



GPU Nuclear Corporation  
Post Office Box 480  
Route 441 South  
Middletown, Pennsylvania 17057-0191  
717 944-7621  
TELEX 84-2386  
Writer's Direct Dial Number:

October 3, 1984  
5211-84-2244

Office of Nuclear Reactor Regulation  
Attn: D. G. Eisenhut, Director  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)  
Operating License No. DPR-50  
Docket No. 50-289  
Status of Selected NUREG 0737 Long Term Items

This letter updates the information provided by our letter dated February 27, 1984 (5211-84-2045) concerning the status of 9 long term NUREG 0737 items. Unless required for clarity, we have not duplicated information previously supplied which has not changed. With the exception of Item II.E.1.1, GPUN is meeting the schedules provided in the February 27, 1984 letter.

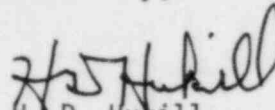
With regard to Item II.E.1.1, Emergency Feedwater Long Term Upgrade, GPUN has completed 3 of the previously identified 13 modifications. GPUN is continuing engineering and construction of EFW modifications. We plan to construct modifications or portions thereof which would not prevent the plant being ready to restart when restart is authorized. At any point in time, we intend to have TMI-1 in a configuration which would support restart within 4-6 weeks of NRC permission to restart. However, we will not complete all of the EFW related NUREG-0737 requirements by the end of 1984, as previously scheduled. The current schedule shows construction completion during the third quarter of 1985 with system tested and fully operational the fourth quarter of 1985 (which assumes TMI-1 shutdown during the entire construction phase). As discussed in the attachment, the primary reason for the delay from our previous schedule is that the electrical scope required to implement the long

8410100524 841003  
PDR ADDOCK 05000289  
P PDR

A046  
11

term EFW upgrade was significantly more extensive than originally anticipated. GPUN remains committed to completion of all EFW long term upgrade modifications prior to criticality following the refueling outage after restart.

Sincerely,

  
H. D. Huxill  
Director, TMI-1

HDH:CWS:vjf

Enclosures

cc: R. Conte  
J. Stolz  
J. Van Vliet

NUREG-0737 (Item I.C.1) Emergency Operating Procedures (ATOG)

III. STATUS

The procedures are in place and training of all the licensed operator crews is complete.

Eleven of the thirteen NRC questions on the Procedures Generation Package have been answered. Answers to the two remaining questions are contingent on the release of an EPRI topical report which is expected this year. Based on having the EPRI report by the end of 1984, we estimate a GPUNC response to the NRC on the remaining two questions in the first quarter of 1985.

NUREG 0737 (Item I.D.1) Control Room Design Review

III. STATUS

GPUN completed and submitted the supplementary report to the final Control Room Design Report on June 29, 1984 (5211-84-2153). No further action on this item is planned pending receipt of the NRC Safety Evaluation Report.

NUREG 0737 (Item I.D.2) - Safety Parameter Display System - SPDS

III. STATUS

- o SPDS Safety Analysis - Submitted April 30, 1984. (5211-84-2100)
- o User Guidelines - User guidelines have been developed.
- o Displays Developed - The basic SPDS performance including analysis and evaluation is scheduled to be completed by 1/1/85. The final verification and validation report is scheduled to be issued by 1/31/85.
- o Users Trained - No Change in Status
- o Hardware Implementation - Engineering was released for construction on 7/27/84 and construction remains scheduled to be completed by 1/1/85. Testing and debugging of the completed upgraded SPDS system is scheduled to be completed during the first quarter 1985.

An updated list of the modifications required by the Emergency Feedwater Long Term Upgrade is provided herein. The changes to the list are the replacement of the main steam/main feedwater (MS/MFW) differential pressure EFW initiating signal (Item 6) with EFW initiation on high containment pressure (Item 14) and the addition of the seismic interaction study (Item 15).

The MS/MFW differential pressure signal will be replaced by a safety grade EFW system initiation on a high containment pressure signal. The purpose for the MS/MFW differential pressure signal was to initiate the EFW system during a guillotine rupture of a MFW line. Steam generator level is a timely initiator for this accident and is included in our design (Item 7). However, OTSG level instrumentation is potentially affected by a MFW line break inside containment. The harsh containment environment can cause instrument inaccuracies or a rapid depressurization of the affected OTSG can lead to flashing of the reference leg. Use of the high containment pressure isolation signal avoids containment environment and reference leg flashing considerations. This replacement signal initiates the EFW system soon enough to satisfy the MFW line break accident analysis assumption of full EFW within 40 seconds. For MFW line breaks outside containment, the OTSG level instrumentation is not subjected to the accident environment. Rapid OTSG depressurizations are precluded in this instance by the MFW isolation check valves which isolate the affected OTSG. Therefore, EFW initiation will occur for the spectrum of MFW line break accidents by utilizing both low OTSG level and containment pressure as initiating signals.

