

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Catawba Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 1 3	PAGE (3) 1 OF 0 4
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TITLE (4)
Reactor Trip Due to Failure to Block Source Range High Flux Trip Setpoint

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																																						
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)																																				
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<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">OPERATING MODE (9)</td> <td style="width:15%;">2</td> <td style="width:15%;">20.402(b)</td> <td style="width:15%;">20.406(e)</td> <td style="width:15%;"><input checked="" type="checkbox"/></td> <td style="width:15%;">50.73(a)(2)(iv)</td> <td style="width:15%;">73.71(b)</td> </tr> <tr> <td rowspan="5">POWER LEVEL (10)</td> <td>0 0 0</td> <td>20.406(a)(1)(i)</td> <td>50.38(a)(1)</td> <td></td> <td>50.73(a)(2)(v)</td> <td>73.71(a)</td> </tr> <tr> <td></td> <td>20.406(a)(1)(ii)</td> <td>50.38(a)(2)</td> <td></td> <td>50.73(a)(2)(vii)</td> <td rowspan="3"><input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 305A)</td> </tr> <tr> <td></td> <td>20.406(a)(1)(iii)</td> <td>50.73(a)(2)(i)</td> <td></td> <td>50.73(a)(2)(viii)(A)</td> </tr> <tr> <td></td> <td>20.406(a)(1)(iv)</td> <td>50.73(a)(2)(ii)</td> <td></td> <td>50.73(a)(2)(viii)(B)</td> </tr> <tr> <td></td> <td>20.406(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td></td> <td>50.73(a)(2)(ix)</td> <td>50.72(b)(2)(ii)</td> </tr> </table>												OPERATING MODE (9)	2	20.402(b)	20.406(e)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)	POWER LEVEL (10)	0 0 0	20.406(a)(1)(i)	50.38(a)(1)		50.73(a)(2)(v)	73.71(a)		20.406(a)(1)(ii)	50.38(a)(2)		50.73(a)(2)(vii)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 305A)		20.406(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		20.406(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		20.406(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(ix)	50.72(b)(2)(ii)
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THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)

LICENSEE CONTACT FOR THIS LER (12)

NAME Roger W. Quелlette, Associate Engineer, Licensing	TELEPHONE NUMBER 7 1 0 4 3 1 7 1 3 E-1 7 1 5 1 3 1 0
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On April 20, 1986, at 1553:53 hours, a Reactor (Rx) Trip occurred during unit startup. The Operator At The Controls (OATC) failed to block the Hi Flux Source Range Rx Trip Signal after receipt of the permissive which allows this trip to be blocked. Minimum transient response occurred since the reactor was subcritical at the time. The Unit Fast Recovery Procedure was begun, and Reactor Startup commenced at 2030 hours. The unit was in Mode 2, Startup, at the time of this incident.

This incident is assigned Cause Code A, Personnel Error, because the OATC failed to block the Hi Flux Source Range Rx Trip signal, as required by the Unit Fast Recovery Procedure.

This incident is reportable pursuant to 10 CFR 50.73, Section (a)(2)(iv) and 10 CFR 50.72, Section (b)(2)(ii).

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

BACKGROUND

When performing a Unit Startup, the Operator at the Controls (OATC) utilizes the Excore Instrumentation (ENB) System (EIIS:IG) to monitor the neutron flux in the reactor (Rx). The ENB System also generates appropriate trips and alarms for various reactor operating conditions. The three ranges of neutron detection instrumentation (source, intermediate, and power) provide the necessary overpower reactor trip protection required during operation in the respective range. The overlap of instrument ranges provides reliable continuous protection beginning with source level through the intermediate and power levels.

During startup, the source range (S/R) high flux reactor trip setpoint must be blocked. The OATC blocks this trip after he receives the P-6 permissive at 10E-10 amps on the intermediate range instrumentation. This is equivalent to about 3E04 counts per second (cps) on the source range. A status light informs the OATC when the Hi Flux Source Range Rx Trip signal is to be manually blocked. If this is not blocked, a reactor trip will occur at 10E05 counts per second on the source range.

