 2.A

This condition represents an IMMINENT core melt sequence which, if not corrected, could lead to vessel failure and an increased potential for containment failure. For this condition to occur, there must already have been a loss of the RCS Barrier and the Fuel Clad Barrier. If implementation of a procedure(s) to restore adequate core cooling is not effective (successful) within 15 minutes, it is assumed that the event trajectory will likely lead to core melting and a subsequent challenge of the Containment Barrier.

The restoration procedure is considered “effective” if core exit thermocouple readings are decreasing and/or if reactor vessel level is increasing. Whether or not the procedure(s) will be effective should be apparent within 15 minutes. The Emergency Director should escalate the emergency classification level as soon as it is determined that the procedure(s) will not be effective.

Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation in a significant fraction of core damage scenarios, and that the likelihood of containment failure is very small in these events. Given this, it is appropriate to provide 15 minutes beyond the required entry point to determine if procedural actions can reverse the core melt sequence.

3. RCS Activity / Containment Radiation

There is no Loss threshold associated with RCS Activity / Containment Radiation.

<u>Potential Loss 3.A</u>

The radiation monitor reading corresponds to an instantaneous release of all reactor coolant mass into the containment, assuming that 20% of the fuel cladding has failed. This level of fuel clad failure is well above that used to determine the analogous Fuel Clad Barrier Loss and RCS Barrier Loss thresholds.

NUREG-1228, Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents, indicates the fuel clad failure must be greater than approximately 20% in order for there to be a major release of radioactivity requiring offsite protective actions. For this condition to exist, there must already have been a loss of the RCS Barrier and the Fuel Clad Barrier. It is therefore prudent to treat this condition as a potential loss of containment which would then escalate the emergency classification level to a General Emergency.

1(2)R-48/R-49 Thermally Induced Errors: 1(2)R-48/49 Containment Radiation Monitors may experience errors due to temperature fluctuations after a DBA LOCA/MSLB. Industry testing and site technical evaluations of high range radiation monitor (HRRM) systems has shown that signal errors or a loss of signal can result from thermally induced current (TIC). During rapid thermal increases at the beginning of a DBA, these currents could be falsely interpreted as indications of the presence of ionizing radiation in containment and lead to inappropriate responses by Operators and Emergency Responders to higher than necessary Emergency Classification Levels. Based on Engineering Evaluation 608000000176, 1(2)R-48/49 monitors should not be used for EAL determination for the first 5 minutes after a Steam Line Break or LOCA in Containment.

4. Containment Integrity or Bypass

Loss 4.A

These thresholds address a situation where containment isolation is required and one of two conditions exists as discussed below. Users are reminded that there may be accident and release conditions that simultaneously meet both thresholds 4.A.1 and 4.A.2.

4.A.1 – Containment integrity has been lost, i.e., the actual containment atmospheric leak rate likely exceeds that associated with allowable leakage (or sometimes referred to as design leakage). Following the release of RCS mass into containment, containment pressure will fluctuate based on a variety of factors; a loss of containment integrity condition may (or may not) be accompanied by a noticeable drop in containment pressure. Recognizing the inherent difficulties in determining a containment leak rate during accident conditions, it is expected that the Emergency Director will assess this threshold using judgment, and with due consideration given to current plant conditions, and available operational and radiological data (e.g., containment pressure, readings on radiation monitors outside containment, operating status of containment pressure control equipment, etc.).

Refer to the middle piping run of Figure F-1. Two simplified examples are provided. One is leakage from a penetration and the other is leakage from an in-service system valve. Depending upon radiation monitor locations and sensitivities, the leakage could be detected by any of the four monitors depicted in the figure.

Another example would be a loss or potential loss of the RCS barrier, and the simultaneous occurrence of two FAULTED locations on a steam generator where one fault is located inside containment (e.g., on a steam or feedwater line) and the other outside of containment. In this case, the associated steam line provides a pathway for the containment atmosphere to escape to an area outside the containment.

Following the leakage of RCS mass into containment and a rise in containment pressure, there may be minor radiological releases associated with allowable (design) containment leakage through various penetrations or system components. These releases do not constitute a loss or potential loss of containment but should be evaluated using the Recognition Category R ICs.

4.A.2 – Conditions are such that there is an UNISOLABLE pathway for the migration of radioactive material from the containment atmosphere to the environment. As used here, the term “environment” includes the atmosphere of a room or area, outside the containment, that may, in turn, communicate with the outside-the-plant atmosphere (e.g., through discharge of a ventilation system or atmospheric leakage). Depending upon a variety of factors, this condition may or may not be accompanied by a noticeable drop in containment pressure.

Refer to the top piping run of Figure F-1. In this simplified example, the inboard and outboard isolation valves remained open after a containment isolation was required (i.e., containment isolation was not successful). There is now an UNISOLABLE pathway from the containment to the environment.

The existence of a filter is not considered in the threshold assessment. Filters do not remove fission product noble gases. In addition, a filter could become ineffective due to iodine and/or particulate loading beyond design limits (i.e., retention ability has been exceeded) or water saturation from steam/high humidity in the release stream.

Leakage between two interfacing liquid systems, by itself, does not meet this threshold.

Refer to the bottom piping run of Figure F-1. In this simplified example, leakage in an RCP seal cooler is allowing radioactive material to enter the Auxiliary Building. The radioactivity would be detected by the Process Monitor. If there is no leakage from the closed water cooling system to the Auxiliary Building, then no threshold has been met. If the pump or system piping developed a leak that allowed steam/water to enter the Auxiliary Building, then threshold 4.B would be met. Depending upon radiation monitor locations and sensitivities, this leakage could be detected by any of the four monitors depicted in the figure and cause threshold 4.A.1 to be met as well.

Following the leakage of RCS mass into containment and a rise in containment pressure, there may be minor radiological releases associated with allowable (design) containment leakage through various penetrations or system components. Minor releases may also occur if a containment isolation valve(s) fails to close but the containment atmosphere escapes to a closed system. These releases do not constitute a loss or potential loss of containment but should be evaluated using the Recognition Category R ICs.

The status of the containment barrier during an event involving steam generator tube leakage is assessed using Loss Threshold 1.A.

<u>Loss 4.B</u>

Containment sump, temperature, pressure and/or radiation levels will increase if reactor coolant mass is leaking into the containment. If these parameters have not increased, then the reactor coolant mass may be leaking outside of containment (i.e., a containment bypass sequence). Increases in sump, temperature, pressure, flow and/or radiation level readings outside of the containment may indicate that the RCS mass is being lost outside of containment.

Unexpected elevated readings and alarms on radiation monitors with detectors outside containment should be corroborated with other available indications to confirm that the source is a loss of RCS mass outside of containment. If the fuel clad barrier has not been lost, radiation monitor readings outside of containment may not increase significantly; however, other unexpected changes in sump levels, area temperatures or pressures, flow rates, etc. should be sufficient to determine if RCS mass is being lost outside of the containment.

Refer to the middle piping run of Figure F-1. In this simplified example, a leak has occurred at a reducer on a pipe carrying reactor coolant in the Auxiliary Building. Depending upon radiation monitor locations and sensitivities, the leakage could be detected by any of the four monitors depicted in the figure and cause threshold 4.A.1 to be met as well.

To ensure proper escalation of the emergency classification, the RCS leakage outside of containment must be related to the mass loss that is causing the RCS Loss and/or Potential Loss threshold 1.A to be met.

<u>Potential Loss 4.A</u>

If containment pressure exceeds the design pressure, there exists a potential to lose the Containment Barrier. To reach this level, there must be an inadequate core cooling condition for an extended period of time; therefore, the RCS and Fuel Clad barriers would already be lost. Thus, this threshold is a discriminator between a Site Area Emergency and General Emergency since there is now a potential to lose the third barrier.

Potential Loss 4.B

The existence of an explosive mixture means, at a minimum, that the containment atmospheric hydrogen concentration is sufficient to support a hydrogen burn (i.e., at the lower deflagration limit). A hydrogen burn will raise containment pressure and could result in collateral equipment damage leading to a loss of containment integrity. It therefore represents a potential loss of the Containment Barrier.

Potential Loss 4.C

This threshold describes a condition where containment pressure is greater than the setpoint at which containment energy (heat) removal systems are designed to automatically actuate, and less than one full train of equipment is capable of operating per design. The 15-minute criterion is included to allow operators time to manually start equipment that may not have automatically started, if possible. If the EAL is briefly met during an expected (normal) plant response, an emergency declaration is not warranted provided that associated systems and components are operating as expected, and operator actions are performed in accordance with procedures. If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the EAL is not considered met and the associated emergency declaration is not required. This threshold represents a potential loss of containment in that containment heat removal/depressurization systems (e.g., containment sprays, containment fan coils, etc., but not including containment venting strategies) are either lost or performing in a degraded manner.

5. Emergency Director Judgment

Loss 5.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Containment Barrier is lost.

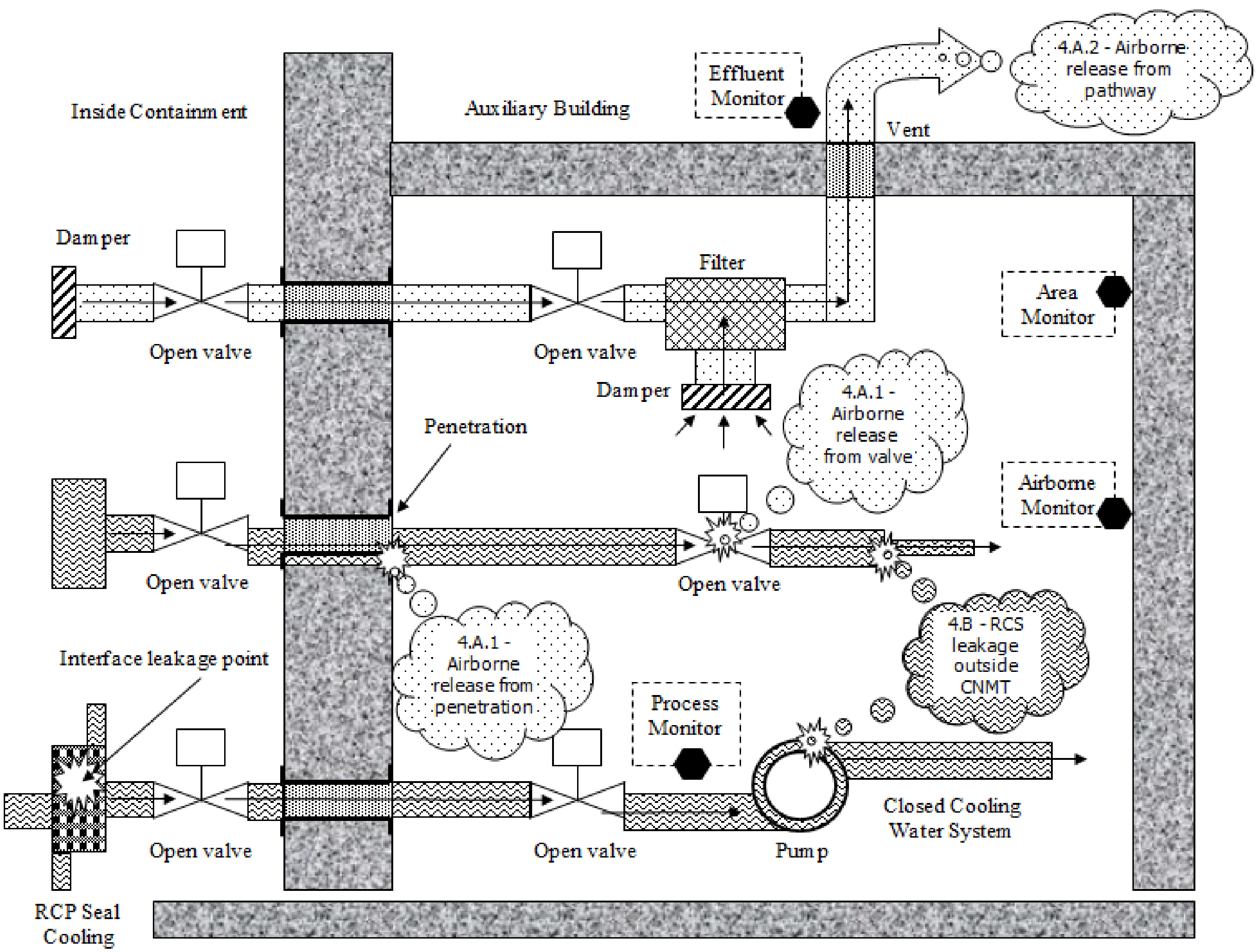
Potential Loss 5.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Containment Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

