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Section V

US Nuclear Regulatory Commission
Attn: Document Control Desk
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MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Emergency Plan Implementing Procedures

Furnished with this letter is a revision to the Monticello Nuclear Generating Plant Emergency Plan Implementing Procedures. The following procedures are revised:

<u>Procedure</u>	<u>Procedure Title</u>	<u>Revision</u>
A.2-401	Emergency Exposure Control	8

Please post changes in your copy of the Monticello Nuclear Generating Plant Emergency Plan Implementing Procedures. Superseded procedures should be destroyed. This revision does not reduce the effectiveness of the Monticello Nuclear Generating Plant Emergency Plan.

Please contact Douglas A. Neve, Project Manager – Licensing, at (763) 295-1353 if you require further information.



Jeffrey S. Forbes
Site Vice President
Monticello Nuclear Generating Plant

- c: Regional Administrator – III, NRC (w/ two copies of enclosure)
NRR Project Manager, NRC (w/o enclosure)
Sr Resident Inspector, NRC (w/o enclosure)
Minnesota Dept. of Commerce (w/o enclosure)
J. E. Silberg (w/o enclosure)

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Prepared By: <i>Bernie Schmitt</i>	Reviewed By: <i>Michael Offord</i>		
ALARA Coord Review By: <i>H. Shinnick</i>			
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1.0 PURPOSE

This procedure provides guidance and criteria for the authorization of personnel exposure to radiation in excess of federal or administrative limits during an emergency.

2.0 APPLICABILITY

- 2.1 An emergency condition at the Monticello Nuclear Generating Plant has resulted in radiation levels within the plant greatly in excess of normal levels and special considerations are required for exposure control.
- 2.2 It has been determined that individual doses for a job are expected to result in an individual exceeding his/her plant administrative limit.

3.0 ORGANIZATION AND RESPONSIBILITIES

- 3.1 The Emergency Director (ED) is responsible for:
 - 3.1.1 Authorization of emergency exposure.
 - 3.1.2 Authorizing the REC to approve personnel exposures in excess of Administrative or Federal limits.
- 3.2 The Radiological Emergency Coordinator (REC) is responsible for:
 - 3.2.1 Overall direction of the Radiation Protection exposure control activities during an emergency.
 - 3.2.2 Authorization of emergency exposures (when delegated by the ED).
- 3.3 The Radiation Protection Coordinator is responsible for:
 - 3.3.1 Coordination of exposure control activities during an emergency.
- 3.4 Radiation Protection Specialists are responsible for:
 - 3.4.1 Implementation of this procedure under the direction of the RPC.
 - 3.4.2 Ensuring all emergency exposure records are properly documented.

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4.0 DISCUSSION

4.1 Summary

- 4.1.1 The exposure of personnel during emergency operation **SHALL** be maintained as low as reasonably achievable (ALARA) and should be maintained less than the administrative guides established in the MNGP administrative control documents and/or less than the federal radiation exposure standards established in 10CFR20 if practicable.
- 4.1.2 In order to accomplish this objective, administrative means used during normal operations to minimize personnel exposure (such as radiation work permits and ALARA measures) should remain in force to the extent consistent with timely implementation of emergency measures.
- 4.1.3 If necessary, operations require personnel exposures in excess of the normal limits, or if normal access control and radiological work practices will result in unacceptable delays, the Radiological Emergency Coordinator may, at his discretion, waive or modify the established exposure control criteria and methods in accordance with the provisions of this procedure. In making such decisions, the Radiological Emergency Coordinator should call upon the expertise of the radiation protection staff on-site, if readily available.

4.2 Authority

- 4.2.1 The Emergency Director has the authority to perform the appropriate protective and corrective measures necessary to mitigate the consequences of an accident and to restore the plant to a safe condition. If necessary, the Emergency Director may authorize the Radiological Emergency Coordinator to approve personnel exposures in excess of normal guides/limits, but not greater than the planned radiation exposure criteria established in this procedure, provided the pre-conditions of such exposure are met. The REC **SHALL** be the only individual besides the Emergency Director authorized to permit emergency exposure.

4.3 Emergency Exposure Criteria

- 4.3.1 The exposure received pursuant to the performance of emergency measures should be commensurate with the significance of the action to be performed and should be maintained at a level which is as low as reasonably achievable (ALARA). Criteria for emergency exposures are established in EPA 400-R-92-001 and FIGURE 7.1.

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4.4 Considerations and Conditions

- 4.4.1 Personnel receiving increased exposure should be volunteers.
- 4.4.2 Personnel should be broadly familiar with the consequences of any exposures received under emergency conditions as per FIGURE 7.2.
- 4.4.3 Women in their reproductive years should not take part in these actions.
- 4.4.4 Women who have declared their pregnancy or are participating in the Monticello Unborn Child Protection Program **SHALL** follow the requirements of that program.
- 4.4.5 Exposures under these conditions should be limited to once in a lifetime.
- 4.4.6 Internal exposure should be minimized by the use of appropriate respiratory equipment, and contamination should be controlled by the use of appropriate protective clothing.
- 4.4.7 Volunteers above age of 45 are recommended.

