

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) OCONEE NUCLEAR STATION UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 2 7 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

The lack of administrative and training guidance on re-use of working copies is thus considered a management deficiency which contributed to the root cause of the event.

Although there have been other events due to failure to follow procedure, and other unit anticipatory trips, the circumstances included in this report were not found to have occurred within the last 3 years; therefore, this event is considered non-recurring.

CORRECTIVE ACTIONS:

The immediate corrective action was to stabilize the unit in hot shutdown conditions and ascertain the cause of the trip.

Supplemental corrective action included:

- o Investigation of the slow response of the "B" turbine bypass valves.
- o Counseling of appropriate personnel by management.
- o Guidelines on the re-use of portions of working copies of procedures have been emphasized by appropriate shift management.

Planned corrective actions are to include guidelines on the re-use of operating procedures in Operations Management Procedures. Appropriate personnel will be trained by May 29, 1987.

ANALYSIS OF OCCURRENCE:

The immediate corrective action of taking the unit to hot shutdown conditions mitigated post-trip transients. There were no significant problems in the post-trip response of the plant. RCS pressure went from 2132 psig (pre-trip) to 2030 psig, then peaked at 2211 psig. RCS average temperature went from 577 degrees-F (pre-trip) to stabilize at 555 degrees-F. No over cooling of the primary side occurred.

All control rods inserted into the core as designed; reactivity was within normal range. Pressurizer level decreased from the initial pre-trip value of 213 inches to a minimum of 155 inches. The 2B High Pressure Injection (HPI) Pump was started by operator action at 2225 to ensure Pressurizer inventory control, and was secured at 2229.

Following the trip, Steam Generator "A" level decreased to 26 inches, and Steam Generator "B" level decreased to 25 inches. No emergency feedwater pumps started, and no ES functions initiated.

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Main Steam Relief Valves (MSRV's) on the "B" loop cycled open and shut due to the slow response of the "B" turbine bypass valves. Turbine Header Pressure was reduced to reset these MSRV's.

Post-trip review indicated that a feedwater flow transient caused increased feedwater flow to the steam generators, resulting in reactor power spiking from 16 to 20% full power. The feedwater spike was initiated due to operators increasing load to quickly for existing conditions.

This event was an unplanned automatic trip resulting from proper operation of the Reactor Protective System. All equipment worked properly with the exception of the slow operation of the "B" Turbine Bypass Valves. All redundant safety equipment was available, and there were no unplanned safety system actuations. No limits were exceeded. There were no exposures, radiation releases, or injuries associated with this event. As such, the health and safety of the public were not affected by this event.

DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

TELEPHONE
(704) 373-4531

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

February 17, 1987

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

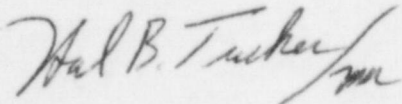
Subject: Oconee Nuclear Station, Unit 2
Docket No. 50-270
LER 270/87-01

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report (LER) 270/87-01 concerning Oconee Unit 2 anticipatory reactor trip on Main Turbine trip at 19% full power.

This report is submitted in accordance with §50.73(a)(2)(iv). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

PJN/127/jgm

Attachments

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1/1

Document Control Desk
February 17, 1987
Page 2

xc: Dr. J. Nelson Grace, Regional Administrator
U.S. Nuclear Regulatory Commission - Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Ga. 30323

Ms. Helen Pastis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

M&M Nuclear Consultants
1221 Avenue of the Americas
New York, New York 10020

Mr. J.C. Bryant
NRC Resident Inspector
Oconee Nuclear Station

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, Georgia 30339

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange, Suite 245
270 Farmington Avenue
Farmington, CT 06032

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TITLE (4)
REACTOR TRIP CAUSED BY PERSONNEL ERROR

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) N</td> <td style="width:15%;">POWER LEVEL (10) 210</td> <td colspan="10">THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)</td> </tr> <tr> <td></td> <td></td> <td>20.402(b)</td> <td>20.405(c)</td> <td><input checked="" type="checkbox"/></td> <td>50.73(a)(2)(iv)</td> <td>73.71(b)</td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(i)</td> <td>50.36(c)(1)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(v)</td> <td>73.71(c)</td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(ii)</td> <td>50.36(c)(2)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(vii)</td> <td>OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(iii)</td> <td>50.73(a)(2)(ii)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(viii)(A)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(iv)</td> <td>50.73(a)(2)(iii)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(viii)(B)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>20.405(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td><input type="checkbox"/></td> <td>50.73(a)(2)(ix)</td> <td></td> </tr> </table>												OPERATING MODE (9) N	POWER LEVEL (10) 210	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)												20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)			20.405(a)(1)(i)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)			20.405(a)(1)(ii)	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)			20.405(a)(1)(iii)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)				20.405(a)(1)(iv)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)				20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)	
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LICENSEE CONTACT FOR THIS LER (12)

NAME		TELEPHONE NUMBER	
PHILIP J. NORTH - LICENSING		AREA CODE	7 0 4 3 7 3 - 7 4 5 6

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
A									

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15) MONTH: DAY: YEAR:
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On January 18, 1987, at 2024 hours, the Oconee Unit 2 main turbine tripped at 1500 RPM due to low oil pressure. After main turbine oil pressure returned to acceptable levels, the turbine was reset and unit startup was continued using the same copy of the TurbineGenerator Startup procedure in use at the time of the turbine trip. The main turbine trip contact buffers in the reactor protective system cabinets were not reset per this procedure following the main turbine trip at 2024 hours.

