

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

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REPORT SOURCE

L	6	0	5	0	0	0	2	5	9	7	0	2	0	2	8	2	8	0	6	2	8	8	4	9
60	61								68	69						74	75							80
DOCKET NUMBER											EVENT DATE							REPORT DATE						

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 | During SI 4.9.A.4.C calibration of the degraded voltage relays on the 4kV shut-
0 3 | down boards (common to units 1 and 2) the trip setpoint of all 12 relays was found to
0 4 | be below the minimum trip point of 3900V. (T.S. Table 4.9.A.4.C). There was no danger
0 5 | to the health or safety of the public in that T.S. 3.9.B.11.b permits operation for 10
0 6 | days with degraded voltage relays inoperable on a board. Loss-of-voltage relays
0 7 | were operable. (Within SI 4.9.A.4.b Surveillance Schedule.)

SYSTEM CODE E B (11)		CAUSE CODE E (12)		CAUSE SUBCODE G (13)		COMPONENT CODE R E L A Y X (14)				COMP. SUBCODE D (15)		VALVE SUBCODE Z (16)	
EVENT YEAR 8 2		SEQUENTIAL REPORT NO. 0 1 3		OCCURRENCE CODE 0 1		REPORT TYPE X		REVISION NO. 5					
ACTION TAKEN E (18)	FUTURE ACTION E (19)	EFFECT ON PLANT Z (20)	SHUTDOWN METHOD Z (21)	HOURS 0 0 0 0 (22)	ATTACHMENT SUBMITTED Y (23)	NPRD-4 FORM SUB. Y (24)	PRIME COMP. SUPPLIER L (25)	COMPONENT MANUFACTURER B 4 5 (26)					

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Setpoint drifted down 3 percent in 6 months after installation. The Gould-Brown-Boveri
1 1 type ITE 27/59H relays were recalibrated and returned to service. Drift was caused
1 2 by initial aging/stabilization and by variations in ambient temperature and supply
1 3 voltage. Replacement of the relays with more stable Brown-Boveri type ITE-27N relays
1 4 is in progress with completion now expected by August 1, 1984.

FACILITY STATUS		% POWER		OTHER STATUS		METHOD OF DISCOVERY		DISCOVERY DESCRIPTION				
1	5	E	28	0	9	8	29	NA	B	31	SURVEILLANCE TEST	
ACTIVITY CONTENT		RELEASED OF RELEASE		AMOUNT OF ACTIVITY		LOCATION OF RELEASE						
1	5	Z	33	Z	34	NA	NA					
PERSONNEL EXPOSURES		NUMBER		TYPE		DESCRIPTION						
1	7	0	0	0	37	Z	38	NA				
PERSONNEL INJURIES		NUMBER		DESCRIPTION								
1	4	0	0	0	40			NA				
LOSS OF OR DAMAGE TO FACILITY		TYPE		DESCRIPTION								
1	9	Z	42			NA						
PUBLICITY		ISSUED		DESCRIPTION								
2	0	N	44			NA						

8407250091 840628
 PDR ADOCK 05000259
 S PDR

NRC USE ONLY

NAME OF PREPARER Walt Christopher

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LER SUPPLEMENTAL INFORMATION

BFRO-50- 259/82013 R5 Technical Specification Involved 3.9.B.11.b

Reported Under Technical Specification 6.7.2.a.(9) Date Due NRC _____

Unit 1 was operating at 98 percent; unit 2 was operating at 100 percent; unit 3 was in a refueling outage. Units 1 and 2 share the 4kV shutdown boards and diesel-generators. Unit 3 was unaffected by this event. During the performance of Surveillance Instruction (SI) 4.9.A.4.A (Auxiliary Electrical Equipment Undervoltage Relay Calibration for Start Buses 1A and 1B and 4kV Shutdown Boards units 1 and 2 or 3), the degraded voltage relay 27-211-(A, B, or C) on 4kV Shutdown Boards A, B, C, and D trip setpoint were found to be approximately 3815 volts. The limit in Technical Specification Table 4.9.A.4.C requires these relays to operate between 3900 and 3940 volts. These undervoltage sensing relays start the associated diesel-generator on degraded voltage. The loss-of-voltage relay channel was available and operable (within the surveillance schedule of SI 4.9.A.4.b) and had been calibrated per SI 4.9.A.4.C. The degraded voltage relays were calibrated and returned to service within the time limits prescribed by Technical Specification 3.9.B.11.b. There was no danger to the health and safety of the public, plant employees, or equipment at any time.

The setpoint drift of 3 percent was primarily due to initial aging and stabilization of the new relays over a 6-month period. Since the initial stabilization period, the degraded voltage relay setpoint drift has ranged from 0.8 percent above trip setpoint (3920 volts) to 0.9 percent below trip setpoint. This drift is primarily due to temperature and control voltage variations. During the last 15 calibration checks of the 24 relays, eight relays have been found with setpoints higher than the maximum allowable setting of 3940 volts. These events were reported by LER's BFRO-50-259/83048 and 296/83040.

The existing ITE 27/59H relays are being replaced with Brown-Boveri ITE-27N relays. The ITE 27/59H relays have been replaced on unit 3 4kV Shutdown Boards 3EA, 3EB, 3EC, and 3ED and units 1 and 2 4kV Shutdown Board D. Replacement of the relays on the remaining units 1 and 2 4kV Shutdown Boards (A, B, and C) is now expected to be completed by August 1, 1984.

This extension is due to the necessity to coordinate this modification with other modifications which will allow the diesel generators to be paralleled in the presence of an accident signal (reference LER BFRO-50-259/84020) and which replace diesel generator speed sensing relays with a more reliable solid state relay (reference LER BFRO-50-296/8104.)

A design problem with a feedback resistor in the new ITE-27N relays was recently identified by Brown-Boveri. The problem could cause the relays to malfunction under certain postulated conditions. (See letter from D. D. Duvall of BBC to R. C. DeYoung of NRC dated March 13, 1984. "ITE-27N Undervoltage Relay (10 CFR Part 21 Report).") (Copy attached).

The resistors required to modify the ITE-27N relays were received from Brown-Boveri on June 13, 1984. Installation of these resistors is pending TVA EN DES approval of the modification. Replacement of these resistors will be accomplished during routine calibration or during relay replacement by September 1, 1984.

Previous Similar Events

This report is also a follow-up report to LERs BFRO-50-259/82028, 82033, 82050, 82075, 82086, 83048 and 296/82032, and 83040.

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

Browns Ferry Nuclear Plant

P. O. Box 2000

Decatur, Alabama 35602

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June 28, 1984

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

Dear Mr. O'Reilly:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 - DOCKET
NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - REPORTABLE OCCURRENCE
REPORT BFR0-50-259/82013 R5

The enclosed report provides followup information concerning calibration of degraded voltage relays on the 4kV shutdown boards (common to units 1 and 2) wherein the trip setpoint of all 12 relays was found to be below the minimum trip point of 3900V. This report is submitted in accordance with Browns Ferry Unit 1 Technical Specification 6.7.2.a.(9).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

G. T. Jones

G. T. Jones
Power Plant Manager
Browns Ferry Nuclear Plant

Enclosure

cc (Enclosure):

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