PINGP Basis Reference(s):

1. 1(2)F-0.2, Core Cooling
2. 1(2)F-0.3, Heat Sink
3. 1(2)F-0.4, Integrity
4. 1(2)F-0.5, Containment
5. Technical Specifications Table 3.3.2-1, Engineered Safety Feature Actuation System Instrumentation
6. Technical Specifications Bases 3.6.5, Containment Spray and Cooling Systems
7. USAR Section 7.5.3.1, General
8. USAR Section 7.5.3.2.5, High Range Containment Monitors (1R-48, 1R-49, 2R-48, 2R-49)
9. USAR Section 7.10.3.6, High Range Containment Monitors
10. USAR Table 7.5-1, Radiation Monitoring System Channel Sensitivities
11. USAR Table 7.10-1, Regulatory Guide 1.97 Rev. 2 Variables – Unit 1
12. USAR Table 7.10-2, Regulatory Guide 1.97 Rev. 2 Variables – Unit 2
13. USAR Appendix D, Radioactive Source Bases
14. USAR Appendix K, Containment Pressure Response to LOCA
15. 1(2)FR-C.1, Response To Inadequate Core Cooling
16. 1(2)FR-H.1, Response To Loss Of Secondary Heat Sink
17. GEN-PI-092, Determine Radiological Emergency Action Levels For FA1, FS1, FG1 The Fission

Figure F-1: PWR Containment Integrity or Bypass Examples



10.0 H - HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY ICS/EALS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
HG1 HOSTILE ACTION resulting in loss of physical control of the facility. *Op. Modes: All*	**HS1** HOSTILE ACTION within the PROTECTED AREA. *Op. Modes: All*	**HA1** HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes. *Op. Modes: All*	**HU1** Confirmed SECURITY CONDITION or threat. *Op. Modes: All*
			HU2 Seismic event greater than OBE levels. *Op. Modes: All*
			HU3 Hazardous event. *Op. Modes: All*
			HU4 FIRE potentially degrading the level of safety of the plant. *Op. Modes: All*
		HA5 Gaseous release impeding access to equipment necessary for normal plant operations, cooldown or shutdown. *Op. Modes: All*	
	HS6 Inability to control a key safety function from outside the Control Room. *Op. Modes: All*	**HA6** Control Room evacuation resulting in transfer of plant control to alternate locations. *Op. Modes: All*	
HG7 Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency. *Op. Modes: All*	**HS7** Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency. *Op. Modes: All*	**HA7** Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert. *Op. Modes: All*	**HU7** Other conditions exist which in the judgment of the Emergency Director warrant declaration of a NUE. *Op. Modes: All*

HG1

ECL: General Emergency

Initiating Condition: HOSTILE ACTION resulting in loss of physical control of the facility.

Operating Mode Applicability: All

Emergency Action Levels:

HG1.1 a. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by Security Shift Supervisor.

AND

b. **EITHER** of the following has occurred:

1. **ANY** of the following safety functions cannot be controlled or maintained.

   - Reactivity control
   - Core cooling
   - RCS heat removal

OR

2. Damage to spent fuel has occurred or is IMMINENT.

Basis:

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

PROTECTED AREA: The area encompassing all controlled areas within the security protected area fence as shown in USAR Figure 1.1-3, Site Plan Prairie Island Security Fence. This area does not include the ISFSI.

This IC addresses an event in which a HOSTILE FORCE has taken physical control of the facility to the extent that the plant staff can no longer operate equipment necessary to maintain key safety functions. It also addresses a HOSTILE ACTION leading to a loss of physical control that results in actual or IMMINENT damage to spent fuel due to 1) damage to a spent fuel pool cooling system (e.g., pumps, heat exchangers, controls, etc.) or, 2) loss of spent fuel pool integrity such that sufficient water level cannot be maintained.

Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program].

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

PINGP Basis Reference(s):

1. PINGP Security Plan
2. PINGP Security Training and Qualification Plan
3. PINGP Safeguards Contingency Plan
4. PINGP Independent Spent Fuel Storage Installation Security Program
5. USAR Figure 1.1-3, Prairie Island Security Fence Drawing

HG7

ECL: General Emergency

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency.

Operating Mode Applicability: All

Emergency Action Levels:

HG7.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Basis:

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a General Emergency.

PINGP Basis Reference(s):

None

HS1

ECL: Site Area Emergency

Initiating Condition: HOSTILE ACTION within the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Levels:

HS1.1 A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by Security Shift Supervisor.

Basis:

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

PROTECTED AREA: The area encompassing all controlled areas within the security protected area fence as shown in USAR Figure 1.1-3, Site Plan Prairie Island Security Fence. This area does not include the ISFSI.

This IC addresses the occurrence of a HOSTILE ACTION within the PROTECTED AREA. This event will require rapid response and assistance due to the possibility for damage to plant equipment.

Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program].

As time and conditions allow, these events require a heightened state of readiness by the plant staff and implementation of onsite protective measures (e.g., evacuation, dispersal or sheltering). The Site Area Emergency declaration will mobilize ORO resources and have them available to develop and implement public protective actions in the unlikely event that the attack is successful in impairing multiple safety functions.

This IC does not apply to a HOSTILE ACTION directed at an ISFSI PROTECTED AREA located outside the plant PROTECTED AREA; such an attack should be assessed using IC HA1. It also does not apply to incidents that are accidental events, acts of civil disobedience, or otherwise are not a HOSTILE ACTION perpetrated by a HOSTILE FORCE. Examples include the crash of a small aircraft, shots from hunters, physical disputes between employees, etc. Reporting of these types of events is adequately addressed by other EALs, or the requirements of 10 CFR § 73.71 or 10 CFR § 50.72.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

Escalation of the emergency classification level would be via IC HG1.

PINGP Basis Reference(s):

1. PINGP Security Plan
2. PINGP Security Training and Qualification Plan
3. PINGP Safeguards Contingency Plan
4. PINGP Independent Spent Fuel Storage Installation Security Program
5. USAR Figure 1.1-3, Prairie Island Security Fence Drawing

HS6

ECL: Site Area Emergency

Initiating Condition: Inability to control a key safety function from outside the Control Room.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown, Cold Shutdown, Refueling

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Site Area Emergency promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

HS6.1

a. An event has resulted in plant control being transferred from the Control Room to the remote Hot Shutdown Panels.

AND

b. Control of **ANY** of the following key safety functions is not reestablished within 15 minutes.

- Reactivity control (Modes 1, 2, and 3 only)
- Core cooling
- RCS heat removal

Basis:

This IC addresses an evacuation of the Control Room that results in transfer of plant control to alternate locations, and the control of a key safety function cannot be reestablished in a timely manner. The failure to gain control of a key safety function following a transfer of plant control to alternate locations is a precursor to a challenge to one or more fission product barriers within a relatively short period of time.

The determination of whether or not “control” is established at the remote safe shutdown location(s) is based on Emergency Director judgment. The Emergency Director is expected to make a reasonable, informed judgment within 15 minutes whether or not the operating staff has control of key safety functions from the remote safe shutdown location(s).

Escalation of the emergency classification level would be via IC FG1 or CG1.

PINGP Basis Reference(s):

1. 1(2)C1.3 AOP-1, Shutdown from Outside the Control Room – Unit 1(2)
2. F-5 Appendix B, Control Room Evacuation (Fire)

HS7

ECL: Site Area Emergency

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency.

Operating Mode Applicability: All

Emergency Action Levels:

HS7.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts, (1) toward site personnel or equipment that could lead to the likely failure of or, (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Basis:

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a Site Area Emergency.

PINGP Basis Reference(s):

None

HA1

ECL: Alert

Initiating Condition: HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.

Operating Mode Applicability: All

Emergency Action Levels: (HA1.1 or HA1.2)

HA1.1 A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by Security Shift Supervisor.

HA1.2 A validated notification from NRC of an aircraft attack threat within 30 minutes of PINGP.

Basis:

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

OWNER CONTROLLED AREA: Land owned or leased by Prairie Island Nuclear Generating Plant. This area is bounded by a wire mesh, owner controlled fence. Unauthorized personnel are not allowed within this area.

This IC addresses the occurrence of a HOSTILE ACTION within the OWNER CONTROLLED AREA or notification of an aircraft attack threat. This event will require rapid response and assistance due to the possibility of the attack progressing to the PROTECTED AREA, or the need to prepare the plant and staff for a potential aircraft impact.

Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program].

As time and conditions allow, these events require a heightened state of readiness by the plant staff and implementation of onsite protective measures (e.g., evacuation, dispersal or sheltering). The Alert declaration will also heighten the awareness of Offsite Response Organizations, allowing them to be better prepared should it be necessary to consider further actions.

This IC does not apply to incidents that are accidental events, acts of civil disobedience, or otherwise are not a HOSTILE ACTION perpetrated by a HOSTILE FORCE. Examples include the crash of a small aircraft, shots from hunters, physical disputes between employees, etc. Reporting of these types of events is adequately addressed by other EALs, or the requirements of 10 CFR § 73.71 or 10 CFR § 50.72.

EAL HA1.1 is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA. This includes any action directed against the ISFSI which is located outside the plant PROTECTED AREA.

EAL HA1.2 addresses the threat from the impact of an aircraft on the plant, and the anticipated arrival time is within 30 minutes. The intent of this EAL is to ensure that threat-related notifications are made in a timely manner so that plant personnel and OROs are in a heightened state of readiness. This EAL is met when the threat-related information has been validated in accordance with site procedures.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may be provided by NORAD through the NRC.

