September 16, 1982

SECY-82-384

POLICY ISSUE
(Notation Vote)

For: The Commissioners

From: William J. Dircks, Executive Director for Operations

Subject: THREE MILE ISLAND, UNIT 1 (TMI-1) NUREG-0737 ITEMS STATUS

Purpose: To provide the Commission with the status of implementation of NUREG-0737 requirements on TMI-1 and the staff's recommendation for deferral of certain NUREG-0737 requirements on TMI-1.

Discussion: By memorandum dated July 27, 1982, Chairman Palladino requested that the staff address NUREG-0737 requirement deferrals on TMI-1 as outlined in CLI-81-3 indicating that the Commission itself will consider the need for deferral of NUREG-0737 requirements on TMI-1 after hearing staff recommendations. A tabulation of the status of all applicable NUREG-0737 action items is enclosed (Enclosure 1). Included in this tabulation are those items with implementation dates occurring after the licensee's estimated date for plant readiness for restart of February 1, 1983 and those with schedules still to be determined (TBD).

The licensee has indicated that five of the items scheduled by NUREG-0737 for completion prior to the licensee's estimated restart date, need deferral to dates after February 1, 1983. These are identified in Enclosure 1. The staff herein provides its recommendations regarding the licensee's proposed delays.

The licensee has requested deferral of four of the items until March 31, 1983 (or restart whichever is later) and one item until the first refueling after restart, which should occur about March 1984. The staff's evaluation of the deferral of these five items is provided in Enclosures 2 and 3.

The staff has concluded that the licensee has provided adequate justification for schedule delay for four of the five items. For item II.B.2.2 Plant Shielding Modifications, the licensee needs deferral until the first refueling after restart.

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The short term modifications for this action item have been completed. The remaining work consists of the installation of remote operators on six Decay Heat Removal (DHR) valves and control panels to facilitate maintaining a recirculation flow path to prevent boron precipitation in the core under certain accident conditions. However, the staff has not completed its review of licensee's justification for interim operation prior to implementation. The staff's evaluation for Item II.B.2.2 is in Enclosure 2.

The remaining four items are: II.B.3, Post Accident Sampling; II.F.1.4, Containment Pressure Monitor; II.F.1.5, Containment Water Level Monitor; and II.F.1.6, Containment Hydrogen Monitor. The licensee has committed to completing these four items by March 31, 1983 or before restart whichever is later, in a letter dated September 7, 1982. These commitment dates represent a modification of his earlier commitment of first refueling after restart. Although the licensee's schedules indicate that these items are expected to be completed prior to January 1983, the licensee is unwilling to commit to this earlier date because of unforeseen problems which may likely develop which could delay implementation beyond the possible restart dates. Since it is unlikely that TMI-1 could be restarted prior to February 1983, plant operation until March 31, 1983 would represent a very short period without these modifications completed. The staff's evaluation for these items is provided in Enclosure 3.

With respect to other items indicated as completed or to be completed before restart in Enclosure 1, the staff will verify their completion before restart authorization.

Recommendations: Recommend that the Commission:

1) approve deferral of the implementation dates for NUREG-0737 Items II.B.3, II.F.1.4, II.F.1.5, and II.F.1.6 until March 31, 1983 or before restart, whichever is later;

2) withhold approval of the proposed implementation date (first refueling outage following restart) for NUREG-0737 Item II.B.2.2 until the staff has completed its review (approximately October 8, 1982).

William J. Dircks
Executive Director
for Operations

Enclosures: See Next Page

Enclosures:
1. Status of NUREG-0737
   Implementation
2. Evaluation of Item II.B.2.2
3. Evaluation of Items II.B.3,
   II.F.4, II.F.5 and II.F.6

Commissioners' comments or consent should be provided directly to the Office of the Secretary by c.o.b. Monday, October 4, 1982.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Monday, September 27, 1982, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

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ENCLOSURE 1

STATUS OF NUREG-0737 IMPLEMENTATION

A. All items with implementation dates prior to 1/1/81 are complete.

B. All items with implementation dates between 1/1/81 and 6/30/81 are complete; the following are under post implementation review:

