



Carolina Power & Light Company

Brunswick Nuclear Project
P. O. Box 10429
Southport, N.C. 28461-0429

AUG 10 1992

FILE: B09-13510C
SERIAL: BSEP-92-0004

10CFR50.73


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

BRUNSWICK STEAM ELECTRIC PLANT UNIT 1 AND 2
DOCKET NO. 50-325 AND 50-324
LICENSE NO. DRP-71 AND DPR-62
LICENSEE EVENT REPORT 1-92-020

Gentlemen:

In accordance with Title 10 of the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is submitted in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,


J. W. Spencer, General Manager
Brunswick Nuclear Project

GMT/gmt

Enclosure

cc: Mr. S. D. Ebnetter
Mr. R. H. Lo
Mr. R. L. Prevatte

140011

9208140023 920810
PDR ADDCK 05000324
S PDR

JE 27

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **Brunswick Steam Electric Plant Unit 1**

DOCKET NUMBER (2)
05000325

PAGE (3)
1

TITLE (4) **WORST CASE DEGRADED VOLTAGE CONDITIONS WERE NOT CONSIDERED FOR STANDBY GAS TRAIN HEATER SURVEILLANCE**

EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQ. NO.	REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
07	10	92	92	-	-	07	10	92	BSEP Unit 2	50-124	

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)										
	20.402(b)	20.406(c)	60.73(e)(2)(iv)	73.71(d)							
	20.406(a)(1)(i)	60.35(e)(1)	X 60.73(a)(2)(v)	73.71(e)							
	20.406(a)(1)(ii)	60.36(e)(2)	60.73(a)(2)(vii)	OTHER (Specify in Abstract and Text)							
	20.406(a)(1)(iii)	60.73(a)(2)(i)	60.73(a)(2)(viii)(A)								
	20.406(a)(1)(iv)	60.73(a)(2)(ii)	60.73(a)(2)(viii)(B)								
20.406(a)(1)(v)	60.73(a)(2)(iii)	60.73(a)(2)(ix)									

LICENSEE CONTACT FOR THIS LER (12)

NAME: **Glen M. Thearling, Regulatory Compliance Specialist**

TELEPHONE NUMBER

(919) 457-2038

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPPDS

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION

MONTH DAY YEAR

DATE (16)

YES (if yes, complete EXPECTED SUBMISSION DATE)

NO

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

Both Units had been in Cold Shutdown since April of 1992, as the result of construction deficiencies found in the Emergency Diesel Generator Building walls.

On July 10, 1992, research into the Technical Specification (TS) surveillance for Containment Atmosphere Control Standby Gas Treatment System heater capacity indicated that degraded voltage conditions should have been considered. Previously run surveillance results when adjusted to consider degraded voltage indicate that the heaters may have failed to demonstrate the ability to dissipate the 15.2 KW specified in TS. Preliminary calculations show that the "worst case" terminal voltage at the SBTG heater can be as low as 427.5 VAC which would equate to 14.88 KW. The 15.2 KW value had been added to TS, in a change submitted in February of 1979, to provide a measurable value that would ensure less than or equal to 70% relative humidity at the influent to the SBTG charcoal filters during accident conditions.

With a "worst case" degraded voltage condition added to the approach originally used, it is possible that for a short period of time (less than 10 minutes) the heaters may not be capable of providing the TS required output of 15.2 KW.

SBTG heater output could be less than the Technical Specification required value of 15.2 KW for a few minutes after initial loss of the Unit, considering the "worst case" conditions, but would not present a nuclear safety concern.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANA "MEN" BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20566, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Brunswick Steam Electric Plant Unit 1	DOCKET NUMBER (2) 05000325	LER NUMBER (6)				PAGE (3) 2
		YEAR		SEQ NO.	REV NO.	
		92		20	0	

TEXT if more space is required, use additional NRC Form 360A's (17)

TITLE

WORST CASE DEGRADED VOLTAGE CONDITIONS WERE NOT CONSIDERED FOR STANDBY GAS TRAIN (SBGT) HEATER SURVEILLANCES

INITIAL CONDITIONS

Both Units were placed in Cold Shutdown in April of 1992, as the result of construction deficiencies found in Emergency Diesel Generator Building walls. On July 6, 1992, it was identified that degraded voltage conditions may not have been initially considered when the Technical Specification (TS) limit of 15.2 KW was added for SBGT heater output.

