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A PECO Energy/British Energy Company

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March 30, 2000

5928-00-20102

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

Dear Sir or Madam:

SUBJECT: THREE MILE ISLAND UNIT 1, TMI UNIT 1
OPERATING LICENSE NO. DPR-50
DOCKET NO. 50-289
LER 99-006-02, "INABILITY OF PRESSURIZER SUPPORT BOLTS TO MEET FSAR REQUIREMENTS SUPPLEMENTAL REPORT"

This letter transmits supplemental Licensee Event Report (LER) number 99-006-02. The revised LER reports the discovery of a condition outside the design basis of the plant and the inability of pressurizer bolts and lug ligaments to meet the FSAR requirements. This supplement addresses both the bolt and lug ligament issues and provides the complete description, extent of the condition and actions taken to meet the FSAR requirements.

The initial condition of the bolts was evaluated and determined to be reportable pursuant to 10 CFR 50.72(b)(1)(ii)(B) and notification was made via the ENS telephone on May 25, 1999. The initial report and first supplement addressed only the inability of the pressurizer support bolts to meet the FSAR requirements.

This supplemental LER is being submitted pursuant to 10 CFR 50.73, using the required NRC forms (attached). NRC Form 366 contains an abstract that provides a brief description of the evaluated condition. A complete report is contained on Form 366A. Margin bars identify the revised portions of the report.

This supplement also addresses the results of the final pre-modification operability determination. Based on the as found field condition information, GPU Nuclear Engineering reevaluated and reconfirmed its initial determination that the pressurizer supports were operable. In October 1999, during the 13R outage, the pressurizer support structure was brought into compliance with the TMI-1 design bases. This was accomplished through the completion of a modification that installed lateral restraints at the pressurizer support lugs.

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The condition of the bolts and lug ligaments did not adversely affect the health and safety of the public. For additional information regarding this supplemental LER contact William Heysek of the TMI Regulatory Engineering Department at (717) 948-8191.

Very truly yours,

John B. Cotton
Vice President, TMI Unit 1

JBC/wgh

cc: Administrator, Region I - Hubert J. Miller
TMI Senior Resident Inspector - Wayne L. Schmidt
TMI-1 Senior Project Manager - Timothy G. Colburn
File 99097

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

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

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TITLE (4)

## Inability of the Pressurizer Support Bolts to Meet FSAR Requirements

| 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 |
| | | | | | | | | | | 05000 |
| 05 | 25 | 1999 | 1999 | - 006 - | 02 | 03 | 30 | 2000 | FACILITY NAME | DOCKET NUMBER 05000 |

| OPERATING MODE (9) | N | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| POWER LEVEL (10) | 100% | | 20.2201(b) | | 20.2203(a)(2)(v) | | 50.73(a)(2)(i) | | 50.73(a)(2)(viii) |
| | | | 20.2203(a)(1) | | 20.2203(a)(3)(i) | X | 50.73(a)(2)(ii) | | 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-Voluntary |
| | | | 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 | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| William Heysek, TMI Regulatory Engineer | (717) 948-8191 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|---|
| | YES (If yes, complete EXPECTED SUBMISSION DATE). | X No | | | | |


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

Corrective Action Process form number T1999-0264 was initiated on March 19, 1999 to document preliminary analyses results provided by Framatome Technologies that identified an apparent discrepancy between the pressurizer support lugs and their design basis. **The deficient condition of the support lug bolts was reported to the NRC at 1703 hours on May 25, 1999 as an immediate report pursuant to 10 CFR 50.72(b)(1)(ii)(B). Subsequent independent analyses performed by GPU Nuclear determined that the pressurizer support lug ligaments and support lug bolt seismic stresses exceeded the FSAR design requirements.**

**Based on available design information, GPU Nuclear initially determined the pressurizer support arrangement (lugs and bolting) was operable. This operability determination was later revisited because a design assumption regarding the assembly differed from the as-found condition. It was again confirmed that the as found support arrangement was operable. A plant modification, that installed lateral restraints at the pressurizer support lugs, returned the pressurizer supports to full compliance with the TMI-1 design bases.**

An evaluation by GPU Nuclear **could not identify the specific cause of this event.**

The **condition of the plant being outside its design basis** is being reported per 10 CFR 50.73(a)(2)(ii).

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**TEXT** *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

I. PLANT OPERATING CONDITIONS BEFORE THE EVENT

The plant was operating at 100% power at the time the conditions were determined to be reportable and plant operation was not changed as a result of that determination.

