

LICENSEE EVENT REPORT

Update Report

Previous Report Data 11/9/82

CONTROL BLOCK:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

During an orderly reactor shutdown, while attempting to automatically transfer bus 2D from the unit auxiliary transformer (UAT) to the unit startup transformer (SAT), a loss of 4150 V emergency bus E-3 occurred. In addition, No. 3 diesel generator was determined to be inoperable. This event did not affect the health and safety of the public.

Technical Specifications 3.8.1.1, 3.8.2.1, 6.9.1.9b

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CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

This event occurred because both the SAT output breaker and No. 3 diesel generator output breaker failed to close when the UAT output breaker was opened. The UAT breaker, Model No. 5HK350, was installed in place of the SAT breaker and power to E-3 was restored. Procedural changes were implemented to compensate for simultaneous close and open signals to the diesel generator's output breakers under certain conditions.

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NAME OF PREPARER R. M. Poulk, Jr.

PHONE 919-457-9521

LER ATTACHMENT - RO #2-82-123

Facility: BSEP Unit No. 2

Event Date: October 10, 1982

While performing an orderly reactor shutdown, an attempt to manually transfer the power source to bus 2D from the unit auxiliary transformer (UAT) to the unit startup transformer (SAT) failed. When an attempt was made to effect an automatic transfer of the power source to bus 2D, a loss of voltage to 2D, and thus emergency bus E-3, occurred. The loss of bus E-3 rendered 2A core spray pump and 1A and 2A RHR pumps inoperable due to lack of their normal and emergency power supplies.

This event occurred when the UAT output breaker was manually opened and the SAT output breaker, ITE Canda Model No. 5HK350, failed to automatically close in to supply bus 2D. Prior to this event, No. 3 diesel generator had been started under Control Room manual control and brought up to operating speed with the diesel generator output breaker open. This was done so that the diesel would be up to speed if the transfer failed. Emergency bus E-3 is normally supplied from bus 2D, and No. 3 diesel generator is the emergency standby power source to E-3. Immediately following the failure of the SAT output breaker, No. 3 diesel generator failed to close on bus E-3. This rendered bus E-3 dead which assisted in causing a scram and Group I isolation.

Shortly after this event, a quick trouble check of the SAT output breaker determined a problem within the breaker. The UAT output breaker was then restored from the SAT within 1 hour and 45 minutes of the event. In addition, bus E-3 reenergized. A close inspection and troubleshooting of the failed SAT output breaker revealed the breaker had failed to automatically close as a result of a sheared breaker charging spring motor actuator. The charging spring motor casing mounting screw had backed out of the motor housing causing the motor actuator to shear and separate from the breaker which prevented charging the breaker charging springs for breaker closing capability. The failed breaker from the SAT output breaker compartment was then repaired using a replacement charging motor assembly, tested satisfactorily for operation and installed in the UAT output breaker compartment.

The failure of a breaker in this manner could prevent it from closing following a trip or a normal opening operation, thus causing a potential loss of power to its respective bus. A sufficient number of failures occurring at the same time could affect the operability of safety-related systems. These 4160 kV breakers are located throughout the plant in both safety-related loads and balance-of-plant loads.

An investigation into the failure of the output breaker of No. 3 diesel generator to close in to bus E-3 revealed that simultaneous close and open signals to the breaker prevented automatic closing of the breaker on loss of voltage to bus E-3. The plant emergency buses utilize a high speed under-voltage relay which applies a one-second trip open signal to the applicable diesel generator output breaker on loss of voltage to the bus. This relay

(Continued)

ensures the diesel generator is separated from an abnormal emergency bus on loss of voltage. In addition, plant emergency buses utilize an inverse time undervoltage relay (1.5 seconds) which causes loads to be shed from the emergency bus on loss of bus voltage. This permits tying the diesel to its applicable bus after the bus is stripped. While the diesel generator is in Control Room manual or local manual, a loss of voltage to the E-bus will result in a failure of the diesel to close on the E-bus. In reality, a voltage drop on the bus will occur somewhat slower and varies with the loads on the bus.

The bus inverse time undervoltage relay will sense the voltage drop condition when it decreases to approximately 82% of normal, and the high speed undervoltage relay senses the voltage drop condition at some percentage less than 40% of normal. As a result, bus loads shed and a close signal to the diesel generator output breaker occurs before the high speed undervoltage relay one-second trip signal is removed, thus preventing the output breaker from closing. To close the diesel generator output breaker in this situation, the high speed undervoltage relay close signal must be removed and reapplied. The investigation determined this can be accomplished by placing the keylock remote shutdown switch on the applicable E-bus switchgear breaker compartment to the local position and then back to normal.

As a result of this event, plant modifications were developed, approved, and implemented to eliminate the problem. As a result of the SAT output breaker failure, applicable plant surveillance procedures have been revised as required to perform a check of plant 4160 V switchgear charging spring mounting attachment bolts during periodic preventive maintenance operability inspections of the breaker mechanisms. Safety-related breakers for both units have been inspected to assure that the breakers are operable. This action was completed during the Unit No. 1 1983 refueling outage.



Carolina Power & Light Company

USNRC REGION
ATLANTA, GEORGIA

83 AUG 29 09:30

Brunswick Steam Electric Plant
P. O. Box 10429
Southport, NC 28461-0429

August 25, 1983

FILE: B09-13510C
SERIAL: BSEP/83-2847

Mr. James P. O'Reilly, Administrator
U. S. Nuclear Regulatory Commission
Region II, Suite 3100
101 Marietta Street NW
Atlanta, GA 30303

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324
LICENSE NO. DPR-62
SUPPLEMENT TO LICENSEE EVENT REPORT 2-82-123

Dear Mr. O'Reilly:

In accordance with Section 6.9.1.9b of the Technical Specifications for Brunswick Steam Electric Plant, Unit No. 2, 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 in accordance with the format set forth in NUREG-0161, July 1977.

Very truly yours,

C. R. Dietz, General Manager
Brunswick Steam Electric Plant

RMP/shb/LETSB2

Enclosure

cc: Mr. R. C. DeYoung
NRC Document Control Desk

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