

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-267/89-17

Operating License: DPR-34

Docket: 50-267

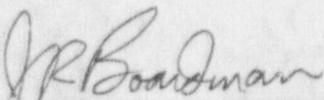
Licensee: Public Service Company of Colorado (PSC)  
P.O. Box 840  
Denver, Colorado 80201-0840

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

Inspection At: FSV Nuclear Generating Station, Platteville, Colorado

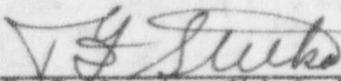
Inspection Conducted: July 17-21, 1989

Inspector:

  
\_\_\_\_\_  
J. R. Boardman, Reactor Inspector, Plant  
Systems Section, Division of Reactor Safety

August 10, 1989  
Date

Approved:

  
\_\_\_\_\_  
T. F. Stetka, Chief, Plant Systems Section  
Division of Reactor Safety

8/10/89  
Date

Inspection Summary

Inspection Conducted July 17-21, 1989 (Report 50-267/89-17)

Areas Inspected: Routine, unannounced inspection of the licensee's programs for instrument calibration and functional testing, for diesel fuel oil (FO) quality and storage, and action on previously identified inspection findings.

Results: Within the areas inspected, one apparent violation of NRC requirements was identified (paragraph 3). The apparent violation involved three examples where procedures did not exist for the calibration or functional testing of instrumentation and controls needed to verify equipment operability or needed for operation of equipment as specified in the licensee's procedures. Except for this violation, the licensee's calibration program appeared to meet regulatory requirements.

The licensee's program for assuring FO quality appeared to be acceptable, but weak because of the limited scope of FO sampling performed. The difference in design requirements for this plant, and the high FO usage which prevented significant FO aging, kept the FO program from appearing flawed.

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DETAILS

1. Persons Contacted

PSC

- \*M. Denniston, Superintendent of Operations
- D. Evans, Operations Manager
- \*C. Fuller, Manager, Nuclear Production
- \*F. Novachek, Nuclear Support Manager
- \*P. Tomlinson, Manager Quality Assurance
- \*N. Snyder, Maintenance Department Manager
- \*L. Scott, Quality Assurance Services Manager
- \*M. Ferris, Quality Assurance Operations Manager
- \*F. Borst, Nuclear Training Manager
- \*D. Weber, Staff Assistant
- \*J. Gramling, Supervisor, Nuclear Licensing-Operations
- \*D. Such, Instrumentation and Controls Supervisor
- \*T. McIntire, Superintendent, Materials Management
- H. O'Hagan, Outage Manager
- M. Block, Systems Engineering Manager
- D. Brown, Nuclear Engineering Supervisor
- P. Burk, Supervisor, Quality Assurance Engineering
- D. Fetterolf, Water Chemistry
- J. Brungardt, Water Chemistry

NRC

- \*T. Stetka, Chief, Plant Systems Section
- \*R. Farrell, Senior Resident Inspector

\*Denotes those persons attending the exit meeting on July 21, 1989.

The inspector also contacted other licensee personnel during the inspection.

2. Followup of Previous Inspection Findings (93701)

(Closed) Open Item (267/8821-01): This item dealt with a concern about circuit breaker coordination for the Alternate Cooling Method (ACM) emergency lighting. The licensee reissued Change Notice (CN) CN-2867 to resolve this concern.

(Closed) Open Item (267/8826-02): This item concerned the lack of procedures providing guidance to operators on load shedding and sequencing of 480 volt electrical busses. The licensee revised emergency operating Procedure EOP-6, Issue 2, on June 30, 1989, to provide a permanent solution to this concern. This item is considered closed based on a review of EOP-6.

3. Calibration (56700)

The purpose of this inspection was to ascertain that the licensee had developed, and implemented an instrumentation calibration program in conformance with regulatory requirements, commitments, and industry standards.

- a. The inspector reviewed the frequency of calibrations and functional tests required by Technical Specifications (TS) for selected components that are part of the following systems:
- Reactor Protection
  - Reactivity Control
  - Plant Auxiliary
  - Liner Cooling
  - Containment
  - Electrical Distribution

Selected completed calibration and functional testing (surveillance) procedures were reviewed. In addition, the inspector observed the performance of the setpoint calibration for the main steam electromagnetic relief valve. The inspector did not note any apparent backlog of safety-related surveillances including calibrations. The accuracy of the calibrations reviewed appeared adequate. The reviewed procedures are listed in Attachment 2.