In some cases, it may not be readily apparent if an aircraft impact within the OWNER CONTROLLED AREA was intentional (i.e., a HOSTILE ACTION). It is expected, although not certain, that notification by an appropriate Federal agency to the site would clarify this point. In this case, the appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. The emergency declaration, including one based on other ICs/EALs, should not be unduly delayed while awaiting notification by a Federal agency.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

Escalation of the emergency classification level would be via IC HS1.

PINGP Basis Reference(s):

1. PINGP Security Plan
2. PINGP Security Training and Qualification Plan
3. PINGP Safeguards Contingency Plan
4. PINGP Independent Spent Fuel Storage Installation Security Program

HA5

ECL: Alert

Initiating Condition: Gaseous release impeding access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability: All

Emergency Action Levels:

NOTE:	**If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.**

HA5.1 a. Release of a toxic, corrosive, asphyxiant or flammable gas into any of the Table H1 plant rooms or areas:

AND

b. Entry into the room or area is prohibited or impeded.

Table H1		
Mode	**Building**	**Area/Room**
Mode 3	Auxiliary Building	735' General Area
Mode 4	Auxiliary Building	695' General Area
Mode 5	Auxiliary Building	695' General Area

Basis:

This IC addresses an event involving a release of a hazardous gas that precludes or impedes access to equipment necessary to maintain normal plant operation, or required for a normal plant cooldown and shutdown. This condition represents an actual or potential substantial degradation of the level of safety of the plant.

An Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect at the time of the gaseous release. The emergency classification is not contingent upon whether entry is actually necessary at the time of the release.

Evaluation of the IC and EAL do not require atmospheric sampling; it only requires the Emergency Director's judgment that the gas concentration in the affected room/area is sufficient to preclude or significantly impede procedurally required access. This judgment may be based on a variety of factors including an existing job hazard analysis, report of ill effects on personnel, advice from a subject matter expert or operating experience with the same or similar hazards. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., requiring use of protective equipment, such as SCBAs, that is not routinely employed).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the gaseous release). For example, the plant is in Mode 1 when the gaseous release occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The gas release is a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., fire suppression system testing).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal operator or security rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

This EAL does not apply to firefighting activities that automatically or manually activate a fire suppression system in an area.

HA5.1 mode of applicability has been limited to the applicable modes identified in Table H1. If plant operating procedures or plant configuration changes result in changes to areas requiring access or modes at which access is required, a corresponding change to Table H1 areas will be required as originally evaluated under Sharepoint Record 01549495, PINGP Plant Specific Area Evaluation for Use in the EALs.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

PINGP Basis Reference(s):

1. USAR Section 12.2.1.1, Classification of Structures and Equipment

2. USAR Table 12.2-1, Classification of Structures, Systems, and Components

3. Sharepoint Record 01549495, PINGP Plant Specific Area Evaluation For Use In The EALs

HA6

ECL: Alert

Initiating Condition: Control Room evacuation resulting in transfer of plant control to alternate locations.

Operating Mode Applicability: All

Emergency Action Levels:

HA6.1 An event has resulted in plant control being transferred from the Control Room to the remote Hot Shutdown Panels.

Basis:

This IC addresses an evacuation of the Control Room that results in transfer of plant control to alternate locations outside the Control Room. The loss of the ability to control the plant from the Control Room is considered to be a potential substantial degradation in the level of plant safety.

Following a Control Room evacuation, control of the plant will be transferred to alternate shutdown locations. The necessity to control a plant shutdown from outside the Control Room, in addition to responding to the event that required the evacuation of the Control Room, will present challenges to plant operators and other on-shift personnel. Activation of the ERO and emergency response facilities will assist in responding to these challenges.

Escalation of the emergency classification level would be via IC HS6.

PINGP Basis Reference(s):

1. 1(2)C1.3 AOP-1, Shutdown from Outside the Control Room – Unit 1(2)

2. F-5 Appendix B, Control Room Evacuation (Fire)

HA7

ECL: Alert

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert.

Operating Mode Applicability: All

Emergency Action Levels:

HA7.1 Other conditions exist which, in the judgment of the Emergency Director, indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Basis:

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for an Alert.

PINGP Basis Reference(s):

None

HU1

ECL: Notification of Unusual Event

Initiating Condition: Confirmed SECURITY CONDITION or threat.

Operating Mode Applicability: All

Emergency Action Levels: (HU1.1 or HU1.2 or HU1.3)

HU1.1 A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by Security Shift Supervisor.

HU1.2 Notification of a credible security threat directed at PINGP.

HU1.3 A validated notification from the NRC providing information of an aircraft threat.

Basis:

SECURITY CONDITION: Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

This IC addresses events that pose a threat to plant personnel or SAFETY SYSTEM equipment, and thus represent a potential degradation in the level of plant safety. Security events which do not meet one of these EALs are adequately addressed by the requirements of 10 CFR § 73.71 or 10 CFR § 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under ICs HA1, HS1 and HG1.

Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event. Classification of these events will initiate appropriate threat-related notifications to plant personnel and OROs.

Security plans and terminology are based on the guidance provided by NEI 03-12, Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program].

EAL HU1.1 references Security Shift Supervisor because these are the individuals trained to confirm that a security event is occurring or has occurred. Training on security event confirmation and classification is controlled due to the nature of Safeguards and 10 CFR § 2.39 information.

EAL HU1.2 addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with site procedures.

EAL HU1.3 addresses the threat from the impact of an aircraft on the plant. The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may also be provided by NORAD through the NRC. Validation of the threat is performed in accordance with site procedures.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

Escalation of the emergency classification level would be via IC HA1.

PINGP Basis Reference(s):

1. PINGP Security Plan
2. PINGP Security Training and Qualification Plan
3. PINGP Safeguards Contingency Plan
4. PINGP Independent Spent Fuel Storage Installation Security Program
5. FP-S-FSIP-08, Contingency Plan Implementing Procedures

HU2

ECL: Notification of Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

HU2.1 Seismic event greater than Operational Basis Earthquake (OBE) as indicated by an "OBE Exceedance" alarm on Seismic Monitoring Panel.

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operational Basis Earthquake (OBE). An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE) should have no significant impact on safety-related systems, structures and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (e.g., performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

Event verification with external sources should not be necessary during or following an OBE. The Shift Manager or Emergency Director may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

PINGP Basis Reference(s):

1. C47023-0603, Seismic Monitoring Panel
2. AB-3, Earthquakes

HU3

ECL: Notification of Unusual Event

Initiating Condition: Hazardous event

Operating Mode Applicability: All

Emergency Action Levels: (HU3.1 or HU3.2 or HU3.3 or HU3.4 or HU3.5)

NOTE:	**EAL HU3.4 does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.**

HU3.1 A tornado strike within the PROTECTED AREA.

HU3.2 Internal room or area flooding of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component needed for the current operating mode.

HU3.3 Movement of personnel within the PROTECTED AREA is impeded due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release).

HU3.4 A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles.

HU3.5 High or low river water level occurrences affecting the PROTECTED AREA as indicated by **EITHER** of the following:

- River Intake level greater than 692 ft MSL
- River Intake level less than 669.5 ft MSL

Basis:

PROTECTED AREA: The area encompassing all controlled areas within the security protected area fence as shown in USAR Figure 1.1-3, Site Plan Prairie Island Security Fence. This area does not include the ISFSI.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS.

This IC addresses hazardous events that are considered to represent a potential degradation of the level of safety of the plant.

EAL HU3.1 addresses a tornado striking (touching down) within the Protected Area.

EAL HU3.2 addresses flooding of a building, room or area that results in operators isolating power to a SAFETY SYSTEM component due to water level or other wetting concerns. Classification is also required if the water level or related wetting causes an automatic isolation of a SAFETY SYSTEM component from its power source (e.g., a breaker or relay trip). To warrant classification, operability of the affected component must be required by Technical Specifications for the current operating mode.

EAL HU3.3 addresses a hazardous materials event originating at an offsite location and of sufficient magnitude to impede the movement of personnel within the PROTECTED AREA.

EAL HU3.4 addresses a hazardous event that causes an on-site impediment to vehicle movement and significant enough to prohibit the plant staff from accessing the site using personal vehicles. Examples of such an event include site flooding caused by a hurricane, heavy rains, up-river water releases, dam failure, etc., or a train derailment blocking access to PINGP.

This EAL is not intended apply to routine impediments such as fog, snow, ice, or vehicle breakdowns or accidents, but rather to more significant conditions such as the Hurricane Andrew strike on Turkey Point in 1992, the flooding around the Cooper Station during the Midwest floods of 1993, or the flooding around Ft. Calhoun Station in 2011.

EAL HU3.5 addresses River water level. River water level greater than 692 ft MSL requires the units to be shutdown. River water level less than 669.5 ft MSL is the level corresponding to the loss of non-safety related cooling water pumps 11 and 21.

Escalation of the emergency classification level would be based on ICs in Recognition Categories R, F, S or C.

PINGP Basis Reference(s):

1. AB-2, Tornado/Severe Thunderstorms/High Winds
2. AB-4, Flood
3. C47020-0106, 11 Cooling Water Pump Locked Out
4. C47520-0101, 21 Cooling Water Pump Locked Out
5. C47041 AR 26, River Intake Canal L High Delta-H
6. USAR Section 2.4, Hydrology
7. EC 23659, Evaluation of Turbine Building Internal Flooding With the External Flood Barriers Installed

HU4

ECL: Notification of Unusual Event

Initiating Condition: FIRE potentially degrading the level of safety of the plant

Operating Mode Applicability: All

Emergency Action Levels: (HU4.1 or HU4.2 or HU4.3 or HU4.4)

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.**

HU4.1 a. A FIRE is <u>NOT</u> extinguished within 15-minutes of ANY of the following FIRE detection indications:

- Report from the field (i.e., visual observation)
- Receipt of multiple (more than 1) fire alarms or indications
- Field verification of a single fire alarm

AND

b. The FIRE is located within ANY of the Table H2 plant rooms or areas.

HU4.2 a. Receipt of a single fire alarm (i.e., no other indications of a FIRE).

AND

b. The FIRE is located within ANY of the Table H2 plant rooms or areas.

AND

c. The existence of a FIRE is not verified within 30-minutes of alarm receipt.

HU4.3 A FIRE within the plant PROTECTED AREA or ISFSI PROTECTED AREA not extinguished within 60-minutes of the initial report, alarm or indication.

HU4.4 A FIRE within the plant PROTECTED AREA or ISFSI PROTECTED AREA that requires firefighting support by an offsite fire response agency to extinguish.

Table H2	
Building	**Rooms**
Control Building	Control Room
	Control Room Chiller Room
Turbine Building	Battery Rooms
	AFW Rooms
	D1/D2 Diesel Generator Rooms
	Safeguards Switchgear Rooms
	Relay Room
	480 V Switchgear Rooms
	Event Monitoring Rooms
D5/D6 Diesel Generator Building	All
Auxiliary Building	All areas within AB Special Vent Zone
Plant Screen House	Safeguards Cooling Water Pump Rooms
	Safeguards Traveling Screen Room
Shield Building/Containment	All

Basis:

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

PROTECTED AREA: The area encompassing all controlled areas within the security protected area fence as shown in USAR Figure 1.1-3, Site Plan Prairie Island Security Fence. This area does not include the ISFSI.

