

U.S. NUCLEAR REGULATORY COMMISSION
LICENSEE EVENT REPORT

CONTROL BLOCK / / / / / / (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)
 /0/1/ /V/A/N/A/S/2/ (2) /0/0/-/0/0/0/0/0/-/0/0/ (3) /4/1/1/1/1/ (4) / / / (5)
 LICENSEE CODE LICENSE NUMBER LICENSE TYPE CAT
 /0/1/ REPORT /L/ (6) /0/5/0/0/0/3/3/9/ (7) /0/8/0/8/8/1/ (8) /0/9/0/2/8/1/ (9)
 SOURCE DOCKET NUMBER EVENT DATE REPORT DATE
 EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)
 /0/2/ / At 1640 on August 8, 1981, an instrument technician misaligned a switch during /
 /0/3/ / Unit 2 solid state protection testing causing a train B safety injection. The SI/
 /0/4/ / was not required. ECCS equipment was secured and unit conditions returned to /
 /0/5/ / normal after verification that SI was not required. Unit 2 was in Hot Standby /
 /0/6/ / when the event occurred. The action statement of applicable LCO's were met. The/
 /0/7/ / public health and safety were not affected. This event is reportable pursuant to/
 /0/8/ / T.S. 6.9.1.9.c. /
 SYSTEM CAUSE CAUSE COMP. VALVE
 CODE CODE SUBCODE COMPONENT CODE SUBCODE SUBCODE
 /0/9/ /S/F/ (11) /A/ (12) /C/ (13) /Z/Z/Z/Z/Z/L/ (14) /Z/ (15) /Z/ (16)
 LER/RO EVENT YEAR SEQUENTIAL OCCURRENCE REPORT REVISION
 (17) REPORT NO. NO.
 NUMBER /8/1/ /-/ /0/6/0/ / \ / /0/3/ /L/ /-/ /0/
 ACTION FUTURE EFFECT SHUTDOWN ATTACHMENT NPRD-4 PRIME COMP. COMPONENT
 TAKEN ACTION ON PLANT METHOD HOURS SUBMITTED FORM SUB. SUPPLIER MANUFACTURER
 /H/ (18) /G/ (19) /Z/ (20) /Z/ (21) /0/0/0/0/ (22) /Y/ (23) /N/ (24) /Z/ (25) /Z/9/9/9/ (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

/1/0/ / Failure to follow written procedures resulted in a switch misalignment. The /
 /1/1/ / misaligned switch initiated a train B SI. Personnel involved have been instructed/
 /1/2/ / to adhere to procedures. /
 /1/3/ / /
 /1/4/ / /
 FACILITY METHOD OF
 STATUS %POWER OTHER STATUS DISCOVERY DISCOVERY DESCRIPTION (32)
 /1/5/ /G/ (28) /0/0/0/ (29) /HOT STANDBY/ (30) /A/ (31) / Operator Observation /
 ACTIVITY CONTENT
 RELEASED OF RELEASE AMOUNT OF ACTIVITY (35) LOCATION OF RELEASE (36)
 /1/6/ /Z/ (33) /Z/ (34) / NA / / NA /
 PERSONNEL EXPOSURES
 NUMBER TYPE DESCRIPTION (39)
 /1/7/ /0/0/0/ (37) /Z/ (38) / NA /
 PERSONNEL INJURIES
 NUMBER DESCRIPTION (41)
 /1/8/ /0/0/0/ (40) / NA /
 LOSS OF CR DAMAGE TO FACILITY (43)
 TYPE DESCRIPTION
 /1/9/ /Z/ (42) / NA /
 PUBLICITY
 ISSUED DESCRIPTION (45)
 /2/0/ /N/ (44) / NA /

NRC USE ONLY

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Description of Event

On August 8, 1981, with Unit 2 in Hot Standby, during performance of train B reactor protection and ESF logic periodic test (2-PT-36.1), the B train reactor trip breaker tripped. A procedure step initiated the trip by removing a low pressurizer pressure reactor trip block and turbine trip reactor trip block (P-7 reactor trip interlock). Since the RCS pressure (1500 psig) was below the low pressurizer pressure reactor trip setpoint (1870 psig) and the turbine was tripped, the B train reactor trip breaker trip was normal and should have been expected. The procedure did not warn the instrument technicians performing the test to expect the event described above when performing the test during shutdown conditions. Since the same instrument technicians had performed the same test on an operating unit previously and not observed the same event, they issued an emergency maintenance request and began investigating the event in accordance with an instrument maintenance procedure (IMP-C-SSP-04).

