

LICENSEE EVENT REPORT (LER)

(See reverse for number of digits/characters for each block)

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FACILITY NAME (1)

PILGRIM NUCLEAR POWER STATION

DOCKET NUMBER (2)

05000-293

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TITLE (4)

Switchgear Room Door Inoperable For Tornado Analysis

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 NAME	DOCKET NUMBER
12	21	98	1998	027	00	01	20	99	N/A	05000
									N/A	05000

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

LICENSEE CONTACT FOR THIS LER (12)

NAME

Douglas W. Ellis - Principal Engineer

TELEPHONE NUMBER (Include Area Code)

(508) 830-8160

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
D	NM	DR	XXXX	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES

(If yes, complete EXPECTED SUBMISSION DATE)

X

NO

EXPECTED SUBMISSION DATE(15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On December 21, 1998, at 1814 hours, one door in the 4.16 Kv switchgear room 'B' was determined to be inoperable due to degraded door hinges. The door functions to provide several functions including remaining closed in the tornado analysis (UFSAR Appendix H). A limiting condition for operation (LCO) was entered upon identification of the problem.

The direct cause of the original degradation (bottom most hinge) was normal wear. A cause contributing to continued degradation was that there was no approved procedure for the type of weld repair that was necessary to repair the door.

Corrective action taken included the repair of the door. The door was returned to operable status at 2224 hours on December 21, 1998, and the LCO was terminated. A new procedure is being developed to include the type of weld repair that was necessary to repair the door.

The condition was discovered during power operation while at 100 percent reactor power with the reactor mode selector switch in the RUN position. The reactor vessel pressure was approximately 1032 psig with the reactor water temperature at the saturation temperature for that pressure. The condition posed no threat to public health and safety.

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BACKGROUND

Appendix H of the Updated Final Safety Analysis Report (UFSAR) pertains to Pilgrim Station tornado criteria. The tornado design basis is that all structures and equipment necessary to initiate and maintain safe shutdown be designed to withstand short term loading as a result of a tornado. The design basis tornado criteria consist of a three psi pressure drop in three seconds, a 300 mile per hour horizontal wind component applied over the full height of the structure(s), and missiles (4000 pound automobile, 108 pound wooden plank, or a three inch pipe ten feet in length). The tornado analysis model includes venting through large openings, and assumptions that include the position of doors. For the tornado analysis, door 95 is modeled in the closed position.

Door 95 is an interior, hollow metal door that meets Pilgrim Station Specification A-13-ER-Q, "Procurement, Design, Installation, and Inspection of Hollow Metal Doors, Pressed Steel Frames and Hardware." The door is located in the Turbine Building, is equipped with a self-closing mechanism and provides one means of access/egress to and from the 4.16 Kv switchgear room 'B'. The door frame is steel and the door swings open into the switchgear room. The room contains nonsafety-related and safety-related equipment, primarily electrical equipment that is part of the Pilgrim Station Auxiliary Power Distribution System. Door 95 is part of the Pilgrim Station maintenance rule program.

Door 95 and other doors, blowout panels, and floor plugs are modeled in the various Pilgrim Station subcompartment analyses for a tornado, a high energy line break analysis, flooding, etc. These barriers are included in a new surveillance procedure 8.C.42, "Subcompartment Barrier Control Surveillance."

Surveillance procedure 8.C.42 (currently rev. 0) is scheduled to be performed periodically or if a tornado warning is issued. For periodic performance, the procedure is scheduled on a once per refueling outage frequency and is tracked by the Master Surveillance Tracking Program (MSTP).

EVENT DESCRIPTION

On December 21, 1998, at 1814 hours, door 95 was determined to be inoperable due to degraded door hinges. The determination was made as a result of evaluating the as-found condition of the door hinges. The door was determined to be inoperable because the condition of the door hinges would not assure the door would function as a closed door (as modeled in the tornado analysis).

Problem Report 98.9634 was written to document the problem. The NRC Operations Center was notified in accordance with 10 CFR 50.72(b)(1)(ii) on December 21, 1998, at 1814 hours. The door was declared inoperable and a 24 hour limiting condition for operation (LCO A98-662) was entered in accordance with Technical Specification 3.9.B, "Auxiliary Electrical System," on December 21, 1998. The door was continuously posted pending door repair.

The condition was discovered during power operation while at 100 percent reactor power with the reactor mode selector switch in the RUN position. The reactor vessel pressure was approximately 1032 psig with the reactor water temperature at the saturation temperature for that pressure.

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CAUSE

The direct cause of the original degradation (bottom most hinge) was normal wear. A cause contributing to continued degradation (ultimately, all three hinges) was that there was no approved procedure for the type of weld repair that was necessary to repair door 95.

The repair of door 95 was originally initiated by a maintenance request (MR 19702518) written on October 11, 1997. At that time, the bottom-most of the door's three hinges was degraded. When MR 19702518 was written, the other two hinges were not degraded and the condition of the door was judged acceptable by a civil-structural engineer. The degradation consisted of the separation of the weld that connects the door hinge reinforcing plate to the door's metal covering. The hinge reinforcing plates are located within the door at the hinge jamb.