ISFSI PROTECTED AREA: The area surrounding the Independent Spent Fuel Storage Installation encompassed by the double chain link fence surrounding the ISFSI as defined in the Security Plan; the ISFSI Protected Area is excluded from the Plant Protected Area.

INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI): A complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage.

This IC addresses the magnitude and extent of FIRES that may be indicative of a potential degradation of the level of safety of the plant.

EAL HU4.1

The intent of the 15-minute duration is to size the FIRE and to discriminate against small FIRES in Table H2 that are readily extinguished (e.g., smoldering waste paper basket). In addition to alarms, other indications of a FIRE could be a drop in fire main pressure, automatic activation of a suppression system, etc.

Upon receipt, operators will take prompt actions to confirm the validity of an initial fire alarm, indication, or report. For EAL assessment purposes, the emergency declaration clock starts at the time that the initial alarm, indication, or report was received, and not the time that a subsequent verification action was performed. Similarly, the fire duration clock also starts at the time of receipt of the initial alarm, indication or report.

EAL HU4.2

This EAL addresses receipt of a single fire alarm in Table H2, and the existence of a FIRE is not verified (i.e., proved or disproved) within 30-minutes of the alarm. Upon receipt, operators will take prompt actions to confirm the validity of a single fire alarm. For EAL assessment purposes, the 30-minute clock starts at the time that the initial alarm was received, and not the time that a subsequent verification action was performed.

A single fire alarm, absent other indication(s) of a FIRE, may be indicative of equipment failure or a spurious activation, and not an actual FIRE. For this reason, additional time is allowed to verify the validity of the alarm. The 30-minute period is a reasonable amount of time to determine if an actual FIRE exists; however, after that time, and absent information to the contrary, it is assumed that an actual FIRE is in progress.

If an actual FIRE is verified by a report from the field, then EAL HU4.1 is immediately applicable, and the emergency must be declared if the FIRE is not extinguished within 15-minutes of the report. If the alarm is verified to be due to an equipment failure or a spurious activation, and this verification occurs within 30-minutes of the receipt of the alarm, then this EAL is not applicable and no emergency declaration is warranted.

EAL HU4.3

In addition to a FIRE addressed by EAL HU4.1 or EAL HU4.2, a FIRE within the plant PROTECTED AREA not extinguished within 60-minutes may also potentially degrade the level of plant safety. This basis extends to a FIRE occurring within the PROTECTED AREA of an ISFSI located outside the plant PROTECTED AREA.

EAL HU4.4

If a FIRE within the plant PROTECTED AREA or ISFSI PROTECTED AREA is of sufficient size to require a response by an offsite firefighting agency (e.g., a local town Fire Department), then the level of plant safety is potentially degraded. The dispatch of an offsite firefighting agency to the site requires an emergency declaration only if it is needed to actively support firefighting efforts because the fire is beyond the capability of the Fire Brigade to extinguish. Declaration is not necessary if the agency resources are placed on stand-by, or supporting post-extinguishment recovery or investigation actions.

Basis-Related Requirements from the Fire Protection Program

> Criterion 3 of Appendix A to this part specifies that "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions."
>
> When considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage resulting from loss of coolant through boil-off.
>
> Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of design basis accidents under post-fire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents.

In addition, the use of 1-hour fire barriers for the enclosure of cable and equipment and associated non-safety circuits of one redundant train. As used in EAL HU4.2, the 30-minutes to verify a single alarm is well within this worst-case 1-hour time period.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

PINGP Basis Reference(s):

1. USAR Section 12.2.1.1, Classification of Structures and Equipment
2. USAR Table 12.2-1, Classification of Structures, Systems and Components

HU7

ECL: Notification of Unusual Event

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of a NUE.

Operating Mode Applicability: All

Emergency Action Levels:

HU7.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a NUE.

PINGP Basis Reference(s):

None

11.0 S - SYSTEM MALFUNCTION ICS/EALS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
SG1 Prolonged loss of all offsite and all onsite AC power to emergency buses. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*	**SS1** Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*	**SA1** Loss of all but one AC power source to emergency buses for 15 minutes or longer. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*	**SU1** Loss of all offsite AC power capability to emergency buses for 15 minutes or longer. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*
		SA2 UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*	**SU2** UNPLANNED loss of Control Room indications for 15 minutes or longer. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*
			SU3 Reactor coolant activity greater than Technical Specification allowable limits. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*
			SU4 RCS leakage for 15 minutes or longer. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*
	SS5 Inability to shutdown the reactor causing a challenge to core cooling or RCS heat removal. *Op. Modes: Power Operation*	**SA5** Automatic or manual trip fails to shutdown the reactor, and subsequent manual actions taken at the main control boards are not successful in shutting down the reactor. *Op. Modes: Power Operation*	**SU5** Automatic or manual trip fails to shutdown the reactor. *Op. Modes: Power Operation*

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
			SU6 Loss of all onsite or offsite communications capabilities. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*
			SU7 Failure to isolate containment or loss of containment pressure control. [*PWR*] *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*
SG8 Loss of all AC and Vital DC power sources for 15 minutes or longer. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*	**SS8** Loss of all Vital DC power for 15 minutes or longer. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*		
		SA9 Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. *Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown*	

SG1

ECL: General Emergency

Initiating Condition: Prolonged loss of all offsite and all onsite AC power to emergency buses.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the General Emergency promptly upon determining that 4 hours has been exceeded, or will likely be exceeded.**

SG1.1 a. Loss of **ALL** offsite and **ALL** onsite AC power to both Safeguards Buses 15 and 16 (25 and 26).

AND

b. **EITHER** of the following:

- Restoration of at least one AC emergency bus in less than 4 hours is not likely.
- Core Cooling CSF – RED

Basis:

This IC addresses a prolonged loss of all power sources to AC emergency buses. A loss of all AC power compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. A prolonged loss of these buses will lead to a loss of one or more fission product barriers. In addition, fission product barrier monitoring capabilities may be degraded under these conditions.

The EAL should require declaration of a General Emergency prior to meeting the thresholds for IC FG1. This will allow additional time for implementation of offsite protective actions.

Escalation of the emergency classification from Site Area Emergency will occur if it is projected that power cannot be restored to at least one AC emergency bus by the end of the analyzed station blackout coping period. Beyond this time, plant responses and event trajectory are subject to greater uncertainty, and there is an increased likelihood of challenges to multiple fission product barriers.

The estimate for restoring at least one emergency bus should be based on a realistic appraisal of the situation. Mitigation actions with a low probability of success should not be used as a basis for delaying a classification upgrade. The goal is to maximize the time available to prepare for, and implement, protective actions for the public.

The EAL will also require a General Emergency declaration if the loss of AC power results in parameters that indicate an inability to adequately remove decay heat from the core.

PINGP Basis Reference(s):

1. 1(2)ECA-0.0, Loss of All Safeguards AC Power
2. 1(2)F-0.2, Core Cooling
3. 1(2)FR-C.1, Response to Inadequate Core Cooling
4. 1(2)FR-C.2, Response to Degraded Core Cooling
5. USAR Section 8.2, Transmission System
6. USAR Section 8.3, Auxiliary Power System
7. USAR Section 8.4.4, Station Blackout
8. USAR Figure 8.2-2, Prairie Island And Substation Operating One Line Diagram
9. USAR Figure 8.3-1, Unit 1 - Unit 2 Safeguards Consolidated Circuit Diagram

SG8

ECL: General Emergency

Initiating Condition: Loss of all AC and Vital DC power sources for 15 minutes or longer.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the General Emergency promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SG8.1 a. Loss of **ALL** offsite and **ALL** onsite AC power to both Safeguards Buses 15 and 16 (25 and 26) for 15 minutes or longer.

AND

b. Indicated voltage is less than 111 VDC on both 125 VDC Panels 11 and 12 (21 and 22) for 15 minutes or longer.

Basis:

This IC addresses a concurrent and prolonged loss of both AC and Vital DC power. A loss of all AC power compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. A loss of Vital DC power compromises the ability to monitor and control SAFETY SYSTEMS. A sustained loss of both AC and DC power will lead to multiple challenges to fission product barriers.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. The 15-minute emergency declaration clock begins at the point when both EAL thresholds are met.

PINGP Basis Reference(s):

1. 1(2)ECA-0.0, Loss of All Safeguards AC Power
2. Technical Specifications 3.8.1, AC Sources - Operating
3. Technical Specifications 3.8.4, DC Sources - Operating
4. Technical Specifications 3.8.9, Distribution Systems - Operating
5. 1(2)C20.9 AOP1, Loss of Unit 1(2) Train “A” DC
6. 1(2)C20.9 AOP2, Loss of Unit 1(2) Train “B” DC
7. USAR Section 8.2, Transmission System
8. USAR Section 8.3, Auxiliary Power System
9. USAR Figure 8.2-2, Prairie Island Plant And Substation Operating One Line Diagram
10. USAR Figure 8.3-1, Unit 1 – Unit 2 Safeguards Consolidated Circuit Diagram
11. USAR Section 8.5, DC Power Supply Systems
12. USAR Figure 8.5-1A/B, 125 VDC & 120 VAC Instrument Supply – Unit 1 – Train A/B
13. USAR Figure 8.5-2A/B, 125 VDC & 120 VAC Instrument Supply – Unit 2 – Train A/B

SS1

ECL: Site Area Emergency

Initiating Condition: Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Site Area Emergency promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SS1.1 Loss of **ALL** offsite and **ALL** onsite AC power to both Safeguards Buses 15 and 16 (25 and 26) for 15 minutes or longer.

Basis:

This IC addresses a total loss of AC power that compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. In addition, fission product barrier monitoring capabilities may be degraded under these conditions. This IC represents a condition that involves actual or likely major failures of plant functions needed for the protection of the public.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation of the emergency classification level would be via ICs RG1, FG1 or SG1.

PINGP Basis Reference(s):

1. 1(2)ECA-0.0, Loss of All Safeguards AC Power
2. USAR Section 8.2, Transmission System
3. USAR Section 8.3, Auxiliary Power System
4. USAR Figure 8.2-2, Prairie Island Plant And Substation Operating One Line Diagram
5. USAR Figure 8.3-1, Unit 1 – Unit 2 Safeguards Consolidated Circuit Diagram

SS5

ECL: Site Area Emergency

Initiating Condition: Inability to shutdown the reactor causing a challenge to core cooling or RCS heat removal.

Operating Mode Applicability: Power Operation

Emergency Action Levels:

NOTE:	**Heat Sink CSF should not be considered RED if total AFW flow is less than 200 gpm due to operator action.**

SS5.1

a. An automatic or manual trip did not reduce reactor power to less than 5%.

AND

b. All manual actions to reduce reactor power to less than 5% have been unsuccessful.

