

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Report: 50-267/82-26

License: DPR 34

Docket: 50-267

Licensee: Public Service Company of Colorado
P. O. Box 840
Denver, Colorado 80201

Facility Name: Fort St. Vrain Nuclear Generating Station

Inspection At: Fort St. Vrain Site, Platteville, Colorado, and St. Luke's
Hospital, Denver, Colorado

Inspection Conducted: November 15-16, 1982

Inspectors: J. L. Montgomery 1/4/83
J. L. Montgomery, Emergency Preparedness
Analyst Date

M. W. Dickerson for 1/4/83
M. W. Dickerson, Senior Resident Inspector Date

G. L. Plumlee III for 1/4/83
G. L. Plumlee III, Resident Inspector Date

Approved: T. F. Westerman 1/4/83
T. F. Westerman, Chief, Reactor Project
Section A Date

Inspection Summary

Inspection Conducted November 15-16, 1982 (Report: 50-267/82-26)

Areas Inspected: Routine, announced inspection of the Fort St. Vrain Nuclear
Generating Station and time spent at St. Luke's Hospital prior to and during
the medical emergency drill. The inspection involved 20 inspector-hours by
three NRC inspectors.

Results: Within the areas inspected, no violations or deviations were
identified. Four open items are discussed in Sections 10 and 11.

Details

1. Persons Contacted

Licensee Personnel

D. Warembourg, Nuclear Production Manager
J. Gahm, Quality Assurance Manager
M. McBride, Technical and Administrative Services Manager
T. Borst, Radiation Protection Manager
J. O'Donahue, Health Physics Technician

Other Organizations

J. Clegg, Nursing Manager, St. Luke's Hospital
D. Thompson, Medical Physicist, St. Luke's Hospital
B. Hester, Chief Technologist, Nuclear Medicine, St. Luke's Hospital
G. Guarino, M.D., Emergency Room Director, St. Luke's Hospital

2. Scope of Inspection

The purpose of this inspection was to observe a test exercise of the licensee's medical emergency program which has been developed in cooperation with St. Luke's Hospital, Denver, Colorado, pursuant to 10 CFR 50, Appendix E.

3. Entrance Interview

The entrance interview was conducted on November 15, 1982, with licensee management at the Fort St. Vrain site.

4. Interviews with Hospital Staff

Interviews with hospital emergency room (ER), nursing, and nuclear medicine staff confirmed that a one-hour training session had been conducted by representatives from the Fort St. Vrain Nuclear Generating Station on November 3, 1982. The training covered St. Luke's Hospital emergency procedures, protocol for the use of the "Flight for Life" helicopter, respiratory protection, dosimetry, radiation surveys, contamination control, accident assessment, minimization of radiation exposure, and review of the 1981 medical emergency exercise.

The hospital staff considered the training and assistance from Public Service Company to be adequate. The staff also conducted their own in-house training prior to the exercise.

The inspector toured the hospital areas where the exercise would take place. These included: helicopter landing area on roof; fifth floor

hospital entrance from helicopter landing area; ER entrance; and ER operatory where simulated patients would be treated.

The hospital staff did not believe that the roof entrance was the best location for bringing radioactively contaminated patient(s) into the ER as this involved a fifth floor entry followed by a central elevator descent to the ground floor and ER. The staff indicated that in the event of a real incident, the patient(s) would enter the ER through a separate rear entrance which opens to ground level. If a helicopter were used, it could land in a parking lot across from the emergency entrance. However, approximately 40 automobiles would have to be moved from the lot before the landing could be safely made.

5. Injury Treatment and Evacuation

The NRC senior resident inspector observed the accident scene and noted that the injured personnel were not evacuated by helicopter for 45 minutes following the initial notification.

There were radio reception problems between the accident site and the control room. The individual handling the radio had to move from the immediate area in order to adequately receive and transmit.

Approximately 13 minutes elapsed before medical help and equipment reached the accident scene. Air sampling at the scene was unsuccessful because of equipment damage. Rather than obtain a replacement sampler, the technician simulated the sample.

Contamination control at the accident scene was inadequate. No attempt was made to conduct radiation surveys of individuals who participated in the evacuation of the injured. No surveys were made of others, such as local ambulance personnel, who aided the injured outside the security fenced areas.

Although the licensee followed his medical emergency plan when issuing a dosimeter to the helicopter pilot, it is advisable to issue dosimeters to all personnel who are present in any vehicle with radiation accident patient(s). The nurse especially needs dosimetry as she would have been administering to the individuals and would have probably received the largest dosage.

