APPENDIX A

NOTICE OF VIOLATION

Public Service Company of Colorado
Fort St. Vrain

Docket: 50-267/88-17
Operating License: DPR-34

During an NRC inspection conducted during July 24 through August 2, 1988, violations of NRC requirements were identified. The violations involved: (1) failure to follow procedures that affect quality, two examples, and (2) a failure to implement the requirements of 10 CFR Part 20 requirements, two examples. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1988), the violations are listed below:

A. Failure to Follow Administrative Procedures

10 CFR Part 50, Appendix B, Criterion V requires, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, . . . and shall be accomplished in accordance with these . . . procedures . . . ."

Licensee Support Services Manager's Administrative Procedure-1 and Fort St. Vrain Administrative Procedure G-7, both require, in part, that specific documentation be completed and signed by senior plant managers prior to certain specified plant positions being filled.

Contrary to the above, the NRC inspector determined on August 1, 1988, that the licensee, on or about June 25, 1988, had promoted an individual into the vacant position of Superintendent of Chemistry and Radiation without first completing the required documentation of SUSMAP-1 and G-7.

The licensee subsequently completed the required documentation on August 2, 1988, and implemented administrative controls to prevent a future recurrence of this violation. Due to the licensee's timely and effective corrective actions concerning this matter, it will not be necessary to respond to this violation.

This is considered a Severity Level V violation. (Supplement I) (267/8817-01)

B. Failure To Follow Procedures

Licensee Health Physics Procedure HPP-16 requires, in part, that prior to use full face air purifying respirators be negatively pressure fit tested by the wearer to ensure air tightness at respirator sealing points.

Contrary to the above, the NRC inspector observed on July 26, 1988, two individuals improperly perform fit tests when donning full-face air purifying respiratory protection equipment prior to entering an airborne radioactivity area.

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This is considered a Severity Level IV violation. (Supplement IV) (267/8817-04)

C. Respiratory Protection 20.103

10 CFR Part 20.103(c) requires, in part, "When respiratory protective equipment is used to limit the inhalation of airborne radioactive material . . . . The licensee may make allowance for this use of respiratory protective equipment in estimating exposures of individuals to this material provide that: . . . . The licensee maintains and implements a respiratory protection program that includes, fitting, . . . and testing of respiratory for operability immediately prior to each use; written procedures regarding supervision and training of personnel."

Licensee HPP 16 defines the licensee's available respiratory protection equipment, selection criteria, preuse testing, available protection factors, and equipment limitations. Also, licensee training lesson plan GE 018.03 defines the licensee presentation for respiratory protection training.

Contrary to the above, the NRC inspector determined on July 28, 1988, during the presentation of respiratory protection training that instructions on both radiological and industrial applications of respiratory protection equipment were inadequate regarding fitting and testing for operability immediately prior to each use, and that HPP-16 did not implement adequate use instructions on all available respiratory protection equipment.

This is considered a Severity Level IV violation. (Supplement IV) (267/8817-02)

D. Radiation Area Posting 20.203

10 CFR Part 20.203 requires, in part, "Each radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words: Caution Radiation Area."

10 CFR Part 202(b)(2) defines "Radiation Area," in part, ". . . as any area accessible to personnel, in which there exists radiation . . . at such levels that a major portion of the body could receive in any one hour a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 100 millirem;" This requirement is for protection of personnel entering a 10 CFR Part 20.5 "Restricted Area," and is considered to encompass a normal 40-hour, 5-day work week.

Contrary to the above, the NRC inspector determined on July 26, 1988, that the licensee's procedure for posting of radiation areas required

posting only if general area radiation levels exceeded 2.5 millirem per hour, and that some licensee personnel were working a mandatory 6-day work week, with 9 1/2-hour work days. The combination of radiation levels and the 47.5 hours in a 5-day period would cause an individual to exceed the 100 millirem limitation.

This is considered a Severity Level IV violation. (Supplement IV) (267/8817-03)

Pursuant to the provisions of 10 CFR 2.201, Public Service Company of Colorado is hereby required to submit to this office, within 30 days of the date of letter transmitting this Notice, a written statement or explanation in reply, including for each violation: (1) the reason for the violations if admitted, (2) the corrective steps which have been taken and the results achieved, (3) the corrective steps which will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Where good cause is shown, consideration will be given to extending the response time.

Dated at Arlington, Texas
this 21st day of September 1988.

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-267/88-17 Operating License: DPR-34

Docket: 50-267

Licensee: Public Service Company of Colorado (PSC)
2420 W. 26th Avenue, Suite 15c
Denver, Colorado 80211

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

Inspection At: FSV Site, Weld County, Platteville, Colorado

Inspection Conducted: July 24 through August 2, 1988

Inspector: _____ 9/16/88
for H. D. Chaney, Radiation Specialist, Facilities Radiological Protection Section Date

Approved: _____ 9/16/88
R. E. Baer, Chief, Facilities Radiological Protection Section Date

Inspection Summary

Inspection Conducted July 24 through August 2, 1988 (Report 50-267/88-17)

Areas Inspected: Routine, unannounced inspection of the licensee's radiation protection program.

