

AEOD TECHNICAL REVIEW REPORT*

UNITS: North Anna-1
Trojan Nuclear Plant
DOCKET Nos: 50-338
50-344
LICENSEES: VEPCO
PGE Co.

TR REPORT No. AEOD/T310
DATE: April 25, 1983
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SUBJECT: BLOCKING OF AUTOMATIC SAFETY INJECTION (SI) SIGNALS.

EVENT DATES: December 6, 1982 (LER 82-082)
August 18, 1982 (LER 82-015)

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* This document supports ongoing AEOD and NRC activities and does not represent the position or requirements of the responsible NRC program office.

SUMMARY

This report concerns two LERs involving blocking of both trains of automatic Safety Injection (SI) while the nuclear plant was in a mode that required the trains to be operable. Both plants involved were Westinghouse PWR's.

Based on my review, I believe that these problems of blocking automatic SI and inadvertently leaving it blocked for a considerable length of time could be generic to all Westinghouse PWR units. Although existing Standard Technical Specification (STS) requirements implicitly prohibit this condition, a revision of the STS may be required to specifically address this condition. To alert operating plants of the possibility of leaving automatic SI blocked following SI initiation, these two events should be included in a forthcoming issue of the Power Reactor Events.

DISCUSSION

While North Anna Unit 1 was in hot-standby on December 6, 1982, following an inadvertent SI on December 5, 1982, it was discovered that both trains of automatic SI were blocked for a period of 22 1/2 hours. The plant's technical specification does not allow both trains of automatic SI to be inoperable in Mode 3.

Trojan Nuclear Plant entered Mode 4 and subsequently Mode 3 on August 18, 1982 with both trains of automatic SI blocked. Both trains were returned to service on August 20, 1982, by which time the block was in place for a duration of 43 hours and 39 minutes. The plant's technical specification requires automatic safety injection to be operable in Modes 1-4.

At North Anna-1 on December 5, 1982 an inadvertent SI event occurred and subsequently the operator "set" the automatic SI block per the applicable emergency procedure. The LER related to this event states that the emergency procedure implied that the automatic SI block required resetting within 30 hours after an SI initiation. The plant's Technical Specifications (which is the Standard Technical Specifications for Westinghouse PWRs) Table 3.3-3 requires both channels of SI Automatic Actuation Logic to be operable in Modes 1 through 4 and the applicable Action Statement states "With the number of OPERABLE channels one less than Total Number of Channels be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours ...". The Action Statement does not address having both channels of automatic SI signals inoperable. However, TS 3.0.3, which states "In the event an LCO and/or associated ACTION requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in at least HOT STANDBY within 1 hour and in COLD SHUTDOWN within the following 30 hours ...", then became the limiting condition for operation. Thus the plant did not meet this TS requirement for a period of 22 hours and 30 minutes less 1 hour.

Under similar circumstances during the month of August 1982, the Trojan Nuclear Plant had both trains of automatic SI blocked for a period of 43 hours and 39 minutes while in Modes 3 and 4.

During the periods the automatic SI was blocked both plants had no challenges that required automatic SI. Had SI been required only manual initiation was available, since all automatic signals were blocked. Upon discovery of the LCO the licensees immediately unblocked the automatic SI signals by closing the Reactor Trip Breakers. The licensees have stated that the applicable procedure and/or outage work sheets will be revised and plant operations staff alerted to the reset of the automatic SI block following an SI initiation.

The automatic SI block features of Westinghouse PWRs are provided to enable plant operators to reset SI and control safety injection and associated safety related equipment with an SI signals locked in. Such a feature allows operators to go from injection to recirculation mode following an actual event requiring SI or to return plant to normal configuration following a spurious SI actuation. The Standard Technical Specifications do not directly address this block of both trains of automatic SI signal which occur after SI initiation. However interpretation of TS 3.0.3 would require that the plant be placed in at least hot standby within 1 hour and in cold shutdown within the following 30 hours.

In LER 50-388/82-082 the licensee has stated that a Technical Specifications change request will be made describing the actions to be taken in the event that both trains of automatic SI are blocked following an SI initiation. The Trojan Nuclear Plant licensee, during the review of the event, has noted that testing of main steam line safety valves could cause pressure changes which might initiate an automatic safety injection on high steam line differential pressure. This matter is still under licensee review and may lead to a request for change to the plant's Technical Specification which would allow blocking the steam line high differential pressure SI trip during testing.

FINDINGS

Based on my review of these events, I believe that the problem of blocking automatic SI and inadvertently leaving it blocked for a considerable length of time is a generic one applicable to all Westinghouse PWR units. The existing Standard Technical Specification in section 3 on Limiting Conditions for Operation and Surveillance Requirements implicitly allows such a condition in Modes 1 through 4 for only 1 hour. Section 3.0.4 is also explicit in stating "Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the conditions for LCO are met without reliance on provisions contained in the ACTION requirements." Hence both North Anna Unit 1 and Trojan Nuclear Plants were clearly in violation of the technical specification requirements. However the STS, in Section 3.3.2 on Engineers' Safety Feature Actuation System Instrumentation and associated Table 3.3-3, does not explicitly address the blockage of both channels of Automatic SI Actuation Logic following an SI actuation. When the licensees of North Anna Unit 1 and Trojan Nuclear Plant submit changes to their plants' technical specifications addressing the blocking of automatic SI, NRR should review their applicability to the Standard Technical Specifications.

CONCLUSIONS

1. The automatic SI block feature of Westinghouse PWRs is always used following an SI initiation and this block could be left in that condition for a considerable length of time.
2. The blocking of both channels of automatic SI signals is not permissible by Standard Technical Specifications while the unit is in Modes 1 through 4.
3. The licensees of North Anna 1 and Trojan may be proposing technical specification changes addressing the block of automatic SI logic. NRR should review these changes for applicability to the STS.
4. For the present, these two events could be included in a forthcoming issue of the Power Reactor Events as a means of alerting **operating** Westinghouse PWR units of the possibility of inadvertently leaving automatic SI signals blocked for a considerable length of time.