ITEM	DESCRIPTION	NUREG-0737 SCHEDULE	LICENSEE SCHEDULE COMMITMENT	REMARKS
II.K.3.1	Evaluate the need for a PORV auto isolation system	1/1/81	Complete	B&W Generic report under review. ANO-1 is lead plant
II.K.3.7	Evaluate the probability of PORV and SV opening	1/1/81	Complete	Same as II.K.3.1
III.D.3.4.1	Control Room Habitability -Design Review	1/1/81	Complete	Licensee submittal under NRC review

C. Status of items with implementation dates after 7/1/81:

ITEM	DESCRIPTION	NUREG-0737 SCHEDULE	LICENSEE SCHEDULE COMMITMENT	REMARKS
I.A.1.3.2	Minimum Shift Crew	7/1/82	Complete	
I.A.3.1	Simulator Exams	10/1/81	Complete	
I.C.1	Transient and Accident Procedures Revision	TBD per SECY-82-111	1st refueling after restart	Generic procedure guidelines are under staff review.
I.D.1	Control Room Design Review	TBD per SECY-82-111	TBD	
I.D.2	Plant Safety Parameter Display Console	TBD per SECY-82-111	TBD	
II.B.1	Reactor Coolant System Vents Installation	Per 50.44 1st refueling after 7/1/82.	1st refueling after restart.	Licensee design submittal under NRC review.
II.B.2.2	Plant Shielding modifications	7/1/82	1st refueling after restart.	Short term modifications are complete; long term (install remote operators on 6 DHR valves) are delayed by procurement difficulties and only needed for protection against one specific accident scenerio.
II.B.2.3	Equipment Qualification	TBD per 50.49 dated 6/25/82	TBD	Licensee submittals are under NRC review.
II.B.3	Post Accident Sampling	1/1/82	3/31/83	Liquid sampling modifications are complete; RCS dissolved gases and containment sampling are 75% complete. Alternate procedures allow for collection and analyzing within three hours; licensee target schedule 12/1/82.
II.B.4	Training to Mitigate Core Damage	10/1/81	Prior to restart	Most training completed; additional training fo emergency support directors and HP chemistry foremen will be completed prior to startup.
SECY-82-111	RG 1.97-Application to emergency Resp. facilities	TBD per SECY-82-111	TBD	

*Item with NUREG-0737 implementation schedule occurring before assumed restart date of 2/1/83 that the licensee does not commit to completing prior to restart.

M	DESCRIPTION	NUREG-0737 SCHEDULE	LICENSEE SCHEDULE COMMITMENT	REMARKS
D.1.2	Safety and Relief Valve Tests	7/1/82	Prior to restart	Generic EPRI report was submitted and is under review; plant specific report and modifications will be completed prior to restart.
D.1.3	PORV Block Valve Tests	7/1/82	Prior to restart	Licensee is participating in the generic EPRI program. Report will be submitted prior to restart.
E.1.1	AFW Evaluation (Long Term Modifications).	1/1/82	Complete	Additional long term modification to upgrade the AFWS to fully safety grade will be complet by first refueling following restart.
E.1.2	AFW Automatic Initiation and Flow Indication (Safety Grade).	7/1/81	Complete	Additional modifications to upgrade AFWS contr to safety grade will be completed by first refueling following restart. (Subject of license condition per ASLB PID Paragraph 2030)
E.4.1	Install Dedicated Hydrogen Penetrations	7/1/81	Complete	
E.4.2.5	Modify Containment Pressure Setpoint	7/1/81	Complete	
E.4.2.7	Radiation Closure Signal on Purge Valves.	7/1/81	Complete	
F.1.1	Noble Gas Monitor	1/1/82	Prior to restart	75% complete - Licensee schedule 12/31/82
F.1.2	Iodine/Particulate Monitor	1/1/82	Prior to restart	75% complete - licensee schedule 10/1/82
F.1.3	Containment Radiation Monitor (High Range).	1/1/82	Prior to restart	75% complete - licensee schedule 12/31/82
F.1.4	Containment Pressure Monitor	1/1/82	3/31/83	98% complete - licensee target schedule 12/1/8
F.1.5	Containment Water Level Monitor	1/1/82	3/31/83	98% complete - licensee target schedule 12/1/8

ee note on page 2 of enclosure)