DESCRIPTION OF INCIDENT

On April 20, 1986, a unit startup (S/U) was in progress, following a trip the previous day caused by the venting of a Loop C Reactor Coolant System (EIIS:AB) flow transmitter (see LER 413/86-22). The S/U was being performed per procedure OP/1/A/6100/05, Unit Fast Recovery Procedure. At 1349 hours, all shutdown banks were withdrawn in preparation for the S/U. At 1543 hours, the OATC began withdrawing the control rods. At approximately 1552 hours, the Hi Flux Source Range Rx Trip Block Permissive (P-6) annunciator activated. The Control Room Senior Reactor Operator informed the OATC that the P-6 permissive was activated, and that the Hi Flux Source Range Trip should be blocked manually. The OATC however was watching the Startup Rate (SUR) which was above the 0.5 decades per minute (dpm) administrative limit. The OATC thought he had time to block the Hi Flux Source Range Rx Trip signal and stopped withdrawing the control rods momentarily, in order to allow the SUR to decrease. Once the SUR began decreasing the OATC began withdrawing the control rods again slowly. He then noticed that the Source Range Flux was already at 10E05 cps, and reached for the manual block switches for the Hi Flux Source Range Rx Trip. Before the OATC could manually block the High Flux trip, the reactor tripped at 1553:53:390 hours.

Immediately upon receipt of the Hi Flux Source Range Rx Trip, both Main Reactor Trip Breakers tripped. Also a Rx Trip Causes Turbine Trip alarm was received, although the turbine was not in operation in Mode 2, Startup. At 1553:54 hours, the operating Main Feedwater (CF) (EIIS:SJ) Pump, 1A, tripped on the Solid State Protection System (EIIS:JC) Protective Trip signal. Both Auxiliary Feedwater (CA) (EIIS:BA) Motor Driven Pumps then started automatically, and a

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CF isolation occurred on low Tave concurrent with reactor trip. At 1604 hours, CF Pump Turbine 1A was started, and CF isolation valves were realigned at 1605 hours. CA Pumps 1A and 1B were secured at 1607 hours.

On April 21, 1986, at 2030 hours, a unit startup was begun per OP/1/A/6100/05 and Mode 1, Power Operation was entered at 2135 hours.

CONCLUSION

This incident is assigned Cause Code A, Personnel Error, due to the OATC failing to block the Hi Flux Source Range Rx Trip after the permissive to block the trip was received. This was the OATC's first actual startup, which could have contributed to his decision to wait until the startup rate decreased to within administrative limits, before blocking the trip. Subsequent startup rate calculations revealed that the startup rate was at 0.24 dpm, well below the administrative limits, just before the last rod withdrawal prior to the trip.

Computer indication for CA Pump 1A discharge pressure did not respond properly, and a Work Request was initiated to investigate.

A spurious alarm on radiation monitor 1EMF-53A was received. A work request was written previously to investigate this (see LER 413/86-22).

CF Isolation pushbutton lights did not correspond with Control Room indications. This problem will be investigated.

This is the first case of an OATC failing to block Hi Flux Source Range Rx Trip signal and causing a Reactor Trip.

CORRECTIVE ACTION

- (1) CFPT 1A was reset and the pump was restarted.
- (2) CF isolation valves were realigned to provide feedwater to the S/G's.
- (3) Motor Driven CA Pumps were secured.
- (4) The OATC was counselled on the importance of blocking the Hi Flux Source Range Rx Trip signal as soon as the P-6 permissive is received.

SAFETY ANALYSIS

Since the unit was in Mode 2, Startup, at the time of this trip, there was little power drop, and post trip transient response was minimal. Post trip pressurizer (PZR) pressure dropped to 2208 psig, then increased to 2255 psig, before stabilizing at 2225 psig. PZR level decreased to 22%, post trip, then increased to 28.8%, before leveling off at 27%. Tave decreased to 552 degrees F, post trip, before stabilizing at 557 degrees F. Post trip S/G pressure

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dropped from 1050 psig to 1025 psig, before leveling off at 1070 psig. Narrow range S/G levels remained on scale at all times after the trip. S/G narrow range maximum level reached 44% before leveling off at 38%. CA flow was sporadic after this trip, due to operators throttling the control valves. The only effect seen from this action was CA flow fluctuations on the post trip transient monitor. This did not have an adverse effect on primary or secondary systems. Primary cooldown rates did not exceed 100 degrees F per hour.

The health and safety of the public were not affected by this incident.

DUKE POWER COMPANY

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CHARLOTTE, N.C. 28242

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(704) 373-4531

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

June 2, 1986

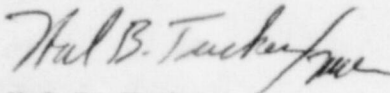
Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Unit 1
Docket No. 50-413

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Revision 1 to Licensee Event Report 413/86-23 concerning a reactor trip during startup due to an operator's failure to block the Source Range High Flux Trip setpoint. This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

RWO:slb

Attachment

xc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
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Atlanta, Georgia 30323

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INPO Records Center
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NRC Resident Inspector
Catawba Nuclear Station

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