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Nuclear Management Company, LLC
Prairie Island Nuclear Generating Plant
1717 Wakonade Dr. East • Welch MN 55089

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US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
Docket Nos. 50-306 License Nos. DPR-60

Prairie Island EOF Emergency Plan
Implementing Procedures - F8

EOF Emergency Response Plan Implementing Procedures

Furnished with this letter are the NSP Prairie Island Nuclear Generating Plant EOF Emergency Plan Implementing Procedures F8. This revision includes the following procedures:

INDEXES: EOF Emergency Plant Implementing Procedures TOC

REVISIONS:

F8-6	Radiological Monitoring & Control at the EOF	Rev 6

INSTRUCTIONS:

Please post changes in your copy of the Prairie Island Nuclear Generating Plant EOF Emergency Implementing Procedures. Procedures which have been superseded or deleted should be destroyed. Please sign and return the acknowledgment of this update to Bruce Loesch, Prairie Island Nuclear Generating Plant, 1717 Wakonade Drive East, Welch, MN 55089.

If you have any questions, please contact Mel Agen at 651-388-1121 Extension 4240.

Joel P. Sorensen
Site General Manager
Prairie Island Nuclear Generating Plant

A045

c: USNRC – James Foster, Region III (2 copies)
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Mfst Num: 2000 - 0663 Date : 10/09/00
FROM : Bruce Loesch/Mary Gadient Loc : Prairie Island
TO : UNDERWOOD, BETTY J
Copy Num: 515 Holder : US NRC DOC CONTROL DESK
SUBJECT : Revisions to CONTROLLED DOCUMENTS

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Procedure #	Rev	Title
Revisions:		
F8-6	6	RADIOLOGICAL MONITORING & CONTROL AT THE E

UPDATING INSTRUCTIONS

Place this material in your Prairie Island Controlled Manual or File. Remove revised or cancelled material and recycle it. Sign and date this letter in the space provided below within ten working days and return to Bruce Loesch or Mary Gadient, Prairie Island Nuclear Plant, 1717 Wakonade Drive E., Welch, MN 55089.
Contact Bruce Loesch (ext 4664) or Mary Gadient (ext 4478) if you have any questions.

Received the material stated above and complied with the updating instructions

_____ Date _____

PRAIRIE ISLAND NUCLEAR GENERATING PLANT NORTHERN STATES POWER COMPANY	Title: EOF Emerg Plan Implementing Procedures TOC Effective Date : 10/09/00
Approved By: Joyce Chitty /BZ BPS Supt	

Document #	Title	Rev
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O.C. REVIEW DATE:	REVIEWED BY:	DATE:
9-12-00 SC		9-12-00
	APPROVED BY:	DATE:
		9-15-00

1.0 PURPOSE

REFERENCE USE
• ***Procedure segments may be performed from memory.***
• ***Use the procedure to verify segments are complete.***
• ***Mark off steps within segment before continuing.***
• ***Procedure should be available at the work location.***

The purpose of this procedure is to provide guidance for the radiological protection of personnel responding to the EOF. Protective guidelines for EOF personnel and control of radioactive materials are discussed in this procedure.

2.0 APPLICABILITY

This procedure is applicable to all EOF personnel responding in support of a declared emergency at Prairie Island Nuclear Generating Plant.

3.0 PRECAUTIONS

3.1 The dose guidelines for EOF personnel are as per F3-12, and no one may exceed 5000 mRem TEDE per year, per 10CFR20.

3.2 Monitoring of the EOF for direct radiation, contamination levels, airborne iodine and airborne particulate radioactivity **SHALL** be performed to ensure the habitability of the EOF.

3.3 Protective actions for individuals located in the EOF **SHALL** be taken at the prescribed levels of direct radiation, contamination, or airborne radioactivity.

