NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Pilgrim Nuclear Power Station Unit No. 1	0 5 0 0 0 2 9 3	1 OF 0 3

TITLE (4)
Main Steam Line Isolation While Reactor Shutdown

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 3	2 2	8 6	8 6	— 0 0 7	— 0 0	0 4	2 2	8 6		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N		20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
0 0 0		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
Paul Hamilton - Sr. Plant Engineer	AREA CODE 6 1 7 — 7 4 6 - 7 9 0 0

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
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 6	0 6	8 6

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

On 3/22/85 at 1739 hours a Group One primary containment isolation (PCIS main steam line) occurred. The reactor was in the cold shutdown condition at the time of the event. Root cause analysis was complicated by the fact that there was no annunciation or computer printout explanation of what caused the isolation. Notwithstanding the complication, the analysis to date indicates that the isolation probably was the result of a spurious reactor high water level signal.

Corrective action is to continue with root cause analysis. In addition, two engineering support requests have been submitted requesting that the computer contacts for the Primary Containment Isolation System (PCIS) and the Reactor Protection System (RPS) be revised from "normally closed" to "normally open". Implementation of this change is expected to provide a computer printout explanation of the cause of similar events should they occur thus allowing for more timely root cause analysis. There were no equipment or component failures identified during this event.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Pilgrim Nuclear Power Station Unit No.1	0 5 0 0 0 2 9 3	8 6	— 0 0 7	— 0 0	0 2 OF 0 3

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

Event

On 3/22/86 at 1739 hours a Group One primary containment isolation occurred resulting in closure of the eight main steam line isolation valves (MSIV's) and the main steam inboard drain valve. The other three Group One isolation valves include the main steam outboard drain valve and the two reactor water sample valves. When the isolation occurred the outboard drain valve did not close and the two reactor water sample valves were already closed. The fact that the outboard drain valve did not close is by design depending on the signal which initiates the isolation.

Unexpectedly there was no annunciation or computer printout of what had initiated the isolation. At the time of the event the reactor was in the cold shutdown condition.

Cause

The cause of this event is believed to be a spurious signal. Root cause analysis was complicated by the fact that there was no annunciation or computer printout explanation of what had caused the isolation. Notwithstanding this complication, the analysis to date has provided a review of the seven inputs that initiate a Group One isolation. Six of the inputs were eliminated for various logical reasons. The remaining input, reactor high water level, was determined to be the most likely cause of the isolation signal.

The analysis indicates that the "C" and "D" channels of the reactor high water level isolation signal originate in indication switches located on instrument rack C2206. Activation of the "C" and "D" channels will, by design, close the eight MSIV's and the inboard drain valve as was experienced on 3/22/86. Since there were no reactor water level excursions when the event occurred it is believed that the isolation resulted from a spurious signal originating in the PCIS circuitry for reactor water level.

Historically the reactor water level switches have been sensitive to vibration (e.g. would sometimes trip when inadvertently bumped during work in or around instrument rack C2206). However, during this event there was apparently no work in progress around rack C2206 that could have resulted in the water level switches or sensing lines being bumped. A previous LER (86-002) discusses the sensitivity of other switches and sensing lines located on rack C2206.

The redundant instrument rack (C2205) was out of service when the event occurred in support of repair work on a reactor water level instrumentation line (ref. LER 86-006 for detail of that work). Therefore the redundant rack was ruled out as a source of the isolation signal.

Corrective Action

Root cause analysis of this event continues. The results of that analysis will be provided in an update to this LER. In addition, two Engineering Support Requests (ESR's 86-116 and 86-118) have been submitted requesting that the computer contacts for Primary Containment Isolation System (PCIS) and Reactor Protection System (RPS) alarms be changed from "normally closed" to "normally open". Implementation of this change is expected to provide a computer printout explanation of the cause of similar events should they occur thus allowing for more timely root cause analysis.

Safety Consequences

The MSIV's are designed to fulfill the following objectives:

- Prevent excessive damage to the fuel barrier by limiting the loss of reactor coolant from the reactor vessel resulting from either a major leak from the steam piping outside the primary containment, or a malfunction of the pressure control system resulting in excessive steam flow from the reactor vessel.

- Limit the release of radioactive materials by closing the nuclear system process barrier in case of a gross release of radioactive materials from the fuel to the reactor cooling water and steam.

- Limit the release of radioactive materials by closing the primary containment barrier in case of a major leak from the nuclear system inside the primary containment.

Since this event would not have prevented the fulfillment of the above stated objectives and since the reactor was in the cold shutdown condition when the event occurred, the consequences of this event were determined to be not significant. Implications of this event are pending completion of root cause analysis and will be discussed in the update to this report. There were no equipment failures identified during this event. Therefore discussion of available redundant equipment is not applicable to this LER.

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WILLIAM D. HARRINGTON
SENIOR VICE PRESIDENT
NUCLEAR

April 22, 1986
BECo Ltr. #86-048

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

Docket No. 50-293
License No. DPR-35

Dear Sir:

The attached Licensee Event Report 86-007-00, "Main Steam Line Isolation While Reactor Shutdown" is hereby submitted in accordance with the requirements of 10CFR50.73.

If there are any questions on this subject, please do not hesitate to contact me.

Respectfully submitted,

W D Harrington

W. D. Harrington

PJH/vp

Enclosure: LER 86-007-00

xc: Dr. Thomas E. Murley
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U.S. Nuclear Regulatory Commission
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