APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-267/86-22 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: Fort Lupton and Fort St. Vrain, Colorado

Inspection Conducted: August 4-8, 1986

Inspector: J B Baird 9/17/86
J. B. Baird, NRC Team Leader Date

Other Inspectors: C. Hackney, RIV, NRC
W. Bennett, RIV, NRC
D. Perrotti, OIE, NRC
E. Hickey, Pacific Northwest Laboratories
G. Bryan, Comex Corporation

Approved: for W. L. Fisher 9/17/86
L. A. Yandell, Chief, Emergency Preparedness and Safeguards Programs Section Date

Inspection Summary

Inspection Conducted August 4-8, 1986 (Report 50-267/86-22)

Areas Inspected: Routine, announced inspection of the licensee's emergency response capabilities during the annual exercise of the emergency plan and procedures.

Results: Within the emergency response areas inspected, one apparent violation was identified (paragraphs 3, 4, 6, 8, and 9 - failure to correct deficiencies). Three emergency preparedness deficiencies were identified by NRC inspectors.

DETAILS

1. Persons Contacted

Principal Licensee Personnel

*F. Borst, Support Services Manager
*H. Brey, Manager, Nuclear Licensing and Fuels
*O. Clayton, Technical Services Engineer
*K. Collins, Quality Assurance Technician
*R. Cook, Quality Assurance Technician
*R. Doyle, Quality Assurance Engineer
*D. Evans, Superintendent of Operations
*M. Ferris, Quality Assurance Operations Manager
M. Fisher, Engineer, Special Projects
*J. Fuller, Vice President, Engineering and Planning
*C. Fuller, Station Manager
J. Gahm, Manager, Nuclear Production
*A. Greenwood, Supervisor, Quality Assurance Auditing
J. Hak, Shift Supervisor
*M. Holmes, Nuclear Licensing Manager
A. Horsechief, Health Physics Technician
R. Husted, Supervisor, Nuclear Fuels
*M. Joseph, Technical Advisor
*B. Langsteiner, Quality Assurance Engineer
*O. Lee, III, Quality Assurance Technician
*W. Ledford, Quality Assurance Engineer
*H. Olson, Member, Nuclear Facility Safety Committee
*D. McCue, Technical Services Engineer
*R. Millison, Technical Services Technician
*F. Novachek, Technical/Administrative Services Manager
*L. Pierce, Manager, Media Relations
*J. Sills, Technical Services Supervisor
*L. Singleton, Manager, Quality Assurance
*G. Toner, Quality Assurance Technician
*R. Walker, Chairman
*D. Warembourg, Manager, Nuclear Engineering
*R. Williams, Jr., Vice President, Nuclear Operations

State of Colorado

*J. Everitt, Division of Disaster Emergency Services
*M. Hanrahan, Department of Health

NRC

*P. Michaud, Resident Inspector

Other Personnel

H. Bluder, Stone and Webster
*B. Matheney, Member, Nuclear Facility Safety Committee, NUS
J. Rodell, Stone and Webster

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Deficiency (267/8518-01): The NRC inspector noted internal inconsistencies in the scenario impacted the demonstration of some exercise objectives (see paragraph 3). This item remains open.

(Open) Deficiency (267/8518-02): The NRC inspector noted that controller weakness in the control room impacted the demonstration of some exercise objectives (see paragraph 4). This item remains open.

(Closed) Deficiency (267/8518-03): The NRC inspector determined that adequate habitability checks were made in the control room. This item is closed.

(Closed) Deficiency (267/8518-04): The NRC inspector determined that adequate habitability checks were made in the technical support center. This item is closed.

(Closed) Deficiency (267/8518-05): The NRC inspector determined that licensee training on information flow had addressed the problems identified in this deficiency; however, see related deficiency in paragraph 6. This item is closed.

(Closed) Deficiency (267/8518-06): The NRC inspector noted that exercise observers did not identify any field monitoring team data record weaknesses. This item is closed.

(Closed) Deficiency (267/8518-07): The NRC inspector observed radiological precautions by health physics technician and repair team members to be adequate. This item is closed.