During the review of the completed surveillance procedure for the monthly linear power channel scram test, the inspector noted numerous steps marked as "Not Applicable" (N/A). These steps were for testing the fixed low-power trip and alarm setpoints for the Startup Channel and Linear Power Channel. Discussions with licensee representatives indicated that system design prevented testing these trips at power levels above their low-power setpoints. Since the channels could not be tested with the plant at high power levels, these steps were marked "N/A" during plant operation at these levels. When plant power level was decreased to the point where the fixed low-power trips were required, and the functional test was not scheduled to be performed, the trips would not be tested for periods of up to one month beyond the required surveillance due date. This occurred because the licensee failed to have a procedure that required the fixed low-power trips to be tested immediately after the plant power level was decreased below the trip setpoint levels. Therefore, there were instances where the plant operated with untested fixed low-power level trips for up to one month.

Failure to have adequate procedures to perform functional tests as required by TS 7.4.a is considered to be an apparent violation.

Violation (267/8917-01): Failure to have adequate procedures to test the fixed low-power level trip setpoints.

- b. The inspector reviewed the calibration and functional testing of components not specifically addressed in the TS as requiring calibration or functional testing. During plant walk-downs, the inspector selected instruments and controls and verified their inclusion in the calibration program. As the result of these walk-downs, the inspector identified the following instruments and controls which required either calibration or a functional test, but were not included in the licensee's calibration program:

- o TS 5.2.10 requires monthly functional testing and annual calibration of the diesel fire pump (DFP) associated instruments and controls. The overspeed trip on the DFP is one of these associated controls. TS 7.4.a requires procedures for the surveillance and test activities of safety-related equipment. The overspeed trip was not in the licensee's calibration and functional test programs and therefore was not calibrated nor functionally tested.
- o Each EDG engine has a coolant water temperature gauge. These gauges are specified in the licensee's operating and surveillance procedures for the EDG to determine engine operating temperature. The inspector verified with a licensee EDG operator that these gauges were the only gauges used to determine engine temperature. These gauges were not in the licensee's calibration program.

Failure to have procedures to test and calibrate the DFP overspeed trip and failure to calibrate the EDG engine temperature gauges is considered to be an apparent violation of TS 7.4.a. This apparent violation will be considered as additional example of the apparent violation identified in previous paragraph 3.a.

4. Storage and Handling of Fuel Oil for Safety-Related Diesels (25100)

The purpose of this inspection was to verify that the licensee had an adequate quality control program for emergency diesel generator (EDG) fuel oil (FO) maintained on site. Because of the plant's unique design, this site has two additional safety-related diesel powered components. These are a diesel fire pump and a diesel Alternate Cooling Method (ACM) generator. The FO for these components was included in the scope of this inspection.

The specific attributes reviewed included the following for which the responses are contained in Attachment 1:

- The scope of the license's review of NRC Information Notice (IN) 87-04, "Diesel Generator Fails Test Because of Degraded Fuel";
- The existence of a permanent EDG FO storage tank recirculating filtration system;
- The periodic cleaning of EDG FO tanks;
- The use of FO antioxidation and bacteriostatic additives;
- The tests performed for such contamination as presence of water, oxidation products, and bacterial growth;
- The prompt removal of identified water contamination;
- The periodic cleaning of strainers and filters;
- The monitoring of fouling and contamination;
- The sampling and testing of EDG FO;
- The use of duplex filters and strainers; and
- The use of differential pressure indication for determination of filter and strainer fouling.

Based on the responses to Attachment 1, the licensee's program is considered to be weak, because of the limited scope of FO sampling performed. The program is in compliance with NRC regulations and commitments.

No violations or deviations were identified.

5. Diesel Generator Fuel Oil Quality Assurance (25593)

Because of the planned decommissioning of FSV, the requirements for this inspection are encompassed by the inspection discussed in paragraph 4 of this report. Inspection activity in this one area is considered to be complete.

