

September 25, 1990

Docket No. 50-289

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GPU Nuclear Corporation
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Middletown, Pennsylvania 17057

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Dear Mr. Hukill:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. 74358)

The Commission has issued the enclosed Amendment No. 156 to Facility Operating License No. DPR-50 for the Three Mile Island Nuclear Station, Unit No. 1, in response to your letter dated July 26, 1989.

The amendment changes the rotational sequence of surveillances on the reactor protection system channels, reduces the calibration frequency for the reactor building sump radiation area monitor, and corrects two clerical errors in the Technical Specifications.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

original signed by Ronald Hernan

Ronald W. Hernan, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 156 to DPR-50
- 2. Safety Evaluation

cc w/enclosures:
See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Mr. Henry D. Hukill, Vice President
and Director - TMI-1
GPU Nuclear Corporation
P. O. Box 480
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Sincerely,

A handwritten signature in black ink that reads "Ronald W. Hernan".

Ronald W. Hernan, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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2. Safety Evaluation

cc w/enclosures:
See next page

Mr. Henry D. Hukill
GPU Nuclear Corporation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER & LIGHT COMPANY

PENNSYLVANIA ELECTRIC COMPANY

GPU NUCLEAR CORPORATION

DOCKET NO. 50-289

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 156
License No. DPR-50

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by GPU Nuclear Corporation, et al. (the licensee) dated July 26, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraphs 2.c.(2) of Facility Operating License No. DPR-50 are hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 156, are hereby incorporated in the license. GPU Nuclear Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance, to be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 25, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 156

FACILITY OPERATING LICENSE NO. DPR-50

DOCKET NO. 50-289

Replace the following pages of the Facility Operating License and the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Remove

viii
* Figure 3.5 - 2K
* Figure 3.5 - 2L
4-2
4-5
4-5a

Insert

viii

4-2
4-5
4-5a

*These figures were deleted by Amendment No. 150

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>
3.5-2K thru 3.5-2L	DELETED
3.5-2M	LOCA Limited Maximum Allowable Linear Heat Rate
3.5-1	Incore Instrumentation Specification Axial Imbalance Indication, TMI-1
3.5-2	Incore Instrumentation Specification Radial Flux Tilt Indication, TMI-1
3.5-3	Incore Instrumentation Specification
3.11-1	Transfer Path to and from Cask Loading Pit
4.17-1	Snubber Functional Test - Sample Plan 2
5-1	Extended Plot Plan TMI
5-2	Site Topography 5 Mile Radius
5-3	Locations of Gaseous Effluent Release Points and Liquid Effluent Outfalls

Calibration

Calibration shall be performed to assure the presentation and acquisition of accurate information. The nuclear flux (power range) channels amplifiers shall be checked and calibrated if necessary, every shift against a heat balance standard. The frequency of heat balance checks will assure that the difference between the out-of-core instrumentation and the heat balance remains less than 4%.

Channels subject only to "drift" errors induced within the instrumentation itself can tolerate longer intervals between calibrations. Process system instrumentation errors induced by drift can be expected to remain within acceptance tolerances if recalibration is performed at the intervals of each refueling period.

Substantial calibration shifts within a channel (essentially a channel failure) will be revealed during routine checking and testing procedures.

Thus, minimum calibration frequencies set forth are considered acceptable.

Testing

On-line testing of reactor protection channels is required monthly on a rotational basis. The rotation scheme is designed to reduce the probability of an undetected failure existing within the system and to minimize the likelihood of the same systematic test errors being introduced into each redundant channel.

The rotation schedule for the reactor protection channels is as follows:

- a) Channels A, B, C & D Before Startup, when shutdown greater than 24 hours and
- b) Monthly with one channel being tested per week on a continuous sequential rotation.

The reactor protection system instrumentation test cycle is continued with one channel's instrumentation tested each week. Upon detection of a failure that prevents trip action in a channel, the instrumentation associated with the protection parameter failure will be tested in the remaining channels. If actuation of a safety channel occurs, assurance will be required that actuation was within the limiting safety system setting.

The protection channels coincidence logic, the control rod drive trip breakers and the regulating control rod power SCRs electronic trips, are trip tested monthly. The trip test checks all logic combinations and is to be performed on a rotational basis. The logic and breakers of the four protection channels and the regulating control rod power SCRs shall be trip tested prior to startup when the reactor has been shutdown for greater than 24 hours.

Discovery of a failure that prevents trip action requires the testing of the instrumentation associated with the protection parameter failure in the remaining channels.

