

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NPC Inspection Report: 50-267/90-03 Operating License: DPR-34

Docket: 50-267

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

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

Inspection At: FSV, Platteville, Colorado, and PSC office, Denver,
Colorado

Inspection Conducted: January 1 through February 6, 1990

Inspector: R. E. Farrell, Senior Resident Inspector

Approved: R. P. Muller 2/20/90
for T. F. Westerman, Chief, Project Section B Date
Division of Reactor Projects

Inspection Summary

Inspection Conducted January 1 through February 6, 1990
(Report 50-267/90-03)

Areas Inspected: Routine, unannounced inspection of licensee action on previously identified inspection findings, followup on items of noncompliance, operational safety verification, monthly surveillance observation, monthly maintenance observation, and defueling activities.

Results: Within the areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

- D. Alps, Supervisor, Security
- *M. Block, System Engineering Manager
- *F. Borst, Nuclear Training and Support Manager
- L. Brey, Manager, Nuclear Licensing and Resources
- *M. Cappello, Defueling/Decommissioning (D/D) Project Manager
- R. Craun, Nuclear Site Engineering Manager
- *A. Crawford, Vice President, Nuclear Operations
- *D. Evans, Operations/Maintenance Manager
- *M. Ferris, Quality Assurance (QA) Operations Manager
- *C. Fuller, Manager, Nuclear Production
- *J. Gramling, Supervisor, Nuclear Licensing Operations
- *M. Holmes, Nuclear Licensing Manager
- *F. Novachek, Program Manager, D/D
- *H. O'Hagan, D/D Project Manager
- *W. Rodgers, Nuclear Computer Services Manager
- *L. Scott, QA Services Manager
- *N. Snyder, Fuel Deck Manager
- *P. Tomlinson, Manager, QA
- *D. Warembourg, Manager, Nuclear Engineering

The NRC inspector also contacted other licensee and contractor personnel during the inspection.

*Denotes those attending the exit interview conducted February 6, 1990.

2. Plant Status

The plant is permanently shut down and in the process of defueling. FSV does not presently have sufficient onsite spent fuel storage capacity to completely defuel the reactor without shipping spent fuel offsite. The onsite spent fuel storage capacity was filled during this inspection period with 12 of the 37 core fuel regions removed from the reactor and placed in the spent fuel wells.

The licensee is currently discussing with the Department of Energy (DOE) to ship spent fuel to the Idaho National Laboratory per a longstanding contract between DOE and the licensee. During previous normal refueling outages, three refueling loads of spent fuel totaling half of a full core were shipped to DOE, Idaho. The licensee is simultaneously preparing a licensing submittal to construct on site a spent fuel storage facility. This facility will be utilized, if necessary, in place of fuel shipment to Idaho.

3. Licensee Action on Previously Identified Inspection Findings (92701)

(Closed) Open Item 267/8708-02: Inoperable Channel Not in Tripped Position. At FSV, a tripped channel outputs a signal. An inoperable channel does not automatically put out a tripped signal, but must have a trip signal module placed in the rack in place of the inoperable module. On occasion, channels not required to be operable would become inoperable. If not placed in a tripped condition at that time, the operations staff could overlook changing operability requirements when changing reactor modes and inadvertently violate Technical Specifications (TS).

Improved licensee attention to instrument channel operability during the last years of FSV operation eliminated this problem. Additionally, the reactor is now permanently shut down, so changing operability requirements with changing reactor mode is no longer a concern.

(Closed) Open Item 267/8812-03: Excessive Time Required to Fix Identified Deficiencies. Prior to cessation of power operation, the licensee was decreasing the number of open deficiency reports. Items were worked in order of importance to safety. Currently, identified deficiencies are worked immediately if important to safety. Items not important to safety are worked on a "resources available" basis. The inspector found licensee performance in this area satisfactory.

(Closed) Open Item 267/8813-02: Analysis of Effect of Dropping Some DC Loads. This item was opened to assure that the licensee had adequate procedures for dealing with the hydrogen in the main generator when the DC hydrogen seal oil pumps are shed from the DC bus following a loss of all AC power. As a result of the plant shutdown, the main generator has been purged of hydrogen and is filled with carbon dioxide.