AND

c. **EITHER** of the following conditions exist:

- Core Cooling CSF - RED
- Heat Sink CSF - RED

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor trip that results in a reactor shutdown, all subsequent operator actions to manually shutdown the reactor are unsuccessful, and continued power generation is challenging the capability to adequately remove heat from the core and/or the RCS. This condition will lead to fuel damage if additional mitigation actions are unsuccessful and thus warrants the declaration of a Site Area Emergency.

In some instances, the emergency classification resulting from this IC/EAL may be higher than that resulting from an assessment of the plant responses and symptoms against the Recognition Category F ICs/EALs. This is appropriate in that the Recognition Category F ICs/EALs do not address the additional threat posed by a failure to shutdown the reactor. The inclusion of this IC and EAL ensures the timely declaration of a Site Area Emergency in response to prolonged failure to shutdown the reactor.

A reactor shutdown is determined in accordance with applicable Emergency Operating Procedure criteria.

Escalation of the emergency classification level would be via IC RG1 or FG1.

PINGP Basis Reference(s):

1. 1(2)E-0, Reactor Trip or Safety Injection
2. 1(2)ES-0.1, Reactor Trip Recovery
3. 1(2)F-0.1, Subcriticality
4. 1(2)F-0.2, Core Cooling
5. 1(2)F-0.3, Heat Sink
6. 1(2)FR-H.1, Response To Loss Of Secondary Heat Sink
7. 1(2)FR-S.1, Response To Nuclear Power Generation/ATWS
8. XH-1-236, Logic Diagram Reactor Trip Signals Unit 1 & 2

SS8

ECL: Site Area Emergency

Initiating Condition: Loss of all Vital DC power for 15 minutes or longer.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Site Area Emergency promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SS8.1 Indicated voltage is less than 111 VDC on both 125 VDC Panels 11 and 12 (21 and 22) for 15 minutes or longer.

Basis:

This IC addresses a loss of Vital DC power which compromises the ability to monitor and control SAFETY SYSTEMS. In modes above Cold Shutdown, this condition involves a major failure of plant functions needed for the protection of the public.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation of the emergency classification level would be via ICs RG1, FG1 or SG8.

PINGP Basis Reference(s):

1. Technical Specifications 3.8.4, DC Sources - Operating
2. 1(2)C20.9 AOP1, Loss of Unit 1(2) Train “A” DC
3. 1(2)C20.9 AOP2, Loss of Unit 1(2) Train “B” DC
4. USAR Section 8.5, DC Power Supply Systems
5. USAR Figure 8.5-1A/B, 125 VDC & 120 VAC Instrument Supply – Unit 1 – Train A/B
6. USAR Figure 8.5-2A/B, 125 VDC & 120 VAC Instrument Supply – Unit 2 – Train A/B

SA1

ECL: Alert

Initiating Condition: Loss of all but one AC power source to emergency buses for 15 minutes or longer.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Alert promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SA1.1 a. AC power capability to both Safeguards Buses 15 and 16 (25 and 26) is reduced to a single power source (Table S1) for 15 minutes or longer.

AND

b. Any additional single power source failure will result in a loss of all AC power to SAFETY SYSTEMS.

Table S1	
Unit 1	**Unit 2**
1R Transformer	2RY Transformer
CT11 Transformer	CT12 Transformer
D1 Diesel Generator	D5 Diesel Generator
D2 Diesel Generator	D6 Diesel Generator
Aligned Available Cross-Ties	

Basis:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS.

This IC describes a significant degradation of offsite and onsite AC power sources (Table S1) such that any additional single failure would result in a loss of all AC power to SAFETY SYSTEMS. In this condition, the sole AC power source may be powering one, or more than one, train of safety-related equipment. This IC provides an escalation path from IC SU1.

An “AC power source” is a source recognized in AOPs and EOPs, and capable of supplying required power to an emergency bus. Some examples of this condition are presented below.

- A loss of all offsite power with a concurrent failure of all but one emergency power source (e.g., an onsite diesel generator or aligned available cross-tie).
- A loss of emergency power sources (e.g., onsite diesel generators or aligned available cross-tie) with a single train of safeguard buses being fed from an offsite power source.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of power.

Escalation of the emergency classification level would be via IC SS1.

PINGP Basis Reference(s):

1. 1(2)ECA-0.0, Loss of All Safeguards AC Power
2. Technical Specifications 3.8.1, AC Sources - Operating
3. Technical Specifications 3.8.9, Distribution Systems - Operating
4. USAR Section 8.2, Transmission System
5. USAR Section 8.3, Auxiliary Power System
6. USAR Figure 8.2-2, Prairie Island Plant And Substation Operating One Line Diagram
7. USAR Figure 8.3-1, Unit 1 – Unit 2 Safeguards Consolidated Circuit Diagram

SA2

ECL: Alert

Initiating Condition: UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Alert promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SA2.1 a. An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer.

Reactor Power
Pressurizer Level
RCS Pressure
Core Exit Temperature
Level in at least one steam generator
Auxiliary Feed Water Flow

AND

b. **ANY** of the following transient events in progress.

- Automatic or manual runback greater than 25% thermal reactor power
- Electrical load rejection greater than 25% full electrical load
- Reactor trip
- ECCS (SI) actuation

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses the difficulty associated with monitoring rapidly changing plant conditions during a transient without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. During this condition, the margin to a potential fission product barrier challenge is reduced. It thus represents a potential substantial degradation in the level of safety of the plant.

As used in this EAL, an “inability to monitor” means that values for one or more of the listed parameters cannot be determined from within the Control Room. This situation would require a loss of all of the Control Room sources for the given parameter(s). For example, the reactor power level cannot be determined from any analog, digital, computer, graphic, and recorder source within the Control Room.

An event involving a loss of plant indications, annunciators and/or display systems is evaluated in accordance with 10 CFR 50.72 (and associated guidance in NUREG-1022) to determine if an NRC event report is required. The event would be reported if it significantly impaired the capability to perform emergency assessments. In particular, emergency assessments necessary to implement abnormal operating procedures, emergency operating procedures, and emergency plan implementing procedures addressing emergency classification, accident assessment, or protective action decision-making.

This EAL is focused on a selected subset of plant parameters associated with the key safety functions of reactivity control, core cooling and RCS heat removal. The loss of the ability to determine one or more of these parameters from within the Control Room is considered to be more significant than simply a reportable condition. In addition, if all indication sources for one or more of the listed parameters are lost, then the ability to determine the values of other SAFETY SYSTEM parameters may be impacted as well. For example, if the value for reactor vessel level cannot be determined from the indications and recorders on a main control board, the SPDS or the plant computer, the availability of other parameter values may be compromised as well.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of indication.

Escalation of the emergency classification level would be via ICs FS1 or IC RS1.

PINGP Basis Reference(s):

1. USAR Section 7.7.1, Emergency Response Computer System-ERCS
2. USAR Section 7.8, Operating Control Stations
3. 1(2)E-2, Faulted Steam Generator Isolation

SA5

ECL: Alert

Initiating Condition: Automatic or manual trip fails to shutdown the reactor, and subsequent manual actions taken at the main control boards are not successful in shutting down the reactor.

Operating Mode Applicability: Power Operation

NOTE:	**A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.**

Emergency Action Levels:

SA5.1 a. An automatic or manual trip did not reduce reactor power to less than 5%.

AND

b. Manual actions taken at the main control boards are not successful in reducing reactor power to less than 5%.

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor trip that results in a reactor shutdown, and subsequent operator manual actions taken at the main control boards to shutdown the reactor are also unsuccessful. This condition represents an actual or potential substantial degradation of the level of safety of the plant. An emergency declaration is required even if the reactor is subsequently shutdown by an action taken away from the main control boards since this event entails a significant failure of the RPS.

A manual action at the main control boards is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core (e.g., initiating a manual reactor trip). This action does not include manually driving in control rods or implementation of boron injection strategies. If this action(s) is unsuccessful, operators would immediately pursue additional manual actions at locations away from the main control boards (e.g., locally opening breakers). Actions taken at back-panels or other locations within the Control Room, or any location outside the Control Room, are not considered to be “at the main control boards”.

The plant response to the failure of an automatic or manual reactor trip will vary based upon several factors including the reactor power level prior to the event, availability of the condenser, performance of mitigation equipment and actions, other concurrent plant conditions, etc. If the failure to shutdown the reactor is prolonged enough to cause a challenge to the core cooling or RCS heat removal safety functions, the emergency classification level will escalate to a Site Area Emergency via IC SS5. Depending upon plant responses and symptoms, escalation is also possible via IC FS1. Absent the plant conditions needed to meet either IC SS5 or FS1, an Alert declaration is appropriate for this event.

It is recognized that plant responses or symptoms may also require an Alert declaration in accordance with the Recognition Category F ICs; however, this IC and EAL are included to ensure a timely emergency declaration.

A reactor shutdown is determined in accordance with applicable Emergency Operating Procedure criteria.

PINGP Basis Reference(s):

1. 1(2)E-0, Reactor Trip or Safety Injection

2. 1(2)ES-0.1, Reactor Trip Recovery

3. 1(2)F-0.1, Subcriticality

4. XH-1-236, Logic Diagram Reactor Trip Signals Unit 1 & 2

5. 1(2)FR-S.1, Response To Nuclear Power Generation/ATWS

SA9

ECL: Alert

Initiating Condition: Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**If the affected SAFETY SYSTEM train was already inoperable or out of service before the hazardous event occurred, then this emergency classification is not warranted. If the hazardous event only resulted in VISIBLE DAMAGE, with no indications of degraded performance to at least one train of a SAFETY SYSTEM, then this emergency classification is not warranted.**

SA9.1 a. The occurrence of **ANY** of the following hazardous events:

- Seismic event (earthquake)
- Internal or external flooding event
- High winds or tornado strike
- FIRE
- EXPLOSION
- Low River Water Level
- Other events with similar hazard characteristics as determined by the Shift Manager

AND

b. 1. Event damage has caused indications of degraded performance on one train of a SAFETY SYSTEM needed for the current operating mode.

AND

2. **EITHER** of the following:

- Event damage has caused indications of degraded performance to a second train of the SAFETY SYSTEM needed for the current operating mode.
- Event damage has resulted in VISIBLE DAMAGE to the second train of the SAFETY SYSTEM needed for the current operating mode.

Basis:

EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or overpressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an explosion. Such events may require a post-event inspection to determine if the attributes of an explosion are present.

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS.

VISIBLE DAMAGE: Damage to a SAFETY SYSTEM that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected SAFETY SYSTEM train.

This IC addresses a hazardous event that causes damage to SAFETY SYSTEMS needed for the current operating mode. I n order to provide the appropriate context for consideration of an ALERT classification, the hazardous event must have caused indications of degraded SAFETY SYSTEM performance in one train, and there must be either indications of performance issues with the second SAFETY SYSTEM train or VISIBLE DAMAGE to the second train such that the potential exists for this second SAFETY SYSTEM train to have performance issues. In other words, in order for this EAL to be classified, the hazardous event must occur, at least one SAFETY SYSTEM train must have indications of degraded performance and the second SAFETY SYSTEM train must have indications of degraded performance or VISIBLE DAMAGE such that the potential exists for performance issues. Note that this second SAFETY SYSTEM train is from the same SAFETY SYSTEM that has indications of degraded performance for criteria SA9.1.b.1 of this EAL; commercial nuclear power plants are designed to be able to support single system issues without compromising public health and safety from radiological events.

