



**Public Service™**

**Public Service  
Company of Colorado**  
P.O. Box 840  
Denver, CO 80201-0840

**R.O. WILLIAMS, JR.**  
VICE PRESIDENT  
NUCLEAR OPERATIONS

July 1, 1988  
Fort St. Vrain  
Unit No. 1  
P-88237

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Docket No. 50-267

SUBJECT: NRC Inspection  
Report 88-11

REFERENCE: 1) NRC Letter, Callan  
to Williams dated  
June 2, 1988  
(G-88196)

2) NRC Letter, Martin  
to Williams dated  
April 29, 1988  
(G-88142)

3) PSC Letter, Williams  
to NRC dated  
June 10, 1988  
(P-88204)

Gentlemen:

This letter is in response to the Notice of Violation received as a result of the inspection conducted by Messrs. C. A. Hackney and D. H. Schultz during the period April 25-29, 1988 (Ref. 1). Apparent training deficiencies noted during the inspection were also identified in Confirmation of Action Letter (CAL) 88-07 (Ref. 2). The following responses to the items contained in the Notice of Violation are hereby submitted.

8807070041 880701  
PDR ADOCK 05000267  
Q PDC

IE01  
11

A. Inadequate Training of Personnel

10 CFR 50.54(q) requires that a licensee shall follow and maintain in effect emergency plans which meet the standards in 50.47(b) and the requirements of 10 CFR 50, Appendix E, to provide reasonable assurance that adequate protective measures can and will be taken in the event of an emergency.

10 CFR 50.47(b)(15) requires that radiological emergency response training be provided to those who may be called on to assist in an emergency.

Section 12.2.4 of the Fort St. Vrain Final Safety Analysis Report "Emergency Training" states that all personnel are trained to familiarize them with those actions to be taken in case of emergencies. Periodic drills are held in accordance with written procedures. Training to carry out the requirements of the Radiological Emergency Response Plan is carried out on several levels. Those persons who have specific assignments and duties to perform during such an emergency are given specific classroom training in those duties and how they relate to the overall plan. Drills are then conducted to provide realistic conditions for on-the-job training. Those drills may vary from a simulated minor incident involving a few people to a simulated major event involving the entire plant site. When drills are conducted in conjunction with local, state, and federal agencies, PSCo personnel who participate include plant staff, corporate support personnel, corporate management, and executive personnel and consultants.

Personnel required to complete the annual training and retraining program for the Emergency Directors are manager-nuclear production, station manager, support services manager, superintendent-operations, licensed equipment operators, shift supervisors, senior reactor operators, reactor operators, superintendent-training, and scheduling/stores coordinator.

This training covers dose estimation, effects of meteorological conditions, emergency procedures for backshift incidents, interface actions with offsite agencies, availability of offsite resources and support, evacuation and personnel accountability, transportation of injured and contaminated personnel, first-aid training and retraining, and training in job-specific tasks and procedures.

Contrary to the above, certain procedures and emergency training were determined to be ineffective, in that during interviews performed during the period April 25-29, 1988, five teams, each consisting of a shift supervisor and at least one licensed operator (one team had two persons; the other teams had four) exhibited the following weaknesses:

- \* Four of the five teams were unable to classify accurately and efficiently an accident scenario which resulted in an alert condition.
- \* All teams failed to exhibit positive command and control of resources and activities.
- \* One team elected to insert reserve shutdown reactivity locally in response to a scram without shutdown due to rods stuck out. The reactor was allowed to operate for approximately 22 minutes without primary and secondary flow.
- \* One team failed to calculate and classify as a general emergency a stack effluent release rate resulting in greater than 1 R/hr dose rate at the Exclusion Area Boundary.
- \* None of the five teams demonstrated an understanding of process radiation monitor readings in counts per minute (cpm), instrument sensitivity in microcuries per cc per cpm, and the mathematical manipulation required to obtain release concentration and release rate.

This is a violation of NRC regulatory requirements 10 CFR 50.54(q) and 50.47(b).

This is a Severity Level IV violation. (Supplement VIII)(267/8811-01)

(1) The Reason For The Violation If Admitted:

The violation is admitted. In reviewing this violation and in performing corrective actions in response to the associated Confirmation of Action Letter (CAL 88-07) (Ref. 2), PSC identified four interrelated areas which contributed to this issue. The areas include applicable procedures, training, operator aids and operator performance during inspection/testing.