Results: Within the areas inspected, four violations (two violations for failure to implement 10 CFR Part 20, see paragraphs 5 and 6; and two violations for failure to follow procedures, see paragraphs 4 and 7) were identified. No deviations were identified

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DETAILS

1. Persons Contacted

PSC

*R. O. Williams, Jr., Vice President, Nuclear Operations
*F. J. Horst, Nuclear Training Manager
*D. W. Evans, Operations Manager
*D. Goss, Regulatory Affairs Manager
*J. M. Gramling, Supervisor of Nuclear Licensing
*J. P. Hak, Maintenance Supervisor
*M. L. Holmes, Nuclear Licensing Manager
*R. O. Hooper, Nuclear Training Administrative Supervisor
*D. D. Miller, Radiochemistry Supervisor
*S. F. Moore, Quality Assurance (QA) Supervisor
*F. J. Novachek, Nuclear Support Manager
*L. D. Scott, QA Services Manager
*S. S. Sherrow, Health Physicist
*L. R. Sutton, QA Auditing Supervisor
R. F. Tomlinson, QA Manager
W. Woodard, Acting Radiation Protection Supervisor
*N. Zerr, QA Engineer

Others

R. E. Farrell, NRC Senior Resident Inspector
*P. W. Michaud, NRC Resident Inspector

*Denotes those individuals present during the exit interview on August 2, 1988.

The NRC inspector also interviewed several other licensee employees including quality control inspectors, maintenance mechanics, radiation protection personnel, clerks, and training instructors.

2. Followup on Previous Inspection Findings

(Closed) Violation (267/8707-01): Radioactive Liquid Effluent Releases - This item was previously discussed in NRC Inspection Reports 50-267/87-07 and 87-24 and involved the licensee's failure to perform the required radiological sampling prior to a liquid effluent release. The NRC inspector reviewed implementation of the licensee's corrective actions stated in the response to the Notice of Violation, dated May 7, 1987, the corrective actions referenced in Licensee Event Report 87-004, and the licensee's corrective actions taken by the licensee in response to an associated QA Department audit finding (CAR 87-023). The licensee's corrective actions appear to be adequate to prevent a reoccurrence of the violation in the future.

(Open) Violation (267/8420-02): "Effluent Monitoring Instrumentation - This item concerned the licensee's commitment to install a continuous reactor building sump liquid release pathway monitor that would provide monitoring for radionuclides that predominantly decay by beta radiation. The licensee committed to providing quarterly progress reports on the development of the monitoring system. The licensee's most recent progress report (Final, October 22, 1987) indicates that the development of beta monitor (beta scintillation cell) had encountered severe difficulties due to the foreign material contamination within the sump and its detrimental affect on the monitor's scintillation crystals (calcium fluoride). The licensee has abandoned further effort in developing a sump monitoring system and has petitioned the NRC for relief from their commitment to develop such a system. The licensee has requested permission to continue to utilize the batch release manual sampling of sump liquified effluents as has been used since the violation had occurred in 1984. This item will remain open pending NRC action on the licensee's petition and verification of licensee implementation of any corrective actions so directed.

(Open) Open Item (267/8221-04): High Range Noble Gas Effluent Monitors, NUREG-0737, Item II.F.1.1 - This item was most recently updated in NRC Inspection Report 50-267/87-24. The NRC informed FSV via letter and Safety Evaluation Report, dated January 9, 1986, that the licensee's proposed design and design improvements to the installed postaccident reactor effluent activity monitor to be acceptable. The licensee had committed to installing a dilution system (sometime in 1988) to extend the measurement range of the monitor (RT7324-2). The licensee had revised the commitment on installation of the dilution system and it will be installed (design change notice: CN2042) prior to the resumption of reactor power operations following the fourth refueling outage (some time during 1989). This item is considered open pending completion of licensee actions and verification of operability of the dilution system.

3. Open Items Identified During This Inspection

An open item is a matter that requires further review and evaluation by the NRC inspector. Open items are used to document, track, and ensure adequate followup on matters of concern to the NRC inspector. The following open items were identified:

Open Item	Title	See Paragraph
267/8817-05	Hot Particle Exposure Assessment Methodology	6
267/8817-06	Industrial Respiratory Protection Program	5
267/8817-07	Hot Particle Control Program	8

267/8817-08	Fixed Contamination Units of Measurement	8
267/8817-09	Release of Materials for Unrestricted Use	8
267/8817-10	Contaminated Material Receptacle Locations	8

4. Organization and Management Controls - Radiation Protection (83522/83722)

The licensee's organization and staffing of the radiation protection group was inspected to determine agreement with commitments in the Updated Final Safety Analysis Report (UFSAR) Sections 11 and 12; and compliance with the requirements of Operating License Technical Specifications (TS) 7.1, 7.3, 7.4, and 7.5; and the recommendations of NUREG-0731 and 0761.

The NRC inspector reviewed the licensee's organization, staffing, assignment of responsibilities, radiological protection program implementing procedures, Radiation Protection Plan, completed and scheduled QA audits, and management oversight of radiological work activities. Senior Management Policies in regard to radiation protection, respiratory protection, and ALARA were also reviewed.