Indications of degraded performance address damage to a SAFETY SYSTEM train that is in service/operation since indications for it will be readily available. The indications of degraded performance should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

Operators will make a determination of VISIBLE DAMAGE based on the totality of available event and damage report information. This is intended to be a brief assessment not requiring lengthy analysis or quantification of the damage. This VISIBLE DAMAGE should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

Escalation of the emergency classification level would be via IC FS1 or RS1.

PINGP Basis Reference(s):

1. AB-2, Tornado/Severe Thunderstorm/High Winds
2. AB-3, Earthquakes
3. AB-4, Flood
4. C47023-0603, Seismic Monitoring Panel
5. C47020-0106, 11 Cooling Water Pump Locked Out
6. C47520-0101, 21 Cooling Water Pump Locked Out
7. C47041 AR 26, River Intake Canal L High Delta-H
8. USAR Section 2.4, Hydrology
9. EC 23659, Evaluation of Turbine Building Internal Flooding With the External Flood Barriers Installed

SU1

ECL: Notification of Unusual Event

Initiating Condition: Loss of all offsite AC power capability to emergency buses for 15 minutes or longer.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SU1.1 Loss of **ALL** offsite AC power capability (Table S2) to both Safeguards Buses 15 and 16 (25 and 26) for 15 minutes or longer.

Table S2	
Unit 1	**Unit 2**
1R Transformer	2RY Transformer
CT11 Transformer	CT12 Transformer

Basis:

This IC addresses a prolonged loss of offsite power. The loss of offsite power sources

(Table S2) renders the plant more vulnerable to a complete loss of power to AC emergency buses. This condition represents a potential reduction in the level of safety of the plant.

For emergency classification purposes, “capability” means that an offsite AC power source(s) is available to the emergency buses, whether or not the buses are powered from it.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of offsite power.

Escalation of the emergency classification level would be via IC SA1.

PINGP Basis Reference(s):

1. 1(2)ECA-0.0, Loss of All Safeguards AC Power
2. Technical Specifications 3.8.1, AC Sources - Operating
3. Technical Specifications 3.8.9, Distribution Systems - Operating
4. USAR Section 8.2, Transmission System
5. USAR Figure 8.2-2, Prairie Island Plant And Substation Operating One Line Diagram

SU2

ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED loss of Control Room indications for 15 minutes or longer.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels:

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SU2.1 a. An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer.

Reactor Power
Pressurizer Level
RCS Pressure
Core Exit Temperature
Level in at least one steam generator
Auxiliary Feed Water Flow

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses the difficulty associated with monitoring normal plant conditions without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. This condition is a precursor to a more significant event and represents a potential degradation in the level of safety of the plant.

As used in this EAL, an “inability to monitor” means that values for one or more of the listed parameters cannot be determined from within the Control Room. This situation would require a loss of all of the Control Room sources for the given parameter(s). For example, the reactor power level cannot be determined from any analog, digital, computer, graphic, and recorder source within the Control Room.

An event involving a loss of plant indications, annunciators and/or display systems is evaluated in accordance with 10 CFR 50.72 (and associated guidance in NUREG-1022) to determine if an NRC event report is required. The event would be reported if it significantly impaired the capability to perform emergency assessments. In particular, emergency assessments necessary to implement abnormal operating procedures, emergency operating procedures, and emergency plan implementing procedures addressing emergency classification, accident assessment, or protective action decision-making.

This EAL is focused on a selected subset of plant parameters associated with the key safety functions of reactivity control, core cooling and RCS heat removal. The loss of the ability to determine one or more of these parameters from within the Control Room is considered to be more significant than simply a reportable condition. In addition, if all indication sources for one or more of the listed parameters are lost, then the ability to determine the values of other SAFETY SYSTEM parameters may be impacted as well. For example, if the value for reactor vessel level cannot be determined from the indications and recorders on a main control board, the SPDS or the plant computer, the availability of other parameter values may be compromised as well.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of indication.

Escalation of the emergency classification level would be via IC SA2.

PINGP Basis Reference(s):

1. USAR Section 7.7.1, Emergency Response Computer System-ERCS
2. USAR Section 7.8, Operating Control Stations
3. 1(2)E-2, Faulted Steam Generator Isolation

SU3

ECL: Notification of Unusual Event

Initiating Condition: Reactor coolant activity greater than Technical Specification allowable limits.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels: (SU3.1 or SU3.2)

SU3.1 1(2)R-9 reading greater than 1.0 R/hr.

SU3.2 Sample analysis indicates that a reactor coolant activity value is greater than an allowable limit specified in Technical Specification 3.4.17 Condition C (Dose Equivalent I-131 > 30 µCi/gm).

Basis:

This IC addresses a reactor coolant activity value that exceeds an allowable limit specified in Technical Specifications. This condition is a precursor to a more significant event and represents a potential degradation of the level of safety of the plant.

Escalation of the emergency classification level would be via ICs FA1 or the Recognition Category R ICs.

PINGP Basis Reference(s):

1. B11, Radiation Monitoring System
2. C47048 1R-09, Reactor Coolant Letdown Line Area Monitor
3. C47047 2R-09, Reactor Coolant Letdown Line Area Monitor
4. USAR Section 7.5.3.1, General
5. USAR Section 7.5.3.2.3, Reactor Coolant Letdown Line Monitors (1R-9, 2R-9)
6. USAR Table 7.5-1, Radiation Monitoring System Channel Sensitivities
7. USAR Section 10.2.3.3.7, Fuel Element Failure Detection
8. Technical Specifications 3.4.17, RCS Specific Activity

SU4

ECL: Notification of Unusual Event

Initiating Condition: RCS leakage for 15 minutes or longer.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels: (SU4.1 or SU4.2 or SU4.3)

NOTE:	**The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.**

SU4.1 RCS unidentified or pressure boundary leakage greater than 10 gpm for 15 minutes or longer.

SU4.2 RCS identified leakage greater than 25 gpm for 15 minutes or longer.

SU4.3 Leakage from the RCS to a location outside containment greater than 25 gpm for 15 minutes or longer.

Basis:

This IC addresses RCS leakage which may be a precursor to a more significant event. In this case, RCS leakage has been detected and operators, following applicable procedures, have been unable to promptly isolate the leak. This condition is considered to be a potential degradation of the level of safety of the plant.

EAL SU4.1 and EAL SU4.2 are focused on a loss of mass from the RCS due to “unidentified leakage", "pressure boundary leakage" or "identified leakage” (as these leakage types are defined in the plant Technical Specifications). EAL SU4.3 addresses a RCS mass loss caused by an UNISOLABLE leak through an interfacing system. These EALs thus apply to leakage into the containment, a secondary-side system (e.g., steam generator tube leakage in a PWR) or a location outside of containment.

The leak rate values for each EAL were selected because they are usually observable with normal Control Room indications. Lesser values typically require time-consuming calculations to determine (e.g., a mass balance calculation). EAL SU4.1 uses a lower value that reflects the greater significance of unidentified or pressure boundary leakage.

The release of mass from the RCS due to the as-designed/expected operation of a relief valve does not warrant an emergency classification. For PWRs, an emergency classification would be required if a mass loss is caused by a relief valve that is not functioning as designed/expected (e.g., a relief valve sticks open and the line flow cannot be isolated).

The 15-minute threshold duration allows sufficient time for prompt operator actions to isolate the leakage, if possible. If the EAL is briefly met during an expected (normal) plant response, an emergency declaration is not warranted provided that associated systems and components are operating as expected, and operator actions are performed in accordance with procedures. If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the EAL is not considered met and the associated emergency declaration is not required.

Escalation of the emergency classification level would be via ICs of Recognition Category R or F.

PINGP Basis Reference(s):

1. Technical Specification 3.4.14, RCS Operational LEAKAGE

SU5

ECL: Notification of Unusual Event

Initiating Condition: Automatic or manual trip fails to shutdown the reactor.

Operating Mode Applicability: Power Operation

NOTE:	**A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.**

Emergency Action Levels:

SU5.1 a. An initial automatic or manual trip did not reduce reactor power to less than 5%.

AND

b. **EITHER** of the following:

- A subsequent manual action taken at the main control boards is successful in shutting down the reactor.
  - Reactor Trip (Switch)
  - AMSAC/DSS (Switch)
  - Turbine Trip (Pushbutton)
- A subsequent automatic trip is successful in shutting down the reactor.

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor trip that results in a reactor shutdown, and either a subsequent operator manual action taken at the main control boards or an automatic trip is successful in shutting down the reactor. This event is a precursor to a more significant condition and thus represents a potential degradation of the level of safety of the plant.

Following the failure on an automatic reactor trip, operators will promptly initiate manual actions at the main control boards to shutdown the reactor (e.g., initiate a manual reactor trip). If these manual actions are successful in shutting down the reactor, core heat generation will quickly fall to a level within the capabilities of the plant's decay heat removal systems.

If an initial manual reactor trip is unsuccessful, operators will promptly take manual action at another location(s) on the main control boards to shutdown the reactor (e.g., initiate a manual reactor trip using a different switch). Depending upon several factors, the initial or subsequent effort to manually trip the reactor, or a concurrent plant condition, may lead to the generation of an automatic reactor trip signal. If a subsequent manual or automatic trip is successful in shutting down the reactor, core heat generation will quickly fall to a level within the capabilities of the plant's decay heat removal systems.

A manual action at the main control boards is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core (e.g., initiating a manual reactor trip). This action does not include manually driving in control rods or implementation of boron injection strategies. Actions taken at back-panels or other locations within the Control Room, or any location outside the Control Room, are not considered to be "at the main control boards".

The plant response to the failure of an automatic or manual reactor trip will vary based upon several factors including the reactor power level prior to the event, availability of the condenser, performance of mitigation equipment and actions, other concurrent plant conditions, etc. If subsequent operator manual actions taken at the main control boards are also unsuccessful in shutting down the reactor, then the emergency classification level will escalate to an Alert via IC SA5. Depending upon the plant response, escalation is also possible via IC FA1. Absent the plant conditions needed to meet either IC SA5 or FA1, an Unusual Event declaration is appropriate for this event.

A reactor shutdown is determined in accordance with applicable Emergency Operating Procedure criteria.

Should a reactor trip signal be generated as a result of plant work (e.g., RPS setpoint testing), the following classification guidance should be applied.

- If the signal causes a plant transient that should have included an automatic reactor trip and the RPS fails to automatically shutdown the reactor, then this IC and the EALs are applicable, and should be evaluated.

- If the signal does not cause a plant transient and the trip failure is determined through other means (e.g., assessment of test results), then this IC and the EALs are not applicable and no classification is warranted.