The seismic interaction study (Item 15) and associated corrective actions have been completed with the exception of deletion of one EFW support and upgrade of another support inside containment. GPUN letter serial 5211-84-2236, dated 8/7/84 documents our commitment to complete the support changes by the end of November or, in any event, prior to criticality.

MFW isolation on a MS/MFW differential pressure signal has been replaced by high OTSG level, high containment pressure isolation signal and by the Main Steam Line Rupture Detection System (MSLRDS).

The list of emergency feedwater long term upgrade modifications is as follows:

- (1) Safety grade EFW control and block valves.
- (2) Upgrading the EFW pump recirc-line from control valves (EFV-8's) to the condensate storage tank to seismic.
- (3) Modify the vent stacks for MSV-22's and MSV-4's to seismic.
- (4) Expand flooding capacity in the event of a MFWLB by removing some walls in the alligator pit and tendon access gallery.

- (5) Provide safety grade power to COV-111's and upgrade-cable-routing to COV-14's to seismic.
- (6) Replaced by Item (14).
- (7) Provide safety grade OTSG level instrumentation and signals for MFW isolation on OTSG high level and low level initiation of EFW.
- (8) Provide dual setpoints for OTSG level control using EFV-30's.
- (9) Provide safety grade automatic control of EFW independent of the ICS.
- (10) Provide safety grade MSLRD system for MFW system.
- (11) Provide overspeed trip indication in the control room for the turbine driven EFW pump.
- (12) Provide an Intermediate Building (Alligator Pit) flooding alarm .
- (13) Upgrade to safety grade the water level indication and low-low water level alarm in the control room for each condensate storage tank.
- (14) Provide safety grade EFW initiation on high containment pressure.
- (15) Prevent adverse seismic interaction between the EFW system/components and non-seismic systems/components.

### III. STATUS

#### (1) Construction

GPUN has completed the installation of modifications (2), (3), and (4). Modification (1) is presently in the construction stage. Our current plans include completing major piping configuration changes for the new EFW control and block valves by March 1, 1985. This is subject to review in November when we would start cutting into existing piping.

#### (2) Engineering (Except Cable and Conduit)

On August 8, 1984 the engineering design package for modifications (5), (11) and (12) was released for construction. These modifications are presently in the construction planning and scheduling stage. Similarly, on August 17, 1984 the mechanical/structural engineering design package for modifications (7), (8), (9), (10), (13), and (14) was released for construction. These modifications are also in the Construction planning and scheduling stage. The electrical design package for these 6 modifications is scheduled to be released for construction by October 31, 1984.

(3)

### Engineering (Cable and Conduit)

GPUNC released the basic engineering for the EFW long term upgrade in August 1984. This was a few weeks behind the mid July date provided in our February 27, 1984 letter. With the basic engineering available, we authorized work to commence on the cable and conduit design on August 6, 1984. Upon receipt in late August of the engineering release schedule for cable and conduit, we realized that the electrical scope required to implement the long term EFW upgrade was significantly more extensive than anticipated.

Review of the scope of electrical work required to support the EFW long term modifications indicates that 655 new or modified cable tray/conduit supports, 7,000 feet of new cable tray and conduit, 400 feet of underground duct bank, 60,000 feet of cable and 11 new control cabinets are required. As a result, engineering, construction and startup and test schedule durations have substantially increased from previous estimates. The engineering for conduit and tray routing is scheduled for release in six separate construction packages commencing October 1984 and extending through December 1984.

Construction will begin following release of each engineering package to the field. Conduit and tray routing will be conducted in accordance with restraints in company policy as they pertain to operational safety and location restrictions. Based on the assumption of 2 construction shift, GPUN presently estimates completion of installation during the third quarter of 1985 with 3 months for terminations and startup and test activities requiring plant shutdown. Upon review of the entire cable and conduit packages in December 1984, GPUN will re-examine this schedule to see if improvements in schedule can be made.

