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VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION
P. O. BOX 402
MINERAL, VIRGINIA 23117

10 CFR 50.73

May 16, 1991

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

Serial No. N-91-010
NAPS:WCH
Docket Nos. 50-338
License Nos. NPF-4

Dear Sir,

The Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Unit 1.

Report No. 91-010-00

This Report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Corporate Management Safety Review Committee for its review.

Very Truly Yours,

G. E. Kane
Station Manager

Enclosure:

cc: U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

Mr. M. S. Lesser
NRC Senior Resident Inspector
North Anna Power Station

IE22 1/1

NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
NORTH ANNA POWER STATION UNIT 1	0 5 0 0 0 3 3 8	1 OF 0 6

TITLE (4) AUTO START OF EMERGENCY DIESEL GENERATOR 1J DUE TO LOSS OF POWER FROM "A" RSST AND SUBSEQUENT START DUE TO INADVERTENT BYPASS OF AIR START SOV

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)
0 4	2 3	9 1	9 1	—	0 1 0	— 0 0	0 5	1 6	9 1		0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9)	1	(11) THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)				
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)	
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)	
		20.405(a)(1)(ii)	50.36(c)(2)	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)(i)	50.73(a)(2)(viii)(A)		
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
G. E. Kane, Station Manager	AREA CODE 7 0 3 8 9 4 - 3 1 4 1

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	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

At 0920 hours on April 23, 1991, with Unit 1 operating at 100 percent power (Mode 1), the "A" Reserve Station Service Transformer (RSST) isolated because of an inadvertent overcurrent auxiliary relay trip. The cause of the "A" RSST isolation was personnel error associated with improper installation of an overcurrent trip auxiliary relay. The Unit 1 "J" Emergency Diesel Generator (EDG) auto-started and re-energized the Unit 1 "J" Emergency Bus. This event is reportable pursuant to 10CFR50.73(a)(2)(iv) as an automatic actuation of an Engineered Safety Feature (ESF). A four-hour report was made in accordance with 10CFR50.72(b)(2)(ii) at 1106 hours.

At 0726 hours on April 26, 1991, with Unit 1 at 100 percent power, the 1J EDG was inadvertently started due to plant personnel accidently bypassing the air start SOV via the manual override while performing a walkdown to plan a work order. This event is reportable pursuant to 10CFR50.73(a)(2)(iv) as an automatic ESF actuation. A four-hour report was made in accordance with 10CFR50.72(b)(2)(ii) at 0908 hours.

The 1J EDG functioned properly to restore power to the Unit 1 "J" Emergency Bus. All other automatic actuations also functioned properly. Therefore, the health and safety of the public was not affected at any time during these events.

1.0 Description of the Event

At 0920 hours on April 23, 1991, with Unit 1 operating at 100 percent power (Mode 1), the "A" Reserve Station Service Transformer (EIIS System Identifier EA, Component Identifier XFMR) isolated because of an inadvertent overcurrent auxiliary relay (EIIS System Identifier EA, Component Identifier RLY, ANSI 94) trip. The Unit 1 "J" Emergency Diesel Generator (EIIS System Identifier EK, Component Identifier DG) auto-started and re-energized the Unit 1 "J" Emergency Bus (EIIS System Identifier EB, Component Identifier BU) due to the loss of normal power from the "A" Reserve Station Service Transformer (RSST). This event is reportable pursuant to 10CFR50.73(a)(2)(iv) as an automatic actuation of an Engineered Safety Feature (ESF). A four-hour report was made in accordance with 10CFR50.72(b)(2)(ii) at 1106 hours.

The Unit 1 "J" Emergency Bus was cross-tied to the Unit 2 "B" station service bus at 0943 hours, and the 1J EDG operation continued in parallel until 1119 hours. Alternate power sources were verified operable through the satisfactory performance of 1-PT-80 (Offsite AC Sources).

Other automatic actuations functioned properly including the auto-start of a charging pump 1-CH-P-1A (EIIS System Identifier BQ, Component Identifier P) and component cooling pump 1-CC-P-1B (EIIS System Identifier CC, Component Identifier P) and the trip and restart of service water pump 1-SW-P-1A (EIIS System Identifier BI, Component Identifier P). The unit was stabilized at 100% power with all secondary equipment returned to normal except for the manual start of a third condensate pump to increase feedwater pump (EIIS System Identifier SJ, Component Identifier P) suction pressure. The 1J EDG was unloaded and shutdown after running for approximately 2 hours, and it was noted that the manual override for an air start solenoid operated valve (SOV)(EIIS System Identifier LC, Component Identifier V) was leaking air. A work order was submitted to correct this problem.

