Medical Services Drill Report for Goodhue County, Minnesota

Prairie Island Nuclear Generating Plant

Licensee:	**Northern States Power Company**
Exercise Date:	**October 20, 1999**
Report Date:	**November 15, 1999**

FEDERAL EMERGENCY MANAGEMENT AGENCY
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I. EXECUTIVE SUMMARY

On October 20, 1999, the Federal Emergency Management Agency (FEMA), Region V, conducted a medical drill in the plume exposure pathway emergency-planning zone (EPZ) around the Prairie Island Nuclear Generating Plant. The purpose of this medical drill was to assess the ability of off-site agencies to respond to a medical emergency involving a potentially radioactively contaminated onsite worker from the Prairie Island Nuclear Generating Plant. The medical drill was held in accordance with FEMA's policies and guidance concerning the exercise of State and local emergency response plans.

FEMA wishes to acknowledge the efforts of the Prairie Island Nuclear Generating Plant, the Red Wing Fire Department Ambulance Service and the Fairview Red Wing Hospital staff who participated in this medical drill.

The scenario for this medical drill was developed by personnel from the Prairie Island Nuclear Generating Plant and coordinated with the State of Minnesota. The following objectives, which are part of the 33 standardized objectives contained in FEMA's Exercise Manual (FEMA-REP-14), are normally evaluated during a medical drill.

> **Objective 5: Emergency Worker Exposure Control.** Demonstrate the capability to continuously monitor and control radiation exposure to emergency workers.
>
> **Objective 14: Implementation of Protective Actions – Use of KI for Emergency Workers, Institutionalized Individuals, and the General Public.** Demonstrate the capability and resources to implement potassium iodide (KI) protective actions for emergency workers, institutionalized individuals, and, if the State plan specifies, the general public.
>
> **Objective 20: Medical Services – Transportation.** Demonstrate the adequacy of vehicles, equipment, procedures, and personnel for transporting contaminated, injured, or exposed individuals.
>
> **Objective 21: Medical Services – Facilities.** Demonstrate the adequacy of the equipment, procedures, supplies, and personnel of medical facilities responsible for the treatment of contaminated, injured, or exposed individuals.

In this drill Objectives 5, 20 and 21 were evaluated.

The local organizations, except where noted in this report, demonstrated knowledge of their organizational emergency response plans and procedures, and adequately implemented them. There were no Deficiencies or Areas Requiring Corrective Actions (ARCAs) identified as a result of this drill.

II. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities which participated in the October 20, 1999 medical drill to test the ability of offsite agencies to respond to a medical emergency involving a potentially radioactively contaminated onsite worker of the Prairie Island Nuclear Power Plant.

This section provides information on the evaluation of each participating jurisdiction and functional entity, in a jurisdiction-based, issues only format. Presented below are definitions of the terms used in this subsection relative to objective demonstration status.

- **Met** – Listing of the demonstrated exercise objectives under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.

- **Deficiency** – Listing of the demonstrated exercise objectives under which one or more Deficiencies was assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.

- **Area Requiring Corrective Actions (ARCA)** – Listing of the demonstrated exercise objectives under which one or more ARCAs were assessed during the current exercise or ARCAs assessed during prior exercises remain unresolved. Included is a description of the ARCAs assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.

- **Not Demonstrated** – Listing of the exercise objectives which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.

- **Prior ARCAs – Resolved** – Descriptions of ARCAs assessed during previous exercises which were resolved in this exercise and the corrective actions demonstrated.

- **Prior ARCAs – Unresolved** – Descriptions of ARCAs assessed during prior exercises which were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues that are discussed in this report.

- **A Deficiency** is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."

- **An ARCA** is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues among FEMA Regions and site-specific exercise reports within each Region. It is also used to expedite tracking of exercise issues on a nationwide basis.

The identifying number for Deficiencies and ARCAs includes the following elements, with each element separated by a hyphen (-).

- **Plant Site Identifier** – A two-digit number corresponding to the Utility Billable Plant Site Codes.

- **Exercise Year** – The last two digits of the year the exercise was conducted.

