Entergy

Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360

Kevin H. Bronson
Site Vice President

March 11, 2008

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

SUBJECT: Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
Docket No.: 50-293
License No.: DPR-35

Licensee Event Report 2008-002-00

LETTER NUMBER: 2.08.015

Dear Sir or Madam:

The enclosed Licensee Event Report (LER) 2008-002-00, "Failure to Meet Technical Specification Requirements for Undervoltage Relay Trip Setting in Table 3.2.B" is submitted in accordance with 10 CFR 50.73.

This letter contains no commitments.

Please do not hesitate to contact Joseph Lynch, (508) 830-8403, if there are any questions regarding this subject.

Sincerely,

for Kevin H. Bronson

WGL/dal

Enclosure

cc: Mr. Samuel J. Collins
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NRR

NRC Form 366 (9-2007) **U.S. NUCLEAR REGULATORY COMMISSION**

LICENSEE EVENT REPORT (LER)

Approved by OMB: No. 3150-0104 Expires: 08/31/2010

Estimated burden per response to comply with this mandatory information collection request: 80 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52). U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose and information collection does not display a currently valid control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
PILGRIM NUCLEAR POWER STATION	05000-293	1 of 4

4. TITLE

Failure to Meet Technical Specification Requirements for Undervoltage Relay Trip Setting

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	05000
01	11	2008	2008	002	00	03	11	2008	FACILITY NAME N/A	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more)			
N	20.2201(b)	22.2203(a)(3)(i)	50.73(a)(2)(i)(C)	50.73(a)(2)(vii)
	22.2202(d)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(A)
	20.2203(a)(1)	20.2203(a)(4)	50.73(a)(2)(ii)(B)	50.73(a)(2)(viii)(B)
	20.2203(a)(2)(i)	50.36(3)(1)(i)(A)	50.73(a)(2)(iii)	50.73(a)(2)(ix)(A)
	20.2203(a)(2)(ii)	50.36(3)(1)(ii)(A)	50.73(a)(2)(iv)(A)	50.73(a)(2)(x)
10. Power Level	20.2203(a)(2)(iii)	50.36(c)(2)	50.73(a)(2)(v)(A)	73.71(a)(4)
	20.2203(a)(2)(iv)	50.46(a)(3)(ii)	50.73(a)(2)(v)(B)	73.71(a)(5)
100	20.2203(a)(2)(v)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(C)	OTHER
	20.2203(a)(2)(vi) X	50.73(a)(2)(i)(B)	50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER (

NAME	TELEPHONE NUMBER (Include Area Code)
Joe Lynch, Licensing Manager	(508) 830-8403

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
D	EK	27	GO66	N					

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On January 11, 2008, the as-found, post-service, calibration test of the GE Type RAV11B AC undervoltage (UV) 127-A5/1 and 127-A5/2 relays determined that the undervoltage relays that had been installed on the A5 safety-related 4KV bus from May 2, 2005 to June 11, 2007 exceeded the Technical Specification (TS) required set point range of 20-25% specified in TS Table 3.2.B. The post-service calibration test determined actual set points were 27.17% and 30.29% of rated bus voltage, respectively. Therefore, it was concluded from May 2, 2005 to June 11, 2007, Entergy Pilgrim did not meet the TS requirement for the undervoltage protection function for the safety-related 4KV safety-related bus A5.

The cause of the as-found relay settings was determined to be an improper calibration method utilized prior to the relay installation in May 2005. The immediate corrective actions taken included verification that the installed undervoltage relays in the safety-related A5 bus met the TS requirements and verification that undervoltage relays on safety-related bus A6 were properly calibrated. The corrective actions planned include the use of a new testing apparatus, a revision to the calibration procedure to incorporate use of a new calibration methodology and specialized training. The extent of condition review confirmed that the problem was limited only to the 127-A5/1 and 127-A5/2 relays. The event posed no threat to public health and safety.

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PILGRIM NUCLEAR POWER STATION	05000-293	2008	002	00	2 of 4

Narrative

BACKGROUND

There are six 4160 V buses (A1, A2, A3, A4, A5, and A6) in the station auxiliary power distribution system. The two safety-related buses, A5 and A6, supply AC power to safety-related components required during abnormal operational transients and accidents.

The A5 and A6 4160 V emergency buses are equipped with degraded voltage as well as undervoltage protection. The degraded voltage protection function provides alarm function with anticipated operator action, and input to the safety-related 4160 V bus load shed logic. The degraded voltage function was not impacted by this event.

