

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-267/90-13

Operating License: DPR-34

Docket: 50-267

Licensee: Public Service Company of Colorado (PSC)
P.O. Box 840
Denver, Colorado 80201-0840

Facility Name: Fort St. Vrain Nuclear Generating Station (FSV)

Inspection At: Weld County, Platteville, Colorado

Inspection Conducted: July 9-13, 1990

Inspector:

A. Blair Pittney
Dr. D. B. Spitzberg, Emergency Preparedness
Analyst, Security and Emergency Preparedness
Section

7-31-90
Date

Approved:

L.A. Yandell
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8/3/90
Date

Inspection Summary

Inspection Conducted July 9-13, 1990 (Report 50-267/90-13)

Areas Inspected: Unannounced inspection of the emergency preparedness program including emergency detection and classification, knowledge and performance of duties, and dose calculation and assessment.

Results: Within the areas inspected no violations or deviations were identified. Two previous violations (267/8811-01; 267/9006-01) were effectively corrected and closed during the inspection. Both violations pertained to training inadequacies related to abilities of control room personnel to carry out the emergency plan and implementing procedures. The performance of these personnel during walkthrough interviews improved since the previous inspection, and it was determined that their capabilities in detecting, classifying, assessing emergencies, and performing other emergency plan activities were good.

DETAILS

1. Persons Contacted

- *C. H. Fuller, Manager, Nuclear Production and Station Manager
- *M. E. Deniston, Superintendent of Operations
- *D. W. Evans, Manager, Operations/Maintenance
- *F. J. Borst, Manager, Training and Support
- *R. Millison, Senior Emergency Planning Specialist
- *M. Block, Manager, System Engineering
- *J. M. Grambling, Supervisor, Nuclear Licensing, Operations
- *N. E. Snyder, Fuel Deck Manager
- *M. J. Ferris, Manager, Quality Assurance (QA) Operations
- *M. J. Raymond, Supervisor, Training
- *K. J. Evans, Manager, Operations Maintenance
- *H. L. Brey, Manager, Nuclear Licensing and Resource

The inspector also held discussions with other station and corporate personnel in the areas of security, health physics, operations, training, and emergency response.

*Denotes those present at the exit briefing.

2. Followup on Previously Identified Violations (92702)

(Closed) Violation (267/9006-01; 267/8529-01): Failure to Provide Adequate Training to Emergency Responders. These violations were identified during walkthrough interviews of control room personnel assigned as emergency responders. The training inadequacies were in areas including emergency detection, classification, notification, dose assessment, and knowledge of radiological emergency response plan implementing procedures (RERPs). During this inspection, the inspector reviewed documentation of special retraining in emergency preparedness given to all control room emergency responders as committed to in the licensee's response letter dated May 25, 1990. The inspector also verified the changes made in Radiological Emergency Response Plan Procedure RERP-DOSE "Offsite Dose Calculation Methodology" in order to prevent certain errors made during the interviews documented by NRC Inspection Report 50-267/90-06. Finally, during the current inspection, interviews of each of the control room shifts were performed. Each team demonstrated adequate knowledge of the emergency plan and RERPs and was able to make accurate dose assessments from the control room. Specific questions and scenarios were presented to the teams which were related to problem areas noted in prior inspections. The teams' responses were good and indicated no continuing training inadequacies.

(Closed) Unresolved Item (267/9006-01): NRC review of licensee plans to fill the vacant emergency planning coordinator's position. The inspector verified that effective April 2, 1990, the senior technical service engineering technician who had been acting as the emergency planning

coordinator was appointed to the new position of senior emergency planning specialist. A review of this position's job description showed that the functions and responsibilities of this position are essentially equivalent to the former emergency planning coordinator's position which was deleted.

2. Emergency Detection and Classification (82201)

The inspector reviewed licensee procedures, inspected instrumentation and operator aids in the control room, and discussed emergency detection and classification with emergency responders to determine whether the licensee's emergency classification and action level scheme met the requirements of 10 CFR 50.47(b)(4) and 10 CFR 50, Appendix E, Section IV.B.

Procedure EP CLASS contains the licensee's emergency action levels (EALs) and initiating events. The inspector reviewed this procedure and determined that it had not been changed since the last inspection and that it had been reviewed internally annually. The EALs and initiating events are generally consistent with the initiating conditions in Appendix 1 of NUREG-0654. Controlled copies of the emergency plan and implementing procedures and any changes to these documents have been sent to the Colorado Division of Disaster Emergency Services.

Control room instrumentation and operator aids were noted to be present which could be used to rapidly detect and correlate initiating events with EALs outlined in EP CLASS. One instrument, however, was noted to read out in units which could not readily be used in generating manual dose calculations. This issue is discussed in detail in paragraph 5.