- **Objective Number** – A two-digit number corresponding to the objective numbers in FEMA-REP-14.

- **Issue Classification Identifier** – (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.

- **Exercise Issue Identification Number** – A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

1 GOODHUE COUNTY

1.1 Red Wing Fire Department

a. **MET:** Objectives 5 and 20

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

1.2 Fairview Red Wing Hospital

a. **MET:** Objective 21

b. **DEFICIENCY:** NONE

c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE

d. **NOT DEMONSTRATED:** NONE

e. **PRIOR ARCAs – RESOLVED:** NONE

f. **PRIOR ARCAs – UNRESOLVED:** NONE

III. EXERCISE NARRATIVES

The following pages contain the narrative summary that details the activities demonstrated during the October 20, 1999 medical drill for the Prairie Island Nuclear Generating Plant.

OBJECTIVE 5: EMERGENCY WORKER EXPOSURE CONTROL

Demonstrate the capability to continuously monitor and control radiation exposure to emergency workers.

Objective Status: Met

The Red Wing Fire Department Ambulance Service dispatcher received a call at 0807 hours on October 20, 1999, from the Prairie Island Nuclear Generating Plant (PINGP) advising them that a potentially contaminated onsite worker had been injured. Upon notification, each member of the response team was issued a direct-reading dosimeter manufactured by Dosimeter Corporation, Model #611, (with a range of 0-5R), a thermoluminicent dosimeter (TLD) and appropriate protective clothing. Each direct-reading dosimeter was initially zeroed on a dosimeter charger before distribution. The direct-reading dosimeters were read in accordance with prescribed standard operating procedures (every 30 minutes) and recorded on each responder's exposure chart. Monitoring of the injured worker was accomplished by a Plant Radiation Protection (RP) specialist at the scene and while en-route to the hospital. The monitoring equipment utilized was an Eberline Model RM-14 having a range of 0-50,000 counts per minute (CPM) with a Geiger-Mueller pancake probe. At the hospital, another member of the PINGP RP staff utilizing an Eberline Model G-120 with a Geiger-Mueller pancake probe and external speaker accomplished contamination monitoring. (range of 0-70K CPM/0-50mR/hr) All monitoring equipment was currently calibrated. Hospital staff within the Radiological Emergency Area (REA) was issued a direct-reading dosimeter having a range of 0-200mR, a TLD and appropriate protective clothing. Upon issue, dosimeters were zeroed and a log sheet was initiated. Dosimeters were checked every 30 minutes and the results were annotated accordingly.

All activities described in the demonstration criteria for this objective were carried out in accordance with the plan, procedures, and the extent-of-play agreement.

OBJECTIVE 20: MEDICAL SERVICES – TRANSPORTATION

Demonstrate the adequacy of vehicles, equipment, procedures, and personnel for transporting contaminated, injured, or exposed individuals.

Objective Status: Met

At 0807 hours on October 20, 1999, the Red Wing Fire Department Ambulance Service dispatcher received a call from the Prairie Island Nuclear Generating Plant (PINGP) that plant personnel found a potentially contaminated, conscious worker in the Auxiliary Building's Fuel Shipping Dropdown area sitting on the floor, clutching his left arm. Upon arrival of the Emergency Medical Team (EMT), it was further determined that the injured worker was diabetic and that immediate transport to the hospital was of utmost concern. Upon receiving a preliminary diagnosis of the condition of the injured worker, the ambulance crew contacted the Fairview Red Wing Hospital charge nurse at 0810 hours and advised her that a potentially contaminated, diabetic, injured worker was being transported from PINGP to the hospital. At 0814 hours, PINGP personnel also contacted the charge nurse reiterating the condition of the injured worker. The charge nurse verified the injury with PINGP personnel at 0815 hours. While waiting for the ambulance to arrive, EMT personnel conducted a second assessment of the injured worker and instituted actions to minimize the spread of contamination by wrapping the injured worker in a sheet. A member of the PINGP Radiation Protection (RP) staff monitored the injured worker for contamination at the plant site.