ITEM	DESCRIPTION	NUREG-0737 SCHEDULE	LICENSEE SCHEDULE COMMITMENT	REMARKS
F.1.6	Containment Hydrogen Monitor	1/1/82	3/31/83	98% complete - licensee target schedule 12/1/82
I.F.2	Instrumentation to detect ICC	1st refueling after 1/1/83 per SECY 81-582	T/C-prior to startup; RPV level-TBD	Backup, non-safety grade incore thermocouples (T/C) will be installed prior to restart; T/C-75% Complete-licensee schedule 10/1/82. Reactor vessel level requirements will be determined per SECY-81-582.
I.K.2.9	FMEA of ICS	TBD	Modifications Complete	NRC approval issued; awaiting testing during hot functional or power escalation testing.
I.K.2.10	Safety Grade Anticipatory Reactor Trips	7/1/81	Complete	
I.K.3.1	Automatic PORV Isolation	TBD by staff review of failure reports per II.K.3.2 submittals	TBD	Awaiting staff determination
I.K.3.5	Automatic Trip of RCPs	TBD by staff review	TBD	Awaiting staff determination
I.K.3.30	SBLOCA Model	1/1/82	Model modifications to be submitted by 10/82	Under staff review; GPU participating in Owners Group.
I.K.3.31	Compliance with 10 CFR 50.46	1 year after staff approval	TBD	Awaiting staff determination.
II.A.1.2	Upgrade Emergency Response Facilities	TBD per SECY-82-111	TBD	Modifications proceeding per 9/10/81 letter; awaiting further staff guidance.
II.A.2.2	Emergency Preparedness-Meteorological Data	TBD per SECY-82-111	TBD	Awaiting further staff guidance; interim actions have been found acceptable.
II.D.3.4.2	Control Room Habitability Modification	TBD	Second refueling after restart	Modifications are those identified in licensee' study for III.D.3.4.1 which is under staff review.

ENCLOSURE 2

Enclosure 2

EVALUATION OF NUREG-0737, ITEM II.B.2.2, IMPLEMENTATION AT TMI-1

Introduction

NUREG-0737, Item II.B.2.2, "Plant Shielding Modifications" requires all licensees to provide for adequate access to vital areas and protection of safety equipment by design changes, increased permanent or temporary shielding or post accident procedural controls. GPU Nuclear (the licensee) performed a radiation and shielding review of the spaces around systems that may, as a result of an accident, contain highly radioactive materials, in accordance with NUREG-0737, Item II.B.2.1, and determined that modifications were required. The licensee has documented the results of this review and described the problems associated with implementating the required modifications by the revised implementation schedule date of July 1, 1982, in letters dated May 21, 1982 and June 15, 1982.

Evaluation

As a result of the radiation and shielding review, modifications were determined to be necessary for adequate access to some motor control centers and remote operation of six Decay Heat Removal (DHR) System valves. The modification to limit the radiation dose to acceptable levels at the motor control centers have been completed; the modifications to the DHR valves have been delayed and are scheduled for completion, by the licensee, at the first refueling following restart about March 1984.

For an accident scenario involving a large cold leg loss-of-coolant accident (LOCA), it is necessary to maintain a long-term flow path through the reactor core in order to avoid a buildup in boron concentration that could cause subsequent precipitation and adversely affect long-term cooling of the reactor. To prevent this occurrence, the TMI-1 plant, similar to other Babcock and Wilcox plants, must establish a flow path which enables the decay heat removal (DHR) pumps to either discharge or to take suction from the reactor coolant hot leg approximately 24 hours following the LOCA. In order to establish this recirculation path, repositioning of some DHR cross over valves will be required. The DHR valves are located in an area where potential high radiation levels can occur after an accident. These levels might result in doses to operators in excess of the 5 rems criteria of II.B.2.2. Therefore, remote operation of the valves from local control panels located in low radiation areas was determined to be necessary.

