



PERRY NUCLEAR POWER PLANT

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Donald C. Shelton
SENIOR VICE PRESIDENT
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June 3, 1996
PY-CEI/NRR-2059L

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
LER 96-004

Gentlemen:

Enclosed is Licensee Event Report 96-004, Maintenance Under Inadequate
Tagout Results in Partial ESF Actuation.

If you have questions or require additional information, please contact
Mr. James D. Kloosterman, Manager - Regulatory Affairs at (216)
280-5833.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'D. Shelton', written over the typed name 'Donald C. Shelton'.

CRE:sc

Enclosure: LER 96-004

cc: NRC Project Manager
NRC Resident Inspectors Office
NRC Region III

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PDR ADOCK 05000440
S PDR

Operating Companies
Cleveland Electric Illuminating
Toledo Edison

Handwritten initials 'TE' and the date '11/11' in the bottom right corner of the page.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION
COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO
THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING
BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 F33),
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)

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TITLE (4)

Maintenance Under Inadequate Tagout Results in Partial ESF Actuation

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
05	02	96	96	004	00	06	03	96		05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
1			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)	
100			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)		X 50.73(a)(2)(iv)		OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

Keith R. Jury, Supervisor-Compliance

TELEPHONE NUMBER (Include Area Code)

(216) 280-5594

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)

YES

(If yes, complete EXPECTED SUBMISSION DATE).

NO

X

EXPECTED
SUBMISSION

MONTH

DAY

YEAR

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

On May 2, 1996, Perry Nuclear Power Plant, Unit No. 1 was operating at 100 percent power. At approximately 1800 hours, during maintenance activities on a containment isolation valve, a blown fuse resulted in an unplanned partial automatic actuation of the containment isolation system and closure of two automatic containment isolation valves. Closure of the containment isolation valves constituted an Engineered Safety Feature (ESF) actuation.

The causes were attributed to personnel errors during implementation of the safety tagging and work order processes. The fuse was replaced and the automatic containment isolation valves were opened.

Appropriate personnel have been counseled. Personnel responsible for implementation of the safety tagging and work order process are being retrained to the procedural requirements associated with this event. This event is reported in accordance with 10CFR50.73(a)(2)(iv) as an event or condition that resulted in an automatic actuation of an ESF.

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I. Introduction

On May 2, 1996, at approximately 1800 hours, a blown fuse resulted in an unplanned partial automatic actuation of the Containment Isolation system [JM] and closure of two automatic containment isolation valves [ISV]. At 2118 hours, a four hour non-emergency notification No. 30410 was made to the NRC as required by 10CFR50.72(b)(2)(ii) for any event or condition that results in a manual or automatic actuation of any Engineered Safety Feature (ESF). This event is being reported in accordance with 10CFR50.73(a)(2)(iv).

At the time of the event, the plant was in Operational Condition 1 at 100 percent of rated thermal power. The reactor pressure vessel pressure was at approximately 1024 psig with reactor coolant at saturated conditions.

II. Event Description

On May 2, 1996, a work package and associated tagout were implemented to perform an Equipment Qualification (EQ) related task to replace a gasket and an o-ring on an Instrument Air system [LD] automatic outboard containment isolation valve (1P52-F170). Although a safety tagout was in place, only the solenoid coil for 1P52-F170 had electrical power removed; the valve's limit switches did not have their power removed. Maintenance electricians who were assigned to work on the valve checked to ensure power was removed from the solenoid prior to replacing the parts. After partial disassembly of the valve, the parts were replaced. At approximately 1330 hours, during reassembly of the valve, one of the electricians received an electrical shock while trying to install a terminal block on the valve. A subsequent check by the other electrician indicated that 120 VAC was present at the terminals for the limit switches. The work activity was stopped and the area was secured.

Completion of the work activity was then assigned to electricians from the oncoming afternoon shift. The electricians were instructed and cautioned about the energized limit switch circuits prior to starting work. When the electricians arrived at the job site shortly before 1800 hours, they checked for voltage at the limit switches and found that there was no voltage present. The electricians immediately told their supervisor that the circuits were not energized. Subsequently, the maintenance supervisor notified control room personnel at approximately 1800 hours, that maintenance activities associated with 1P52-F170 had potentially resulted in a blown fuse.