TABLE 4.1-1 (Continued)

	<u>CHANNEL DESCRIPTION</u>	<u>CHECK</u>	<u>TEST</u>	<u>CALIBRATE</u>	<u>REMARKS</u>
19.	Reactor Building Emergency Cooling and Isolation System Analog Channels				
	a. Reactor Building 4 psig Channels	S(1)	M(1)	R	(1) When CONTAINMENT INTEGRITY is required
	b. RCS Pressure 1600 psig	S(1)	M(1)	NA	(1) When RCS Pressure > 1800 psig
	c. RPS Trip	S(1)	M(1)	NA	(1) When CONTAINMENT INTEGRITY is required
	d. Reactor Bldg. 30 psig	S(1)	M(1)	R	(1) When CONTAINMENT INTEGRITY is required
	e. Reactor Bldg. Purge Line High Radiation (AH-V-1A/D)	W(1)	M(1)	R	(1) When CONTAINMENT INTEGRITY is required
	f. Line Break Isolation Signal (ICCW & NSCCW)	W(1)	M(1)	R	(1) When CONTAINMENT INTEGRITY is required
20.	Reactor Building Spray System Logic Channel	NA	Q	NA	
21.	Reactor Building Spray System Analog Channels				
	a. Reactor Building 30 psig Channels	NA	M	R	
22.	Pressurizer Temperature Channels	S	NA	R	
23.	Control Rod Absolute Position	S(1)	NA	R	(1) Check with Relative Position Indicator
24.	Control Rod Relative Position	S(1)	NA	R	(1) Check with Absolute Position Indicator
25.	Core Flooding Tanks				
	a. Pressure Channels	S(1)	NA	R	(1) When Reactor Coolant system pressure is greater than 700 psig
	b. Level Channels	S(1)	NA	R	
26.	Pressurizer Level Channels	S	NA	R	
27.	Makeup Tank Level Channels	D(1)	NA	R	(1) When Makeup and Purification System is in operation

TABLE 4.1-1 (Continued)

<u>CHANNEL DESCRIPTION</u>	<u>CHECK</u>	<u>TEST</u>	<u>CALIBRATE</u>	<u>REMARKS</u>
28. Radiation Monitoring Systems*	W(1)(3)	M(3)	Q(2)	<p>(1) Using the installed check source when background is less than twice the expected increase in cpm which would result from the check source alone. Background readings greater than this value are sufficient in themselves to show that the monitor is functioning.</p> <p>(2) Except area gamma radiation monitors RM-G5, RM-G6, RM-G7, RM-G8, and RM-G21, which are located in the Reactor Building. When purging is permitted per T.S. 3.6, RM-G5 and RM-G21 will be calibrated quarterly. If purging is not permitted per T.S. 3.6, RM-G5 and RM-G21 shall be calibrated at the next scheduled reactor shutdown following the quarter in which calibration would normally be due. RM-G6, RM-G7, and RM-G8 which are in high radiation areas shall be calibrated at the next scheduled reactor shutdown following the quarter in which calibration is due, if a shutdown during the quarter does not occur.</p> <p>(3) Surveillances are required to be performed only when containment integrity is required. This applies to monitors which initiate containment isolation only.</p>
29. High and Low Pressure Injection Systems: Flow Channels	NA	NA	R	

*Does not include the monitors covered under Specifications 3.5.5.2 and 4.1.3 or Specifications 3.21.1, 3.21.2 and 4.21.1, 4.21.2.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 156 TO FACILITY OPERATING LICENSE NO. DPR-50

METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER & LIGHT COMPANY
PENNSYLVANIA ELECTRIC COMPANY
GPU NUCLEAR CORPORATION

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-289

INTRODUCTION

GPU Nuclear Corporation (the licensee) requested various minor changes to the Three Mile Island Unit 1 (TMI-1) Technical Specifications (TSs) in a letter dated July 26, 1989. Two of these changes affect instrumentation surveillance frequency. The other changes provide clarification of or correct clerical errors in the TSs.

EVALUATION

Reactor Protection System (RPS) Testing

The first proposed change pertains to revision of the RPS channel testing schedule making the number of performances per channel more equitable. Performing tests in accordance with the present schedule accrues significantly different numbers of monthly tests per channel over time. Since the rotation always begins with channel A, operating cycles containing several plant shutdowns and start-ups result in channel A accruing the greatest number of test performances with B, C and D decreasing respectively. Unnecessary degradation or wear of components having the greatest number of test cycles may result over the life of the plant. This change only alters the order of test performance previously delineated. Specifically, the revised TSs would specify a continuous sequential rotation for weekly testing (even after startup from shutdowns of less than 24 hours) rather than always starting the sequence over with channel A following a shutdown. Revising the rotation schedule of the RPS channel testing will increase confidence in the operability of those channels that had a fewer number of tests. At the same time, it will reduce the wear on those components having the greatest number of test cycles.

The NRC staff has evaluated this request and finds that it is justified and acceptable. This change will also make the TMI-1 TSs more consistent with the B&W standard TSs.

