

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
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MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS.
REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE
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COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION
AND 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.

FACILITY NAME (1)

Three Mile Island, Unit 1

DOCKET NUMBER (2)

05000289

PAGE (3)

1 OF 6

TITLE (4)

Auxiliary and Fuel Handling Building Ventilation System Declared Inoperable Due To
Questions on Quality Classification

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
02	28	97	97	-- 004 --	0	04	04	97	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 6: (Check one or more) (11)							
N			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) 50.73(a)(2)(iv) X OTHER							
			20.2203(a)(2)(iii) 50.36(c)(1) 50.73(a)(2)(v) Specify in Abstract							
			20.2203(a)(2)(iv) 50.36(c)(2) 50.73(a)(2)(vii) below or in NRC Form							

LICENSEE CONTACT FOR THIS LER (12)

NAME

Adam Miller, TMI Regulatory Affairs Engineer

TELEPHONE NUMBER (Include Area Code)

(717) 948-8128

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES
(If yes, complete EXPECTED SUBMISSION DATE).

X NO

EXPECTED
SUBMISSION

MONTH DAY YEAR

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

On February 28, 1997, GPU Nuclear declared the Auxiliary & Fuel Handling Building Ventilation system (AFHBVS) inoperable due to quality classification concerns. The AFHBVS continues to meet its surveillance requirements and its filter efficiency and flow requirements and thus remains in operation. The cause of this event is related to wording in the Technical Specification Bases and the Final Safety Analysis Report (FSAR) that implies quality requirements that are not supported by the system design.

A Safety Evaluation will be completed by August 15, 1997, to support any documentation changes needed to clarify the existing Technical Specification Bases and FSAR in regards to the AFHBVS.

This event is not reportable under the criteria of 50.72 or 50.73. However, a voluntary LER is being submitted to document this condition. This LER is also being submitted in accordance with Technical Specification 3.15.3.3.b, which requires a special report if the Auxiliary & Fuel Handling Ventilation system is inoperable longer than seven days.

There were no adverse safety consequences or safety implications that resulted from this event, and the event did not affect the health and safety of the public.

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I. Plant Operating Conditions Before Event

On February 28, 1997, TMI-1 was operating at 100% rated power.

II. Status of Structures, Components, or Systems that were Inoperable at the Start of the Event and that Contributed to the Event

One of the four Auxiliary & Fuel Handling Building Ventilation system exhaust fans (AH-E-14C) was out of service for corrective maintenance following operational damage to the fan blade wheels and motor on January 20, 1997. The exhaust fans operate in pairs; either AH-E14A/C or AH-E-14B/D. Therefore, AH-E-14B/D were operating in accordance with plant Technical Specifications while AH-E-14C was out of service. Even though the inoperable fan did not contribute to the event, it did raise the question of proper component quality classification.

III. Event Description

While AH-E-14C [VF/FAN]* parts were in the process of requisition, the NRC resident inspectors questioned their quality classification. Based upon NRC review of Technical Specifications, FSAR and plant procedures governing quality classification, the system was inferred to be Nuclear Safety Related (NSR). Yet the system design, and the parts ordered for AH-E-14C, were of commercial grade quality. This raised the issue of proper quality classification of the Auxiliary & Fuel Handling Building Ventilation system.

The Auxiliary & Fuel Handling Building Ventilation system was not designed as Nuclear Safety Related, and has not been classified or maintained as Nuclear Safety Related. Yet the FSAR description and Technical Specification Bases credit the system to mitigate accidents, helping to keep the resulting doses within the criteria of 10 CFR 100. This has led to questions of whether the system is, or should be, Nuclear Safety Related. There have been a number of licensing interactions since the original license was issued, and GPUN has committed to testing the system exhaust filter banks in accordance with Regulatory Guide 1.52. However, GPUN believes that no commitment has been made to upgrade the system to Nuclear Safety Related.