6. Exit Meeting (30703)

An exit meeting was held on July 21, 1989, with those individuals denoted in paragraph 1 of this report. At this meeting, the scope of the inspection and the findings were summarized. The licensee did not identify as proprietary any of the information provided to, or reviewed by, the inspector.

ATTACHMENT 1

SURVEY OF LICENSEE'S RESULTS TO  
SELECTED EMERGENCY DIESEL GENERATOR (EDG) FUEL OIL (FO) ISSUES

Plant Name: Fort St. Vrain (FSV)  
Docket Number: 50-267  
Inspector: J. R. Boardman

1. Has the licensee adequately reviewed and evaluated NRC Information Notice (IN) 87-04, issued on January 16, 1987, as a result of the ANO Unit 2 EDG FO starvation event which occurred on June 27, 1986?

The licensee had reviewed this IN. See Item 3 for the licensee's response to the IN.

2. Does the licensee have a permanent FO storage tank recirculation system which allows for complete FO inventory cleaning by filtering each refueling outage to remove accumulated particulates?

Discussions with licensee personnel indicated that for the EDG such recirculation could be accomplished. FSV is different from other sites. There are three sets of safety-related diesels. In addition to the EDGs, there is an Alternate Cooling Method (ACM) diesel generator and a diesel fire pump (DFP). All safety-related diesels are covered in the TS.

Additionally, FO usage is relatively high at FSV. Licensee personnel indicated that FO usage from the day tanks of all safety-related diesels is greater than 100% per month. The DFP has only a day tank. The storage tanks for the EDGs and ACM diesel have an average usage of 100% per month. This is because the diesel fuel tanks also supply the station auxiliary boiler. As a result, FO aging with its attendant problems of fuel degradation does not appear to be a concern at FSV.

3. Are all FO storage tanks being cleaned and inspected at a minimum of 10-year intervals in accordance with Regulatory Guide 1.137?

Licensee personnel indicated that tanks were cleaned in response to IN 87-04. Future cleaning is not projected based on the present plant decommissioning schedule.

4. Does the licensee's FO program include a regular analysis of FO samples and bottom testing for accumulated water, at the lowest point in the FO day tanks and FO storage tanks?

TS 5.2.10 requires that the DFP FO be sampled and tested quarterly. No ASTM standard is referenced. No attributes are specified in the TS. The DFP FO is tested for viscosity at 40°F, for water content, and for sediment. Neither the EDG or the ACM diesels have any requirement for testing. With the rapid turnover in stored fuel, periodic sampling and testing is less meaningful than at sites having large storage capacities and low usage.

5. Is a fuel additive being used as a fuel stabilizer which will function to prevent oxidation and bacterial growth?

No.

6. Does the licensee effectively ensure that periodic FO bottom sampling and analysis are being performed to detect high particulate concentrations in the FO supply which occurs over long-term storage due to the effects of oxidation, and biological contamination in accordance with ASTM D270-1975?

As stated in 2 and 4 above, there is no long-term storage of fuel on site, and no ASTM standard is required by TS, or identified in site procedures.

7. Are day tanks and integral tanks being checked for water monthly, as a minimum, and after each operation of the diesel where the period of operation was 1 hour or longer?

There is no TS or procedural requirement for this. See the responses to 2 and 4.

8. Is accumulated water removed immediately if it is determined that water is present in the storage, integral, or day tanks?

The licensee's personnel stated that if water is found, it is promptly removed from the tanks.

9. Is the licensee replacing FO in a short period of time (about a week) if it is determined that the FO does not meet the applicable specifications?

The licensee's personnel stated that FO determined to be nonconforming would be replaced immediately. The only FO tests performed are for viscosity at 40°F, water content, and sediment. These are the only identified bases for FO replacement.

10. Are FO components which may be prone to fouling being routinely monitored for indications of fouling?

Yes, through the preventive maintenance program.

11. Are FO filters and strainers being cleaned and inspected on a periodic basis per the vendor recommendations?

Per licensee personnel, filters and strainers are cleaned and inspected to periodicities which meet vendor recommendations as part of the preventive maintenance program.

12. Does the FO system utilize dual element filters and strainers which permits on line cleaning of the elements, in the event of fouling, to allow continuous operation of the EDG?