Problems related to operator actions for mitigation and classification of emergency events were due, in part, to inadequate procedures. Emergency Action Levels (EAL's) and event classification guidelines were distributed throughout three different sets of procedures. There was a general lack of continuity between the information contained in the Radiological Emergency Response Plan - Control Room procedure (RERP-CR), the Event and Emergency Classification Overview procedure (EP-CLASS), and individual Emergency Procedures (EP's). Individual procedures were inadequate in that information which would have clarified events and classifications was not available or was difficult to utilize. There were inconsistencies between EP symptom/action matrices and supporting discussions. Differences in format, presentation, elements of style and outstanding procedure deviations against current procedures also contributed to problems experienced by the operators during this inspection.

Formalized operator aids are a tool used by the operator in addressing emergencies. Two operator aids are used at Fort St. Vrain for situations requiring offsite dose calculation and event classification. The first aid was deficient in that it defined switch and equipment alarm settings which were not easily translatable into dose assessment or classification values. The second aid is a flow chart of classification event categories referenced to appropriate emergency procedures and classification documents. Operators experienced difficulties in using this aid during the inspection due to the previously noted lack of continuity between various procedure sets which input into the flow chart.

Lesson plans prepared for formal emergency training are developed from existing procedures and other analyses of operator training needs. Since the training was developed from procedures containing the noted inadequacies, the problem was further compounded.

Operators also experienced difficulty with the method of testing used during this inspection. First, the "crew concept" of regular operating teams was not maintained for all crews tested. Normal crews had to be broken up for inspection/testing to avoid violating plant Technical Specification requirements for time on shift. Secondly, the tests were administered at the site Technical Support Center (TSC) rather than in the control room or on the plant mock-up. Although all necessary resources were available in the TSC, the surroundings were not as familiar to the operators as the control room or mock-up would have been. Finally, operators involved indicated that they understood that they were participating in a seminar test environment involving group discussion and a critique of one another's activities. In an actual control room environment, each operator has his/her tasks to perform individually (as directed by the shift

supervisor) without an opportunity to perform a detailed review of one another's activities. Therefore, the inspection/testing environment was not a good simulation of an actual control room crew performance environment.

(2) The Corrective Steps Which Have Been Taken And The Results Achieved:

Many of the corrective steps taken relative to this inspection have already been documented in PSC's response to Confirmation of Action Letter 88-07 (Ref. 3). Those corrective actions are summarized briefly here with other associated corrective actions.

Reporting/activation requirements were removed from the symptom/action matrices and the supporting discussion of all Emergency Procedures (EP's). Reporting/activation requirements have been incorporated into a revision to EP CLASS, "Event and Emergency Classification Overview." EP CLASS is now a "stand alone" document which includes all Emergency Action Levels (EAL's) previously dispersed throughout the Emergency Procedure set.

EAL's have been broken down into categories to simplify the thought process used in the classification of events for the Radiological Emergency Response Plan (RERP). EAL's have been reviewed and verified to be comprehensive for all events including those events not previously addressed by the EP's. The flow chart in EP CLASS has been updated to reflect the changes and correct known errors.

Instructions have been added to the appropriate EP's for operators to actuate the station reserve shutdown system in the event of a failure of the reactor to be shut down by control rod insertion.

Considerable effort has also been put into "cleaning up" all of the EP's. All outstanding procedure deviations to the EP's have been permanently incorporated. The procedures have been revised to correct identified errors, clean up grammar and spelling, and improve consistency between matrices and discussion. Format and presentation problems have been corrected. Equivalent RERP procedures have been revised to guarantee consistency between the two procedure sets.

The changes noted above were accomplished, the procedures were reviewed by the Plant Operations Review Committee (PORC), and the new procedures were issued effective May 9, 1988.

Further revision of the existing Emergency Procedure set was undertaken. Critical review of the procedures was solicited from the operations staff. Operator input was requested in an attempt

to increase operator confidence in the procedures by being responsive to their concerns and observations. Operator comments were incorporated into another round of procedure revisions. The revisions were completed, the changes received the review of the PORC, and the new procedures were issued effective June 30, 1988.

Comprehensive training has been undertaken on this issue. Seminar training was presented to the operators regarding changes made to the Emergency Procedures.

A seminar overview of the techniques required to perform a monitored and unmonitored dose calculation on the plant data logger was presented by the Nuclear Training Manager who also served as the plant Radiation Protection Manager. A formal Job Performance Measure (JPM) for the task of performing an RERP dose calculation was successfully completed by each operator.

"Emergency Event Classification" seminars were presented by the Nuclear Training Manager to all operators. This training included the Fort St. Vrain management philosophy with respect to classification and mitigation of emergency events, a review of EAL's in the procedures and operator aids, a review of changes to the requirements for a Notification Of Unusual Event (NOUE), a discussion of the role of the Emergency Coordinator, and an update of the changes made to the Operating Procedures which address stuck control rods and slack cable lights.

