

May 23, 1985

MEMORANDUM FOR: E. G. Tourigny, Acting Chief
Operating Reactors Branch #3
Division of Licensing

FROM: Kenneth L. Heitner, Project Manager
Operating Reactors Branch #3
Division of Licensing

SUBJECT: SUMMARY OF MAY 16, 1985 MEETING WITH PUBLIC SERVICE
COMPANY OF COLORADO CONCERNING EMERGENCY ELECTRICAL
POWER SYSTEMS AT FORT ST. VRAIN

The purpose of this meeting was to discuss staff concerns about the emergency electrical power systems at the Fort St. Vrain Nuclear Generating Station. These concerns are a result of the staff's evaluation of the problems encountered during testing of the emergency diesel generators (EDGs) on December 18, 1984. The attendees at this meeting are listed in Enclosure I.

The staff stated at the beginning of the meeting that their approach was to review the plant against the Fort St. Vrain FSAR. Their goal was to understand if the plant was consistent with the FSAR. They also sought to evaluate the plant against three fundamental criteria:

1. Redundancy
2. Independence, and
3. Single Failure

Their goal was to determine if both the emergency AC and DC power systems were redundant, that the redundant trains were independent of each other, and the power system as a whole met the single failure criteria.

4KV Rapid Transfer System

The first staff concern centered on the rapid transfer system for the 4KV buses. The staff stated that they did not understand how the system would respond to a fault in 4KV bus 1 or 3 when the faulted bus also was tied to 4KV bus 2. The potential concern here was that the loss of 2 out of 3 4KV buses would cause the EDGs to start, instead of automatically transferring to the auxiliary service transformer. Selection of the EDGs to supply emergency power was undesirable if an offsite power source was still available. The licensee responded that they would provide an answer to this question.

Independence of Redundant Trains

The staff noted that in numerous cases Fort St. Vrain electric power system drawings indicated that the redundant emergency electric power trains were not independent. Specific examples that were discussed included:

- Logic controlling the emergency diesel generator (EDGs) breakers
- Logic controlling the 480 volt emergency bus tie breakers.

The staff's initial conclusion was that logic permissives and interlocks from one train were required to close EDG the breaker for the second train. The existence of such logic permissives did not assure independent automatic operation of the redundant EDGs. However, the staff stated that they believed that the lack of independence in the logic circuits did not compromise independence of the system when operated in the manual mode. The licensee responded that they would evaluate this problem and provide their evaluation to the staff. They would potentially address short term justification for continued operation as well as long term electric power system changes.

Testing of the 4KV Rapid Transfer System

The staff inquired if the 4KV rapid transfer system was tested and if this requirement was part of the plant Technical Specifications. The licensee responded they would provide this information.

Switchgear Powering

The DC power systems for the plant switchgear were discussed. The licensee noted that all switchgear was provided with DC power from both battery supplies. However, these circuits were separately fused at the switchgear power entry cubicle. These circuits also had breakers at the DC distribution cabinet. A fuse is provided at the switchgear power entry cubicle in one of the two circuits. In the event of a DC power loss or fuse failure, DC power is administratively restored by replacing the fuse in the appropriate power circuit. The staff inquired how loss of DC voltage to the switchgear was indicated to the operators, both at the switchgear and in the control room. The licensee responded that they would provide this information.

Other Topics Discussed

Separation - The licensee stated that there was at least 6 inch separation or a suitable burner between (their divisional bus or loop) cables. However, some buses had no loop association. If a non safety related cable ran with safety related cable in the same tray, it could not compromise the separation criteria.

Current Limitors - The licensee stated increased fault current from the introduction of larger transformers in certain circuits required the use of current limiting reactors.

Diesel Generator Protection - The licensee stated that, in an emergency, the diesel generator would trip only on overspeed or differential current. Other protective circuits were activated only in the test mode.

Concluding Remarks

The staff stated that their concerns about the independence of the control logic for the redundant emergency electric power systems at Fort St. Vrain were a significant safety issue. The staff further stated that Public Service of Colorado should respond promptly with a justification for continued operation prior to plant restart.

The licensee responded that they would address these concerns and provide the information noted above.

Kenneth L. Heitner, Project Manager
Operating Reactors Branch #3, DL

Enclosure:
As stated

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