NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| Pilgrim Nuclear Power Station | 0 5 0 0 0 2 9 3 | 1 OF 0 3 |

TITLE (4) Anticipated Transient Without Scram (ATWS) Division 2 (Two) Trip Signal and Subsequent Scram Signal

| 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 2 | 0 3 | 8 8 | 8 8 | 0 0 6 | 0 0 | 0 3 | 0 2 | 8 8 | N/A | 0 5 0 0 0 |
| | | | | | | | | | N/A | 0 5 0 0 0 |

| OPERATING MODE (9) | N | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | |
|---|---|---|---|---|---|
| POWER LEVEL (10) | 0 1 0 0 | 20.402(b) | 20.405(c) | X 50.73(a)(2)(iv) | 73.71(b) |
| | | 20.405(a)(1)(i) | 50.36(a)(1) | 50.73(a)(2)(v) | 73.71(c) |
| | | 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 |
|---|---|
| Douglas W. Ellis - Compliance Management Engineer | AREA CODE 6 1 7 — 7 4 7 - 8 1 6 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 5 | 0 4 | 8 8 |

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


On February 3, 1988 at 1936 hours, a trip signal was generated unexpectedly from the Anticipated Transient Without Scram (ATWS) Division 2 (two) circuitry. The trip signal resulted in the expected automatic trip of the Recirculation System pumps, and a subsequent Reactor Protection System (RPS) scram signal. Following immediate investigation, the scram signal was reset at 1938 hours.

The root cause for the ATWS trip signal has not been identified at the time of submittal of this report but is being investigated. The RPS scram signal was the subsequent and expected designed response to the ATWS trip signal.

A stop work order was issued halting further implementation of modifications being made to the ATWS circuitry. A root cause investigation plan was developed for the testing of ATWS panels and related circuitry. The trip functions of the ATWS circuitry were made inoperable for investigation purposes. A supplement to this report will be submitted following the investigation.

This event occurred during an extended outage while in cold shutdown with plant conditions that were as follows. The reactor mode selector switch was in the SHUTDOWN position. The control rods were in the inserted position prior to the trip signal. The reactor water temperature was approximately 95 degrees Fahrenheit with negligible core decay heat. The Reactor Vessel pressure was approximately zero psig. Both Recirculation System pumps were in operation. This event posed no threat to the health and safety of the public.




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| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) |
|---|---|---|---|---|---|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| Pilgrim Nuclear Power Station | 0 5 0 0 0 2 9 3 | 8 8 | — 0 0 6 | — 0 0 | 0 2 OF 0 3 |

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

EVENT DESCRIPTION

On February 3, 1988 at 1936 hours, a Recirculation Pump Trip (RPT) and Alternate Rod Insertion (ARI) trip signal was generated unexpectedly from the Anticipated Transient Without Scram (ATWS) Division 2 (two) circuitry.

The ATWS/RPT trip signal resulted in the expected automatic trip of the Recirculation System pumps ("A" and "B") that were in operation at the time of the trip signal. The ATWS/ARI trip signal resulted in a subsequent and expected (by design) Reactor Protection System (RPS) scram signal.

Following immediate investigation, the scram signal was reset at 1938 hours. Failure and Malfunction Report 88-36 was written to document the ATWS trip signal and RPS scram signal. Notification was made to the NRC Operations Center on February 3, 1988 at 2030 hours.

ATWS is a diverse protective system that functions to add negative reactivity to the reactor core and is redundant to the Reactor Protection System (RPS).

Prior to the outage, the ATWS functions were for Alternate Rod Insertion (ARI), i.e. alternate means for inserting the control rods into the reactor core; and Recirculation Pump Trip (RPT), i.e. trip of the field breakers of the Recirculation System motor generator sets "A" and "B".

During the outage, modifications to the ATWS circuitry were being made. One modification (PDC 87-30) added a trip of the Recirculation System pump drive motor breakers to the RPT function. Another modification (PDC 86-102) added a (new) Reactor Feedpump Trip (RFT) function, i.e. trip of the Reactor Feedpump motor breakers.

This event occurred during an extended outage while in cold shutdown with plant conditions that were as follows. The reactor mode selector switch was in the SHUTDOWN position. The control rods were in the inserted position prior to the trip signal and remained in the inserted position. The reactor water temperature was approximately 95 degrees Fahrenheit with negligible core decay heat. The Reactor Vessel pressure was approximately zero psig. Both Recirculation System pumps were in operation. The Reactor Feedpumps of the Feedwater System were not in operation.

CAUSE

The root cause for the trip signal from the ATWS division 2 (two) circuitry has not been identified at the time of submittal of this report but is being investigated. The RPS scram signal was the subsequent and expected designed response to the ATWS/ARI trip signal.

Following the investigation (please refer to the Corrective Action section) a supplement to this report will be submitted.

CORRECTIVE ACTION

A stop work order was issued by utility management halting further implementation of the modifications (PDC 86-102 and PDC 87-30) being made to the ATWS Division 1 (one) and 2 (two) circuitry.

A root cause investigation plan was developed. The plan consists of procedures used for gathering data (i.e. voltage checks, wiring verifications, voltage transient affects) related to the ATWS panels (C-2277 and C-2278) and associated circuitry. The trip functions of the ATWS circuitry were made inoperable for investigation purposes.

SAFETY CONSEQUENCES

This event posed no threat to the health and safety of the public.

The ATWS trip signal and subsequent RPS scram signal occurred while in the cold shutdown condition. The control rods were in the inserted postition prior to the trip signal and remained in the inserted position.

Control Room operator corrective actions for response to alarms and trips of ATWS and RPS are addressed in written procedures that include: (ARP) "Alarm Response Procedure" ARP-905L (Left) and ARP-905R (Right); 2.1.6, "Reactor Scram"; 2.2.126, "ATWS"; and 2.4.17, "Recirculation Pump(s) Trip."

This event was determined to be reportable pursuant to 10CFR50.73(a)(2)(iv) because the full RPS scram signal, although a subsequent and expected designed response to the ATWS/ARI trip signal, was not expected.

SIMILARITY TO PREVIOUS EVENTS

A review of Pilgrim Station Licensee Event Reports (LERs) written since January 1984 was conducted. The review focused on LERs submitted pursuant to 10CFR50.73(a)(2)(iv) that involved an RPS scram signal caused by an ATWS trip signal. No previous reports were identified during the review.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this event are as follows:

| COMPONENTS | CODES |
|---|---|
| Breaker | BKR |

SYSTEMS

| | |
|---|---|
| Auxiliary Logic Control System (ATWS) | JG |
| Control Rod Drive System (ATWS/ARI) | AA |
| Engineered Safety Features Actuation System (RPS) | JE |
| Feedwater System (ATWS/RFT) | SJ |
| Reactor Power Control System (ATWS/ARI) | JD |
| Reactor Recirculation System (ATWS/RPT) | AD |

10CFR50.73

**BOSTON EDISON**
Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360

**Ralph G. Bird**
Senior Vice President — Nuclear

March 2, 1988
BECo Ltr. #88-036

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

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

Dear Sir:

The attached Licensee Event Report (LER) 88-006-00 "Anticipated Transient Without Scram (ATWS) Division 2 (Two) Trip Signal and Subsequent Scram Signal" is submitted in accordance with 10CFR Part 50.73.

Please do not hesitate to contact me if you have any questions regarding this subject.

R.G. Bird

DWE/bl

Enclosure: LER 88-006-00

cc: Mr. William Russell
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Rd.
King of Prussia, PA 19406

Sr. Resident Inspector - Pilgrim Station

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