(Closed) Deficiency (267/8510-08): The NRC inspector did not observe any prepositioning of station personnel for accountability. The licensee created a printout list of personnel inside the protected area and station personnel were accounted for against the station list. This item is closed.

(Open) Deficiency (267/8518-09): The NRC inspector observed similar weaknesses in first aid and decontamination during the exercise (see paragraph 9). This item is open.

(Open) Deficiency (267/8518-10): The NRC inspector observed similar weaknesses in command and control of the forward command post during this exercise (see paragraph 8). This item is open.

3. Exercise Scenario

The PSC exercise scenario was reviewed prior to the exercise to determine that provisions had been made for the required level of participation by state and local agencies, and that all major elements of emergency response would be exercised by PSC in accordance with the requirements of 10 CFR 50.47(b), 10 CFR Part 50, Appendix E, paragraph IV.F, and the guidance criteria in NUREG-0654, Section II.N.

Comments from this review were transmitted to the scenario coordinator prior to the inspection date and satisfactory resolution was obtained prior to the exercise. In general, the scenario was found to be significantly improved over the previous exercise in internal consistency and completeness of scenario data and instructions for players and controllers. However, the NRC inspectors determined during the exercise that weaknesses in the scenario were still present and impacted the demonstration of some exercise objectives. Examples of these weaknesses were as follows:

- Scenario data indicated higher fuel damage initially than planned for in the exercise timeline. This caused the control room to initially select the Alert classification instead of Notice of Unusual Event (NOUE) as planned. Later, scenario data inadequacies contributed to a delay in making the Alert classification.

- No thermal data were provided to permit prestressed concrete reactor vessel (PCRV) failure risk.

- Reactor building louvers were opened although peak pressure data was insufficient to cause opening.

- Scenario dose assessment data was based upon release option 4 although release option 1 (via the louvers) was appropriate. This resulted in the re-boot of the dose assessment program and reentry of data, causing a significant delay in producing dose assessment projections.

- The method of providing data-logger information to players was new and the scenario did not make adequate provisions for training players to use this data in the same way as they would the data-logger.

The exercise scenario weakness observed appears to constitute the same general deficiency in this area that was identified during the last annual exercise (267/8515-01). The failure to correct this deficiency is

an apparent violation of 10 CFR 50.47(b)(14), which requires the correction of exercise deficiencies (267/8622-01). The licensee also identified this deficiency in the post-exercise critique.

No other violations or deviations were identified.

4. Control Room

Initial plant conditions and events of the scenario were provided to the control room staff at about 7:00 p.m. by the exercise controllers. The initial event was decreasing core outlet temperatures which could not be corrected by adjusting the flow orifice control valves, followed by erratic thermocouple readings. At about 7:30 p.m., a rise in primary coolant activity was shown and a NOUE was declared at approximately 7:52 p.m. A spurious reactor scram, rise in primary coolant moisture, and a main steamline rupture with the reactor building louvers open resulted in the declaration of an Alert at about 8:47 p.m. and a Site Area Emergency at about 9:05 p.m. A rise in primary coolant radioactivity and the assessment of offsite dose consequences resulted in the declaration of a General Emergency at about 12:06 a.m.

During the initial part of the exercise, the NRC inspector noted that scenario problems (see paragraph 3) were impacting the demonstration of emergency classification. The controllers in the control room did not maintain contact with the players and make the necessary scenario/player action corrections to get the exercise back on the time line and permit adequate evaluation of control room response. After a delay of about 30 minutes, one of the lead controllers informed the control room staff that the scenario required declaration of a NOUE. The classification problem persisted for the Alert also. The shift supervisor (SS) consulted with the operations superintendent by telephone and questions about whether or not the data given required the declaration of Alert caused this classification to be delayed until the operations superintendent arrived at the plant.

The NRC inspector in the control room observed the appropriate use of emergency implementing procedures (EIPs) for classifying events and noted that initial notifications to state and local agencies were made promptly by the SS. No notification was made for Alert because a Site Area Emergency was declared about 15 minutes later, preempting the Alert notification. The subsequent notifications were timely. It was noted that the SS had to leave the control room often to make calls and notifications. During the times the SS was out of the control room it was not clear who was in charge of operations.

