

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8705280270 DOC. DATE: 87/05/19 NOTARIZED: NO DOCKET #  
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250  
 AUTH. NAME AUTHOR AFFILIATION  
 HART, R. D. Florida Power & Light Co.  
 WOODY, C. O. Florida Power & Light Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 86-040-01: on 86121B, deficiency discovered re potential for loss of three air conditioner compressors & air handlers of control room ventilation sys. Caused by excessive clearance between cover plate & relay. W/86121B ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6  
 TITLE: 50.73 Licensee Event Report (LFR), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-2 LA	1 1	PD2-2 PD	1 1
	McDONALD, D	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/ROAB	2 2
	AEOD/DSP/TPAB	1 1	DEDRO	1 1
	NRR/DEST/ADE	1 0	NRR/DEST/ADS	1 0
	NRR/DEST/CEB	1 1	NRR/DEST/ELB	1 1
	NRR/DEST/ICSB	1 1	NRR/DEST/MEB	1 1
	NRR/DEST/MTB	1 1	NRR/DEST/PSB	1 1
	NRR/DEST/RSB	1 1	NRR/DEST/SGB	1 1
	NRR/DLPQ/HFB	1 1	NRR/DLPQ/QAB	1 1
	NRR/DOEA/EAB	1 1	NRR/DREP/RAB	1 1
	NRR/DREP/RPB	2 2	NRR/BMAS/ILRB	1 1
	NRR/PMAS/PTSB	1 1	<u>REC FILE</u> 02	1 1
	RES DEPY GI	1 1	RGN2 FILE 01	1 1
EXTERNAL:	EG&G GROH, M	5 5	H ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC HARRIS, J	1 1	NSIC MAYS, G	1 1



LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Turkey Point Unit 3</b>	DOCKET NUMBER (2) <b>0   5   0   0   0   2   5   0   1</b>	PAGE (3) <b>OF 05</b>
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TITLE (4)  
**Single Failures in CRVS May Result in Loss of Control Room Ventilation System**

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	1987	86	040	01	05	19	87	<b>Turkey Point Unit 4</b>		<b>0   5   0   0   0   2   5   1</b>
											<b>0   5   0   0   0  </b>

OPERATING MODE (9) <b>6</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) <b>0   0   0</b>	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 50.38(c)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.38(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 365A)						
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>R. D. Hart, Licensing Engineer</b>	TELEPHONE NUMBER
	AREA CODE: <b>3   0   5</b> NUMBER: <b>2   4   6   -   6   5   5   9</b>

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS
<b>B</b>	<b>V</b>	<b>I</b>	<b>3β</b>	<b>A</b>	<b>6</b>	<b>0</b>	<b>9</b>	<b>N</b>	

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 December 18, 1986, with both Units 3 and 4 at 100% power, it was determined that a deficiency existed concerning the potential for loss of three air conditioner compressors and three air handlers of the Control Room Ventilation System (CRVS). An engineering evaluation of the CRVS, revealed the concerns. The evaluation concluded that during CRVS operation, should a loss of power from MCC 3A occur, and the transfer switch sticks between its two positions (MCC 3A and MCC D), no control circuit power will be available, and the CRVS air conditioning compressors and air handlers will be disabled. This condition constituted a substantial safety hazard (SSH) as defined by 10 CFR 21. On April 19, 1987, it was discovered that the clearance between the cover plate and a relay in the transfer switch was such that, the cover plate could interfere with its ability to swap power supplies for the CRVS. Procedure controls have been put in place to override the operation of the thermostat and the temperature controller should a failure of the CRVS occur. The transfer switch unavailability due to the single failure will be reduced to an acceptable level by verifying its operability on a weekly basis. This surveillance will be modified to allow testing of the transfer switch with the cover plate installed.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

EVENT:

On December 18, 1986, at 1745, with both Units 3 and 4 at 100% power, it was determined that a deficiency existed concerning the potential for loss of three air conditioner compressors and three air handlers of the Control Room Ventilation System (CRVS). At Turkey Point, the design basis for the heating and air conditioning portion of the CRVS is to maintain an environment which does not exceed 120 degrees F and 95% relative humidity. In order to satisfy this design basis, one of three air conditioning compressors and one of three air handling units would be required to be operating.

The temperature control circuit is normally powered from Motor Control Center (MCC) 3A. MCC 3A is temporarily deenergized after a loss of offsite power, during sequencer operation. Upon loss of power from MCC 3A, the transfer switch in panel DP-312A functions to transfer the power source from MCC 3A to MCC D.

Based on the above, the evaluation concluded that during CRVS operation, should a loss of power from MCC 3A occur, and the transfer switch fails to transfer between the two positions (MCC 3A and MCC D), no control circuit power will be available, and all CRVS air conditioning compressors and air handlers will be disabled. Should this occur, the maintenance of a control room environment which does not exceed the design basis cannot be assured. This may result in the failure of safety related components which are located in the control room, due to potentially high temperatures and relative humidity. This in turn may substantially inhibit the ability to safely shutdown and/or maintain the units in a safe shutdown mode. On December 18, 1986, it was determined that this condition constituted a substantial safety hazard and was reportable under 10 CFR 21.

The engineering evaluation identified two other single active failures. These are the failure of the thermostat, or failure of the temperature controller. Failure of either of these components would result in the loss of control power to all three air conditioning compressors, with the air handlers continuing to operate. However, as the air handlers will continue to operate, the average control room air temperature would not exceed that required for equipment protection, and therefore no substantial safety hazard exists.