The ambulance arrived at the plant at 0829 hours. Upon their arrival, the EMT personnel briefed the ambulance crew on the current status of the injured victim. The ambulance crew then transferred the injured worker into the ambulance. The ambulance departed PINGP at 0848 hours. A member of the RP staff monitored the victim for contamination while en-route to the hospital. An oral interview was conducted with the ambulance crew after the ambulance arrived at the hospital. The oral interview determined that all required information had been relayed to the hospital charge nurse, including estimated time of arrival, injuries sustained, current status of the victim and information regarding contamination. Ambulance crewmembers frequently changed contaminated gloves, and maintained proper contamination control.

All activities in the demonstration criteria for this objective were carried out in accordance with the plan, procedures, and extent-of-play agreement.

OBJECTIVE 21: MEDICAL SERVICES – FACILITIES

Demonstrate the adequacy of equipment, procedures, supplies, and personnel of medical facilities responsible for treatment of contaminated, injured, or exposed individuals.

Objective Status: Met

At 0810 hours, the charge nurse at the Fairview Red Wing Hospital received a telephone call from the Red Wing Fire Department Ambulance Service that an incident occurred at the Prairie Island Nuclear Power Generating Plant (PINGP) involving a potentially contaminated injured worker. The hospital was also advised that the injured worker was a diabetic. Four minutes later, at 0814 hours, PINGP personnel also contacted the hospital advising them of the accident that occurred. The charge nurse confirmed the accident with PINGP by calling the plant back at 0815 hours.

Immediately upon being notified, hospital staff began preparing a Radiation Emergency Area (REA) in the emergency room to ensure that adequate measures were taken to receive the potentially contaminated patient. Hospital personnel set up a radiological cordon immediately outside of the emergency room doors to include the ambulance drop-off point located inside the attached garage. The cordon served as the designated patient offloading area for the ambulance and consisted of yellow and magenta rope tied to white plastic stanchions. Radiation caution signs were posted on the outside of the overhead garage door and on the door leading into the emergency room where the patient would be transferred too. Non-essential equipment and supplies were removed from the REA. Plastic bags for contaminated items were put in place and marked accordingly. Access to the REA was controlled by means of yellow and magenta rope. A contamination control step-off pad was placed at the entrance of the REA. X-rays would be taken if required by use of a portable machine outside of the REA.

The REA medical team consisted of a surgeon, one nurse and a Radiation Protection (RP) specialist from PINGP. The REA medical team wore a standard emergency room protective ensemble consisting of a white plastic surgical gown, a white plastic apron, two pairs of surgical gloves, with the inner gloves taped to the gown sleeve, one pair of white plastic shoe covers which were taped to the gown, a hair cap and a surgical mask. Hospital REA staff were issued a direct-reading dosimeter having a range of 0-200mR and a thermoluminescent dosimeter (TLD). The RP specialist had a direct-reading dosimeter with a range of 0-200mR, a TLD and a RADOS Model RAD-51R, self-reading/dual Alarming Dosimeter with a range of 0-1000 rad dose and 100,000R/hr dose rate. All dosimeters were properly zeroed and a log sheet was initiated.

Upon arrival, the ambulance proceeded into the radiological area inside the designated garage, where the transfer of the patient would take place. An orderly transfer of the patient from the ambulance crew to the hospital staff was accomplished. The ambulance crew briefed the hospital emergency room staff on the condition of the patient, including the results of radiation survey measurements. The REA physician conducted an initial patient evaluation while a radiation protection staff member from the plant monitored the patient for contamination utilizing an Eberline Model G-120 with a Geiger-Mueller pancake probe and external speaker. A thorough examination of the patient by the REA's medical staff was accomplished in a timely

fashion. Vital signs were as follows: Blood Pressure 116/80, Pulse 88, Blood Sugar 127, and Respiratory 12. Medical facility personnel maintained contamination control measures during and after treatment of the patient. Glove exchange by members of the REA was accomplished in a timely fashion. After initial treatment and decontamination of the patient was completed, the hospital staff demonstrated the proper removal of their protective clothing and step-off procedures.

All activities described in the demonstration for this objective were carried out in accordance with the plan, procedures and extent of play agreement.