While placing the train B solid state protection system (SSPS) in test pursuant to the instrument maintenance procedure, a SSPS output relay "Mode Selector" switch was returned to the operate position. This action allowed an existing low pressurizer pressure train B SI signal to actuate train B ECCS equipment at 1640 on August 8, 1981. Normally the low pressurizer pressure SI signal is blocked in Hot Standby if the RCS pressure is below 2000 psig; however, when the SSPS output relay "Mode Selector" switch is placed in the test position, for testing or maintenance, the low pressurizer pressure signal is removed from logic input causing an automatic drop of the low pressure SI block. Normally blocks are re-established by returning the SSPS output relay switch to the operate position and turning the manual block switches in the control room to the block position while inhibiting inputs to the SSPS train being tested. During performance of the maintenance procedure, the SSPS train B output relay "Mode Selector" switch was returned to the operate position without inhibiting SSPS train B inputs or re-establishing the SI low pressure block.

When the train B SI occurred, the reactor was shutdown with two shutdown banks withdrawn. Reactor trip breakers A and BYB (both train A operated) were closed; therefore, a reactor trip did not occur. The Shift Supervisor immediately ordered a manual reactor trip. Normally an automatic reactor trip would have occurred because train A and train B breakers are normally in series. One train of protection can be bypassed only for short periods of time for surveillance testing pursuant to T.S. requirements. Maintenance testing as described above with one train bypassed required entry into the Action Statement of T.S. 3.3.1.1.

All train B emergency safety equipment responded as designed. After determining that SI had been caused by an instrument technician's error and was not required, SI flow to the RCS was secured at 1642. RCS pressure and temperature were not significantly effected by the SI.

The safety injection event described above is reportable pursuant to T.S. 6.9.1.9.c. This report is also intended to meet the additional requirements of T.S. 6.9.2 and T.S. 3.5.2.b which require a report within 90 days describing the circumstances of the actuation

and the total accumulated cycles to date. This is the second ECCS actuation reportable pursuant to T.S. 6.9.2 and T.S. 3.5.2.b.

Removal of one train of protection for maintenance testing with the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal lead to operation in a degraded mode. The Action statement of the LCO (T.S. 3.3.1.1) was met. The maintenance testing as described above is reportable pursuant to T.S. 6.9.1.9.b.

The safety injection caused the Boron Injection Tank (BIT) boron concentration to fall below the concentration specified in T.S. 3.5.4.1. The control room bottled air system actuated and dropped below the pressure specified in T.S. 3.7.7.1. The refueling water storage tank (RWST) level dropped below the level specified in T.S. 3.5.5. The BIT, control room bottled air system and RWST performed as designed.

After the Train B SI was reset, a failure of SI output relay K611 to unlatch prevented auxiliary feedwater pumps 2-FW-P-2 and 2-FW-P-3B from being secured. When this occurred operation secured 2-FW-P-3B locally and isolated the discharge of 2-FW-P-2. When the SI reset switches were tried a second time, relay K611 unlatched.

Probable Consequences of Occurrence

The SI system with the exception of the SI reset problem described above performed as designed. An actual accident condition did not exist; therefore, the SI actuation was not required. This event caused a thermal cycle stress load to be placed on the safety injection nozzles. Total cycles (two including this event) are well below design values. The action statements of applicable LCO's were met. The public health and safety were not affected.

Cause of Event

Failure to follow procedure, failure to adhere to procedure precautions, and human error resulted in a switch misalignment. The misaligned switch initiated a train B SI.

Immediate Corrective Action

The Shift Supervisor ordered the reactor trip breakers tripped. The cause of the SI was determined. Verification that the SI was not required was made. The SI was secured. Plant conditions and equipment were returned to normal. The BIT boron concentration was restored as required by the action statement of LCO (T.S. 3.5.4.1). The control room bottled air system pressure was restored as required by action statement of the LCO (T.S. 3.7.7.1). The level of the RWST was restored as required by the action statement of the LCO (T.S. 3.5.5). The instrument technicians involved were instructed to closely adhere to procedures. Train B SSPS testing was completed satisfactorily and SSPS train B returned to service.

Scheduled Corrective Action

Unit 1 and 2 reactor protection and ESF logic periodic tests 1-PT-36.1 and 2-PT-36.1 are being changed. Notes are being added to warn instrument technicians that when the test is performed during shutdown conditions, the reactor trip breakers for the train under test will trip when placing the SSPS in the test mode. The procedures already contain precautions which if followed will prevent occurrence of the SI event.

SI output relay K611 will be tested and replaced if necessary during the next outage of sufficient duration.

Actions Taken to Prevent Recurrence

Instrument technicians involved were instructed to adhere to procedures. Procedures are being changed as described in the scheduled corrective actions.

Westinghouse was notified of SI output relay unlatching problems in November of 1980. Actions to prevent recurrence will be taken when a satisfactory modification or design change is developed.

Generic Implications

The failure of SI relay K611 to relatch has generic implications. SI relay K611 was among several SI output relays which have unlatching failure histories (see LER 80-092/032-0). The latching mechanism is a Westinghouse ARLA type 4993D05606 and the relay is a Westinghouse type AR 440A relay.