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4.0 RESPONSIBILITIES

4.1 The Emergency Manager has the overall responsibility for the radiological protection of the EOF personnel.

4.2 The RPSS has the following responsibilities:

4.2.1 Verify and supervise the records of exposure control.

4.2.2 Determine when individual exposure controls should be implemented.

4.2.3 Assign and direct qualified personnel for dose assessment.

4.2.4 Provide the Security Force with a list of individuals who may leave the EOF with dosimetry (field survey teams, etc.).

4.2.5 Control radioactive materials and limit contamination at the EOF.

4.2.6 Initiate radiological surveys of the EOF to determine habitability and control contamination areas. Provide routine status reports of the EOF atmosphere to the EM.

4.2.7 Remind personnel on a periodic basis, as required by measured doserates, to read their dosimeters.

4.2.8 Inform the EM when the EOF exposure levels are above administrative guidelines.

4.3 The EOF Coordinator has the responsibility to ensure personnel have been assigned to maintain EOF Entry Log, issue and collect dosimetry, and assist in establishing a radiological control point for access to the EOF as necessary.

4.4 The EOF Entrance Security Watchperson has the following responsibilities:

4.4.1 Initiate the EOF Entry Log in accordance with F8-2.

4.4.2 Issue and collect dosimetry, and record dosimeter readings upon issue and collection.

4.4.3 Notify the Security Coordinator in the event of lost, damaged, or off-scale dosimeter readings.

4.5 The Radiation Protection Specialists (RPS) have the following responsibilities:

4.5.1 Establish radioactive material control measures as specified in this procedure.

4.5.2 Control access and monitor frisking of potentially contaminated personnel to EOF as appropriate.

4.5.3 Direct personnel decontamination measures in accordance with F3-19, Personnel and Equipment Monitoring and Decontamination.

4.5.4 Control receipt and transport of samples within the EOF.

4.5.5 Complete surveys within the EOF as requested by the RPSS.

4.5.6 Direct EOF facility decontamination activities as required.

5.0 DISCUSSION

EOF personnel should be issued a TLD and a self-reading dosimeter upon entering the EOF. When permanently leaving the EOF, or upon completion of assigned duties, personnel should surrender the TLD and self-reading dosimeter to the EOF Entrance Security Watchperson.

At the discretion of the EOF Coordinator, personnel may be allowed to exit the EOF other than through a potentially contaminated access control area. Prior to exiting however, all personnel must follow security procedures for leaving the EOF.

During special emergency conditions, normal exposure practices may have to be waived to protect equipment and/or life.

6.0 PREREQUISITES

Prairie Island Staff has declared an Emergency Classification of an Alert, Site Area, or General Emergency.

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7.0 PROCEDURE

7.1 Radiological Access Control into the EOF for potentially contaminated personnel or radioactive materials **SHALL** be initiated when any of the following conditions have occurred:

7.1.1 Emergency response personnel which may have been exposed to a plume or radioactive materials require access to the EOF.

7.1.2 A release of radioactive materials has occurred and samples from the Offsite Survey Teams are being returned to the EOF for analysis.

7.1.3 Radioactive samples have been sent from the plant to the EOF for analysis.

7.1.4 Contaminated personnel have been transported to the EOF for decontamination.

7.2 Establish Radiological Access Control for personnel as follows:

7.2.1 The EOF Coordinator should direct set up of radiological access control at the rear EOF access control area in accordance with Figure 1, Access Control for Radioactive Materials at the EOF.

7.2.2 Security should ensure that the airlock door and all other doors to the EOF are CLOSED.

7.2.3 The RPS should establish a barrier rope for contamination control and radiological screening (see Figure 1). This will establish an EOF radiological access holding area.

7.2.4 The RPS should set up a Step-off-Pad and friskers (see Figure 1).

7.2.5 Security should direct personnel entering the EOF to pass through the control point, using the frisker to detect possible contamination. Ensure RPS is available when potentially contaminated personnel enter the EOF.

7.2.6 Personnel which have been screened and are not contaminated should be allowed access to the EOF. Personnel not involved with EOF activities (e.g. evacuated plant personnel) should be instructed to assemble in the unoccupied classrooms until they are released from site.