In addition, the NRC inspector observed that there was good communication and interaction in the control room during the exercise, that the SS was properly relieved by the control room director (CRD), and that control room personnel were kept well informed of events by the CRD as the information became available.

However, it was noted that communications outside the control room were weak in that the control room did not know the status of accountability, if the personnel control center was staffed, or if the onsite radiation monitoring team had been dispatched.

The control room controller weakness observed appears to constitute the same general deficiency in this area that was identified during the last annual exercise (267/8515-02). The failure to correct this deficiency is an apparent violation of 10 CFR 50.47(b)(14), which requires the correction of exercise deficiencies (267/8622-01). The licensee also identified this deficiency in the post-exercise critique.

Based on the above, the following additional item is considered to be an emergency preparedness deficiency:

> Information flow to the control room was deficient in that the SS was not informed of the status of accountability, staffing of the Personnel Control Center (PCC), or dispatch of the onsite monitoring team in a timely manner. (267/8622-02)

The following are observations for the licensee's attention. These observations are neither violations nor unresolved items. These items are recommended for licensee consideration for improvement, but they have no specific regulatory requirement.

- Provisions should be made for making notifications from the control room and consideration given to delegation of the calls to a person other than the SS.

- Consideration should be given to providing a status board to display plant conditions and system status for the control room staff.

No other violations or deviations were identified.

5. Personnel Accountability

The NRC inspector noted that personnel were requested to report directly to their emergency response facilities by the control room following the declaration of an Alert class. According to administrative Procedure G-5, titled "Personnel Emergency Response," Section 4.1, "In the event that an Alert or higher level classification event occurs, the Technical Support Center (TSC), Personnel Control Center (PCC) . . . . will be activated immediately after initial accountability is completed." In addition, Section 4.4 of Procedure G-5 states that personnel other than operations and health physics shall report to the lunchroom for initial accountability. This caused some initial confusion. During the accountability process all but two persons were accounted for in approximately 30 minutes; however, two persons could not be accounted for in the assembly area. It was subsequently determined by the licensee that the two persons had left the area and were not key carded out of the

protected area. The NRC inspector noted that Section 4.4 of the accountability procedure did not address what to do on backshifts or weekends if personnel were missing, who to report missing persons to, or who would and how to initiate search and rescue. These deficiencies were also identified by the licensee during the post-exercise critique.

No violations or deviations were identified.

6. Technical Support Center

The NRC inspector observed that the technical support center activation was not timely. The Alert was declared about 8:47 p.m. and the TSC activation was accomplished at about 10:56 p.m. The NRC inspector noted that this was in excess of the general goal of 60 minutes stated in Section 8.2.1 j. of Supplement 1 to NUREG-0737 and the specific goal of 90 minutes authorized for Fort St. Vrain. The deficiency in demonstration of timely staff augmentation and TSC activation was also identified in the licensee's post-exercise critique.

After the TSC was activated, the NRC inspector noted that command, control and communications in the TSC were deficient at times. For example, the TSC director did not announce taking charge of the TSC when he arrived, and briefings of TSC staff were infrequent, often incomplete (missing key players and important information), and hampered by high noise levels which included that of the TSC air sampler. These deficiencies were also identified in the licensee's post-exercise critique.

In addition, the initial status board entries were not timely and dose assessment information flow to the TSC director was slow. No running accounts of limiting conditions for operations (LCOs) or inoperative equipment were made. The NRC inspector also noted that, for approximately 1 hour, information unavailability apparently led the TSC staff to incorrectly believe the release rate had been decreased significantly by venting primary coolant to the bottle farm. Additionally, no provisions were made for displaying the protective action recommendations implemented by state and local agencies.

The NRC inspector noted that the TSC formulated the General Emergency classification and directed the control room to announce a General Emergency at approximately 12:05 a.m., and informed the forward command post (FCP) of that declaration and protective action recommendations at about 12:08 a.m. At this time the FCP had been activated and the corporate emergency director (CED) had been responsible for classification and protective action decisionmaking for about an hour.