PINGP Basis Reference(s):

1. 1(2)E-0, Reactor Trip or Safety Injection
2. 1(2)ES-0.1, Reactor Trip Recovery
3. 1(2)F-0.1, Subcriticality
4. 1(2)FR-S.1, Response To Nuclear Power Generation/ATWS
5. XH-1-236, Logic Diagram Reactor Trip Signals Unit 1 & 2

SU6

ECL: Notification of Unusual Event

Initiating Condition: Loss of all onsite or offsite communications capabilities.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels: (SU6.1 or SU6.2 or SU6.3)

SU6.1 Loss of **ALL** of the following onsite communication methods:

- Sound Powered Phones
- Plant Paging System
- Plant Telephone Network
- Plant Radio System

SU6.2 Loss of **ALL** of the following Offsite Response Organization (ORO) communications methods:

- Plant Telephone Network
- Plant Radio System (dedicated offsite channels)

SU6.3 Loss of **ALL** of the following NRC communications methods:

- Plant Telephone Network
- ENS Network

Basis:

This IC addresses a significant loss of on-site or offsite communications capabilities. While not a direct challenge to plant or personnel safety, this event warrants prompt notifications to OROs and the NRC.

This IC should be assessed only when extraordinary means are being utilized to make communications possible (e.g., use of non-plant, privately owned equipment, relaying of on-site information via individuals or multiple radio transmission points, individuals being sent to offsite locations, etc.).

EAL SU6.1 addresses a total loss of the communications methods used in support of routine plant operations.

EAL SU6.2 addresses a total loss of the communications methods used to notify all OROs of an emergency declaration. The OROs referred to here are the states of Minnesota and Wisconsin, Goodhue, Pierce, and Dakota counties, and the Prairie Island Tribal Community.

EAL SU6.3 addresses a total loss of the communications methods used to notify the NRC of an emergency declaration.

PINGP Basis Reference(s):

1. PINGP Emergency Plan Section 7.2, Communications
2. PINGP Emergency Plan Table 6, Prairie Island Site Communications Matrix

SU7

ECL: Notification of Unusual Event

Initiating Condition: Failure to isolate containment or loss of containment pressure control.

Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown

Emergency Action Levels: (SU7.1 or SU7.2)

SU7.1 a. Failure of containment to isolate when required by an actuation signal.

AND

b. **ALL** required penetrations are not closed within 15 minutes of the actuation signal.

SU7.2 a. Containment pressure greater than 23 psig.

AND

b. Less than one full train of containment spray and any two containment fan coils is operating per design for 15 minutes or longer.

Basis:

This IC addresses a failure of one or more containment penetrations to automatically isolate (close) when required by an actuation signal. It also addresses an event that results in high containment pressure with a concurrent failure of containment pressure control systems. Absent challenges to another fission product barrier, either condition represents potential degradation of the level of safety of the plant.

For EAL SU7.1, the containment isolation signal must be generated as the result of an off-normal/accident condition (e.g., a safety injection or high containment pressure); a failure resulting from testing or maintenance does not warrant classification. The determination of containment and penetration status – isolated or not isolated – should be made in accordance with the appropriate criteria contained in the plant AOPs and EOPs. The 15-minute criterion is included to allow operators time to manually isolate at least one of the required valves in the penetration flow path, if possible.

EAL SU7.2 addresses a condition where containment pressure is greater than the setpoint at which containment energy (heat) removal systems are designed to automatically actuate, and less than one full train of equipment is capable of operating per design. The 15-minute criterion is included to allow operators time to manually start equipment that may not have automatically started, if possible. If the EAL is briefly met during an expected (normal) plant response, an emergency declaration is not warranted provided that associated systems and components are operating as expected, and operator actions are performed in accordance with procedures. If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the EAL is not considered met and the associated emergency declaration is not required. The inability to start the required equipment indicates that containment heat removal/depressurization systems (e.g., one train of containment spray and any two of the four containment fan coil units) are either lost or performing in a degraded manner.

This event would escalate to a Site Area Emergency in accordance with IC FS1 if there were a concurrent loss or potential loss of either the Fuel Clad or RCS fission product barriers.

PINGP Basis Reference(s):

1. Technical Specification Table 3.3.2-1, Engineered Safety Feature Actuation System Instrumentation
2. Technical Specifications Bases 3.6.5, Containment Spray and Cooling Systems
3. USAR 6.3.1.1, Containment Heat Removal Systems
4. USAR Table 5.2-1 – (Part A), Containment Vessel Penetrations

Appendix A
ACRONYMS AND ABBREVIATIONS

AB .... Auxiliary Building
AC .... Alternating Current
AOP .... Abnormal Operating Procedure
ATWS .... Anticipated Transient Without Scram
AMSAC .... ATWS Mitigating System Actuation Circuitry
CDE .... Committed Dose Equivalent
CFR .... Code of Federal Regulations
CTMT/CNMT .... Containment
CSF .... Critical Safety Function
CSFST .... Critical Safety Function Status Tree
DBA .... Design Basis Accident
DC .... Direct Current
DSS .... Diverse SCRAM System
EAL .... Emergency Action Level
ECCS .... Emergency Core Cooling System
ECL .... Emergency Classification Level
EOF .... Emergency Operations Facility
EOP .... Emergency Operating Procedure
EPA .... Environmental Protection Agency
EPIP .... Emergency Plan Implementing Procedure
EPRI .... Electric Power Research Institute
ERCS .... Emergency Response Computer System
ERG .... Emergency Response Guideline
FAA .... Federal Aviation Agency
FBI .... Federal Bureau of Investigation
FEMA .... Federal Emergency Management Agency
FSAR .... Final Safety Analysis Report
GE .... General Emergency
HOO .... Headquarters Operation Officer
IC .... Initiating Condition
ID .... Inside Diameter
IPEEE .... Individual Plant Examination of External Events (Generic Letter 88-20)

Appendix A CONT'D
ACRONYMS AND ABBREVIATIONS

ISFSI .... Independent Spent Fuel Storage Installation
Keff .... Effective Neutron Multiplication Factor
LCO .... Limiting Condition of Operation
LOCA .... Loss of Coolant Accident
MCR .... Main Control Room
MSIV .... Main Steam Isolation Valve
MSL .... Main Steam Line
mR, mRem, mrem, mREM .... milli-Roentgen Equivalent Man
MW .... Megawatt
NEI .... Nuclear Energy Institute
NPP .... Nuclear Power Plant
NRC .... Nuclear Regulatory Commission
NSPM .... Northern States Power Company, a Minnesota corporation,
.... doing business as Xcel Energy
NSSS .... Nuclear Steam Supply System
NORAD .... North American Aerospace Defense Command
NUE .... Notification Unusual Event
OBE .... Operational Basis Earthquake
OCA .... Owner Controlled Area
ODCM .... Offsite Dose Calculation Manual
ORO .... Off-site Response Organization
PA .... Protected Area
PAG .... Protective Action Guideline
PRA/PSA .... Probabilistic Risk Assessment / Probabilistic Safety Assessment
PWR .... Pressurized Water Reactor
PSIG .... Pounds per Square Inch Gauge
R .... Roentgen
RCS .... Reactor Coolant System
Rem, rem, REM .... Roentgen Equivalent Man
RPS .... Reactor Protection System
RPV .... Reactor Pressure Vessel
RVLIS .... Reactor Vessel Level Instrumentation System

Appendix A CONT'D
ACRONYMS AND ABBREVIATIONS

SAR .... Safety Analysis Report
SBO .... Station Blackout
SCBA .... Self-Contained Breathing Apparatus
SFP .... Spent Fuel Pool
SG .... Steam Generator
SI .... Safety Injection
SPDS .... Safety Parameter Display System
SRO .... Senior Reactor Operator
TEDE .... Total Effective Dose Equivalent
TOAF .... Top of Active Fuel
TSC .... Technical Support Center
USAR .... Updated Safety Analysis Report
WOG .... Westinghouse Owners Group

Appendix B
DEFINITIONS

The following definitions are taken from Title 10, Code of Federal Regulations, and related regulatory guidance documents.

Alert: Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA PAG exposure levels.

General Emergency: Events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Notification of Unusual Event (NUE): Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Site Area Emergency: Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

The following are key terms necessary for overall understanding the NEI 99-01 emergency classification scheme.

Emergency Action Level (EAL): A pre-determined, observable threshold for an Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.

Appendix B CONT'D
DEFINITIONS

Emergency Classification Level (ECL): One of a set of names or titles established by the US Nuclear Regulatory Commission (NRC) for grouping off-normal events or conditions according to (1) potential or actual effects or consequences, and (2) resulting onsite and offsite response actions. The emergency classification levels, in ascending order of severity, are:

- Notification of Unusual Event (NUE)
- Alert
- Site Area Emergency (SAE)
- General Emergency (GE)

Fission Product Barrier Threshold: A pre-determined, observable threshold indicating the loss or potential loss of a fission product barrier.

Initiating Condition (IC): An event or condition that aligns with the definition of one of the four emergency classification levels by virtue of the potential or actual effects or consequences.

Selected terms used in Initiating Condition and Emergency Action Level statements are set in all capital letters (e.g., ALL CAPS). These words are defined terms that have specific meanings as used in this document. The definitions of these terms are provided below.

CONFINEMENT BOUNDARY: The barrier(s) between spent fuel and the environment once the spent fuel is processed for dry storage.

CONTAINMENT CLOSURE: No open containment penetrations exist as identified in C19.9, Containment Boundary Control during Mode 5, Cold Shutdown and Mode 6, Refueling. The definition of an open containment penetration is a penetration that provides direct access from the containment atmosphere to the outside environment with no automatic closure available.

EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or overpressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an explosion. Such events may require a post-event inspection to determine if the attributes of an explosion are present.

Appendix B CONT'D
DEFINITIONS

FAULTED: The term applied to a steam generator that has a steam leak on the secondary side of sufficient size to cause an uncontrolled drop in steam generator pressure or the steam generator to become completely depressurized.

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE ACTION: An act toward a NPP or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

HOSTILE FORCE: One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI): A complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage.

ISFSI PROTECTED AREA: The area surrounding the Independent Spent Fuel Storage Installation encompassed by the double chain link fence surrounding the ISFSI as defined in the Security Plan; the ISFSI Protected Area is excluded from the Plant Protected Area.

NORMAL LEVELS: As applied to radiological IC/EALs, the highest reading in the past twenty-four hours excluding the current peak value.

Appendix B CONT'D
DEFINITIONS

OWNER CONTROLLED AREA: Land owned or leased by Prairie Island Nuclear Generating Plant. This area is bounded by a wire mesh, owner controlled fence. Unauthorized personnel are not allowed within this area.

PROJECTILE: An object directed toward PINGP that could cause concern for its continued operability, reliability, or personnel safety.

PROTECTED AREA: The area encompassing all controlled areas within the security protected area fence as shown in USAR Figure 1.1-3, Site Plan Prairie Island Security Fence. This area does not include the ISFSI.

REFUELING PATHWAY: The reactor refueling cavity, spent fuel pool, or fuel transfer canal.

RUPTURE(D): The condition of a steam generator in which primary-to-secondary leakage is of sufficient magnitude to require a safety injection.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These are typically systems classified as safety-related.

SECURITY CONDITION: Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

UNISOLABLE: An open or breached system line that cannot be isolated, remotely or locally.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

VISIBLE DAMAGE: Damage to a SAFETY SYSTEM train that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected SAFETY SYSTEM train.