In January 1995 the classification of the Auxiliary & Fuel Handling Building Ventilation system was changed from "Regulatory Required" to "Other" with specified Quality Assurance. This change in quality classification allowed elimination of material receipt inspection by the QA organization, but maintained Quality Assurance/Control with respect to Installation, Testing and Maintenance. The classification has since been changed back to "Regulatory Required", and future maintenance will be performed with material receipt inspection. On February 28, 1997, the Auxiliary & Fuel Handling Building Ventilation system was declared inoperable, but the system would remain in service. This conclusion was reached because the Nuclear Safety requirements implied by the Technical Specification bases for this system are not supported by the system design.

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Technical Specification 3.15.3 requires that with the system inoperable, one train must be restored to operability within seven days, or a special report must be submitted to the NRC within the next 30 days. GPU Nuclear decided to combine the special report with this voluntary LER.

The operability status will be resolved when the licensing basis has been verified to be "Regulatory Required", and a Safety Evaluation is documented supporting that classification.

IV. Component Failure Data

None.

V. Automatic or Manually Initiated Safety System Responses

No safety system responses were involved in this event.

VI. Assessment of the Safety Consequences and Implications of the Event

The bases of Auxiliary and Fuel Handling Building Air Treatment system Technical Specification 3.15.3 states that if the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the 10 CFR 100 criteria for the accidents analyzed in Chapter 14 of the FSAR. Furthermore, the accident analyses in Chapter 14 of the FSAR for the Waste Gas Tank Rupture and the Maximum Hypothetical Accident contain assumptions for charcoal adsorber bank performance when calculating the resulting thyroid dose at the site boundary.

By crediting the Auxiliary & Fuel Handling Building Air Treatment system charcoal banks for accident mitigation within the 10 CFR 100 criteria, the Technical Specification bases and the FSAR analyses imply a Nuclear Safety Related (NSR) quality classification for the system.

A quality classification of NSR would require that the system meet the design requirements specified in FSAR Section 1.4, Principal Architectural and Design Criteria. Examples of these criteria are Seismic Class I, emergency power supply and redundancy. The Auxiliary & Fuel Handling Building Air Treatment system does not meet, and has never met, these safety grade design requirements. This is based on a review of the system's initial design, installation, system modifications and maintenance.

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In order to assess whether there are any safety consequences for this event, the initial design requirements were reviewed, along with the system function during accident and normal operations.

The system continues to meet all of the original design requirements, except that the Fuel Pool area for TMI Units 1 and 2 are serviced by a separate ESF Air Treatment system (installed as a TMI-1 restart commitment in 1985) for the postulated fuel handling accident in the Fuel Handling Building. The original design requirements for the Auxiliary & Fuel Handling Building Air Treatment system were accepted as satisfactory in the 1973 NRC Safety Evaluation Report, and are specified in the following documents:

* Gilbert Associates, Inc. Specification, Heating, Ventilating, and Air Conditioning, Three Mile Island Nuclear Station, Unit 1, SP-5750, December 30, 1969. All system fans are specified as Seismic Class II.

* Gilbert Associates Inc. Requirement Outline, RO-2705, Three Mile Island Nuclear Station Charcoal Filter Systems, October 17, 1968. This document was the specification sent to suggested bidders for charcoal filter systems. HEPA filters and charcoal adsorber banks were to be tested and accepted in accordance with the current Military Standards of the day.

* Gilbert Associates Inc. System Description, Auxiliary and Fuel Handling Building Ventilation System, March 10, 1970. When describing the ventilation exhaust system, the following statements are made: "...components include four, vane-axial fans each having 50 percent capacity and eight filter banks each having 12 1/2 percent capacity. Each filter bank contains roughing, HEPA, and charcoal filter elements. The fans and filter elements are of standard industrial design..."

The Auxiliary & Fuel Handling Building Air Treatment system operational modes are described below:

During the postulated Maximum Hypothetical Accident (MHA), a source of fission product leakage following the loss-of-coolant accident (LOCA) is water leakage from emergency core cooling system (ECCS) equipment located in the Auxiliary Building. This accident is analyzed in FSAR Chapter 14 for the dose contribution at the site boundary from an Auxiliary Building release. The dose contribution from ECCS equipment leakage is currently being recalculated assuming a larger amount of leakage and an unfiltered release from the building. GPUN expects this calculation to result in a Maximum Hypothetical Accident dose that continues to remain below the criteria of 10 CFR 100 without taking credit for the Auxiliary & Fuel Handling Air Treatment System. It should also be noted that during the MHA, cooling of ECCS equipment is accomplished with Nuclear Safety Related systems independent from the Auxiliary & Fuel Handling Building Air Treatment system.

