

## LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS  
INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD  
COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION  
AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR  
REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO  
THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF  
MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Perry Nuclear Power Plant, Unit 1

DOCKET NUMBER (2)

05000 440

PAGE (3)

1 OF 7

TITLE (4)

Inadequate Retest of Containment Air Lock Door Results in Tech. Spec. Violations

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
10	23	92	92	020	01	03	19	93	FACILITY NAME	DOCKET NUMBER	
										05000	
									FACILITY NAME	DOCKET NUMBER	
										05000	
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)											
OPERATING MODE (9)			20.402(b)			20.405(c)			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)
			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)		OTHER
			20.405(a)(1)(iii)			X 50.73(a)(2)(i)			50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 365A)
			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

Charles R. Elberfeld, Compliance Engineer, Ext. 5264

TELEPHONE NUMBER (include Area Code)

(216) 259-3737

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On October 23, 1992, at 0315, an inadequate Containment Lower Air Lock Inner Door work order retest resulted in the violation of Technical Specification LCO 3.6.1.1.1 and 3.6.1.3 Action a.1. Further investigation revealed that some components had incorrect identification tags and that there were additional previous periods in which these LCO Actions were violated.

The cause of this event is improper labeling of plant equipment. The identification tag discrepancy is considered to be limited in nature to the containment and drywell air lock doors. A contributing cause of the October 23, 1992 event is personnel error, inattention to detail. The alternate Responsible System Engineer prescribed the retest without realizing the impact that the maintenance had on the integrity of the door seal pneumatic system pressure boundary and the impact the maintenance had on meeting the appropriate surveillance requirements for Primary Containment Air Lock Operability and Primary Containment Integrity.

Engineering personnel have performed equipment inspections to ensure that all appropriate components of the Penetration Pressurization Seal Pneumatic Systems have identification tags properly installed in accordance with the Piping System Diagram. This event was reviewed by all RSEs and alternates. Additionally, as part of the established requalification training program, all plant licensed operators will be instructed on the lessons learned from this event.

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TEXT (If more space is required, use additional copies of NRC Form 365A) (17)

**I. Introduction**

On October 23, 1992, at 0315, an inadequate Containment [NH] Lower Air Lock [AL] Inner Door work order retest resulted in the violation of Technical Specification LCO 3.6.1.1.1 and 3.6.1.3 Action a.1. Further investigation revealed additional previous periods in which these Technical Specification LCO Actions were violated. At the time of the event, the plant was in Operational Condition 1 (Power Operation) at 100 percent of rated thermal power. The Reactor Pressure Vessel [RPV] pressure was at 1025 psig and the reactor was at saturated conditions. This event is being reported under the requirements of 10CFR50.73(a)(2)(i)(B), as operation prohibited by the plant's Technical Specifications.

**II. Description of Event**

On October 21, 1992, at 2330, the Containment Lower Air Lock Inner Door was declared inoperable for the performance of a maintenance work order to find and correct the cause of a seal inflation light indication problem. The Containment Lower Air Lock Outer Door was maintained closed and locked in accordance with requirements of Technical Specification LCO 3.6.1.3 Action a.1. Work commenced on October 22, 1992, and at 1730, it was determined that a faulty pressure switch [PS] in the door inflatable seal system had caused the indication problem. The pressure switch was replaced and leak checked under the work order. The technicians who replaced the switch contacted an alternate Responsible System Engineer (RSE), as prescribed by the work order, for retest requirements. The alternate RSE determined that the retest should be to cycle the Air Lock Inner Door three times and verify proper operation of the door, lights, and pressure switch. The retest was completed satisfactorily, the Air Lock Inner Door was declared operable on October 23, 1992, at 0315, and the Containment Lower Air Lock Outer Door was unlocked.

On October 23, 1992, at 1000, the RSE determined, through his review of the work order package, that the retest was inadequate because the pressure integrity of the Containment Lower Air Lock Inner Door seal pneumatic system was broken by the maintenance performed, and the Technical Specification Surveillance Requirement 4.6.1.3.e (conducting a seal pneumatic system leak test) had not been met. The RSE contacted the control room, and the Air Lock Inner Door was again declared inoperable, and the Air Lock Outer Door was maintained closed and locked in accordance with Technical Specification requirements.

On October 23, 1992, at 1140, the performance of a portion of Surveillance Instruction (SVI-P53-T7305) "Lower Containment Airlock Pneumatic System Leak Test, Pen #305" was commenced as a retest for the work order on the pressure

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switch. The retest was completed satisfactorily on October 24, 1992, at 0110; the Containment Lower Air Lock Inner Door was declared operable on October 24, 1992, at 0632; and the Air Lock Outer Door was unlocked.