The licensee had recently selected a new Radiation Protection Manager (RPM). The RPM position was previously held by the Support Services Manager. The new RPM position is titled Superintendent of Chemistry and Radiation Protection (SCRP). The previous RPM was assigned full time duties as manager of the onsite Nuclear Training Department. The new SCRP position was created during a major personnel reorganization of FSV in May 1988. This position (RPM/SCRP) no longer has direct access to the Nuclear Production Division Manager (NPM) (equivalent to the position of Plant Manager) but reports through the realigned position of Manager of Nuclear Support Department. The NRC inspector determined that even though current TS and UFSAR charts do not provide clear lines of authority to the NPM for the RPM, there is a clear understanding that the RPM can contact the NPM at any time to resolve radiological protection problems not resolved through the normal chain of command.

The NRC inspector determined that a new SCRP position was permanently filled on or about May 26, 1988, by the incumbent Health Physics (HP) Supervisor.

10 CFR Part 50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for

determining that important activities have been satisfactorily accomplished.

FSV Support Services Manager's Administrative Procedure (SUSMAP) 1, "Health Physics, Radiochemistry and Chemistry Experience, Qualification, and Training Requirements," (Revision 14, dated July 29, 1987), paragraph 3.1.2 states, in part, "The RPM shall meet the requirements of Regulatory Guide 1.8 - 1975 . . . prior to assignment to the position. This shall be documented on Attachment SUSMAP-1M." SUSMAP-1M requires the signature of the NPM. Also, FSV Administrative Procedure G-7, "FSV Project Personnel Training and Qualification Programs," (Revision 20, dated June 22, 1988), paragraph 4.1.3, requires that qualifications of individuals filling certain positions at FSV be evaluated to specific industry prescribed criteria and documented on Attachments G-7A and G-7B to the procedure. Paragraph 4.2.4 of Procedure G-7 identifies the FSV equivalent position of RPM as requiring verification of the assignees qualifications at the time of appointment to the active position.

The NRC inspector determined that as of August 1, 1988, that the documentation required by SUSMAP-1 and G-7 had not been initiated for the individual assigned to the position of RPM/SCRP. This failure to comply with procedural requirements is an apparent violation of the requirements of 10 CFR Part 50, Appendix B, Criterion V. (267/8817-01)

The licensee indicated that failure to initiate the proper documentation was a result of two separate occurrences: (1) the reliance on a comprehensive review of the selectee's qualifications that was performed in late 1987, as documented by a memorandum to file by the former RPM, and (2) the new department manager of Nuclear Support had not made himself fully familiar with the department's implementing procedures (SUSMAP), and there was no mechanism in place to ensure that managers performed the SUSMAP-1 or G-7 evaluations. This resulted in the requirements being overlooked. The licensee took immediate action to complete the required documentation, the manager familiarized himself with the SUSMAP procedures, and changes were initiated to personnel administrative action checklists to ensure that the requirements of SUSMAP-1 and G-7 (G-7 is the primary governing procedure) will be complied with, as a routine matter, during any future personnel selections involving G-7 identified positions. Due to the licensee's timely correction of the apparent violation, identification of the root cause, and implementation of effective corrective action to prevent a recurrence, no response to this apparent violation (267/8817-01) will be necessary.

The licensee has experienced a turnover rate of approximately 60 percent within the radiation protection group in the last 12 months. The losses involved health physics technicians (HPTs) and mostly involved transfers (5) to other operational groups at FSV. Currently the licensee's radiation protection staff consists of 1 SCRP, 2 health physicists, 12 HPTs, and 1 vacant Health Physics Supervisor position.

Licensee procedures and documents reviewed are listed in the attachment to this inspection report.

No deviations were identified.

5. Training and Qualification - Radiation Protection (83523/83723)

The licensee's radiological training and the radiation protection personnel qualification program were inspected to determine agreement with commitments in Section 12 of the UFSAR; and compliance with the requirements of TS 7.1.2.g, 7.1.2.h, 7.1.2.i, 7.1.3, and 7.3.b.7, 10 CFR Part 19.12; the recommendations of NRC Regulatory Guides (RGs) 8.13, 8.27, 8.29; Industry Standard ANSI 18.1-1971; and NUREG-0041 and 0761.

The NRC inspector reviewed the licensee's radiological training programs for permanent plant employees, visitors, and contractors. Lesson plans and student reference material were reviewed for content.

Instructor qualifications and training were reviewed. The NRC inspector observed selected general employee training (GET) and radiological worker training classes. The licensee had received INPO accreditation of all their training programs in May 1988.

The licensee's HPT training program, including on-the-job-training, was reviewed. Individual experience and qualification for all personnel in the radiation protection group were reviewed.

The NRC inspector attended the licensee's radiation worker and respiratory protection training requalification programs on July 28, 1988. The licensee's requalification program for respiratory protection training is the same as the initial qualification training provided radiological workers. The licensee's GET is structured as Category I Training - Personnel not entering radiological work areas or radiation areas, - Category II Training - Personnel entering the reactor building but not engaging in radiological controlled work activities, and Category III Training - Personnel engaging in radiological work activities at FSV, and also includes respiratory protection training.

10 CFR Part 20.103 establishes requirements for implementation of an acceptable respiratory protection program that may take advantage of the protection factors assigned to various respiratory protection equipment (RPE). Qualitative guidance on suitable equipment, procedures, user training, instructor qualifications, and content of written instructions are contained in NRC RG 8.15 and NUREG-0041. 10 CFR Part 20.103 requires that written procedures for selection, use, supervision, and training involving respiratory protection equipment be implemented.