(Closed) Open Item 278/8813-04: Effect of Revised Environmental Qualification Temperature Profile. The licensee's consultant identified a small break scenario that was more limiting than the temperature profile used for environmental qualification of equipment. This problem was reviewed by the staff and resolved by issuance of Operating License Amendment 68, which added a fixed high temperature trip setpoint for the steam line rupture detection and isolation system.

(Closed) Unresolved Item 267/88200-005: Control of Remote Shutdown Activities. This item called for further NRC review of the licensee's remote shutdown procedure, training, and drill. The plant is permanently shut down. No further NRC review of this item is required.

No violations or deviations were identified in the review of this program area.

4. Followup on Items of Noncompliance (92702)

(Closed) Violation 267/8807-02: Valves on Diesel-Driven Firewater Pump Not Included in Valve Lineup. Three valves (two in parallel with one on

the cooling water line to the diesel-driven firewater pump) were omitted from the system valve lineup. The valves are inlet and outlet and bypass flow to the cooling water filter. The valves must be in the correct positions to assure adequate cooling of the diesel-driven firewater pump. The licensee numbered the valves and included them in IVL-45-01, Issue 3, "Integrated System Valve Lineup and Checklist For SOP 45-01" by issuing Procedure Deviation Request (PDR) 89-0545.

(Closed) Violation 267/8916-01: Reactor Engineers Working Beyond TS Limits Without Proper Documentation. The licensee has an existing process for evaluating and approving extended work hours beyond normal TS limits. This is in accordance with the licensee's TS.

In accordance with the licensee's response to this violation, the engineers involved in this violation have been reinstructed in the implementation of this process. This item is closed.

No violations or deviations were identified in the review of this program area.

5. Operational Safety Verification (71707)

The inspector made daily tours of the control room during normal working hours and at least once per week during backshift hours. Control room staffing was verified to be at the proper level for the plant conditions at all times. Control room operators were observed to be attentive and aware of plant status and reasons why annunciators were lit. The inspector observed the operators using and adhering to approved procedures in the performance of their duties. A sampling of these procedures by the inspector verified current revisions and legible copies. During control room tours, the inspector verified that the required number of nuclear instrumentation and plant protective system channels were operable. The operability of emergency AC and DC electrical power, meteorological, and fire protection systems was also verified by the inspector. The reactor operators and shift supervisor logs were reviewed daily along with the TS compliance log, clearance log, operations deviation report (ODR) log, temporary configuration report (TCR) log, and operations order book. Shift turnovers were observed at least once per week by the inspector. Information flow was consistently good, with the shift supervisors soliciting comments or concerns from the reactor operators, equipment operators, auxiliary tenders, and health physics technicians. The licensee's station manager, operations manager, and superintendent of operations were observed to make routine tours of the control room.

The inspector made tours of all accessible areas of the plant to assess the overall conditions and verify the adequacy of plant equipment, radiological controls, and security. During these tours, particular attention was paid to the licensee's fire protection program, including fire extinguishers, firefighting equipment, fire barriers, control of flammable materials, and other fire hazards.

A walkdown of the firewater system was performed by the inspector. Valve and breaker positions were verified where possible. When affected by a clearance, the valves or breakers were verified to be positioned in accordance with the clearance requirements. Power supplies for components in these systems were verified, but were also subject to clearances in some cases. During this system walkdown, the inspector verified the operability of standby or backup equipment when components or portions of systems were inoperable due to clearances.

The inspector observed health physics technicians performing surveys and checking air samplers and area radiation monitors. Contamination levels and exposure rates were posted at entrances to radiologically controlled areas and in other appropriate areas and were verified to be up to date by the inspector. Health physics technicians were present to provide assistance when workers were required to enter radiologically controlled areas. The inspector observed workers following the instructions on radiation work permits concerning protective clothing and dosimetry and observed workers using proper procedures for contamination control, including proper removal of protective clothing and whole body frisking upon exiting a radiologically controlled area.