On November 12, 1992, at 1300, discussion between the RSE and the technician who installed the pressure switch resulted in the discovery that there was a discrepancy between the Piping System Diagram, the Electrical-Elementary Diagram, and the pressure switch as it was installed in the field. The technician had used the appropriate Electrical-Elementary Diagram to troubleshoot the seal inflation light indication problem and also to identify the faulty pressure switch as 1P53-N0701B. The faulty pressure switch, which was labeled in agreement with the Electrical-Elementary Diagram, monitored the pressure in the smaller of the two seals on the Containment Lower Air Lock Inner Door. However, the Piping System Diagram displayed 1P53-N701B as monitoring the larger seal pressure. The RSE utilized the appropriate Piping System Diagram to determine which seal required testing; therefore, the retest performed on October 24, 1992 was performed on the wrong seal pneumatic system, which again made the retest invalid. The control room was contacted immediately. The Air Lock Outer Door was closed and locked in accordance with Technical Specification requirements on November 12, 1992, at 1330. The RSE verified that the current tests for the other air lock door seal pneumatic systems were still valid despite the discrepancy concerning pressure switch identification.

Surveillance Requirement 4.6.1.3.e states, "Each primary containment air lock shall be demonstrated OPERABLE: By verifying the door inflatable seal system OPERABLE at least once per 18 months by conducting a seal pneumatic system leak test and verifying that system pressure does not decay more than 1.5 psig from 90 psig within 24 hours." During this event, the required verification was not made prior to returning the air lock to service. Because of this, Technical Specification LCO 3.6.1.3 Action a.1 was not met on October 23, 1992, between 0315 and 1000 hours, and also from October 24, 1992, at 0632, and November 12, 1992, at 1330. Additionally, the Technical Specification LCO 3.6.1.1.1 Action was not met on October 23, 1992, between 0415 and 1000, and also from October 24, 1992, at 0732, to November 12, 1992 at 1330.

On November 12, 1992, at 1558, the performance of the appropriate portion of SVI-P53-T7305 was commenced. The test of the seal pneumatic system associated with the recently installed pressure switch was completed satisfactorily on November 13, 1992, at 0643.

A review of both containment and drywell air lock door seal pneumatic system pressure switch work history revealed that a work order for the same pressure switch for the same door was performed on August 22, 1987 without the appropriate retest. In this case the Containment Lower Air Lock Inner Door seal

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pneumatic system was not tested until January 19, 1988, at which time the system was tested satisfactorily. The person who prescribed the retest for the 1987 event is also no longer on site. Additionally, the review of work history did not identify any cases of the pressure switch identification discrepancies resulting in other inadequate retests.

The Technical Specification violations discussed above were initially believed to be the result of an inaccurate design drawing and were reported to the NRC under LER 92-020 dated November 20, 1992.

Work orders were generated to inspect all four of the Containment Air Lock doors and both Drywell Air Lock doors to ensure that components were appropriately identified in accordance with the Piping System Diagram. The results of the inspections are as follows.

Date	Air Lock Door (MPL Number)	Results
12/23/92	Containment Upper Inner (1P53-A312B)	Large and Small Seal pressure switch identification tags were reversed.
12/24/92	Containment Lower Outer (1P53-A305A)	Large and Small Seal pressure switch identification tags were reversed.
1/20/93	Containment Upper Outer (1P53-A312A)	Large and Small Seal pressure switch identification tags were reversed.
1/20/93	Containment Lower Inner (1P53-A305B)	Large and Small Seal pressure switch identification tags were reversed.
3/3/93	Drywell Inner (1P53-A3050B)	Large and Small Seal pressure switch identification tags were reversed.
3/3/93	Drywell Outer (1P53-A3050A)	No discrepancies found.

All of the improperly tagged pressure switches have been identified and tagged appropriately with the correct identification tags. Additionally, the identification tags for the Containment Upper Air Lock Inner Door Large Seal Pneumatic System and the Small Seal Pneumatic System test valves were found to be reversed. These tags were also placed on the proper components.

On February 17, 1993, an extensive review of previous work history for the Containment Upper Air Lock Inner Door indicated that two previous air lock pneumatic system leak tests (one on March 1, 1991, and one on March 13, 1991) were performed on the wrong seal pneumatic systems due to the misidentification

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of the test valves. On March 1, 1991, the Containment Upper Air Lock Inner Door small seal was replaced under a work order; however, due to the test valve identification tags being reversed, the seal pneumatic system leak test was performed on the large seal pneumatic system. On March 13, 1991, the Containment Upper Air Lock Inner Door large seal was replaced under a work order, and the small seal pneumatic system was tested. On June 18, 1991, the Containment Upper Air Lock Inner Door was declared inoperable for maintenance on other inner door components, and on June 20, 1991, both the large and small seal pneumatic systems were leak tested.