The EDG FO transfer system filters and the ACM diesel FO filters are duplex. The EDG and DFP filters are simplex.

13. Is there a differential pressure indicator for each duplex filter strainer for indication of fouling in accordance with ANSI195-1976?

There is a flow indicator for the EDG FO. There is no other indication.

14. Are FO alarms annunciated in the main control room or incorporated into a general control room trouble alarm with local individual alarms, in accordance with ANSI N195-1976?

- The EDG FO day tank alarms locally and in the control room.
- The ACM FO alarms locally.
- The DFP has no FO alarms.

15. Are any of the instruments that perform a control function and provide an alarm seismically qualified in accordance with the IEEE Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations, IEEE-344-1975?

The licensee's personnel indicated the EDG and ACM are seismic and that the DFP is not required to be.

Note: The ASTM, ANSI, and IEEE standards referenced in this survey did not appear to be applicable to FSV.

ATTACHMENT 2LICENSEE PROCEDURES REVIEWED DURING THE INSPECTION

<u>DESIGNATOR</u>	<u>TITLE</u>	<u>ISSUE</u>	<u>DATE</u>
SR 5.3.3-A1X	Main Steam Electromatic Relief Valve Functional Test and Setpoint Calibration	3	June 2, 1989
SR 5.6.1b-SA4	Standby Generator 1B Auto Start Test	1	July 15, 1988
SR 5.4.1.1.4.b-M/ SR 5.4.1.4.2.b-M	Linear Power Channel Scram Test	47 and 48	February 12, 1988 July 21, 1989
SR 5.4.1.1.4.d-R/ SR 5.4.1.4.2.d-R	Linear Power Channel Calibration	22	August 9, 1985
OPOP I	General Plant Requirements	66	January 6, 1988
RP-A-01	General Maintenance Requirements Governing Procedures For The Calibration and Maintenance of Plant Instrumentation	4	February 3, 1989
RP-A-02	NBD Instrument and Maintenance Program	3	November 25, 1987
RP-A-03	Calibration Data Base	7	November 28, 1988
MAP-2	Maintenance Department Program for Measuring and Test Equipment	4	April 26, 1989
SR 5.2.10.a.1-M/ SR 5.2.10.a.2-M	Fire Pump and Instrumentation Functional Test	12	July 1, 1988
SR 5.2.10.a.1-A	Fire Pump Instrumentation Calibration	14	April 15, 1988
SMAP-1	Technical Specifications Surveillance Testing Program	7	February 1, 1988
SMAP-2	Non-Technical Specification Surveillance Testing Program	4	February 1, 1988
MP-7090	Standby Diesel Generator	3	May 17, 1989
SMAP-5	Scheduling Program for Surveillances	6	October 12, 1988

SOP 92-04	Emergency Diesel Generators	19	June 17, 1988
SR 5.6.1a-W	Standby Diesel Generator Test [weekly]	46	June 23, 1989
SR 5.6.1b-SA3	Standby Generator 1A Auto Start Test (Semiannual)	1	July 15, 1988
SR 5.6.1cd-A1	Standby Diesel Generator Calibration: Set 1A	1	May 12, 1989
SOP 48-01	Alternate Cooling Method System	17	September 21, 1988
MP-7110	ACM Diesel Preventative Maintenance	1	July 14, 1987
SR-RE-80-X	ACM Instruments Calibration	5	June 2, 1989
SR 5.2.20ab-W	ACM Generator Load Test	8	September 30, 1988
SR-RE-146-R	Calibration of Circulator Differential Pressure Instrumentation	3	August 24, 1988
SR 5.4.1.1.5.c-M/ SR 5.4.1.4.3.c-M	Wide Range Heat Balance Calibration	25	May 6, 1988
RP-164	Calibration and Maintenance of Foxboro E11GM/E11GH Pressure Transmitters	4	June 19, 1986
SR-RE-161-A	Steam Pipe Rupture Temperature Calibration	2	May 6, 1988
EOP-6	Restoration of Essential Electric Power	2	June 30, 1989
SR 5.6.1e-1.5Y	Loss of Outside Power with the Main Turbine Generator Tripped	1	March 9, 1988
WCP-314	Chemistry Specifications Oil Systems	4	November 11, 1987