The undervoltage protection is provided by two (2) GE Type RAV11B AC undervoltage relays within the A5 (127-A5/1 and 127-A5/2) and A6 (127-A6/1 and 127-A6/2) buses which actuate in a two out of two logic. If 4160 V bus voltage drops below 1040 volts (25% of bus rated), relays 127-A5/1 and 127-A5/2 will operate and will trip the Residual Heat Removal (RHR), Core Spray (CS), and Control Rod Drive (CRD) pump motor supply breakers without any intentional time delay. These relays will also trip the Unit Aux Transformer (UAT) feeder breaker to the A-5 (A-6) bus and provide a permissive signal in the close logic for the output breaker of the associated emergency diesel generator.

The undervoltage voltage relays also interlock with the RHR and Core Spray initiation logic for the "loss of bus power" feature. This feature will block the Core Standby Cooling System (CSCS) pump motors from start until these relays are reset, i.e., the 4160 V bus voltages are re-established.

Technical Specification (TS) Table 3.2.B requires these undervoltage relay trip settings to be within the 20-25% range of rated voltage.

EVENT DESCRIPTION

On January 11, 2008, the as-found, post-service, calibration test of the GE Type RAV11B AC undervoltage (UV) 127-A5/1 and 127-A5/2 relays determined that the undervoltage relays that had been installed on the A5 safety-related 4KV bus from May 2, 2005 to June 11, 2007 exceeded the Technical Specification (TS) required set point range of 20-25% specified in TS Table 3.2.B. The post-service calibration test determined actual set points were 27.17% and 30.29% of rated bus voltage, respectively. Therefore, it was concluded from May 2, 2005 to June 11, 2007, Entergy Pilgrim did not meet the TS requirement for the undervoltage protection function for the safety-related 4KV safety-related bus A5

The improperly calibrated undervoltage relays were installed on May 2, 2005, and were believed to be within the TS band of 20-25% rated voltage. These were subsequently removed from service on June 11, 2007 and replaced by properly calibrated relays during performance of procedure 8.M.2-2.10.8.5.

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PILGRIM NUCLEAR POWER STATION	05000-293	2008	002	00	3 of 4

TEXT (If more space is required, use additional copies of NRC Form 366A) **(17)**

On January 11, 2008, Entergy performed the planned post-service calibration test on the removed relays in preparation for future replacement in accordance with the routine maintenance schedule established for this equipment. The removed relays did not meet TS Table 3.2.B requirements, which require the trip setting to be 20-25% of rated voltage. The actual as-found values were at 27.17% and 30.29% of rated voltage for the 127-A5/1 and 127-A5/2, respectively.

CAUSE

The Apparent Cause Evaluation (ACE) revealed that a human error resulted in an incorrect calibration method being used prior to installing the 127-A5/1 and 127-A5/2 relays in 2005.

While the correct method of testing was to use an open delta voltage configuration on the input of the relay, proper connection of the test leads is also vital to achieving the desired results in this configuration. The test leads were not properly connected during calibration of the relays in 2005.

A contributing cause was that the calibration methodology relied on the skill of specialized craft in conjunction with vendor manual instructions for this application.

CORRECTIVE ACTION

The undervoltage relays on 4KV safety-related bus A5 that were installed on June 11, 2007 were immediately checked and determined to be in proper calibration.

The undervoltage relays on 4KV safety-related A6 bus were also immediately checked and were determined to be in proper calibration.

Entergy Pilgrim has procured a "Doble System Power Simulator" test set that is being used for relay testing. The Doble test set has built-in software that defines the testing method for many different types of protective relays and will reduce the potential for testing the relay in an improper configuration.

Pilgrim procedure 8.M.2-2.10.8.5 for relay testing is being revised to include the "Doble System Power Simulator" in the test procedure. In addition, training on the use of the "Doble System Power Simulator" and this Event Report will be provided to the appropriate maintenance personnel. These actions are being tracked by the corrective actions associated with this event. (CR-PNP-2008-00117).

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PILGRIM NUCLEAR POWER STATION	05000-293	2008	002	00	4 of 4

TEXT (If more space is required, use additional copies of NRC Form 366A) **(17)**

SAFETY CONSEQUENCES

The consequence review determined that there would have been no adverse impact on the operation of the components installed downstream of A5 bus with the as-found settings. The relays tripping at a higher voltage than the no-adjust limit would not have a significant effect on any safety-related equipment. The relays actuate to shed loads on the bus in anticipation of loss of off-site power and bus voltage restoration from the emergency diesel generator. A time delay exists in the logic to allow residual bus voltage to decay prior to closure of the emergency diesel supply breaker, therefore a slightly premature actuation of these relays does not challenge safety-related equipment.

The Plant was at 100% power and in Run while the undervoltage relays were installed.

The event posed no threat to public health and safety.

REPORTABILITY

This report was submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station LERs since 1974. The review identified no similar events.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS	CODES
GE Type RAV11B A-C Under voltage Relays	27
SYSTEM	
Emergency Onsite Power Supply	EK