The decisionmaking weakness observed appears to constitute the same general deficiency in this area identified during the licensee's critique of the last annual exercise and documented in paragraph 5 of NRC Report No. 50-267/85-15. The failure to correct this deficiency is an apparent violation of 10 CFR 50.47(b)(14), which requires the correction of exercise deficiencies (267/8622-01). The licensee also identified this deficiency in the post-exercise critique.

The following are observations for the licensee's attention. These observations are neither violations nor unresolved items. These items are recommended for licensee consideration for improvement, but they have no specific regulatory requirement.

- The Radiological Emergency Response Plan (RERP), Section 6, indicates the emergency alarm is to be sounded at Alert and all higher classifications. Procedure RERP-CR stated the alarm is sounded at Alert, Site Area, and General Emergencies unless previously sounded. This should be made consistent.

- RERP-CR and RERP-PHONE lists only one of the four alternate telephone numbers for the NRC operations center. The additional numbers should be provided.

- RERP-TSC, 2.4.2, requires the control room director's concurrence prior to commanding a data-logger printout of "Alarm Types." This should be reviewed to determine if concurrence is necessary.

- Emergency response personnel coming into the plant were delayed at security awaiting telephone authorization for entry. This practice should be reviewed to determine if a more efficient procedure can be provided.

- A display of protective action recommendations made by the licensee and actually implemented by offsite authorities should be provided.

No other violations or deviations were identified.

7. Personnel Control Center

The Alert classification was declared at about 8:51 p.m. and the first person arrived at the PCC at approximately 9:37 p.m. The PCC director arrived at the PCC at about 9:44 p.m. and most of the other PCC personnel arrived at approximately 10:06 p.m. The PCC director began conducting a radiological survey to determine facility habitability and requested that the emergency implementing procedures be removed from the library and used by PCC personnel. The NRC inspector noted that the PCC director did not announce when the PCC was activated and did not conduct any PCC staff briefings during the exercise. The emergency director in the control room made emergency class declarations over the paging system from the control room; however, there were areas in the PCC where one could not hear the announcements. The NRC inspector heard the emergency class announcements but did not hear the reasons announced for the change in emergency classes.

The NRC inspector noted that personnel arriving at the PCC assisted in setting up a system for personnel monitoring and decontamination, and checked themselves for contamination prior to entering the main PCC work area. The NRC inspector also noted, however, that two persons went from the PCC to the TSC without the PCC director checking with the control room

for onsite radiological conditions. At this time, the station emergency director had previously declared an Alert and there had been a radiological release.

Telephone and radio communications were established with the TSC and both were maintained throughout the exercise. The NRC inspector noted that the offsite radiological monitoring personnel received the keys to the offsite monitoring vehicles and were prepared to depart shortly after PCC activation; however, the teams were not dispatched in a timely manner. The exclusion area boundary monitoring (EAB) team was dispatched in 2 hours 38 minutes and the emergency planning zone (EPZ) monitoring team was dispatched in 3 hours 25 minutes after the declaration of an Alert. In addition to the slow dispatch, the failure to restart and stalling of the vehicle for the EPZ team contributed to this problem. This deficiency was also identified by the licensee during the post exercise critique.

The following are observations for the licensee's attention. These observations are neither violations nor unresolved items. These items are recommended for licensee consideration for improvement, but have no specific regulatory requirement.

- Control room, TSC and PCC personnel should be notified when the PCC is activated.

- The PCC and alternate PCC should have emergency lighting in the event of a power failure.

- Personnel should sign in at the PCC under their functional areas so that the PCC director is aware of personnel that have arrived.

- All personnel should be made aware of plant radiological conditions prior to departing for the TSC or control room.

- The public address system in the PCC should be upgraded so that all PCC personnel can hear accident related messages.

- PCC personnel should receive periodic emergency related information from the PCC director.

No violations or deviations were identified.