FSV Lesson Plan GE 018.03, "Internal Exposure Control, Respiratory Protection Program," sets forth the training necessary to qualify a worker to use RPE.

FSV HPP 16, "Selection and Use of Respiratory Protection Equipment," provides written instructions on the selection and use of several different types of RPE.

The NRC inspector determined during the observation of Category III training and a review of the licensee's implementing procedures that the licensee's RPE program lacked the following:

- Training on the proper ways to verify a suitable face-to-respirator mask seal for respirators other than self-contained breathing apparatus (SCBA) models. Personnel were not required to demonstrate proficiency on full-face airline or air purify models which are commonly used and available.

- Sufficient instructions were not provided personnel on the types of cartridges and canisters available for both radiological and nonradiological uses, and their limitations. The licensee has approximately five different chemical and particulate filter canisters available onsite.

- The instructor lacked familiarity with certain equipment (chemical cartridges, airline respirator hose length limitations and pressure requirements), and locations of emergency equipment.

- The instructor's experience level with RPE was very limited and he had not received any professional training in acceptable industrial or radiological applications of RPE.

- The instructions concerning preuse testing of the SCBAs was deficient in that personnel were not instructed on the necessity of verifying that the low pressure alarm was operational. This is required by the SCBA's manufacturer in their use and operating instructions.

- The training program did not address limitations or protection factors for use of RPE in airborne concentrations of tritium and noble gases.

- The training did not discuss sufficiently nonradiological hazards existing at FSV (chlorine, helium, ammonia, or asbestos) and the available protective equipment (canisters/cartridges).

The NRC inspector determined that the licensee's program for respiratory protection training and management of the RPE program requires further evaluation and is considered and open item. (267/8817-06)

The NRC inspector noted that a QA audit (HPHY-87-01) of respiratory protection practices revealed deficiencies in the licensee's ability to ensure personnel medical reviews and RPE training are conducted within the time period referenced in procedures. These deficiencies were corrected.

The NRC inspector noted that the licensee instructs personnel on applicable RPE protection factors and makes use of the applicable protection factors when evaluating uptakes of airborne radioactive materials by personnel. Due to the many deficiencies in the licensee's written procedures and training program for RPE use, the NRC inspector requested that the licensee no longer take credit for protection factors as allowed by 10 CFR Part 20.103(c). The failure to implement an acceptable respiratory protection program is considered an apparent violation of 10 CFR Part 20.103(c). (267/8817-002)

No deviations were identified.

6. External Exposure Control and Personal Dosimetry (83524/83724)

The licensee's external radiation exposure control program was reviewed for: agreement with the commitments in Section 11 of the UFSAR; compliance with the requirements contained in TS 7.4.d; 10 CFR Parts 19.12, 13, and 20.101, 102, 104, 105, 202, 203, 205, 206, 405, 407, 408, and 409; and the recommendations of NRC Inspection and Enforcement Information Notices (IEIN) 86-23 and 87-39; RGs 8.8, 8.13, 8.14, and 8.28; and industry standards ANSI N13.11-1983.

The NRC inspector reviewed personnel exposure records, records storage facilities, exposure control procedures, dosimetry processing procedures, dosimetry quality control methods, data processing, and report generation. Facility inspections were made and independent measurements were conducted of posted radiation areas. The licensee's high radiation area controls, including locking and control of keys, was inspected. Accreditation of the licensee's dosimetry processor was verified. The licensee's on hand stock of extremity dosimeters and spare film badges for personnel monitoring was reviewed. The NRC inspector observed the use of multiple dosimetry for personnel entering areas with non-uniform radiation fields.

TS 7.4-3.d requires, in part, "Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20, and shall be approved, maintained, and adhered to for all operations involving personnel radiation exposure."

10 CFR Part 20.203 requires, in part, "Each radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words: Caution Radiation Area." 10 CFR Part 202(b)(2) defines "Radiation Area," in part, ". . . as any area accessible to personnel, in which there exists radiation . . . at such levels that a major portion of the body could receive in any one hour a dose in excess of 5 millirem (mrem), or in any 5 consecutive days a dose in excess of 100 mrem." This requirement is for protection of personnel entering a 10 CFR Part 20.5, "Restricted Area," and is considered to encompass a normal 40-hour, 5-day work week.