Additional formal classroom training for each operator shift has been conducted. "Event and Emergency Classification Overview" training was presented in accordance with a formalized Fort St. Vrain Training Department lesson plan (SO 131.00). This "Event and Emergency Classification Overview" lesson plan is a new lesson plan developed in response to the issues raised during the Emergency Preparedness inspection. This lesson plan addresses all events, including those events not previously included in the training program. The lesson plan also addresses recent changes made to the Fort St. Vrain Emergency Procedures. An examination was administered to each operator following classroom training. Operators were tested for their ability to classify events in each event category.

Ongoing formal operator training, in areas associated with this issue, has been revised to incorporate lessons learned during this effort.

Training and testing noted above for all crews was completed by May 31, 1988.

New operator aids have been prepared and training was conducted in their use. Operator Aid 88-043 was posted on May 11, 1988. This aid provides a matrix which correlates direct instrument

readings to event classification categories. The matrix can be used to determine EAL's without translating control room indications. Threshold values for calculated sensitivity on noble gas, iodine, liquid effluent, in-plant noble gas and Prestressed Concrete Reactor Vessel (PCR) relief valve radiation monitors are provided. If set threshold values are reached, the appropriate classification is declared.

Operator Aid 88-042 was revised and posted on May 9, 1988. This flow chart was revised to reflect the changes made to the Emergency Procedures noted above.

(3) The Corrective Steps Which Will Be Taken To Avoid Further Violations:

The Training Department and the Operations Department at Fort St. Vrain are developing a program to provide ongoing training and periodic testing for the operating crews in the areas of mitigation and classification of emergency events. A program of training and drills, performed more frequently than the current annual requalification cycle, will help to maintain operator knowledge and retention at an elevated level. Regular drills will also enhance operator drillsmanship during future inspection testing.

(4) The Date When Full Compliance Will Be Achieved:

Full compliance was achieved following the training and testing noted above and the final round of procedure revisions which were implemented on June 30, 1988.

B. Failure To Notify State In Required Time

10 CFR 50.54(q) requires that a licensee follow and maintain in effect emergency plans which meet the requirements of 10 CFR 50, Appendix E, to provide reasonable assurance that adequate protective measures can and will be taken in the event of an emergency. 10 CFR 50, Appendix E IV D.3. states, "A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency."

Contrary to the above, on April 4, 1988, at 2:21 p.m., following a reactor manual scram from 72 percent power due to power grid frequency, emergency response personnel did not notify the state until 25 minutes after declaring an emergency.

This is a Severity Level IV violation. (Supplement VIII)(267/8811-02)

(1) The Reason For The Violation If Admitted:

The violation is admitted. During the training conducted as a result of the situation addressed in Violation A above, a common misunderstanding among the licensed operators was apparent. The shared belief was that the Shift Supervisor was not only responsible for making notifications to State, Local and Federal authorities, but was expected to conduct the notifications personally. This pointed out a deficiency in the training process since Step Number 3 of Attachment A in RERP-CR specifically identifies offsite notifications as one task that the Shift Supervisor can obtain assistance in performing.

The Shift Supervisor dedicated too much of the 15 minute period following event declaration to mitigation of the unplanned radioactive release that was in progress. Notifications to offsite authorities did not begin until 15 minutes after the declaration, when Weld County was contacted. Had the Shift Supervisor recognized that the actual notifications could have been performed by someone else on the operating shift, performance of the notifications would have been delegated so that he could continue with event mitigation and the 15 minute requirement would have been met.

(2) The Corrective Steps Which Have Been Taken And The Results Achieved:

Licensed operators have been trained and tested as described in response to Violation A above. The training specifically addressed the area of deficiency identified by this violation, i.e., the expectations of the Shift Supervisor/Emergency Coordinator with respect to offsite notifications.

(3) The Corrective Steps Which Will Be Taken To Avoid Further Violations:

No additional corrective action is planned.

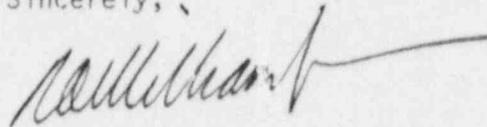
(4) The Date When Full Compliance Will Be Achieved:

Full compliance was achieved with the completion of training described in response to Violation A above on May 30, 1988.

July 1, 1988

Should you have any further questions, please contact Mr. M. H. Holmes at (303) 480-6960.

Sincerely,

A handwritten signature in cursive script, appearing to read "R. O. Williams, Jr.", with a long horizontal flourish extending to the right.

R. O. Williams, Jr.  
Vice President,  
Nuclear Operations

ROW:DLW/djc

cc: Regional Administrator, Region IV  
ATTN: Mr. T. F. Westerman, Chief  
Projects Section B

Mr. Robert Farrell  
Senior Resident Inspector  
Fort St. Vrain