The inspector reviewed the emergency response organization duty roster and shift coverages and determined that an individual had been assigned to the site at all times who had the authority and responsibility to initiate emergency actions. The inspector discussed entry into the emergency classification procedures with responsible control room directors and shift supervisors. Events detected in the control room by means of instrument or equipment alarms would be acted on by the operators entering into an abnormal operating procedure. It was noted that the introduction of the abnormal operating procedure manual directs the operator to EP CLASS for appropriate classification of abnormal conditions. References to EP CLASS were not made, however, in the individual abnormal operating procedures, nor did the operator's actions specified for alarms in these procedures direct the operators to determine if the events met initiating conditions for an emergency as outlined in EP CLASS.

No violations or deviations were noted in this program area.

4. Knowledge and Performance of Duties

The inspector conducted a series of walkthrough interviews of teams of critical emergency response personnel to determine whether the basic level

of training, understanding of emergency preparedness, and their abilities to implement emergency actions were adequate to satisfy the requirements of the emergency plan.

The inspector interviewed five control room teams. The teams consisted of control room shift personnel including a shift supervisor/emergency director and at least two reactor operators. The interviews were held in the control room. Each interview lasted about 2 hours and consisted of two parts. One part presented questions of a technical nature pertaining to fundamental knowledge of the emergency plan and implementing procedures that decisionmakers need to know in order to perform their duties efficiently. Some of the questions were in areas where operators were found to be weak during the last interviews performed. (Reference NRC Inspection Report 50-267/90-06). The other part of the interview consisted of presenting an accident scenario developed by the inspector, which was designed to prompt the interviewees to detect, classify, notify, perform dose assessments, and make protective action recommendations (PARs).

The scenario was developed using the technical assistance of a licensee operations training instructor. The scenario involved a seismic event which toppled the refueling machine as it was loaded with spent fuel and reflector blocks during a defueling operation. The machine broke open, spilling out fragments of broken spent fuel. An operator was injured and pinned under debris near the toppled refueling machine. The seismic event also caused a loss of the data logger capabilities. Control room indications for operators to act on included a seismic alarm, area radiation monitor alarms from Level 11 (refueling floor), and operator messages to the control room. Later, a release of radioactive material took place out of the ventilation stack as indicated by high-level alarms and activity release rates on the iodine and noble gas vent monitors. The source term used was similar to values used in a scenario developed by the licensee and drilled during 1989. Necessary monitor values, ventilation flowrates, and meteorological conditions were given to the interviewees as requested to use as input parameters for dose assessment purposes.

Overall the teams responded well to the interview questions and demonstrated a sound understanding of the emergency plan. In responding to the scenario, the teams arrived at the proper classification and made prompt and accurate notifications to offsite authorities. Information flow was good and the teams were able to capably act on the contaminated and injured operator scenario by promptly entering the medical emergency procedure. The teams were found to be proficient in using the manual dose assessment procedure and made proper protective action recommendations based upon the information available.

No violations or deviations were identified in this program area.

5. Dose Calculation and Assessment (82207)

The inspector reviewed dose assessment procedures, computer based dose assessment systems used during emergencies, and interviewed emergency dose assessors to determine that adequate methods were available for assessing the consequences of radiological releases.

The Dose Assessment Procedure RERP DOSE had been changed since the previous inspection conducted February 26 through March 2, 1990, in order to improve the ease at which users would be able to complete the procedure. The inspector reviewed these changes and found that errors made during the previous inspection's walkthroughs would be less likely to occur as a result of the changes. During the walkthroughs performed during this inspection as documented in paragraph 4, a manual dose assessment task was incorporated into the scenario to retest the dose assessor's capabilities in this area. All teams were proficient at manually calculating accurate offsite doses. The procedure remains slow to complete, however, and may require the user to spend time generating results which are not needed in order to classify a release and make early protective action recommendations.

The review of Procedure RERP DOSE identified a unit inconsistency with control room instrumentation that could result in confusion or errors in performing manual dose assessments. The inconsistency relates to the procedural need for delta temperature from 60 meters to 10 meters in degrees Fahrenheit. The control room instrument, however, which indicates delta temperature, reads out only in degrees Celsius. The absence of a conversion factor in the procedure caused unnecessary delays during the walkthroughs. During the exit meeting, the licensee acknowledged this problem and committed to change the procedure to include the necessary unit conversion.

The inspector reviewed protective action recommendation procedures and determined that the protective action recommendations determined through the dose assessment procedures were consistent with those specified in RERP PAR and NUREG-0654.

The licensee's dose assessment model is the same for both the data logger and the manual calculation procedure and is based upon the Gaussian Pasquill atmospheric dispersion models in general use in the industry. The model was found to have the capability to incorporate field measurements into the assessments. The inspector called representatives with the state of Colorado Division of Disaster Services and was informed that the dose assessment model used by the state is of the same type as the licensee's and has yielded results which are in agreement with the licensee's during exercises. Differences between the state and licensee dose assessment models are primarily in the number of atmospheric stability classes and options for release height parameters.

No violations or deviations were identified in this program area.

6. Exit Interview

The inspector met with licensee representatives denoted in paragraph 1 on July 13, 1990, and summarized the scope and findings of the inspection as presented in this report. The licensee did not identify as proprietary any of the material provided to, or reviewed by, the inspector during the inspection.