Based on the above comments, the inspector noted the following open items:

- . Poor radio reception between the accident site and control room created communication problems. (267/8226-01)
- . The control of contamination at the accident scene was inadequate. (267/8226-02)
- . Consideration should be given to amending the medical emergency plan to specify that all personnel remaining with the radiation accident

patient(s) in the transport vehicle be supplied with a self-reading pocket type dosimeter. (267/8226-03)

6. Observation of the Medical Emergency Exercise at St. Luke's Hospital

The drill at St. Luke's Hospital began at 8:57 a.m. with an announcement over the public address system that two injured and contaminated victims were soon to arrive from the Fort St. Vrain Nuclear Generating Station.

Nuclear medicine technologists immediately mobilized by taking two emergency carts to the ER. Plastic sheeting was taped to the floor and air conditioning vents. All ER personnel suited up in anticontamination clothing and half-face respirators. Respirators were worn over surgical masks.

Personnel assembled on the fifth floor near the exit ramp for the helicopter landing area. All personnel observed were wearing a film badge and dosimeter. The helicopter arrived at 9:34 a.m. The helicopter crew (pilot, nurse, and health physicist) were not wearing respiratory protection.

The two patients were transported on gurneys to the ER. In the ER operatory, the patients were surveyed for contamination, but the contamination/survey tags attached to each patient's arm were not read by any ER personnel.

The physicians simulated emergency medical care for the fracture and eye wounds present. Although the radiation monitor repeatedly reported "zero" radioactivity readings on the patients, the ER staff continued to follow meticulous contamination control procedures.

During recovery operations, the staff members were surveyed for contamination, carefully removed anticontamination clothing, and generally followed proper health physics procedures. Pocket dosimeters were read by each staff member, but no one was observed recording the results.

The inspector noted the following comments and recommendations:

- a. Health physics instrumentation and equipment appeared to be well stocked and available. The nuclear medicine technologists appeared knowledgeable in how to use the equipment and prepared the ER to handle contamination in a timely and effective manner.
- b. ER staff working evening and weekend shifts should be as well trained and familiar with the procedures and equipment as are the day-shift staffs.
- c. Respirators should not be worn over surgical masks as this compromises the protective seal between the mask and skin.
- d. If the Fort St. Vrain health physics staff has determined that airborne contamination is not present, this should be made known to

the hospital radiation safety officer, who in turn could consider issuing an advisory to the hospital staff. If safety permits, the removal of the respirators would facilitate clearer communication among staff members.

- e. Depending on the estimated arrival time, it may be unnecessary for hospital staff to wear their respirators prior to the arrival of contaminated patients.
- f. From a health physics standpoint, it is not recommended that patients contaminated with radioactive material enter the hospital or emergency room from the roof-top helicopter landing area.
- g. Radiation monitoring tags attached to the patients should be carefully read immediately upon entering the ER. The type of radiological monitoring, decontamination, and medical treatment should reflect the information on the tags.
- h. Radiation survey readings should never be recorded as "zero."
- i. Readings taken from pocket dosimeters should be recorded.

Based on the above comments, the inspector has noted the following open item:

Although a brief training session was conducted by the licensee for St. Luke's hospital staff, the inspector has noted several weak areas which could be improved through additional and effective training by health physics specialists. The licensee should determine the amount and kind of additional training needed and accomplish this with the hospital staff as soon as practical.
(267/8226-04)

7. Control Room Activities

The NRC resident reactor inspector was in the control room during the exercise and made the following observations:

- . The west reactor operator's medical emergency plan contained outdated copies of worksheets.
- . The west reactor operator's attention appeared to be devoted solely to the medical emergency exercise and not to reactor plant operations.
- . Duty-shift supervisor had problems obtaining personnel to perform normal duties for continued plant operations. It appeared that the entire day-shift health physics department was involved with the exercise. The initiation of such an exercise on a backshift with limited plant personnel present would appear to be a more appropriate indicator as to the licensee's capability to utilize its available resources to cope with such a casualty.

From an observation point located in the licensee's lunch room towards the end of the exercise, it was not apparent that any precautions were being taken to prevent the spread of contamination at the scene where loading of the victims into the "Flight for Life" helicopter took place.

8. Exit Interview

The exit interview was held on November 16, 1982, at the Fort St. Vrain site. The meeting was conducted by Mr. James L. Montgomery, Emergency Preparedness Analyst. Also participating were NRC resident inspectors, M. W. Dickerson and G. L. Plumlee. The licensee was represented by Mr. M. McBride and other Public Service Company of Colorado staff. Messrs. Montgomery, Dickerson, and Plumlee gave a verbal summary of their observations of the licensee's and hospital's performance during the exercise.