The NRC inspector determined on July 26, 1988, that the licensee's procedure for posting of radiation areas (HPP-9, "Establishing and Posting Controlled Areas") required, in paragraph 5.1.1, that "Establish an area

such that radiation dose levels at the boundary do not exceed 2.5 mrem/hour (hr)." This value was discussed with the licensee and was found to be based on a person not exceeding 100 mrem in 5 consecutive days (8 hours a day for 5 days: 40-hour work week). This would result in a person receiving equal to, or less than 100 mrem of exposure when working near the boundary. This requirement had been in effect for several years. Licensee internal correspondence for the Daily Helium Circulator Outage Meetings established, as early as June 29, 1988, that shift work hours for work crews would be 9 1/2-hour shifts, 6 days a week. This work schedule would result in a person working near the same barrier to receive an exposure in excess of 100 mrem. A review of selected posted radiation areas did not reveal any boundaries exhibiting dose rates greater than 2.0 mrem/hr. The failure to properly implement the requirements of 10 CFR Part 20.202 is considered an apparent violation of TS 7.4.d. (267/8817-03)

The NRC inspector reviewed the licensee's program for hot particle control and skin exposure evaluation. The licensee's procedure (HPP-11) for calculating skin dose due to radioactive contamination or hot particles on the skin of the whole body does not utilize the VARSKIN dose calculation methodology recognized by the NRC. The licensee's skin dose calculation procedure appears to produce overly conservative exposure values and uses units of measurement (counts per minute - CPM) that can not be readily converted to dose. The licensee's procedure does not address the use of portable ion chamber type dose rate measurement instruments for assessing radioactivity levels on the skin. The licensee was provided information on the VARSKIN program and NUREG/CR-4418. The licensee stated that the VARSKIN methodology would be reviewed for possible implementation. The licensee has identified relatively low level (10,000 disintegrations per minute - DPM) particles of radioactivity during routine contamination surveys, but has not had any significant incidents involving skin contamination. Licensee contamination control practices are discussed in paragraph 8 of this report.

The NRC inspector considers the licensee's implementation of a hot particle exposure evaluation program to be an open item pending licensee completion of an evaluation of their skin dose assessment methodology to that recognized by the NRC. (267/8817-05)

No deviations were identified.

7. Internal Radiation Exposure Control and Assessment (83525/83725)

The licensee's internal radiation exposure control program was reviewed for agreement with the commitments in Section 11 of the UFSAR; and compliance with the requirements contained in TS 7.4.d, 10 CFR Parts 19.13 and 20.103, 108, 203, 206, 401, and 405; and the recommendations in NRC RGs 8.8, 8.13, 8.15, 8.20, 8.26, and 8.28, NUREG-0041, and industry standards ANSI 13.1-1969, and N343-1978.

The NRC inspector reviewed the licensee's implementing procedures; management policies governing use of RPE; programs and activities involving routine and emergency aspects of the internal dosimetry, air sampling, and analysis; and posting of airborne radioactivity areas. The licensee's program for monitoring and evaluation of tritium uptakes was reviewed to determine compliance with the limits established in 10 CFR Part 20, Appendix B, and industry accepted calculational methodologies. Tritium uptakes appear to be negligible at less than 1 percent of a maximum permissible organ (whole body) burden. The NRC inspector observed on going work activities involving high levels of loose radioactive contamination, the use of containment enclosures, engineered ventilation systems, breathing zone air sampling, and use of RPE.

TS 7.4.d requires, in part, "Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20, and shall be approved, maintained, and adhered to for all operations involving personnel radiation exposure. Respiratory protective equipment shall be provided in accordance with 10 CFR Part 20.103." HPP-16, "Selection and Use of Respiratory Protection Equipment," paragraph 5.2.2.6, requires that a "Check for the proper fit by placing hand over the air inlet holes in the filter and inhale gently. A gas tight fit will be indicated . . . ."

The NRC inspector observed on July 27, 1988, two FSV employees, in preparation for entering a posted airborne radioactivity area, remove the high efficiency filter from their full face respirators and perform a seal test by blocking off, with their hand, the respirator coupling nut for the removed filter. Upon completing this test, the employees reattached the filter without verifying that the filter was properly sealed to the respirator. The NRC inspector brought the apparent improper testing to the attention of the senior HPT covering the job and the employees were required to retest the respirators in accordance with the requirements of HPP-16. This was accomplished successfully prior to the employees entering the airborne radioactivity area. Licensee representatives indicated that testing of the respirator without the filter on was the way they were trained. The NRC inspector could not verify this during discussions with training department instructors or review of training material. The acting HP supervisor immediately issued a notice that informed all HP personnel on the proper way to preuse check a full face respirator for proper fit. The failure to properly test RPE prior to use is considered an apparent violation of TS 7.4.d. (267/8817-04)

No deviations were identified.

8. Control of Radioactive Materials (RAM) and Contamination, Surveys, and Monitoring (83526/83726)

The licensee's programs for the control of RAM and contamination, radiological surveys and monitoring were reviewed for agreement with the commitments in Section 11 of the UFSAR; compliance with the requirements of TS 7.4, 10 CFR Parts 19.12, 20 4, 20.5, 20.201, 20.203, 20.205, 20.207,

20.301, 20.401, 20.402, and NUREG-0737, Item III.D.3.3; and the recommendations of IEIN 85-06, 85-92, 86-23, 87-39, IE Bulletin 80-10, and IE Circular 81-07.

The NRC inspector toured facilities; conducted independent gamma radiation dose rate measurements and loose surface contamination surveys; reviewed ongoing work operations within the reactor building and turbine building; reviewed Radiation Work Permits, radiation, airborne and surface contamination surveys (routine and work related); and observed analysis of radiological samples and the use of laboratory counters, response checking of instruments, and the updating of plant radiological information maps. The licensee's analytical equipment provides for beta and alpha radioactivity analysis, and the evaluation of air samples for iodine and other fission products.