The inspector randomly verified that the number of armed security officers required by the security plan were present. A lead security officer was on duty to direct security activities on each shift. The inspectors verified that search equipment, including an x-ray machine, explosive detector, and metal detector were operational or a 100 percent hands-on search was conducted.

The protected area barrier was surveyed by the inspectors to ensure it was not compromised by erosion or other objects. The inspector observed that vital area barriers were well maintained and not compromised. The inspectors also observed that persons granted access to the site were badged and visitors were properly escorted.

6. Monthly Surveillance Observation (61726)

The inspector routinely checked surveillance logs to confirm that surveillances required with the plant shutdown were maintained current. Special attention was paid to surveillances involving defueling. The inspector observed performance and/or reviewed documentation of the following surveillances:

- o SR 5.7.1, Fuel Handling Machine
- o SR 5.7.3, Fuel Handling and Maintenance in the Reactor
- o SR 5.7.4, Spent Fuel Shipping Cask
- o SR 5.7.5, Instrumentation
- o SR 5.7.6, Communications During Core Alterations

No violations or deviations were identified during the review of this program area.

7. Monthly Maintenance Observation (62703)

The licensee added two neutron sources to the core during this inspection period. The neutron sources were added to help maintain count rate on the source range neutron monitors as required by TS Limiting Condition for Operation 4.4.1.

The licensee utilized new fuel blocks for the neutron source installation. These were actual fuel blocks manufactured previously to hold fuel, not dummy blocks. The fuel pin holes were plugged with graphite dowels and no fuel was installed.

At the bottom of the handling tool hole in the top of each block, an additional cavity was machined to hold the neutron source. Such a block, when placed in the core in lieu of a fuel block, would look like a fuel block, contain no fuel, contain no poison, but contain a neutron source.

The inspector observed the quality control inspection of the empty fuel blocks that were to hold the neutron sources. The inspector observed the installation of the neutron source into empty Fuel Block 11-5130, which was destined for Region 10 of the reactor core. The neutron source was californium 252 and was giving off approximately $3.85 \text{ E}+8$ counts per second.

The inspector also observed the installation of Fuel Block 11-5130 in the reactor. Health physics coverage was conservative. Film badges were changed to hold neutron exposure film. Health physics technicians provided full-time monitoring of dose rates.

The inspector noted the full-time presence of quality assurance, reactor engineering, and fuel deck management during placement of the source in the fuel block and placement of the fuel block in the reactor core.

No violations or deviations were identified in the review of this program area.

8. Defueling Activities (60710)

The inspector monitored defueling activities during the inspection period. The licensee completed defueling of the 12 core regions for which there is onsite spent fuel storage capacity. Active fuel is still contained in 25 of the 37 core regions.

The inspector noted the presence of health physics and QC during fuel movements. The licensee maintained a systems engineer on shift to be responsible for fuel accountability. The inspector verified that the fuel handler at the controls of the fuel handling machine held a current NRC license to handle fuel. The licensee has these licenses on display in the fuel handling machine control room.

The inspector noted that excellent skills and attention to detail were displayed by the fuel handlers and system engineers. The licensee's fuel deck organization appeared to function very well.

The licensee identified what appeared to be a hairline crack running the full length of one face of a fuel block. The block in question was Serial No. 1-2448, taken from Region 20 of the core. The licensee believes this cracking is identical to that found during the 1982 refueling. At that time, the licensee did detailed studies which were reviewed by the NRC. The conclusion was that this cracking does not affect fuel integrity, structural integrity, or heat removal.

The licensee is not visually examining all fuel blocks as they are removed from the core. The licensee is verifying the serial number on one side of each hexagonal block. Cracking on another face of the block would be noticed only by chance. The crack identified above was identified in this manner but, once known, was brought to the attention of the inspector.

No violations or deviations were identified during the review of this program area.

9. Exit Meeting (30703)

An exit interview was conducted with licensee representatives identified in paragraph 1 on February 6, 1990. During this interview, the inspectors reviewed the scope and findings of the report. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.