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September 18, 1990
JPN-90-063

U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555

SUBJECT: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
RESPONSE TO NOTICE OF DEVIATION
INSPECTION REPORT 50-333/90-19

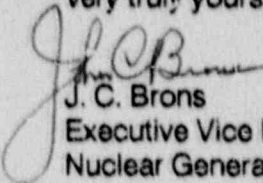
Reference: 1. NRC letter, J. P. Durr to W. Fernandez, dated August 14, 1990,
transmits Inspection Report 50-333/90-19.

Dear Sir:

In accordance with 10 CFR 2.201, Attachment I responds to the Notice of Deviation included with NRC Inspection Report 50-333/90-19 (Reference 1). This inspection was conducted by Mr. A. Deila Greca during the period from June 25 to June 29, 1990 at the James A. FitzPatrick Nuclear Power Plant. Attachment II addresses a related open item identified during this inspection.

If you have any questions regarding this matter, please contact Mr. J. B. Ellmers of my staff.

Very truly yours,


J. C. Brons
Executive Vice President
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ATTACHMENT I TO JPN-90-063

DEVIATION

As a result of the inspection conducted during the period of June 25 through June 29, 1990, and in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (Enforcement Policy) (1988), the following Deviation was identified:

Section 8.5.6 of the James A. FitzPatrick Nuclear Power Plant FSAR, "Safety Evaluation," states that redundant emergency power distribution systems are physically and electrically independent and that no automatic switching is provided to interconnect the redundant systems. In addition, while discussing the conditions under which transfer switches are used to power single pieces of equipment or systems from the redundant emergency buses, the same section states that the power transfer equipment is designed to meet single failure criteria.

Contrary to the above, at the time of the inspection, power transfer switch 71TS-7, if failed, could provide a path to interconnect unit substations L25 and L26 in the same manner as an automatic switch. Therefore, it does not meet single failure criteria. In addition, the transfer switch was determined to be non-Class 1E.

This is a deviation.

RESPONSE TO NOTICE OF DEVIATION

The Authority does not agree with the Notice of Deviation. The Authority does not consider this condition to be a "failure to satisfy a commitment" for the following reasons:

1. **The Authority does not agree with the NRC staff's interpretation of Section 8.5.6 of the FitzPatrick FSAR.**

The statement paraphrased in the Notice of Deviation refers to automatic power transfer equipment fulfilling a "safeguard function" and does not apply to the transfer switch in question.

The transfer switch referred to in the Notice of Deviation is a manual transfer device in a non-1E portion of the electrical system. It supplies electrical power to the FitzPatrick Safety Parameter Display System (SPDS) which does not fulfill a "safeguard function."

While this section of the FSAR may be unclear, this sentence was not intended as a commitment that every piece of electrical power transfer equipment be single failure proof. It was never the Authority's intent to provide single-failure-proof power transfer equipment throughout the plant regardless of its function or the quality standards of the system in which the equipment is installed.

2. **The NRC staff has reviewed and approved this arrangement when the Authority submitted information describing the FitzPatrick Safety Parameter Display System (SPDS).**

The Authority described the three interfaces that isolated the FitzPatrick Safety Parameter Display System (SPDS) from potential sources of interference in Reference 2. Although switch 71TS-7 is not illustrated in Figure 1 of Reference 2, it is contained within the non-Class 1E uninterruptible power supply (UPS).

The Authority also provided in Reference 3 specific test data for the 1E qualified electrical breakers including the breakers in question. The results of the breaker tests indicated that the circuit breakers are qualified for safety related application including seismic.

The NRC reviewed and approved this configuration. In the NRC Safety Evaluation (Reference 4), the staff agreed with the use of Class 1E breakers to protect the interface, but it is not clear that the staff was referring to the interface between the non-Class 1E UPS and the station 1E power. The NRC Safety Evaluation, did however, conclude "that the isolation devices, fiber-optic cables and Class 1E circuit breakers, are qualified isolators and are acceptable for interfacing the SPDS Class 1E systems."

3. **Failure of the non-1E transfer switch in a manner necessary to reconnect all three phases is not a credible event.**

Paralleling of the redundant buses on the line side of the transfer switch due to a failure of the switch during a design basis event, would require the dislocation of the wires from the transfer switch terminals and solid reconnection of phase A of the "primary" source cable to phase A of the "alternate" cable, phase B of the "primary" source to phase B of the "alternate" source, etc., without contacting ground. This scenario is not considered credible.

The transfer safety switch is designed and constructed so that only one source of power can be selected at any one time. Considering a remote possibility that an event (e.g., seismic) would cause an unintentional movement, the result would only be that the transferable loads would be fed from the other bus.

4. **A postulated failure of the non-1E transfer switch coincident with a failure of one of the 1E isolation breakers is not a safety concern.**

Postulation of a failure of the non-Class 1E transfer switch could result in either phase-to-ground or phase-to-phase faults on the 600V Class 1E Load Center feeders supplying the switch. As no credit can be taken for the non-Class 1E transfer switch, whether the fault occurs on the load side or the line side of the switch is irrelevant.

During these faults, the breakers located in the Load Centers are expected to operate and isolate the fault from the other loads in that Load Center. These breakers are properly coordinated, so that a fault in a branch circuit such as the one feeding the transfer switch would be isolated by its corresponding breaker without jeopardizing the other loads connected to the Load Center.