EVENT NARRATIVE

On July 10, 1992, research into the Technical Specification surveillance for Containment Atmosphere Control Standby Gas Treatment System heater capacity indicated that degraded voltage conditions should have been considered. Previously run surveillance results, when adjusted to account for degraded voltage, indicate that the heaters may have failed to demonstrate the ability to dissipate the 15.2 KW specified in TS. Preliminary calculations show that the "worst case" terminal voltage at the SBGT heater terminals can be as low as 427.5 volts AC (VAC) which would result in a heater output of 14.88 KW.

The BSEP SBGT System heaters are designed to dissipate approximately 18.7 KW at the rated 480 VAC. In the original documentation it was assumed that the nominal 480 VAC minus 10% (432 VAC minimum) would be available, yielding a heat dissipation rate of 15.2 KW. This heat dissipation rate, combined with inlet conditions of 100% relative humidity at 120 deg. F during a maximum design rated flow of 3300 SCFM, was originally calculated to limit relative humidity at the influent to the charcoal filters to approximately 67%. The 15.2 KW value had been added to TS in a change submitted in February of 1979 to provide a measurable value that would ensure less than or equal to 70% relative humidity at the influent to the SBGT charcoal filters during accident conditions. The 15.2 KW value was added to TS without consideration of additional margin normally added to allow for instrumentation accuracies or the "worst case" degraded voltage of an accident. With the "worst case" degraded voltage conditions added to the approach originally used, it is possible that for a short period of time (fewer than 10 minutes) the heaters may not be capable of providing the TS required output of 15.2 KW.

Calculations have determined that the Technical Specification required value of 15.2 KW is conservative. Actually, per the Design Basis Reconstitution Group, 13.54 KW would ensure that 3300 CFM of influent flow at 100% relative humidity and 130 deg. F (Upgraded from 120 deg. F by revision of the Reactor Building Environmental Report) would be reduced to 70% relative humidity prior to entering the charcoal filters.

The Skaale Energy Control Center dispatchers maintain grid loading, capacitor bank status, and generating facility status to ensure that in the event of a LOCA / Unit Main Turbine trip at BSEP the switchyard voltage would not degrade lower than the "switchyard voltage limit". The "worst case" heater terminal voltage is the voltage which would result during a LOCA with the "switchyard voltage limit" being reached when the Unit Main Turbine trips. This "switchyard voltage limit" is used in our calculations as the lowest voltage that the switchyard can drop to at time t=0 seconds, i.e. initiation of the LOCA signal / loss of the Unit Main Turbine. This voltage will increase by at least 1% after a few minutes (2-10 minutes) without any dispatcher action due to automatic generation control (capacitor banks, voltage regulators on other generating units, etc). The 1% increase due to automatic actions

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-390), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20565, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Brunswick Steam Electric Plant Unit 1	05000325	YEAR	SEQ NO.	REV NO.	3
		92	20	0	

TEXT if more space is required, use additional NRC Form 356A's (17)

should increase heater output to at least 15.2 KW. The dispatcher would be aware that he has lost BSEP generation and could take manual action, if needed, to further restore grid voltage to nominal values. In other words, the lowest calculated heater output of 14.88 KW would immediately start to increase as the switchyard voltage recovers. During a Loss of Off-Site Power, the power source would be the Emergency Diesel Generators (EDGs). The EDG's automatic voltage regulators will keep the voltage within nominal values and would not be subjected to any external events affecting the transmission network.

CAUSE OF EVENT

Original documentation calculated degraded voltage at the Motor Control Center (MCC), but this was inadequate in that it needed to consider the lower value at the heater terminals. The 15.2 KW value was added to TS without consideration of the margins normally added to allow for surveillance testing at normal operating conditions.

Performance Testing did not correct for degraded voltage conditions that could have detected a heater output that would be outside the TS limit during accident conditions.

CORRECTIVE ACTIONS

Both Unit's Standby Gas Treatment trains were declared inoperable on July 10, 1992.

An evaluation is being conducted on changing the SBT heater capacity or the TS.

The SBT heater surveillance (PT-15.1.1) will be revised to compensate for worst case degraded voltage conditions.

SAFETY ASSESSMENT

SBT heater output could be less than the Technical Specification required value of 15.2 KW for a few minutes after initial loss of the Unit, but would not be a nuclear safety concern as the heater KW output with the "worst case" degraded voltage would reduce the inlet relative humidity to less than or equal to 70%.

PREVIOUS SIMILAR EVENTS

None

EIIS COMPONENT IDENTIFICATION

System/Component

EIIS Code

Standby Gas Treatment System

BH