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During the postulated Waste Gas Tank Rupture Accident, the dose release at the site boundary with or without the air treatment system operable is less than a "small fraction" of the dose criteria of 10 CFR 100 (A "small fraction" of 10 CFR 100 means 10 percent of these dose criteria, that is 2.5 rem and 30 rem for the whole-body and thyroid doses, respectively. -- as defined in USNRC Standard Review Plan Chapter 15.6.2).

During the postulated Fuel Handling Accident in the Fuel Handling Building, a separate Fuel Handling Building ESF Air Treatment system was designed and installed with the intent to mitigate, monitor and record the release from the fuel pool area. The system was installed in response to a commitment in the TMI Restart Hearing Partial Initial Decision. The NRC staff performed independent analyses of the dose consequences of this accident assuming the failure of the ESF Air Treatment system, and concluded that the calculated doses to personnel in the TMI-1 and TMI-2 control rooms, and at the exclusion area boundary, for the design basis fuel handling accident without a functional ESF system are below those of the acceptance criteria of SRP Sections 6.4 and 15.7.4. Thus, the corresponding releases of fission products to working and outdoor environments are "well within" the exposure criteria of 10 CFR 100.

During normal plant operational modes, the Auxiliary & Fuel Handling Building Air Treatment system does not perform any Nuclear Safety Related functions. The system functions to supply filtered and tempered air to the Auxiliary and Fuel Handling buildings, and maintains the work space at a minimum temperature for comfort. Supply and exhaust duct systems are arranged to direct this air to areas of low to higher activity, eventually directing it to the main exhaust filter system, and from there to the exhaust vent. The main exhaust filters include roughing, HEPA and charcoal cells. The design intent of the system is to maintain all releases from the buildings through a filtered and monitored path. This is accomplished by maintaining the buildings at a negative pressure with respect to the outdoor environment. GPUN has committed to test the exhaust filter banks per the following:

- ANSI/ASME N510-1980
- Reg Guide 1.52, Rev. 2, 1978
- ANSI/ASME N509-1980
- ASTM D3803, Method A, 1979.

Based on the initial system design documentation, and the system operational functions, it can be concluded that the Tech Spec bases imply an over-commitment to the Auxiliary & Fuel Handling Building Air Treatment system. This over-commitment to charcoal filtration during design basis accidents is also implied in the FSAR. Therefore, these two documents err when implying that the system must be operable during specific design basis accidents. Due to filter testing commitments, and system installation to Seismic II requirements, the system has a quality classification of REGULATORY REQUIRED (RR) per GPUN procedure EP-011, Methodology for Preparing the Quality Classification List.

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The implication of this event is that commitments in Licensing Basis and Design Basis documents are in error. These implied commitments were not made during the original design or installation of the system, but were added later when ventilation system Technical Specifications were instituted in 1981, which used wording similar to the inaccurate wording in the FSAR. These errors shall be corrected.

VII. Previous Events of a Similar Nature

No previous LER's were considered directly related to this event.

VIII. Corrective Actions Planned

1. All system maintenance, testing and design modifications performed while the Auxiliary and Fuel Handling Building Air Treatment system was classified as "Other" (Non-Safety Grade), will be reviewed and reconciled to the current "Regulatory Required" quality classification to determine if appropriate Quality Assurance was applied to any system changes.
2. Perform analysis of the Maximum Hypothetical Accident and the Waste Gas Tank Rupture Accident using revised assumptions and data.
3. Prepare a Safety Evaluation to support documentation changes to the bases for Technical Specification 3.15.3, and to FSAR Chapter 14 accident analyses for the Waste Gas Tank Rupture and Maximum Hypothetical Accident.

These corrective actions will be completed by August 15, 1997.

* The Energy Industry Identification System (EIIIS), 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).