As a result of the fuse blowing, position indication was lost for two additional valves. The loss of control room position indication for Instrument Air system

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automatic outboard containment isolation valve (1P52-F160) and Service Air system [LF] automatic outboard containment isolation valve (1P51-F150) led to the determination that the fuse for 1P51-F150, 1P52-F160, and 1P52-F170 had blown. The EQ related work was completed and at 1835, the fuse was replaced. Both 1P51-F150 and 1P52-F160 indicated closed. The closure of these containment isolation valves when the fuse blew constituted an unplanned ESF actuation. On May 2, 1996, at 1850 hours, power was restored to 1P52-F170. At 1855 hours, 1P51-F150 was opened and at 1910 hours, 1P52-F160 was opened.

The time at which the fuse blew could not be conclusively determined. A review of the Annunciator system sequence of events recorder records determined that the annunciator associated with the electrical power loss had been reset at 1510 hours. The annunciator was locked in due to another containment isolation valve being down-powered on the same day at approximately 1516 hours. Therefore, there was a six minute period of time when the annunciator was "cleared" which is not possible with the blown fuse in the circuit. This indicates that the fuse was not blown when the electrician received the electrical shock at 1330 hours. As a result of the annunciator being locked in after 1516 hours, the control room personnel were not immediately aware of the blown fuse and ESF actuation when they occurred.

Access to and from containment was available only via the lower containment airlock [AL] during this event due to maintenance being performed on 1P52-F170, which supplies instrument air to the upper containment airlock outer door. When 1P52-F160 closed due to the blown fuse, instrument air was isolated to both the inner and outer lower containment airlock doors. This would have resulted in local "unsafe" indications at the airlock doors and a control room alarm if the lower airlock had been operated after the instrument air was isolated. Neither of these conditions were reported during the time in question. A review of the security card reader log associated with the lower containment airlock door usage indicated that numerous entries/exits were made using the lower containment airlock. The last card reader activity recorded before the blown fuse was replaced, was at approximately 1800 hours. Based on the information available, it is concluded that the fuse was blown and the ESF actuation occurred on May 2, 1996 at approximately 1800 hours, and was attributed to the work activities of the electricians from the oncoming afternoon shift. The specific action/condition that caused the fuse to blow is indeterminate. However, it was identified that better controls over the tagout associated with the work activities would have precluded both the fuse blowing and the electrical shock.

III. Cause of Event

A Human Performance Enhancement System (HPES) investigation was initiated to determine the causes of the issues associated with this event and to determine appropriate corrective actions. The causes were attributed to personnel errors during implementation of the safety tagging and work order processes.

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The primary cause of the event is development and implementation of an inadequate tagout. The tagout preparer and reviewer did not provide an adequate tagout for the work being performed as required by Plant Administrative Procedure (PAP-1401), "Safety Tagging." PAP-1401 requires that the tagout preparer and reviewer ensure that the document is properly completed and that it provides the necessary personnel and equipment protection and control for the work to be performed. The tagout preparer thought he knew the scope of the job and the appropriate tagging boundaries when in fact, he did not. The applicable references were available; however, they lacked detail as to the specifics of the job. This lack of information contributed to the tagout error. Although the preparer knew that part of the circuit would be left energized and noted it as such on the tagout, he should have verified that the work could be safely accomplished in that configuration. From both the personnel and equipment safety standpoints, the valve circuitry being partially energized should have been more cautiously evaluated as to the possible effects of maintenance, such as inadvertent shorting, and the effects on other components. Electrical power to the limit switches should have been tagged out prior to maintenance.

Additional contributing causes were identified and include the following items.

1. The work planner did not provide adequate detail on the tagout request nor the work order for the work to be performed. PAP-1401 requires that the individual requesting a tagout shall include sufficient details to accurately indicate the scope of the work to be performed and any specific equipment conditions that need to be established. The request form for this job stated "isolate valve for rework." The work planner knew the scope of work, but did not convey the appropriate information on the request form.
2. The work group's review and walkdown of the work order did not reveal the tagout inadequacy. The supervisor's review and walkdown should have flagged the energized condition since the purpose of the review and walkdown steps in the work order process is to detect and remedy such conditions.
3. The tagout was accepted and signed on by a supervisor who recognized the tagout note (that the switches would be left energized) but did not convey the information effectively. The person who signed tagout acceptance as person-in-charge was the only person in the process who questioned the tagout note. This person was not the supervisor responsible for the work and should have taken the information a step further to the responsible work supervisor. PAP-1401 requires the individual signing as person-in-charge to be cognizant of the job, and to ensure that work can be performed safely. This requirement was not accomplished.