The NRC inspector reviewed the licensee's program for protection against and control of hot particle areas (as referenced in IEIN 86-23 and 87-39). Even though the licensee has two areas (hot service facility and the refueling deck) that could be the source of hot particles (activation particles and fuel fragments), the licensee had not trained employees, developed a hot particle control program, or implemented a special survey program for determining the degree of hot particle contamination. The licensee does not currently utilize high sensitivity automatic whole body contamination monitors for surveying personnel exiting loose surface contamination control areas. Whole body frisking with a hand held beta/gamma sensitive pancake probe is currently utilized. Standard portal monitors for detecting moderate radioactive contamination levels (0.5-2 microcuries of cesium-137 equivalent radioactivity) are used by site personnel prior to each exit of the protected area. The licensee's lack of a documented hot particle program and lack of employee training on the nuclear power industry hot particle problems is considered an open item pending action by the licensee. (267/8817-07)

Due to an INPO commitment, the licensee has adopted in HPP-21, the use of referencing fixed radioactive contamination survey results below the level of 0.5 mrem/hr in the units of CPM which is not directly relatable to 10 CFR Part 20.5 required units of mrem, DPM, or curies. The licensee stated that survey forms for documenting the fixed radioactivity results contain sufficient information to allow conversion of the CPM data to 10 CFR Part 20.5 units. The NRC inspector determined that while the necessary information was traceable, there could be confusion as to which instrument data on the results forms was applicable to fixed radioactivity measurements. This is considered an open item pending action by the licensee. (267/8817-08)

The licensee procedures for release of radioactive material (not wastes) complies with the guidance given by the NRC in IE Circular 81-07 and is also in agreement with the guidance given to the licensee by the state of Colorado. Currently, materials (tools and equipment) with a post decontamination fixed radioactivity levels of less than 0.4 mrem, as

measured with a beta/gamma sensitive detector, can be released for unrestricted use and possible disposal. This licensee uses a conservative limit, based on laboratory counting equipment limitations, for the levels of loose surface contamination allowed on material to be released for unrestricted use. The NRC inspector noted to the licensee that current NRC interpretative guidance (IEIN 85-92, and NRC Staff Letter G. W. Kerr [NRC] to E. D. Bailey [Texas Bureau of Radiation Control]; Subject: Clarification of the Regulatory Control Over Independent Service Company Waste and Equipment Processing Used at Licensed Facilities, dated May 6, 1986), established that the appropriate release limit to be applied by licensee's for evaluating the release of potentially radioactive material from licensed facilities is "No detectable radioactivity." Licensee representatives indicated that they would reevaluate their material release program with regard to the above noted guidance. This is considered an open item pending action by the licensee. (267/8817-09)

The NRC inspector noted during tours of the licensee's facilities and comparisons with training films used in Category III (radiological worker training) that receptacles used for disposal of radioactively contaminated clothing and wastes at work sites are located, contrary to industry practices and licensee training presentations, on the outside of contamination control boundaries (clean side). This is not a good practice for controlling contamination or hot particles. The licensee issued written instructions on August 2, 1988, to all HPTs on placing disposal receptacles on the inside of controlled areas. This is considered an open item pending further NRC inspector review during future inspections. (267/8817-10)

No violations or deviations were identified.

9. Radiological Control Facilities and Equipment/Instruments

The licensee's facilities for radiological protection activities during routine and emergency situations were reviewed for agreements with commitments contained in Sections 12.3.2 and 12.3.4.E of the UFSAR; Section 7 of the Radiological Emergency Response Plan (RERP) - Station; and the recommendations of RG 1.97, 8.8, 8.25; NUREG-0041 and NUREG-0654/FEMA-REP-1.

The NRC inspector inspected training facilities, respirator decontamination and maintenance facilities, HP counting laboratory, postaccident sampling system, calibration, and hot-work facilities, robotic equipment for handling highly radioactive materials, radioactive source storage, locker and toilet facilities for workers, radiological controlled area access control point, first aid facilities, machine shop for radioactive materials, decontamination facilities for personnel and equipment, and emergency equipment inventories (RP response survey equipment, respiratory protection equipment, and protective clothing) at the onsite technical support center. Selected equipment referenced in Table 7.3-1 of the RERP - Station was verified to be present and

operational. Operation of the portal monitors at the exit to the protected area was verified. Instructions were posted as to actions to be taken if the portal monitors were to alarm.

No violations or deviations were identified.

10. ALARA Program

The licensee's ALARA program was reviewed to determine agreement with the commitments in Section 11.2 of the UFSAR; the requirements of 10 CFR Part 20.1(c); and the recommendations of RGs 8.8, 8.10, and 8.27.

The NRC inspector reviewed the licensee's new (August 4, 1987) ALARA plan. The implementation of this ALARA plan resolves an NRC concern discussed in the licensee's 1986-87 Systematic Assessment of Licensee Performance Report (50-267/87-06). The licensee's ALARA plan has all the attributes of a good exposure reduction program. Workers knowledge and work practices demonstrated a good working knowledge of ALARA practices. The NRC inspector reviewed ALARA committee meeting minutes. The Plant Health Physicist is designated as the station ALARA coordinator.