#### NUREG 0737 (Item II.B.1) High Point Vents

### III. STATUS

GPUN has installed high point vents in the hot legs, pressurizer and reactor vessel head. The ATOG procedure has been issued and training on the ATOG procedure is complete.

III. STATUS

The relocation of an existing reach rod extension on valve DH-V64 is scheduled to be completed by the end of 1984.

By letter dated July 27, 1984 GPUN proposed an alternative to the installation of the new post-accident boron precipitation control bypass line and valve in the Decay Heat Removal System (DHRS). The NRC staff has requested additional information which will be provided in October 1984. Receipt of the NRC's concurrence with this alternative and installation of the DH-V64 reach rod will complete item II.B.2

NUREG 0737 (Item II.F.2) Instrumentation for Detection of Inadequate Core Cooling

III. Status

Saturation Margin Monitor

The qualified safety grade temperature sensor in each RCS hot leg has been installed. The safety grade  $T_{hot}$  leads have been terminated within the Foxboro signal conditioning cabinets.

The seismic test program performed by Wyle Lab. on Weston digital indicators is completed and GPUNC is reviewing the data for approval. GPUNC will release the new meters for manufacturing after approval of the test data. Meter manufacture requires 60 days and we estimate receipt of the new meters by January 15, 1985. GPUN plans to replace the currently installed meters at the first available outage of 30 days or more duration subsequent to receipt of qualified meters.

Incore Thermocouples

GPUN will replace the present digital indicator (as discussed above) with a seismically qualified unit during the first available outage of 30 days or more duration subsequent to receipt of qualified meters.

Reactor Coolant Inventory Trending Systems

Onsite delivery of the final long lead items is scheduled by November 20, 1984. The modification remains scheduled for completion by the end of 1984. Testing will be completed during the first quarter of 1985.

NUREG-0737 (Item III.D.3.4) Control Room Habitability

III. Status

Onsite Hazards: In response to the NRC letter of Dec. 28, 1983, a more detailed analysis of chlorine and ammonium hydroxide onsite hazards was performed by Pickard, Lowe & Garrick consultants for GPUN. The conclusions of this analysis were submitted to the NRC via letter 5211-84-2099, dated April 30, 1984, which committed to the following:

Chlorine - A Chlorine Detection System (CDS) will be installed that will alarm in the control room and automatically isolate the Control Building Ventilation System such that the control room operator has at least 2 minutes to don emergency air breathing apparatus. Engineering evaluation has determined that the CDS requires redundant Cl<sub>2</sub> detectors at the River Water Intake Chlorinator House and at the Air Intake Structure which will automatically actuate and isolate the Control Building Ventilation System.

Order Long Lead Items	December 1984
Issue Engineering Package for Installation	March 1985
Complete Installation	*
Complete Testing and Turnover to Plant	*

\*Outage required for the final tie-ins, therefore, completion schedule is dependent on plant availability. This modification will be completed no later than the end of the next refueling outage. Construction activities feasible during plant operation will be implemented. Earlier completion of the project will depend on having an outage of sufficient duration.

Ammonia - Engineering evaluation performed by PLG has determined that the ammonia would not pose a hazard for control room habitability if the dike surrounding the Ammonium Hydroxide Tank were modified. This dike modification will limit the evaporation surface area to less than 550 square feet and contain the entire contents of the tank.

Issue engineering package for installation	Dec. 1984
Complete Installation	Jan. 1985

Radiation - PLG's engineering evaluation determined that airborne radiation does not pose any problems for habitability of Control Room by the operators with the as designed Control Building Ventilation System.



Failure Modes and Effects Analysis (FMEA) - The analysis for the onsite and offsite hazard analysis was based on the Control Building Ventilation System performing as designed. The analysis was based on consideration of all obvious systems failure mode. The NRC requested a FMEA be performed to assure that all single failures of active components are considered. The FMEA effort is presently being completed. GPUN expects to submit the results of FMEA to the NRC by November 30, 1984.

Offsite Hazards - A Probabilistic Risk Assessment (PRA) was made to determine the aggregate probability of offsite railroad accidents causing an exceedence of toxic limit values in the control room. The conclusion submitted to the NRC via licensing letter 5211-84-2199, dated August 8, 1984, was that no modifications were required in addition to the Chlorine Detection System already planned. GPUNC is awaiting NRC response to this submittal.

NUREG 0737 Supplement 1 - REG. GUIDE 1.97, REV. 2

III. STATUS

The final Reg. Guide 1.97 report and implementation schedule was submitted to the NRC on October 1, 1984.