At 0726 hours on April 26, 1991, the 1J EDG was inadvertently started when plant personnel accidently actuated the air start SOV via the manual override. Station personnel were performing a walkdown of the air start SOV as a method of planning corrective maintenance to repair the air leakage. Subsequently, the EDG was loaded in accordance with station procedures and all equipment operated as expected. This event is reportable pursuant to 10CFR50.73(a)(2)(iv) as an automatic ESF actuation. A four-hour report was made in accordance with 10CFR50.72(b)(2)(ii) at 0908 hours.

2.0 Significant Safety Consequences and Implications

No significant safety consequences occurred due to these events since the redundant emergency busses remained available to supply power to required plant equipment. The 1J EDG functioned properly and restored power to the Unit 1 "J" Emergency Bus, and all other automatically actuated equipment also functioned properly. Therefore, the health and safety of the public was not affected at any time during these event.

3.0 Cause of the Event

The cause of the first ESF actuation was personnel error associated with improper wiring of an overcurrent trip auxiliary relay during the installation of 34.5 kV bus number 5 in March of 1989. Improper control wire routing of the relay prevented the cover from being properly installed. The relay cover was installed in a position which caused misalignment with the relay hinge armature. The interference with the hinge armature caused the gap between the normally open trip contacts to be significantly less than design. Vibration from a technician working on an adjacent panel caused the armature to be operated (mechanically) to the energized position which led to the isolation of "A" RSST.

The cause of the second ESF actuation was personnel error which resulted in the accidental bypassing of the air start SOV using the manual override. While performing a visual inspection of the valve as a method of planning a work order, the maintenance planner placed his hand on the valve to locate external leakage. In doing so, he contacted the manual override and started the diesel.

4.0 Immediate Corrective Actions

Abnormal Procedure (AP) 10, Loss of Electrical Power Diagnostic, was entered following the isolation of "A" RSST to determine the extent of power loss. The Unit 2 "B" station service bus was placed in service as the power supply to the Unit 1 "J" Emergency Bus at 0947 hours. The 1J EDG was shutdown at 1119 hours after successfully fulfilling its design function.

After the accidental EDG start, the engine was loaded in accordance with station procedures, and all equipment operated as expected.

5.0 Additional Corrective Actions

Equipment which was auto-actuated or auto-secured on the 1J Emergency Bus low-voltage signal was realigned to its normal status, and a third condensate pump was started to increase feedwater pump suction pressure. Troubleshooting operations in the switchyard and a review of the fault recorder tapes revealed no relay targets, control circuit problems or fault currents.

"A" RSST was returned to service supplying power to the Unit 1 "J" Emergency bus after the relay wire routing was corrected and the relay cover was properly re-installed. The overcurrent trip auxiliary relay cover for the "B" RSST was inspected and determined to be misaligned due to improper wire routing; therefore, access to the area was restricted. Subsequently, a modified cover was installed on "B" RSST relay to eliminate armature binding due to incorrect cover alignment.

6.0 Actions to Prevent Recurrence

On April 29, 1991, all planners were taken on tours of an EDG room to point out where the subject air start SOV manual bypass is located. In addition, a meeting was held with all planners to discuss the event as well as other incidents in which equipment was accidently operated during planning walkdowns. The art of passive data gathering was emphasized to each planner.

A memorandum was submitted on May 14, 1991, to inform switchyard foremen, technicians and electricians of the event including a discussion of the proper technique of routing control wires connected to GE HGA type relays.

The appropriate section of the Control Operations T&D Methods Manual, whic. establishes policies and standards for Control Operations T&D groups, will be revised by December 1, 1991, to set the standards for proper wire routing on GE HGA type relays.

During the next "B" RSST outage, the subject wire routing will be corrected to eliminate the problem.

The leaking air start SOV will be repaired.

7.0 Similar Events

LER N1/2-89-010-00 documents an automatic actuation of the Unit 1 H and Unit 2 J EDG's due to an inadvertent ground during switchyard modifications on April 16, 1989.

LER N2-90-009-00 documents an automatic actuation of the Unit 2 J EDG during undervoltage testing due to a wiring modification design deficiency on October 28, 1990.

8.0 Additional Information

North Anna Unit 2 was in mode 1 at 100% power throughout this event and was not affected.

All HGA type relays on the control panels at both North Anna and Surry switchyards were inspected, and no additional problems were found.