FSV's exposure expenditure for 1987 was 1.24 person-rem as compared to a national average for all light water reactors of 420 person-rem. FSV was not operating for approximately 10 months of 1987.

11. Advance Planning and Preparations

The NRC inspector reviewed the licensee's preparations for a 92-day nonrefueling outage, which began on July 5, 1988. The NRC inspector reviewed the scheduling and preplanning for removal, inspection, and repair of the reactor coolant circulators. The NRC inspector observed the removal and inspection of helium circulator "B." Previous experience data provided to the Lead HP technician indicated that loose radioactivity could exceed 1 million DPM per 100 square centimeters with gamma radiation levels of 30 mrem/hr general area and 100 mrem/hr on contact with components. Contact beta radiation levels of 10 rad/hr were expected. The preparation and inspection of the spare helium circulator which was placed in the "B" cavity was also observed. The NRC inspector discussed with outage coordinators the observation that even though the circulator procedure, Maintenance Procedure (MP) 2225, contained extensive HP work and survey sign-offs, and the HP department provided a supplementary procedure to MP 2225, there were little if any specific instructions on contamination containment requirements for separation of the circulator from its removal shield, ventilation requirements, or respiratory protection needs. This job had been accomplished six or more times in the past. The maintenance personnel indicated that several containment methods have been used in the past. The NRC inspector noted that the HPTs stopped work often and held briefings on work activities and required radiological controls during the course of circulator "B" work. The HPT covering the job were fully qualified HPT with several years of light water reactor

experience but had little if any experience with work on helium circulators. The licensee stated that supervising HP and maintenance personnel were developing supplemental procedures that would permanently clarify all aspects a helium circulator removal, inspection, shipment, and replacement.

No violations or deviations were identified.

12. Exit Interview

The NRC inspector met with the NRC resident inspector and licensee representatives denoted in paragraph 1 on August 2, 1988, and summarized the scope and findings of the inspection as presented in this report. The licensee committed to reviewing their respiratory protection program for agreement with RG 8.15 and NUREG-0041.

ATTACHMENT

DOCUMENTS REVIEWED FOR
NRC INSPECTION REPORT
50-267/88-17

TITLE	ISSUE NUMBER	DATE
Public Service Company of Colorado Operations Policies		
Radiation Protection Guideline No. 7-3, Respiratory Protection Policy		02-07-84
FSV Administrative Procedures		
G-5, Personnel Emergency Response	22	05-24-88
G-7, FSV Project Personnel Training Qualification Programs	20	06-22-88
G-19, Performance Indicator Program	01	07-14-87
G-20, As Low As Is Reasonably Achievable (ALARA)	01	08-04-87
P-3, Radioactive/Contaminated Waste/Area Control	13	12-03-87
P-10, Industrial Safety Program	06	05-20-86
O-1, FSV Organization & Responsibilities	09	09-23-86
Support Services Managers Administrative Procedures (SUSMAP)		
SUSMAP-1, Health Physics, Radiochemistry, and Chemistry Experience, Qual ification and Training Require ments	14	07-29-87
SUSMAP-2, Offsite Dose Calculation Manual and Radiological Environmental Monitoring Program (REMP)	16	03-03-88
SUSMAP-3, Process Control Program	02	11-13-84
Nuclear Production Administrative Procedures (NPAP)		
NPAP-6, Chemical Control Program	01	10-14-86
NPAP-8, Procedure Reviews	02	04-14-87
NPAP-9, Radiation Protection Plan	01	01-13-87
NPAP-10, Radiation Work Permits and Supplements	02	02-29-88
Health Physics Procedures (HPP)		
HPP-1, Routine Survey Intervals and Survey Documentation	11	01-06-88
HPP-2, Bioassay Program	15	06-10-86
HPP-8, Radiation Surveys	06	04-07-86

TITLE	ISSUE NUMBER	DATE
HPP-9, Establishing and Posting Controlled Areas	08	05-15-86
HPP-11, Personnel Decontamination	07	01-06-88
HPP-12, Portable Air Sample Collection and Analysis	11	12-15-87
HPP-13, Continuous Air Monitors	11	03-03-87
HPP-16, Selection and Use of Respiratory Protection Equipment	13	07-28-87
HPP-20, Calibration of Radiation Detection Instruments	20	03-03-87
HPP-21, Surface Radioactive Contamination Surveys	09	01-06-88
HPP-23, Receiving Radioactive Materials	10	07-29-86
HPP-25, Use of the Health Physics Shift Report and Irregularity Report	07	11-25-87
HPP-26, Radioactive Material Control and Handling	16	12-22-87
HPP-27, Personnel Dosimetry	11	08-05-86
HPP-28, Radioactive Source Leak Testing	10	10-16-86
HPP-33, Fast Gas and Iodine Sampling	10	03-26-86
HPP-37, RERP Inventory List	27	05-11-88
HPP-44, Radioactive Material Spill	06	11-19-87
HPP-45, Air Activity Analysis Using the RM 14/15 with HP210 Probe	02	12-10-82
HPP-46, Technical Specifications Related to Health Physics	06	07-24-86
HPP-48, Routine Maintenance, Inspection and Cleaning of Respiratory Equipment	10	02-02-88
HPP-49, Respirator Facepiece Fitting	06	03-17-86
HPP-50, Breathing Air System Sampling Procedure	03	07-24-86
HPP-51, Continuous Air Monitors Filter and Cartridge Change Out	08	02-03-87
HPP-53, RT-7325 and RT-73437 Emergency Filter and Cartridge Removal	05	04-01-85
HPP-54, Operation of the Eberline BC-4	04	07-07-86
HPP-56, Reactor Building Exhaust Stack Discharge Activity Calculation	10	05-24-88
HPP-58, Calibration Procedure for Airflow Measuring Devices	07	06-24-86
HPP-61, Film Badge and Finger Ring Response Check	05	06-10-86
HPP-62, Portable Grab Sampler Operation Using 1260cc Marinelli Beaker	05	05-12-87
HPP-63, Quantitative Respirator Fit Testing	06	11-13-85
HPP-64, Operating the Harshaw TASC-12-A6 Automatic Alpha/Beta Counting System	05	01-21-87
HPP-66, Operation of Portable Survey Instrumentation	10	03-03-87
HPP-67, Calibration and Operation Procedure for the Eberline SAM-2 Stabilized Assay Meter	10	12-04-86
HPP-70, Health Physics Routines	06	04-13-88