8. Forward Command Post

The licensee's forward command post, which is the emergency operations facility, is located in the licensee's Fort Lupton service center building. The NRC inspector noted that the facility was laid out per Procedure RERP-FCP, Issue 13, as amended by PDR 86-895. The NRC inspector noted that the FCP was not activated within the 90 minutes time from the declaration of an Alert (synonymous with the start of the fan-out notification) as committed to by the licensee. The NRC inspector noted that the CED arrived approximately 90 minutes after the fan-out (AF+90).

However, at this time no plant status was available from the TSC, so the FCP remained staffed, but essentially unable to perform its primary function of command and control of the licensee's emergency response. It was observed by the NRC inspector that a FCP communicator passed information on to the TSC that the FCP was fully manned at AF+97. However, the CED had made no decision on activation at this point. At AF+120 the TSC and FCP still had not been declared fully operational.

The NRC inspector also noted that Procedure RERP-FCP provides no detailed instructions for the CED as to when or how the responsibility for command and control of the emergency response should be transferred from the TSC to FCP. The initial plant status briefing for the PSC FCP staff was conducted by the CED. However, from that point on the licensee demonstrated weaknesses in the command and control of emergency response activities, as evidenced by the following examples:

- The CED attempted a premature activation and announcement of PSC FCP operability before the condition of the plant was fully known.

- There was no announcement made by the CED to the PSC FCP staff that the FCP was considered to be activated and fully operational, that the CED was in charge, and that the responsibility for notifying and making protective action recommendations (PARs) to offsite authorities had been transferred from the TSC to FCP.

- For the most part the station technical liaison (STL) briefed the staff and appeared to be the decisionmaker for PSC.

- When asked for a protective action recommendation by the state, the CED was indecisive as to what to recommend. Scenario events finally overtook this situation when the emergency escalated from a Site Area Emergency to a General Emergency.

- Press releases were not reviewed and concurred in by the CED, and made available to the NRC for review prior to issuance.

During the exercise the NRC inspector noted several instances where approved procedures were not followed:

- RERP-PAG, Issue 4, specifies that the decision for PARs is to be based, in part, upon plant system parameters. However, at the Site Area Emergency level no consideration was given to protective actions based on deteriorating plant conditions (even though an uncontrolled release was in progress).

- RERP-PAG states that this procedure is to be implemented (i.e., protective actions are to be developed) whenever there is an Alert or higher emergency class event in progress. However, when the state requested a PAR (during the Site Area Emergency class) the licensee failed to provide a PAR.

- RERP-FCP, Issue 13, specifies that data for radiological updates is to be obtained from, and reviewed by, the radiological assessment coordinator (RAC) prior to posting. However, the status board keeper repeatedly posted data announced over the TSC speaker without a prior review and concurrence by the RAC. At one point this resulted in confusion as to the status of offsite doses (measured vs. projected).

- RERP-FCP states that media relations will provide assistance to the FCP public information team in the preparation of news and related media releases. However, the media relations personnel informed the inspector that they had not provided assistance in the preparation of news releases, but had distributed the releases as they were issued. The process used in this exercise precluded concurrence in the technical content of the news releases by the CED as discussed above.

Although certain aspects of the physical capability of the FCP appeared to be substandard and detracted from the exercise, this matter will be deferred until the review of the Fort St. Vrain facilities under the NRC's program of post-implementation review of the emergency response facilities is conducted as discussed in a letter from G. L. Madsen, RIV to O. R. Lee, Vice President, Electrical Production, Public Service Company of Colorado dated August 16, 1983.

The FCP command and control weakness observed appears to constitute the same general deficiency in this area that was identified during the last annual exercise (267/8515-10). The failure to correct this deficiency is an apparent violation of 10 CFR 50.47(b)(14), which requires the correction of exercise deficiencies (267/8622-01). The licensee also identified this deficiency in the post-exercise critique.