II. STATUS OF STRUCTURES, COMPONENTS OR SYSTEMS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT.

No systems, structures or components were out-of-service that contributed to the condition addressed by this LER.

III. EVENT DESCRIPTION

**While performing analytical design reviews, Framatome Technologies, Inc., (FTI), identified a potential overstress condition in the pressurizer support lugs. GPU Nuclear initiated Corrective Action Process (CAP) form number T1999-0264 on March 19, 1999 based on the assertions that the TMI-1 pressurizer supports [AB/PZR SPT] did not meet the Final Safety Analysis Report (FSAR) requirements.** Based on engineering judgement, GPU Nuclear determined the pressurizer supports to be operable based on the confidence in the prior analysis results which established the pressurizer support design basis and the uncertainties regarding the FTI analysis modeling methodology and considerations.

**Subsequent to the initial operability determination, GPU Nuclear Engineering performed an independent analysis of the pressurizer support arrangement. It concluded 1) that the pressurizer support lug bolt seismic stresses exceeded the TMI-1 FSAR seismic requirements for both an operating basis earthquake (OBE) and a safe shutdown earthquake (SSE), and 2) the pressurizer lug bolts remained operable during these seismic events.**

**A TMI Plant Review Group meeting was convened on May 25,1999 to review CAP T1999-0264 and address the operability and reportability of the pressurizer support arrangement. Following that meeting, GPU Nuclear reported to the NRC, at 1703 hours, as an immediate report pursuant to 10 CFR 50.72(b)(1)(ii)(B), that the pressurizer support bolts were outside the TMI-1 design basis.**

**Subsequently, continuing analysis found the support lug ligaments did not meet the FSAR design bases seismic requirements. GPU Nuclear analysis determined the lugs were operable.**

**In response to the nonconforming condition, the pressurizer support arrangement was modified during the 13R outage to restore it to the design basis. During that effort, it was identified that the as found condition of the pressurizer supports was not consistent with the assumptions that supported the original operability determination. A reevaluation of the original operability determination, utilizing the as found condition, concluded that the pressurizer support arrangement was operable at all times, despite its noncompliance with the design basis.**

IV. AUTOMATIC OR MANUAL INITIATED SAFETY SYSTEM RESPONSES

No automatic or manual safety system responses were involved with the deficiencies reported herein since there was no physical plant event.

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**TEXT** *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

V. FAILURES AND ERRORS

The root cause for the inability of the pressurizer support lug **ligaments and** bolts to satisfy the TMI-1 FSAR stress requirements could not be determined. This is due to the **lengthy** time interval between the plant construction design activities and the more recent FTI RCS analyses and GPU Nuclear calculations that identified the deficiency.

VI. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

**GPU Nuclear determined that the pressurizer support lug bolts and ligaments were not in compliance with the TMI-1 FSAR design bases. Analyses, incorporating initial assumptions, design documentation and modification design walk-down information found the pressurizer support lug ligaments and bolts to be operable during an OBE or SSE event. In the final analysis, the validity of the prior operability determination was confirmed.**

In support of an effort to determine the extent of condition, an engineering review was performed on the other Reactor Coolant System vessels to identify if any similar concerns were present. No additional concerns were identified.

Therefore, there are no safety consequences resulting from the discrepancy between the current TMI-1 design bases and the pressurizer support lug bolts.

VII. PREVIOUS EVENTS OF A SIMILAR NATURE

There have been no other similar problems identified at TMI-1 which were not later found to be adequate upon a detailed review. This is considered to be an isolated case.

VIII. CORRECTIVE ACTIONS

A. Immediate Corrective Action

Upon determining that the pressurizer support lug bolts **did** <u>not</u> satisfy the TMI-1 FSAR stress requirements, GPU Nuclear performed an operability review and determined that the pressurizer would remain operable under all required design conditions.

B. Completed Corrective Action

During the 13R refueling outage, a modification to the TMI-1 pressurizer support attachment arrangement was completed. The modification, designed to limit lateral motion during a seismic event, involved the installation of lateral restraints (cleats and filler plates) on each of the pressurizer's eight support lugs. The modified pressurizer support structure reduces the seismic stresses in the support components to levels equal to or less than the FSAR requirements when the pressurizer experiences a design basis seismic event. The final installation was inspected by Quality Verification personnel and the installed configuration was verified to be in accordance with engineering direction.

The Energy Industry Identification System (EIIS), System Identification (SI) and Component Function Identification (CFI) Codes are included in brackets, "[SI/CFI] where applicable, as required by 10 CFR 50.73 (b)(2)(ii)(F).