TITLE	ISSUE NUMBER	DATE
HPP-76, ALARA	01	08-04-87
HPP-77, Quality Review for Health Physics Documentation	01	03-07-88

Radiochemistry Procedures (RCP)

RCP-8, Sample Preparation for Tritium Analysis	09	10-31-84
RCP-18, Operation and CAlibration Procedure for the Bechman LS100C	11	10-15-85
RCP-28, Routine Laboratory Functions	11	02-29-88
RCP-29, Radiological Surveillance Program	08	10-16-86
RCP-40, Operation and Calibration of the Whole Body Counting System	08	09-30-86

Quality Assurance Audits

HPHY-87-01, Health Physics/Radiation Protection, March-April 1987

TRDL-88-01, Station Training (including Health Physics), January 1988

Quality Assurance Surveillances and Corrective Action Documentation

QAC-88-0938	07-12-88
QAC-88-0905	07-06-88
QAC-88-0811	06-20-88
QAC-88-0749	06-06-88
QAC-88-0581	05-03-88
QAC-88-0460	04-04-88
QAC-88-0330	03-01-88
QAC-87-1157	10-23-87
QAC-87-1129	10-20-87
QAC-87-1039	09-25-87
QAC-87-0869	08-19-87
QAMP-QAA-05-88-04	
FU.QDC-132	
QAC-88-0831	06-23-88
QAC-88-0314	02-19-88
QAS-88-0876	
QAS-88-0739	
QAS-88-0579	
QAS-88-0423	
QAS-88-0331	

Nuclear Training Department Procedures (TP) and Training Programs Administrative Manual (TPAM)

TPAM-GET, General Employee Training Program	27	01-10-86
TP-HPT, Health Physics Technician	02	05-27-87
TP-TI, Training Instructor	03	12-03-87
TP-TM, Technical Staff and Manager	01	12-03-87

Health Physics Training Qualification Checklist
Training Record Book
Category III GET Retraining Student Handout, GR 614.01

TITLE	ISSUE NUMBER	DATE
Internal Exposure Control, Respiratory Protection Program Student Handout, GE 018.03, dated March 22, 1988		
Training Records for 13 FSV personnel associated with Radiation Protection Activities		
Miscellaneous Documents		
Reorganization of Nuclear Operations, memorandum, dated May 12, 1988		
Reorganization Charts		
Quality Assurance Memorandum, Subj: Closure of CAR 87-023 (associated with LER 87-004), Serial No. FPS-88-2379, dated July 29, 1988		
Breathing Air System Compressors Initial Functional Tests, dated January 24, 1986 (SR 5.10.5a-A)		
FSV Attrition Table for 1987 and 1988		
Leak Test of Radioactive Sources, 1988		
ALARA Committee Meeting Minutes: 02-24-88 and 03-08-88		
Radiation Work Permits:		
06061, Survey of Reflector Block		
10322, Work In Hot Service Facility on CRD #27		
10319, Helium Circulator "B" Work (Rucker Unit)		
10324, Helium Circulator "B" Work (Installation of shipping restraints)		
FSV Quality Assurance Division Master Audit Schedule for 1987 and 1988	02	07-19-88
Radiochemical Analysis Report on Bioassays for Personnel Tritium Uptake Measurements		08-02-88
Daily Circulator Outage Meeting Minutes: 06-29-88 and 07-28-88		
Procedure Deviation Report No. 88-0647		08-09-88
FSV Memorandum, Subj: Radiation Area Posting Assumptions, Serial No. PPC-88-2564, dated August 10, 1988		
Staff Changes Checklist and Routing Sheet		
Attachment SUSMAP-1M, Reg Guide 1.8 Experience Requirement Checklist for T. E. Schleiger, dated August 2, 1988		
Attachment G-7A and G-7B, Plant Staff Evaluation/Qualification Form Parts 1 and 2, for T. E. Schleiger, dated August 2, 1988		
SR 5.4.9A-3, Area and Equipment Radiation Monitor Calibration	24	03-07-85
SR 5.4.9A-4, High Range Containment Monitor Calibration	05	05-20-85