Based on the observations above, the following additional items are considered to be emergency preparedness deficiencies:

The FCP was not activated and operational in 90 minutes after declaration of an Alert emergency classification. (267/8622-03)

Certain provisions of RERP implementing procedures controlling emergency response activities at the FCP were not followed. (267/8622-04)

The following are observations for the licensee's attention. These observations are neither violations nor unresolved items. These items are recommended for licensee consideration for improvement, but have no specific regulatory requirement.

- RERP-FCP needs revision to provide clear instructions on the transfer of command/control from TSC to FCP.

- RERP-FCP and RERP-PAG need clarification with regard to the difference in meaning of protective action recommendations and protective action guides (PAGs).

- The functions of dose assessment (primary responsibility), control of field monitoring teams and associated activities should be transferred to the FCP when that facility is declared operational. The TSC should continue to perform dose assessment as backup capability.

- Responsibility for event classification and determination of PARs should be clarified as to when transfer of these functions is to take place along with the transfer of the responsibility for notification of offsite authorities.

- RERP-PAG should be revised to fully conform to IE Information Notice 83-28 regarding PARs based on plant status.

- Status boards should be reviewed to provide capability for trending, site evacuation status, to tell new data from old since all information on the board is not updated at the same time, and posting protective actions implemented by the state/local agencies.

No other violations or deviations were identified.

9. First Aid and Inplant Radiation Protection

The inplant monitoring and first aid portion of the exercise began at approximately 9:20 p.m. with a team preparing to enter the reactor building for valve lineup to depressurize the PCRV. The team was subsequently dispatched at about 9:40 p.m., followed by one of the operators falling and simulating the breaking of his leg and becoming contaminated. The NRC inspector noted that the scenario for the medical emergency was expected to require search and rescue, but was timed such that the individual injured was never alone, and therefore never missing. During this part of the exercise scenario, it was also noted that there were many uses of the radios without stating that the activity was a drill.

The NRC inspector noted that the team providing first aid made radiological surveys, but did not keep a written record of the surveys. In addition, the injured person was asked to "hop" out without benefit of a splint being applied to his broken leg. A trauma kit containing a splint was available, but since the individuals responding were not qualified emergency medical technicians (EMT's), they did not use the kit. The NRC inspector also noted that after the injured person was removed to the health physics control point, his protective clothing was not cut off to remove the majority of contamination, and to give him relief from the heat.

The NRC inspector noted that the radiological protection by health physics technicians and repair team personnel appeared to be adequate. Anticontamination clothes and respirators were properly used and dosimetry was checked after leaving the radiation area.

The first aid and decontamination weakness observed appears to constitute the same general deficiency in this area identified during the licensee's last annual exercise (267/8515-09). The failure to correct this deficiency is an apparent violation of 10 CFR 50.47(b)(14), which requires the correction of exercise deficiencies (267/8622-01). The licensee also identified this deficiency in the post-exercise critique.

No other violations or deviations were identified.

10. Exercise Critique

The NRC inspectors attended the post-exercise critiques by the licensee's staff on February 26 and 27, 1986, to evaluate the licensee's identification of deficiencies and weaknesses as required by 10 CFR 50.47(b)(14) and Appendix E of Part 50, paragraph IV.F.5. The first critique was conducted immediately following the exercise and included observations from players, controllers, and observers. The second critique was a debriefing of exercise audit findings by the quality assurance audit team under the cognizance of the Nuclear Facility Safety Committee. It was noted that most of the observations by the NRC inspectors during the exercise were also independently made and reported during these critiques. Deficiencies which were identified by both licensee personnel and NRC inspectors are described in the preceding sections of this report. Corrective action for identified deficiencies and weaknesses will be examined during a future NRC inspection.

No violations or deviations were identified.

11. Exit Meeting

The NRC inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on June 27, 1986. The NRC inspector summarized the purpose and the scope of the inspection and the findings. The NRC inspection team leader stated that although a number of deficiencies were identified during the exercise, implementation of the Plan and procedures in many of the areas observed was improved over the previous annual exercise, as was the exercise scenario. The NRC inspector also stated that the failure to correct deficiencies from the previous exercise was an apparent violation of NRC requirements and the deficiencies identified during this exercise indicated a lack of effective demonstration of some of the major exercise objectives.