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4. The supervisor responsible for the work did not do a detailed review of the work package and did not see the tagout note stating that the limit switches would be energized. The supervisor relied on one of the electricians to review the job, tagout, and work package in detail to determine if it could be worked. The supervisor eliminated himself as an additional protective barrier by not performing the review himself.
5. The administrative controls associated with performing work on energized equipment were not completely followed.

IV. Safety Analysis

The design objective for the containment isolation system is to allow normal or emergency passage of fluids through the containment boundary while preserving the ability of the boundary to prevent or limit the escape of fission products that may result from postulated accidents so that site boundary dose guidelines specified by 10CFR100 are not exceeded. This objective is achieved by provisions for automatic isolation of appropriate lines that penetrate the containment boundary.

The containment boundary penetrations associated with 1P51-F150 and 1P52-F160 close automatically upon receipt of high drywell pressure, low reactor water level, and/or manual isolation signals. Both valves close upon loss of electrical power.

The 1P51-F150 valve is the Service Air system outboard containment automatic isolation valve which provides a flow path for service air to maintenance and breathable air stations inside the containment and drywell and also to the Reactor Water Cleanup system Filter/Demineralizers during non-accident conditions. Closure of this valve to its required safeguards position did not adversely affect safe plant operation.

The 1P52-F160 valve is an Instrument Air system outboard containment automatic isolation valve which provides a flow path for instrument air to the lower containment airlock doors during non-accident conditions. Although the upper containment airlock was out of service due to the work activities on 1P52-F170, plant operations were not impacted by the closure of 1P52-F160 and closure of this valve to its required safeguards position did not adversely affect safe operation of the plant.

During the event, 1P51-F150 and 1P52-F160 responded as designed to the loss of electrical power. Closure of these valves, to their required safeguards position, did not adversely affect safe operation of the plant; therefore, this event is considered to have minimal safety significance.

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V. Similar Events

Previous unplanned ESF actuations attributed to inadequate planning and implementation of work activities have been documented in LER 94-017 and LER 95-006. LER 94-017 documented an event in which work activities under an inadequately planned work order resulted in an automatic isolation of the Residual Heat Removal Shutdown Cooling system. The lessons learned from this event were reviewed by personnel involved with the planning of the work order and by licensed operators. LER 95-006 documented an event in which restoration of power to an inverter resulted in generation of initiation signals to the Reactor Core Isolation Cooling system and associated Emergency Closed Cooling system and Emergency Service Water system. Engineers involved in the technical review of the restoration procedure were coached and counseled. Procedural guidance to determine appropriate levels of technical review was evaluated and implemented for Instrumentation and Controls (I&C) engineers.

The events documented by LERs 94-017 and 95-006 involved I&C related activities compared to Maintenance related activities involved in the May 2, 1996, event. The corrective actions for the two previous LERs could not reasonably have been expected to prevent the May 2, 1996, event.

VI. Corrective Actions

Personnel responsible for the preparation and review of tagouts shall review this event and retrain to PAP-1401, with emphasis placed on the responsibilities for tagout preparation and review. Personnel responsible for planning work orders shall review this event and retrain to PAP-1401, with emphasis placed on the proper level of detail required to complete a tagout request. Maintenance supervisors shall review this event and retrain to PAP-1401 with emphasis placed on the responsibilities of the person-in-charge and the requirement for those persons signing as person-in-charge to be cognizant of the job that is signed for.

The supervisor responsible for the initial work package review and walkdown has been counseled as to the expectations for complete review and walkdown of work order packages. The electrician involved in this event has been counseled as to the need/procedural requirement to thoroughly check electrical terminations for energy prior to working on equipment. Additionally, as part of the established regualification training program, plant licensed operators will be instructed on the lessons learned from this event by July 26, 1996.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

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The following table identifies those actions committed to by the Perry Nuclear Power Plant in this document. Any other actions discussed in the submittal represent intended or planned actions by the Perry Nuclear Power Plant. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Perry Nuclear Power Plant of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed date or outage
Personnel responsible for the preparation and review of tagouts shall review this event and retrain to PAP-1401, with emphasis placed on the responsibilities for tagout preparation and review.	June 30, 1996
Personnel responsible for planning work orders shall review this event and retrain to PAP-1401, with emphasis placed on the proper level of detail required to complete a tagout request.	June 30, 1996
Maintenance supervisors shall review this event and retrain to PAP-1401 with emphasis placed on the responsibilities of the person-in-charge and the requirement for those persons signing as person-in-charge to be cognizant of the job that is signed for.	June 30, 1996