On April 19, 1987 while Unit 3 was in refueling shutdown (mode 6) with the core off loaded into the Unit 3 spent fuel pit and Unit 4 in mode 6 another failure mode of the transfer switch DP-312A was discovered. At 1900 on April 19, 1987 the operators received an annunciator for a D.C. ground on the 3A 4160 volt bus at the same time they noticed a loss of light indication for the 3A motor control center (MCC). In addition DP-312A failed to transfer to its alternate power supply upon loss of power to the 3A MCC. An investigation discovered that the telemand swap circuitry for the 3A MCC had actuated but since the alternate power supply breaker for the 3A MCC had been taken out of service, the 3A MCC could not transfer to its alternate power supply so the MCC remained deenergized.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Investigation of the DP-312A failure to swap discovered that upon removal of the cover panel for the transfer switch, the switch transferred by itself as designed. Further investigation of this failure discovered that the clearance between the cover plate and a relay in the transfer switch was such that the cover plate could prevent the transfer switch from performing its intended function. The weekly surveillance test is performed with the cover plate removed so this test would not be able to detect this failure mode.

CAUSE OF EVENT:

An engineering evaluation of the CRVS, following the loss of control room air conditioning due to the transfer switch sticking during a safeguards test on July 26, 1986, revealed the concerns for the potential loss of the CRVS during an accident.

Additional investigations revealed that the clearance between the cover plate and a relay in the transfer switch was such that the switch could be prevented from performing its intended function.

ANALYSIS OF EVENT:

The interim measures taken include weekly surveillance of the transfer switch, and the installation of quick-connect jumpers which override the thermostat and temperature controller. An engineering evaluation, in accordance with 10 CFR 50.59, has determined that these temporary changes eliminate the consequences of the above single failures.

A calculation has been performed which indicates that, based on the performance of a weekly operability surveillance, the unavailability of the transfer switch is reduced to  $9 \times 10^{-5}$ . This is considered acceptable in that it is comparable to the unavailability of both on-site emergency power sources.

It is unlikely that the control room operators would be required to use the quick-connect jumpers during an accident or transient condition, since continuous operation of the CRVS assures operability of the thermostat and the temperature controller. Nevertheless, in the unlikely event that a failure in the thermostat or the temperature controller should render all compressors inoperable, the connection of the described jumper could be accomplished quickly. An analysis has been performed which concludes that with loss of the air conditioner compressors but with the air handlers continuing to operate, the average air temperature in the control room would not exceed that required for equipment protection. Therefore, no specific time limit is required for the control room operators to restart the air conditioning compressors.

The potential failure of the transfer switch constitutes a substantial safety hazard as defined by 10 CFR 21; however, since no actual loss of the CRVS during plant operation occurred this condition did not affect the health and safety of the public.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

At the time that the additional failure mechanism was found both units were in mode 6 and Unit 3 had its core off loaded into the Unit 3 spent fuel pit. No CORE ALTERATIONS or positive reactivity additions were in progress during this event so the control room ventilation isolation system was not required to be operable. In addition, prior to this event, the fuel element shuffle in the Unit 3 spent fuel pit had been stopped and did not recommence until after the event. Therefore, the health and safety of the public were not affected.

CORRECTIVE ACTIONS:

- 1) Until permanent design changes are implemented, the panel DP-312A transfer switch unavailability due to a single failure will be reduced to an acceptable level by the implementation of a Plant Maintenance Instruction to verify the operability of the transfer switch on a weekly basis. This surveillance has been entered in O-OSP-200.1, "Schedule of Plant Checks and Surveillances", to assure timely performance of this surveillance.
- 2) Quick-connect jumpers have been installed around the control circuitry (located in control room panel C-45) for the air conditioner compressor units. These jumpers are not connected during normal plant operation. Once connected, these jumpers will override operation of the thermostat and the temperature controller, thus eliminating any impact on the air conditioning compressors from the failure of either of these devices. No specific time limit is required for the restart of the air conditioning compressors with continued air handler operation.
- 3) Training Brief 186 was issued, describing the concern, the above modifications, and the weekly surveillance. Upon identification, the concern and corrective measures were discussed with the shift operators.
- 4) Permanent plant modifications to correct this condition are being pursued on an expeditious basis.
- 5) The method of mounting the cover plate was enhanced to increase the clearance between the transfer switch and the cover plate.
- 6) The weekly surveillance of the transfer switch has been modified to allow for testing the transfer switch with the cover plate installed on an interim basis by installing a temporary toggle switch that is removed upon completion of the test.
- 7) A request for technical assistance has been written to investigate the feasibility of installing the toggle switch on a permanent basis until the long term modifications are complete.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

ADDITIONAL DETAILS:

The individual informing the Commission is: C. O. Woody, Group Vice President, Nuclear Energy, P.O. Box 029100, Miami, Florida 33012.

The transfer switch manufacturer is: Asco Electrical Products Co., Inc. Model No.: 9041.

The original designer of the CRVS is the Bechtel Corporation.

The other nuclear plants in Florida Power and Light's system have been made aware of the potential problem. An entry will be made in the INPO Network to make other nuclear facilities aware of the potential problem.



MAY 19 1987

L-87-218  
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Unit 3  
Docket No. 50-250  
Reportable Event: 86-40 Rev. 1  
Date of Event: April 19, 1987  
Single Failures in CRVS May Result in  
Loss of Control Room Ventilation System

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

A handwritten signature in cursive script, appearing to read "C. O. Woody", is written over the typed name.

C. O. Woody  
Group Vice President  
Nuclear Energy

COW/SDF/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC  
Senior Resident Inspection, USNRC, Turkey Point Plant

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