CERTIFICATE OF SERVICE

I, Victor Barreiro, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

or

xx electronic filing

Docket No. E002/CN-24-68

Dated this 14th day of June 2024

/s/

Victor Barreiro
Regulatory Administrator

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ross	Abbey	ross.abbey@us-solar.com	United States Solar Corp.	100 North 6th St Ste 222C Minneapolis, MN 55403	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Gary	Ambach	Gambach@slipstreaminc.org	Slipstream, Inc.	8973 SW Village Loop Chanhassen, MN 55317	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Katherine	Arnold	katherine.arnold@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Susan	Arntz	sarntz@mankatomn.gov	City Of Mankato	P.O. Box 3368 Mankato, MN 560023368	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Mara	Ascheman	mara.k.ascheman@xcelenergy.com	Xcel Energy	414 Nicollet Mall Fl 5 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Jessica L	Bayles	Jessica.Bayles@stoel.com	Stoel Rives LLP	1150 18th St NW Ste 325 Washington, DC 20036	Electronic Service	No	OFF_SL_24-68_Official CC Service List
David	Bender	dbender@earthjustice.org	Earthjustice	1001 G Street NW Suite 1000 Washington, DC 20001	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Tracy	Bertram	tbertram@ci.becker.mn.us		12060 Sherburne Ave Becker City Hall Becker, MN 55308-4694	Electronic Service	No	OFF_SL_24-68_Official CC Service List
James J.	Bertrand	james.bertrand@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
James	Canaday	james.canaday@ag.state.mn.us	Office of the Attorney General-RUD	Suite 1400 445 Minnesota St. St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Thomas	Carlson	thomas.carlson@edf-re.com	EDF Renewable Energy	10 2nd St NE Ste. 400 Minneapolis, MN 55413	Electronic Service	No	OFF_SL_24-68_Official CC Service List
John	Coffman	john@johncoffman.net	AARP	871 Tuxedo Blvd. St, Louis, MO 63119-2044	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_24-68_Official CC Service List
Jean	Comstock	jean.comstock.dbcc@gmail.com	St. Paul 350	729 6th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_24-68_Official CC Service List
George	Crocker	gwillc@nawo.org	North American Water Office	5093 Keats Avenue Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_24-68_Official CC Service List
James	Denniston	james.r.denniston@xcelenergy.com	Xcel Energy Services, Inc.	414 Nicollet Mall, 401-8 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Ian M.	Dobson	ian.m.dobson@xcelenergy.com	Xcel Energy	414 Nicollet Mall, 401-8 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Richard	Dornfeld	Richard.Dornfeld@ag.state.mn.us	Office of the Attorney General-DOC	Minnesota Attorney General's Office 445 Minnesota Street, Suite 1800 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
J.	Drake Hamilton	hamilton@fresh-energy.org	Fresh Energy	408 St Peter St Ste 350 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christopher	Droske	christopher.droske@minneapolismn.gov	City of Minneapolis	661 5th Ave N Minneapolis, MN 55405	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Adam	Duininck	aduininck@ncsrcc.org	North Central States Regional Council of Carpenters	700 Olive Street St. Paul, MN 55130	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Brian	Edstrom	briane@cubminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota St Ste W1360 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Bret	Eknes	bret.eknes@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	No	OFF_SL_24-68_Official CC Service List
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	2720 E. 22nd St Institute for Local Self-Reliance Minneapolis, MN 55406	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Mike	Fiterman	mikefiterman@libertydiversified.com	Liberty Diversified International	5600 N Highway 169 Minneapolis, MN 55428-3096	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Lucas	Franco	lfranco@liunagroc.com	LIUNA	81 Little Canada Rd E Little Canada, MN 55117	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Edward	Garvey	edward.garvey@AESLconsulting.com	AESL Consulting	32 Lawton St Saint Paul, MN 55102-2617	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kim	Havey	kim.havey@minneapolismn.gov	City of Minneapolis	350 South 5th Street, Suite 315M Minneapolis, MN 55415	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Philip	Hayet	phayet@jkenn.com	J. Kennedy and Associates, Inc.	570 Colonial Park Drive Suite 305 Roswell, GA 30075-3770	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Annete	Henkel	mui@mnutilityinvestors.org	Minnesota Utility Investors	413 Wacouta Street #230 St.Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Kristin	Henry	kristin.henry@sierraclub.org	Sierra Club	2101 Webster St Ste 1300 Oakland, CA 94612	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.	445 Etna Street Ste. 61 St. Paul, MN 55106	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Craig	Janezich	craig.janezich@state.mn.us	Public Utilities Commission	121 7th Pl E #350 St. Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2950 Yellowtail Ave. Marathon, FL 33050	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
William D	Kenworthy	will@votesolar.org	Vote Solar	332 S Michigan Ave FL 9 Chicago, IL 60604	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Samuel B.	Ketchum	sketchum@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Frank	Kohlasch	frank.kohlasch@state.mn.us	MN Pollution Control Agency	520 Lafayette Rd N. St. Paul, MN 55155	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Brian	Kolbinger	brian@beckertownship.org	Becker Township Board	PO Box 248 12165 Hancock St Becker, MN 55308	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Kay	Kuhlmann	Teri.Swanson@ci.red-wing.mn.us	City Of Red Wing	315 West Fourth Street Red Wing, MN 55066	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Brenda	Kyle	bkyle@stpaulchamber.com	St. Paul Area Chamber of Commerce	401 N Robert Street Suite 150 St Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Carmel	Laney	carmel.laney@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.	8300 Norman Center Drive Suite 1000 Bloomington, MN 55437	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Rachel	Leonard	rachel.leonard@ci.monticello.mn.us	City of Monticello	505 Walnut St Ste 1 Monticello, MN 55362	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Annie	Levenson Falk	annielf@cubminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota Street, Suite W1360 St. Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Alice	Madden	alice@communitypowermn.org	Community Power	2720 E 22nd St Minneapolis, MN 55406	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting, LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Emily	Marshall	emarshall@mojlaw.com	Miller O'Brien Jensen, PA	120 S. 6th Street Suite 2400 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Mary	Martinka	mary.a.martinka@xcelenergy.com	Xcel Energy Inc	414 Nicollet Mall 7th Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Gregg	Mast	gmast@cleanenergyeconomymn.org	Clean Energy Economy Minnesota	4808 10th Avenue S Minneapolis, MN 55417	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Daryl	Maxwell	dmaxwell@hydro.mb.ca	Manitoba Hydro	360 Portage Ave FL 16 PO Box 815, Station Main Winnipeg, MB R3C 2P4 CANADA	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Megan	McKenzie	megan.mckenzie@state.mn.us	Office of Administrative Hearings	PO Box 64620 St Paul, MN 55164	Electronic Service	Yes	OFF_SL_24-68_Official CC Service List
Taylor	McNair	taylor@gridlab.org		668 Capp Street San Francisco, CA 94110	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Melanie	Mesko Lee	Melanie.Lee@burnsvillemn.gov	City of Burnsville	100 Civic Center Parkway Burnsville, MN 55337-3867	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Stacy	Miller	stacy.miller@minneapolismn.gov	City of Minneapolis	350 S. 5th Street Room M 301 Minneapolis, MN 55415	Electronic Service	No	OFF_SL_24-68_Official CC Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Evan	Mulholland	emulholland@mncenter.org	Minnesota Center for Environmental Advocacy	1919 University Ave W Ste 515 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Alan	Muller	alan@greendel.org	Energy & Environmental Consulting	1110 West Avenue Red Wing, MN 55066	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_24-68_Official CC Service List
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
M. William	O'Brien	bobrien@mojlaw.com	Miller O'Brien Jensen, P.A.	120 S 6th St Ste 2400 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Ric	O'Connell	ric@gridlab.org	GridLab	2120 University Ave Berkeley, CA 94704	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Carol A.	Overland	overland@legalectric.org	Legalectric - Overland Law Office	1110 West Avenue Red Wing, MN 55066	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
J. Gregory	Porter	greg.porter@nngco.com	Northern Natural Gas Company	1111 South 103rd St Omaha, NE 68124	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Greg	Pruszinske	gpruszinske@ci.becker.mn.us	City of Becker	PO Box 250 12060 Sherburne Ave Becker, MN 55308	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_24-68_Official CC Service List
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Nathaniel	Runke	nrunke@local49.org	International Union of Operating Engineers Local 49	611 28th St. NW Rochester, MN 55901	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Joseph L	Sathe	jsathe@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Jeff	Schneider	jeff.schneider@ci.red-wing.mn.us	City of Red Wing	315 West 4th Street Red Wing, MN 55066	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Mark	Schoennauer	markwsch@hotmail.com		607 19th St NW Apt 17 Rochester, MN 55901	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Christine	Schwartz	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Douglas	Seaton	doug.seaton@umwlc.org	Upper Midwest Law Center	8421 Wayzata Blvd Ste 300 Golden Valley, MN 55426	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_24-68_Official CC Service List
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	7400 Lyndale Ave S Ste 190 Richfield, MN 55423	Electronic Service	Yes	OFF_SL_24-68_Official CC Service List
Edyta	Sitko	esitko@ucsusa.org	Union of Concerned Scientists	1 N Lasalle Ave CHICAGO, IL 60602	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Beth	Smith	bsmith@greatermankato.com	Greater Mankato Growth	1961 Premier Dr Ste 100 Mankato, MN 56001	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Joshua	Smith	joshua.smith@sierraclub.org		85 Second St FL 2 San Francisco, CA 94105	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Beth	Soholt	bsoholt@cleangridalliance.org	Clean Grid Alliance	570 Asbury Street Suite 201 St. Paul, MN 55104	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Anna	Sommer	ASommer@energyfuturesgroup.com	Energy Futures Group	PO Box 692 Canton, NY 13617	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Mark	Spurr	mspurr@fvbenergy.com	International District Energy Association	222 South Ninth St., Suite 825 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Byron E.	Starns	byron.starns@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Carla	Vita	carla.vita@state.mn.us	MN DEED	Great Northern Building 12th Floor 180 East Fifth Street St. Paul, MN 55101	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Julie	Voeck	julie.voeck@nee.com	NextEra Energy Resources, LLC	700 Universe Blvd Juno Beach, FL 33408	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Laurie	Williams	laurie.williams@sierraclub.org	Sierra Club	Environmental Law Program 1536 Wynkoop St Ste 200 Denver, CO 80202	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine	225 South Sixth Street, Suite 3500 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Tim	Wulling	t.wulling@earthlink.net		1495 Raymond Ave. Saint Paul, MN 55108	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Kurt	Zimmerman	kwz@ibew160.org	Local Union #160, IBEW	2909 Anthony Ln St Anthony Village, MN 55418-3238	Electronic Service	No	OFF_SL_24-68_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Emily	Ziring	eziring@stlouispark.org	City of St. Louis Park	5005 Minnetonka Blvd St. Louis Park, MN 55416	Electronic Service	No	OFF_SL_24-68_Official CC Service List
Patrick	Zomer	Pat.Zomer@lawmoss.com	Moss & Barnett PA	150 S 5th St #1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-68_Official CC Service List