At 2223 hours during restart, power reached 20%, the setpoint for the turbine/generator to reactor anticipatory trip circuit, and the unit tripped as designed. Immediate corrective action was to stabilize the unit at hot shutdown conditions and determine the cause of the trip.

The root cause of this event was personnel error as the anticipatory trip contact buffers were not reset as required by procedure. Contributory errors were the lack of direction for re-use of a procedure without prescribing acceptable methodology.

The Reactor Protective System reacted in accordance with design features, no Technical Specification limits were exceeded, and there was no release of radioactivity. Therefore, the health and safety of the public were not affected.

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BACKGROUND

The Reactor Protective System (RPS) includes the Anticipatory Turbine/Reactor Trip function. Pressure switches monitoring the hydraulic fluid pressure in the Turbine Emergency Trip System header will input an open indication to the RPS on turbine trip. Contact buffers located in each RPS channel provide isolation for the RPS from the field contacts. Upon sensing field contact change of state, the contact buffer will initiate an RPS trip when a turbine trip is indicated. This trip is bypassed below a predetermined flux level (20% power) for unit startup.

DESCRIPTION OF INCIDENT

At 2020 hours on January 18, 1987, Oconee Unit 2 was at 7% reactor power in startup mode following a brief shutdown to investigate possible loose parts indications from the Reactor Coolant System (RCS). These indications had disappeared during the shutdown process and were not the result of actual loose parts in the system.

At 2024 hours, the main turbine tripped from 1500 RPM due to loss of oil pressure. The unit startup was continued when turbine oil pressure returned to an acceptable level.

To prevent having to obtain, verify, and fill out a new working copy of the enclosure to the Turbine-Generator procedure, the same working copy was used. Although this practice is an option allowed by Operations management and is not specifically prohibited by written administrative procedures, re-use of operating procedure working copies is not described in administrative procedures or operator training. In addition, guidance was not provided to operators on how to document actions using the procedure with sign-off blanks already initialed. Consequently, operators began to re-perform the steps necessary to startup the turbine, but did not re-initial each step as completed.

Step 2.6 of Enclosure 3.1 to the Turbine-Generator procedure and a corresponding note require reset of the "Main Turbine Trip Contact Buffer" on each of the four RPS channels, with independent verification required for that step. Operators failed to perform this step. The Senior Reactor Operator assigned to the Control Room, whose responsibilities include assurance of procedural compliance by the Control Room operators was occupied with the turbine oil problem and did not monitor the re-performance of the Turbine Startup Enclosure.

There was increased, but not abnormal, noise, personnel, alarms and other activity in the Control Room area commensurate with a unit startup. Operations shift management was paying particular attention to the Turbine-Generator oil system and the loose parts monitor system due to previous problems in these areas.

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The Turbine/Generator was placed "on-line" at 2207. At 2210, operators began to manually increase electrical megawatt load at the ICS Turbine Control Station per the controlling procedure for unit startup. At this time, all nuclear instruments (NIs) indicated 15% power. The Turbine-Generator procedure was still being performed; a "Caution" associated with Step 2.43 calling for verification of contact buffer reset by checking a statalarm did not result in immediate operator action to reset the contact buffers.

Load was increased until 2223 hours, when the Turbine/Generator to reactor anticipatory trip occurred. At this time, power had increased more rapidly than anticipated to 20% Full Power (FP). The anticipatory trip setpoint is 20% FP, so when NI's feeding Reactor Protective System (RPS) channels B&C reached the setpoint with the contact buffers not previously reset, the system worked as designed and tripped the unit. There was enough deviation in power level among portions of the reactor core that the NI's feeding RPS Channels B and C indicated 20% power ahead of those feeding Channels A and D. When Channels B and C tripped, the 2 out of 4 logic of the RPS was met. Operators had almost reached the point in the controlling procedure for unit startup which requires a verification at 17% power that the main turbine trip contact buffers are reset on all RPS channels when the rapid power increase occurred.

The unit was stabilized at hot shutdown conditions after the reactor trip.

CAUSE OF OCCURRENCE:

There were several personnel errors and management deficiencies which formed the root cause of this event. After the initial turbine trip the same working copy of the Turbine/Generator procedure was re-used in order to save time. However, no direction on how to document re-performance of the steps was given. As such, completion of the procedure was not properly assured.

The procedural step calling for reset of the contact buffers was not performed. Procedure steps were not re-initialed as they were re-performed. It is concluded that this caused the operator to lose his place enough in the procedure to skip the buffer reset step.

From review of data and interviews with appropriate personnel it is apparent that operators tried to increase electrical load too fast. This caused reactor power to rapidly increase from 16% to 20% F.P., and precluded the opportunity in the startup procedure at 17% to verify the contact buffers were reset. This is considered a contributing cause of the event.

The option of re-using a working copy of an operating procedure is not defined in any station administrative procedure, particularly on when the option can be used, who can choose the option, and how to document the option. The process is not covered in Operations classroom training, and is apparently picked up as "on-the-job training".