Reactor Building Sump Area Radiation Monitor Surveillance

The second proposed change involves the calibration frequency of area gamma radiation monitor RM-G21, which monitors radiation levels at the reactor building sump standpipe (elevation 281). The licensee has requested exemption

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from quarterly calibration of this monitor during periods when reactor building purging is not permitted. During such periods (i.e. normal power operation), the monitor would be calibrated during the next scheduled reactor shutdown following the quarter in which calibration would normally be due. This request is consistent with a similar provision for radiation monitor RM-G5 (reactor building personnel hatch) that was approved by License Amendment NO. 103 in May 1985.

Radiation channel RM-G21 provides monitoring of activity for containment isolation. It monitors the reactor building sump and alarms and isolates the sump by closing valves WDL-V534 and WDL-V535 on detection of radioactivity above the setpoint.

The licensee's application stated that decreasing the calibration frequency will have no effect on the nuclear safety or safe plant operation since:

- a. the safety function is required infrequently; the sump isolation valves are normally closed (open only for draining the sump).
- b. changing isolation valve positions to open requires manual action. It is not automatic. Closure of WDL-V535 is automatic on low sump level.
- c. conservatism exists in the independent alert setpoint.
- d. administrative controls require operator action in response to excessive radiation levels indicated by sustained or unexpected alert or high alarm from radiation monitors reading out in the control room.

Given the above, the licensee claims that any drift resulting from the longer calibration frequency should not impact the ability to isolate the sump and that the benefit of the change that will result from the decrease in calibration frequency is a reduction in personnel exposure and this will offset any decrease in reliability resulting from the increase in calibration frequency.

In its review of this request, the staff notes that calibration of containment monitors, such as area gamma radiation monitor RM-G21, may be considered a special case when compared to the calibration needs of all other area monitors in the plant. Calibration of these monitors requires personnel entry to the containment. With the reactor at power, this person would be potentially exposed to high levels of neutron and gamma radiation, as well as airborne radioactivity levels. In order to minimize radiation to personnel calibrating the containment areas monitors, the licensee would have to shut down the reactor and purge containment prior to personnel entry. However, shutting down the reactor every quarter to calibrate the containment area monitors is not cost effective with respect to the philosophy of ALARA.

Additional factors that influence our evaluation are that area monitors in containment (reactor building) are not safety related and are not required to operate during accident or seismic events. Only those two high-range monitors installed in accordance with NUREG-0737 need be so qualified. Three Mile Island Unit 1 TSs require all area monitors to have a channel check and functional test at frequent intervals (i.e., weekly and monthly respectively) to verify operability of the channel, including alarm function.

From the above, we can draw the following conclusions concerning area monitor RM-G21, and area monitors in containment in general:

- (1) They are not used primarily for occupational exposure purposes.
- (2) They are located in high radiation areas so that an RWP and portable radiation survey equipment are required for entry into the area in accordance with TSs. Therefore, these area monitors are not needed for radiation protection when entry into containment is made.
- (3) There is no need for calibrating them every quarter if this necessitates unnecessarily exposing personnel to high levels of radiation during each calibration. This is not consistent with ALARA philosophy. Channel checks and functional tests are performed frequently to assure operability of the channel in accordance with TSs.
- (4) They should, however, be calibrated quarterly whenever full containment purging is permitted and not less often than once every 18 months during refueling outages.
- (5) Recalibration of these monitors should be performed after maintenance or replacement of any component that could affect calibration.

Based on the above criteria, we concur with the TS change that defers calibration frequency requirements for area monitor RM-G21 from quarterly to periods of shutdown when full purging is permitted.

Editorial Changes

The licensee proposed changing the list of monitors in the note on page 4-5a to exclude those monitors specifically identified, thereby resolving conflicts between table 4.1-1 item 28 and tables 4.21-1 and 4.21-2.

Revising the note to exclude the monitors identified by the specified TS sections, 3.21 (Radioactive Liquid Effluent Instrumentation) and 4.21 (Radioactive Gaseous Process Effluent Monitoring Instrumentation), eliminates possible ambiguity in the Radiation Monitoring System channel being described.

The final proposed change is administrative in nature and has no adverse effect upon nuclear safety. TS 4.1-1.23 has been changed to correct a clerical error since "Absolute" has been specified instead of "Relative".

The staff concurs with the above editorial changes because they remove ambiguity and errors from the TSs.

In addition to the above changes, the staff has included revised page viii to the TS index to correct a clerical error on that page with the issuance of License Amendment No. 150. Figure 3.5-2m was to remain as part of the TSs.

ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted areas as defined in 10 CFR Part 20 and changes surveillance requirements. We have determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released off site, and that there is no significant increase in individual or cumulative occupational radiation exposure. The staff has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

CONCLUSION

We have concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor:

Ronald W. Hernan

Dated: September 25, 1990