7.2.7 Contaminated personnel should be instructed to assemble in the EOF radiological access holding area.

7.2.8 The RPS should direct personnel decontamination in accordance with F3-19, Personnel and Equipment Monitoring and Decontamination.

NOTE:	**The decontamination shower drains to a 1000 gallon liquid waste holding tank that is equipped with a high level alarm. The alarm indicator is located on the South wall of the decon shower. The RPS should notify the RPSS when the high level alarm comes in. There is a 4" withdrawal pipe outside the receiving area door for pumping out the tank.**

7.2.9 After decontamination, personnel should be checked at the control point and allowed access to the EOF.

7.3 Establish Radiological Access Control for Radioactive Materials as follows:

7.3.1 The RPS should establish barriers and Step-off-Pads as specified in Figure 1, Access Control for Radioactive Materials at the EOF.

7.3.2 Security should ensure all samples are held in the access holding area until checked and released by the RPS.

7.3.3 The RPS assigned to the EOF Count Room should ensure that, prior to transporting samples to the EOF Count Room, all samples have dose rates checked, are bagged or rebagged as necessary, before passing through clean area.

7.3.4 If necessary, samples should be rebagged and stored in the shielded sample storage area.

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7.4 Specific Radiation Exposure Controls

The RPSS should implement specific exposure controls if personnel exposures in the range of 10 mRem are expected at the EOF. The following actions are then necessary.

7.4.1 An RPS should have temporary personnel complete NRC-4 and NRC-5 forms.

7.4.2 If the site computer is available, the individuals' personal and exposure data should be added to the computer exposure system as per the Radiation Protection Manual.

7.4.3 If the computer is not available, the individuals' data should be added to the Emergency Weekly Exposure Record, PINGP 755.

7.4.4 Obtain current administrative dose guidelines and yearly doses from plant records for personnel who have a current plant TLD issued.

7.4.5 At the end of each shift, the RPS should record the exposures from the EOF Entry Log, and enter in the computer as per the Radiation Protection Manual; or if the computer is not available, add the exposure to the Emergency Weekly Exposure Record, PINGP 755.

7.4.6 The RPSS should track exposures received, and limit each individual's exposure in accordance with 10CFR20 NRC limits in RPIP-1110, Administrative Dose Controls, unless the Emergency Manager authorizes higher exposure.

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7.5 Protective Guidelines for EOF Personnel

7.5.1 EPA 400 Guidelines for Recommended Protective Action to limit total exposure to personnel are:

Projected TEDE Dose Limit (mrem)	Activity	Condition
5,000	All	Lower dose not practical
10,000	Protecting valuable property	Lower dose not practical
25,000	Life saving or protection of large populations	Lower dose not practical
>25,000	Life saving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved.

NOTE:	1. Based on EPA 400-R-92-001, May 1992 2. TEDE = Total Effective Dose Equivalent 3. These are doses to nonpregnant adults from external exposure and intake during an emergency. 4. Workers should limit dose to the lens of the eye to 3 times the listed values and doses to extremities and any other organ to 10 times the doses listed above.

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7.5.2 The following guidance may be used, at the discretion of the Emergency Manager, for determining protective actions at the EOF:

External (DDE) Exposure Rates (mRem/hr)	Protective Action	Comments
greater than 1	Evacuate non-EOF areas of the Training Building and personnel who are not part of the emergency response organization.	
greater than 15	Consider evacuation of declared pregnant women and non-essential personnel	
greater than 100	Consider activation of the Backup EOF. Execute exposure authorization for those personnel approaching administrative limits and deemed by the Emergency Manager as vital to the emergency response effort. Evacuate all others.	**CAUTION**: Consider only if levels are expected to be sustained for a significant period of time and would cause excessive exposure to emergency personnel or levels are such that they seriously reduce the effectiveness of the emergency organization.
greater than 1000	Evacuation to the Backup EOF is recommended.	