The February 17, 1993 review indicated an additional previous air lock pneumatic system leak test (on September 19, 1992) was performed on the wrong seal pneumatic system. On September 19, 1992, a Containment Upper Air Lock Inner Door ball valve for the large seal was replaced under a work order; however, due to the same test valve identification tags being reversed, the leak test was performed on the small seal pneumatic system. On December 16, 1992, the same Air Lock Door was declared inoperable and maintenance was performed on the door components. Both seal pneumatic systems were successfully tested on December 24, 1992. Because the wrong seal pneumatic systems were tested, between March 1 and June 18, 1991, and between September 19 and December 16, 1992, the actions for Technical Specification LCOs 3.6.1.1.1 and 3.6.1.3 Action a.1 were not met.

## III. Cause of Event

The cause of this event is improper labeling of plant equipment. The air locks were originally tagged and labeled by the vendor and "as-built" drawings were supplied which were verified by engineering personnel. The discrepancy is considered to be limited in nature to the containment and drywell air lock doors due to the difficulty in visual verification of the tubing/piping and components associated with the Penetration Pressurization Seal Pneumatic Systems and due to a lack of significant history of components being incorrectly labeled in the plant. Additionally, giving consideration to the controls in place under the work order process for equipment and labeling, it is most likely that the identification tagging errors were made before initial plant startup.

A contributing cause of the October 23, 1992 event is personnel error, inattention to detail. The alternate RSE prescribed the retest without realizing the impact that the maintenance on the pressure switch had on the integrity of the Containment Lower Air Lock Inner Door seal pneumatic system pressure boundary and the impact the maintenance had on meeting the appropriate surveillance requirements for Primary Containment Air Lock Operability and Primary Containment Integrity. Provisions are made for alternates to contact

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the appropriate RSE when questions arise but the alternate in this event did not perceive the need to do so. The person who prescribed the inadequate retest is no longer on site.

#### IV. Analysis of Event

The personnel air locks are welded steel assemblies with double doors, each equipped with double gaskets or seals, one large and one small. The air locks are designed so that pressure inside the containment would aid in positively seating the door assemblies. The air supply to the containment air lock and seal system is the service [LF] and instrument [LD] air system, which is redundant and extremely reliable. The testing prescribed by Technical Specification Surveillance Requirement 4.6.1.3.e ensures that the Containment Air Lock Door seals remain inflated upon loss of their air supply.

The required testing completed on November 13, 1992 and January 19, 1988, indicated that the Containment Lower Air Lock seal pneumatic system was operable and it is reasonable to assume that the system could have performed its intended function, if needed, for the periods in question. Therefore, these events are not considered to be safety significant.

The satisfactory results of the March 13, 1991 and the June 20, 1991 seal pneumatic system leak tests indicate that both the Containment Upper Air Lock Inner Door large and small seal pneumatic systems could have performed their intended function for the period in question; therefore, the event encompassing the time from March 1 to June 18, 1991 is not considered to be safety significant.

The ball valve replaced on September 19, 1992, was reworked as part of the work performed on the Upper Containment Air Lock Inner Door during the December 16 to December 24, 1992 time frame. Because the large seal pneumatic system was never tested between the time the ball valve was replaced in September and the time the ball valve was reworked in December, 1992, it is not known whether the large seal pneumatic system could have performed its intended function if needed. Therefore, the event encompassing the time between September 19 and December 16, 1992 is considered to be potentially safety significant.

#### V. Corrective Actions

Engineering personnel have performed equipment inspections to ensure that all appropriate components of the Penetration Pressurization Seal Pneumatic Systems have identification tags properly installed in accordance with the Piping System Diagram. Because the discrepancy was limited to the seal pneumatic system

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components, and because these components are now properly identified and tagged, no additional corrective actions associated with the improper equipment identification tagging are warranted.

The discrepancies between the Piping System Diagram and the field installation of the pressure switches have been rectified by changing the identification tagging of the affected components. Further action is in progress to revise the Electrical-Elementary Diagrams or the actual field wiring to reflect the corrected field labeling. The drawing or field wiring changes are needed to support any future electrical maintenance on air lock door switches or lights, but are not necessary for present door operability. The Electrical-Elementary Drawing discrepancies do not affect the operability of the air lock doors.

A note was added to the generic work order associated with Penetration Pressurization System troubleshooting of air lock doors to remind personnel that any maintenance activity which breaches a system pressure boundary may require Technical Specification Surveillance testing to re-establish system integrity prior to returning the system to service. Engineering management assessed this event, including aspects of training, workload, and procedures, and determined that the appropriate level of expertise is being utilized to prescribe retests for work orders. This event was reviewed by all RSEs and alternates with emphasis placed on the importance of meeting Technical Specification requirements when prescribing retests and also placed on alternates contacting the RSE if there are any questions concerning retest requirements. Additionally, as part of the established requalification training program, all plant licensed operators will be instructed on the lessons learned from this event.

This report is revised in its entirety. No revision bars are included to identify changes from Revision 0 of this report.

Energy Industry Identification System Codes are identified in the text as [XX].