4.5 Post-Exposure Evaluations

- 4.5.1 Personnel receiving exposures under emergency conditions should be restricted from further occupational exposure pending the outcome of exposure evaluations and, if necessary, medical surveillance.

5.0 PRECAUTIONS

- 5.1 Personnel **SHALL NOT** enter any area where does rates are unknown and unmeasurable or when dosimetry is not immediately available.
- 5.2 Appropriate dosimetry, which is capable of measuring the anticipated maximum exposure and type of radiations, **SHALL** be worn.
- 5.3 Extremity dosimeters **SHALL** be worn if it's anticipated that the extremity exposure is greater than two (2) times that of the whole body.

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6.0 INSTRUCTIONS

6.1 Emergency Exposure Authorization

IMPORTANT: In the event a planned emergency exposure is necessary, the following actions should be performed. Although it is preferable to perform and document these steps prior to the exposure, if necessary, the Emergency Director may verbally authorize the increased exposure and complete the documentation at a later time.

- 6.1.1 Initiate Form 5790-401-01 (EMERGENCY EXPOSURE AUTHORIZATION FORM).
- 6.1.2 Complete PART A of the EMERGENCY EXPOSURE AUTHORIZATION as follows:
 - A. Record personal information provided by the individual and/or other exposure control files;
 - B. Record the date the exposure was authorized and the authorized exposure limit (refer to Form 5790-107-04 (EMERGENCY WORK REQUEST) if completed);
 - C. Check the applicable INDIVIDUAL INFORMATION boxes;
 - D. Check the applicable EMERGENCY ACTIONS boxes;
 - E. Thoroughly brief the individual on the consequences of acute emergency exposures (review the EFFECTS OF ACUTE EXPOSURES, FIGURE 7.2) and other aspects of the emergency action;
 - F. Sign and date the completed PART A.
- 6.1.3 Instruct the individual to review PART A, read and sign PART B of the EMERGENCY EXPOSURE AUTHORIZATION form.
- 6.1.4 Route the completed form to the Radiological Emergency Coordinator for review and Emergency Director approval.
- 6.1.5 After the individual receives emergency exposure the Radiological Emergency Coordinator should:
 - A. Restrict the individual(s) from further exposure until an exposure evaluation is completed.
 - B. Complete an exposure evaluation of each individual based on dosimetry results, measured dose rates, airborne activity measurements, whole body counts, and area staytimes.

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C. Complete Part IV of Form 5790-401-01 (EMERGENCY AUTHORIZATION FORM).

- 6.1.6 If the dose equivalent exceeds 25 REM whole body, 100 REM skin or 100 REM extremity, the details of the exposure should be evaluated by the Radiological Emergency Coordinator and the individual should be examined by a physician and have appropriate tests completed.

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7.0 FIGURES

FIGURE

7.1 Emergency Worker Exposure Limits

EXPOSURE LIMIT ¹	EMERGENCY ACTIVITY ¹	COMMENTS
5 REM (TEDE) ⁽²⁾⁽³⁾	All emergency activities	This dose limit applies when a lower dose is not practicable through application of ALARA practices.
10 REM (TEDE) ⁽²⁾⁽³⁾	Protection of valuable property	This dose limit applies when a lower dose is not practicable through application of ALARA practices.
≥ 25 REM (TEDE) ⁽²⁾⁽³⁾	Life saving or protection of large populations	Doses in excess of 25 REM should be on a voluntary basis to persons fully aware of the risks involved.
<p>NOTE 1: Dose limits for emergency workers and activities are based on EPA 400-R-92-001, May 1992.</p> <p>NOTE 2: Sum of external effective dose equivalent and committed effective dose equivalent to non-pregnant adults from external exposure and intake during the duration of an emergency.</p> <p>NOTE 3: Exposure to the lens of the eye should be limited to <u>3</u> times the value listed and doses to the skin and/or extremities should be limited to <u>10</u> times the value listed.</p>		

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FIGURE

7.2 Effects of Acute Exposures

Health Effects Associated with Whole-Body Absorbed Doses Received Within a Few Hours^a

Whole Body Absorbed (Rad)	Dose	Early Fatalities ^b (percent)	Whole Body Absorbed (Rad)	Dose	Prodromal (percent affected)	Effects ^c
140		5	50		2	
200		15	100		15	
300		50	150		50	
400		85	200		85	
460		95	250		98	

- ^a Risks will be lowered for protracted exposure periods.
- ^b Supportive medical treatment may increase the dose at which these frequencies occur approximately 50 percent.
- ^c Forewarning symptoms of more serious health effects associated with large doses of radiation.

Approximate Cancer Risk to Average Individuals from 25 Rem Effective Dose Equivalent Delivered Promptly

Age at exposure (years)	Appropriate risk of premature death (deaths per 1,000 persons exposed)	Average years of life lost if premature death occurs (years)
20 to 30	9.1	24
30 to 40	7.2	19
40 to 50	5.3	15
50 to 60	3.5	11

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FIGURE

7.3 Forms Utilized in the Procedure

1. 5790-401-01 Emergency Exposure Authorization Form
2. 5790-107-04 Emergency Work Request

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