DDE = Deep Dose Equivalent - external dose rate in mrem/hr.

Smearable Surface Contamination Levels (cpm/100 cm2)	Protective Action	Comments
greater than 100	Evacuate non-EOF areas of the Training Building and personnel who are not part of the emergency response organization. Control eating, drinking and smoking.	
greater than 500	Consider use of protective clothing, evacuate non-essential personnel.	Operation may continue as long as restrictions on personnel movements to limit the spread of contamination do not become limiting to operations.
greater than 5000	Ensure use of protective clothing.	

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Airborne Radioactive Levels	Protective Action	Comments
CAM - Particulate		
1. $1X10^{-9}$ uCi/cc	No protective action necessary.	
2. > $1X10^{-9}$ uCi/cc, but < $1X10^{-6}$ uCi/cc	Consider evacuation of unnecessary personnel and establish a program of regular portable air samples and counting to determine the DAC.	
a. If portable air sample results > .3 DAC		
	Evacuate non-EOF areas of the Training Building and personnel who are not part of the emergency response organization.	This measure is to ensure that classrooms and other non-EOF areas do not contain personnel being trained, i.e., badging classes, visitors, consultants, etc.
b. If portable air sample results > 1 DAC		
	Consider evacuation of unnecessary personnel and limit exposures to less than 40 DAC-hours per week, if possible.	Prolonged exposure to excessive airborne levels without protection that would lead to a exposure of 5000 mrem Committed Effected Dose Equivalent in one year should be avoided.
c. If portable air sample results > 10 DAC		
	Evacuate all personnel not deemed by the Emergency Manager as vital to the emergency response effort. Consider relocation of the EOF to the Backup EOF.	**CAUTION**: Consider evacuation only if levels are expected to be sustained for a significant period of time and would cause excessive exposure to emergency personnel or levels are such that they seriously reduce the effectiveness of the emergency organization.
3. > $1X10^{-6}$ uCi/cc	Evacuation to the Backup EOF is recommended.	

Airborne Radioactive Levels	Protective Action	Comments
CAM - Iodine		
1. If CAM alarms for iodine (2×10^{-9} uCi/cc)	Establish a program of regular portable air samples and counting to determine the DAC.	Prolonged exposure to excessive airborne levels without protection that would lead to an exposure of 5000 mrem Committed Effective Dose Equivalent in one year should be avoided.
2. If portable air sample results > 1 DAC	Consider evacuation of unnecessary personnel and limit exposures to less than 40 DAC-hrs per week, if possible.	
3. If portable air sample results > 10 DAC	Consider evacuation to the Backup EOF.	**CAUTION**: Consider evacuation only if levels are expected to be sustained for a significant period of time and would cause excessive exposure to emergency personnel or levels are such that they seriously reduce the effectiveness of the emergency organization.

NOTE:	**The RPSS should recommend the use of potassium iodide pills (thyroid blocking agent) if the projected thyroid exposure approaches 25 REM. See F3-18, Thyroid Iodine Blocking Agent (Potassium Iodide), for determining projected thyroid exposures.**

7.5.3 Generally, operational limits are flexible considering the "stay time" in the radiation area. A Total Effective Dose Equivalent (TEDE) in excess of 5000 mRem in one year should be avoided. Consideration to the exposure of key individuals should be used to determine the advisability of long term operation of the EOF in any area greater than 100 mR/hr.

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NOTE:	Radiation levels are probably from the plume. Consideration should be given to a potential wind shift and/or decrease of rad levels prior to ordering an evacuation.

The time to reach yearly limit at various radiation levels is:

Radiation Level	Number of 12 Hour Shifts
5 mR/hr	80
10 mR/hr	40
25 mR/hr	16
50 mR/hr	8
100 mR/hr	4

7.5.4 When the decision to evacuate the EOF is made, refer to F8-11, Transfer to the Backup EOF, for specific guidance.

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FIGURE 1 - ACCESS CONTROL FOR RADIOACTIVE MATERIALS AT THE EOF