The maintenance request was prioritized in accordance with procedure 1.5.20, "Work Control Process," Attachment 3 (MR prioritization) in October 1997. The work control process includes work planning. As part of the work planning, a weld repair of the hinge reinforcing plate was decided instead of a replacement of the entire door. In April 1998, and before a weld repair of the hinge reinforcing plate could be accomplished, surveillance procedure 8.B.17.1, "Inspection of Fire Door Assemblies," was conducted. [Procedure 8.B.17.1 is scheduled to be performed once per year and is tracked by the MSTP.] During the surveillance, degradation of the metal covering of the door occurred in the area of the degraded hinge reinforcing plate weld. The metal covering degradation was most likely due to continued door use with the degraded hinge. The metal covering degradation affected the fire protection characteristics of the door and, therefore, a fire watch was established in accordance with the fire protection program on April 24, 1998.

The hinge reinforcement plates are approximately 1/8 inch in thickness, and the metal covering of the door is 16 gauge (i.e., less than 1/16 inch in thickness). At that time, procedure 3.M.4-15.4, "General Welding Procedure Structural Welding Code," included provision for metal welding of materials greater than or equal to 1/8 inch in thickness. Therefore, the procedure could not be used for the repair of the hinges because the repair required welding of the metal covering to the hinge's reinforcing plate.

Welding requirements include welder training and welder qualifications. The welding requirements were developed by the end of the summer in 1998 and welder qualifications began for the weld repairs to the door.

Once the welding qualifications were completed, procedure 3.M.4-15 was revised (to rev. 37) and approved on December 10, 1998. The revision provided for the use of the procedure for metal materials less than 1/8 inch in thickness. The procedure revision, however, did not include acceptance criteria for door welds and, therefore, an engineering document specifying acceptance criteria was requested. The engineering document (FRN 98-01-103) specifying acceptance criteria was developed, and approved on December 17, 1998.

The work package for MR 19702518 was updated and prioritized for work at the next earliest timeframe.

On December 21, 1998, the performance of preventive maintenance procedure 3.M.4-108, "Mechanical Inspection and Preventive Maintenance for Facility Doors," began. [Procedure 3.M.4-108 is scheduled to be performed monthly and is tracked by the MSTP (node S9812324).] The procedure includes door 95. The door

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did not meet the acceptance criteria of the procedure and the maintenance planner for MR 19702518 was notified of the problem. The planner notified a civil-structural engineer regarding the as-found condition of the door. The engineer evaluated the as-found condition of the door and concluded the door was not operable for the tornado function. The welds of all three of the door's hinge reinforcing plates had degraded. The degradation was such that the door's closing mechanism would not close the door without human assistance and, when in the closed and latched position, the door would not be assured of remaining closed if a sufficiently large differential pressure were to occur such as that postulated in the tornado analysis. The door was operable for the door's other functions (access control, high energy line break, and fire).

CORRECTIVE ACTION

Corrective action taken included the following:

The metal covering and hinge reinforcement plates of door 95 were weld repaired, the door was restored to operable status, and the LCO (A98-662) was terminated at 2224 hours on December 21, 1998.

Corrective action planned includes the following:

A new procedure, 3.M.4-15.5 (rev. 0), "Welding Procedure and Welder Performance Qualification Procedure - Structural Sheet Steel," has been initiated. Essentially, the procedure incorporates the engineering document (FRN 98-01-103) issued for the weld repair of doors including door 95. The procedure is expected to be issued by the end of March 1999.

SAFETY CONSEQUENCES

The condition posed no threat to public health and safety.

Although the problem with door 95 is classified as a maintenance rule failure, the problem did not result in a functional failure of equipment in switchgear room 'B'.

Tornadoes are an infrequent phenomenon in the coastal New England region where Pilgrim Station is located. The likelihood of a tornado in the Pilgrim Station area is approximately 3.0E-05 per year (NUREG/CR-4461). The as-found condition of door 95 on December 21, 1998, could have existed for as long as one month (since procedure 3.M.4-108 was previously performed on November 20, 1998). Therefore, the likelihood of a tornado occurring while the condition existed was less than 3.0E-05.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) because door 95 was inoperable for the tornado analysis function.

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SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station LERs submitted since 1992. The review focused on LERs involving control of safety-related compartment barriers. The review identified the following reports:

LER 98-011-00 involved two Reactor Building floor plugs removed from the their normally installed location on 23' elevation floor;

LER 97-028-00 involved the Intake Structure that was in a configuration inconsistent with tornado analysis assumptions;

LER 97-023-01 involved the Radwaste Building trucklock doors in a configuration inconsistent with tornado analysis assumptions;

LER 97-010-01 involved an Auxiliary Building door in a configuration inconsistent with high energy pipe break analysis assumptions.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS	CODES
Door	DR
SYSTEMS	
Medium-voltage power system - Class 1 Turbine Building	EA NM