If an additional single failure of the 600V Class 1E breaker that feeds the transfer switch is postulated, it would not result in loss of power to the redundant bus. The failed breaker would cause the tripping of the upstream 600V Load Center breaker supplying that particular Load Center. This Load Center would be lost, but the other redundant Load Center would remain unaffected.

The only consequence of the fault would be temporary loss of power to the EPIC uninterruptible power supply (UPS). The EPIC system has more than 1 hour backup time which is sufficient to transfer power from primary to alternate source.

5. This configuration complies with appropriate, applicable industry standards.

The 600V power feeders from Load Center L25 (Breaker 12504) and L26 (Breaker 12604) feed non-1E EPIC uninterruptible power supply via transfer switch 71TS-7 (Westinghouse model XNU-365). This design complies with IEEE 384-1981 Section 6.1.3.3 "Routing Requirements" and 7.1.2.1, "Isolation Criteria - Circuit Breaker Tripped by Fault Currents." As indicated in the inspection report, proper coordination exists between the main (supply) and feeder (load) breakers of both redundant load centers. In addition, the trip units for all emergency load center breakers are included in a periodic maintenance and calibration program.

6. The NRC's "Safety Evaluation of the James A. FitzPatrick Nuclear Power Plant", (Reference 4) and Supplements 1 and 2 (Reference 5 and 6) do not discuss electrical transfer equipment.

Section 7.2.2, "Onsite Power" of the NRC SE for the FitzPatrick plant (Reference 4), discusses the 4kV and 600V electrical buses and concludes, "Separation and independence of these redundant systems has been maintained." (p. 7 - 10).

This lack of discussion shows that the qualifications of electrical power transfer equipment did not form a primary basis for the conclusions delineated in the NRC's SEP.

Summary and Conclusion

The statement paraphrased in the Notice of Deviation is not applicable to this transfer switch. The paralleling of the redundant Class 1E buses as a result of a failure of the transfer switch is not considered a credible event. The NRC staff was aware of this configuration, details of the breaker qualifications, and test program, and subsequently approved them in an SER. Electrical faults, generated by an internal failure of the transfer switch, would be cleared by the corresponding Load Center breaker with no risk to any other load connected to the bus. Single failure of a breaker would result in tripping of the 600V Load Center breaker supplying that particular Load Center. The redundant Load Center would remain available. This configuration complies with applicable industry standards.

The failure of the transfer switch during a design basis event would not jeopardize the redundant Class 1E buses. The transfer switch design meets the single failure criterion as described in Section 8.5.6 of the FitzPatrick FSAR and does not constitute a deviation as defined in 10 CFR 50 Part 2.

Interim Corrective Actions

The Authority has implemented a temporary procedure change to administratively prohibit concurrent closure of both upstream feeder breakers until this issue is resolved.

References

1. NRC letter, J. P. Durr to W. Fernandez, dated August 14, 1990, transmits Inspection Report 90-19.
2. NYPA letter, J. C. Brons to D. B. Vasallo, dated November 1, 1985 (JPN-85-080), regarding request for additional information to the SPDS/EPIC system.
3. NYPA letter, J. C. Brons to the NRC, dated April 15, 1987 (JPN-87-021), regarding Safety Parameters Display Electrical Breakers.
4. NRC letter to J. C. Brons, dated March 18, 1988, regarding Safety Evaluation Report of the FitzPatrick Safety Parameter Display System (SPDS).
5. Supplement No. 1 to the Safety Evaluation of the James A. FitzPatrick Nuclear Power Plant, dated February 1, 1973.
6. Supplement No. 2 to the Safety Evaluation of the James A. FitzPatrick Nuclear Power Plant, dated October 4, 1974.

ATTACHMENT II TO JPN-90-322

Response to NRC Inspection 50-333/90-19

NRC Inspection Report 50-333/90-19 identified other concerns not specifically mentioned in the Notice of Deviation. These are addressed below.

Emergency Lighting System Transfer Switches

In addition to the condition described in the Notice of Deviation, the inspector also noted that there are four other areas of the plant where a similar configuration exists.

The Authority has verified by walkdown that all switches in question are non-Class 1E manual transfer switches. These switches are used to feed the Emergency Lighting System. Each transfer switch consists of two molded case circuit breakers. These breakers are mechanically interlocked, so that only one breaker can be closed at a time. These molded case breakers are installed in a single metal enclosure on either side of a metal barrier which separates the breakers. Therefore, this configuration fully complies with the FitzPatrick design basis and is not a concern.

Automatic Transfer Switches

The Inspection Report also noted that one line diagrams show that one of the transfer switches (RWTS-01) is equipped with an automatic throwover. This drawing is incorrect; all of the transfer switches in question are operated manually. A Design Change Request (DCR) has been initiated to correct the affected drawings to reflect this accurately.

Effects of Momentary Voltage Drops in AC Circuits

The inspection report suggested that the Authority, in its response

"consider credible failure modes affecting redundant equipment through transfer switches. In particular, the evaluation should address the effects of momentary voltage drops on AC circuits which rely on seal-in auxiliary relays and contactors for operation."

The 30 days allotted for this response is not sufficient time to complete the detailed analyses required to answer this question. Until the issue can be resolved satisfactorily, the Authority has implemented a temporary administrative control to prohibit concurrent closure of both upstream feeder breakers.