The licensee began detailed engineering efforts in February 1981 on the remote DHR valve operators. The corrective action required and a projected completion date of Cycle 6 refueling were provided in the Restart Report, Amendment 25, dated May 13, 1981. In August 1981, bid specifications were issued to vendors

for remote operators for the six DHR valves. Shortly after the bid proposals were received in December 1981, which indicated a one year delivery time, the licensee announced a six month delay in restart due to steam generator (SG) problems. Because of manpower and financial constraints imposed by the SG problems, work on II.B.2 (and others) was placed on engineering hold. It was the Licensee's belief that it would be impossible to obtain and install the valve operators prior to restart, even with the restart delay, because the proposals received were not adequate and the lead time for delivery was longer than the predicted delay. Subsequently, by letter dated March 16, 1982, the valve operator vendor was provided comments concerning problems with their proposal. A pre-award meeting was then conducted on June 30, 1982 for four of the valve operators and the purchase order for these four valve operators will be let in September 1982 with delivery expected in April 1983. The purchase order for the remaining two valve operators will be let, to another vendor, in October 1982 with delivery expected in July 1983. In addition, the safety grade, remote valve operation control panel will be ordered in December 1982 with delivery expected in September 1983. Upon delivery of the control panel, it will be possible for the Licensee to begin the electrical portions of the modification during plant operation. It will still be necessary, however, to place the plant in a cold shutdown condition to install the remote operators on the valves; this is planned by the licensee during the first refueling after restart, about March 1984.

Conclusions

Based on the staff's review, it appears that a good faith effort has been made by the licensee to implement this item, completing the short-term modifications and starting detailed engineering in February 1981 on the valve operators; and that there is good cause shown (manpower impact of the steam generator repair, vendor difficulties) for not being able to complete the installation before restart.

Repositioning of the DHR valves will be necessary only in the event of a large LOCA in the reactor coolant system cold leg, together with active failure in the a DHR train. However, the staff has not completed its review of licensee's justification for operation prior to implementation of this item.

ENCLOSURE 3

Enclosure 3

EVALUATION OF DEFERRED NUREG-0737 ITEMS II.B.3, II.F.4, II.F.5, AND II.F.6 AT TMI-1

Introduction

In addition to NUREG-0737 Item II.B.2.2, which is discussed in Enclosure 2, GPU Nuclear (the licensee) has identified four other items with scheduled implementation dates occurring before the assumed restart date of TMI-1 that may not be completed prior to restart. These are action items: II.B.3 "Post Accident Sampling," II.F.1.4 "Containment Pressure Monitor," II.F.1.5 "Containment Water Level Monitor" and II.F.1.6 "Containment Hydrogen Monitor." The licensee has targeted completion of all four of these modifications for December 1, 1982 but is hesitant to commit to their completion prior to restart because unforeseen problems may develop. Therefore, the licensee has committed, by letter dated September 7, 1982, to complete these four items by March 31, 1983 or restart, whichever is later. If any work is needed after the plant would otherwise be ready and approved for restart, the licensee would complete the necessary work during a special shutdown before March 31, 1983.

Evaluation

Item II.B.3 - Post Accident Sampling

The requirements of this item are being implemented in three steps; Reactor Coolant System (RCS) liquid and dissolved gas sampling and containment atmospheric sampling. The RCS liquid sampling modifications have been completed; the RCS dissolved gas sampling and containment atmospheric sampling are approximately 75% completed and are expected to be implemented by December 1, 1982. In the interim, it is possible to obtain a RCS or containment atmosphere sample, using presently installed equipment, and analyze for dissolved gases or isotopes in the containment atmosphere.

Item II.F.1.4 - Containment Pressure Monitor

This modification is being implemented through three engineering packages, two of which have been completed. The implementation is approximately 98% complete and no problems in meeting the present schedule of December 1, 1982 are envisioned. In the interim, presently installed (control grade) pressure instrumentation to measure containment pressure beyond design pressure (0-100 psig) will be operational to provide reliable indication and recording.

Item II.F.1.5 - Containment Water Level Monitor

The requirements of a safety grade water level monitor are approximately 98% complete and full implementation is expected by December 1, 1982. An installed control grade reactor building sump level instrument will provide level indication in the control room and a wide range containment level, control grade, instrument will provide a 0" to 120" reactor building level indication.

Item II.F.1.6 - Containment Hydrogen Monitor

The requirements for this modification are physically extensive and problems were encountered with procurement of long lead time items. The modification is presently about 98% complete with work proceeding toward a December 1, 1982 implementation. As noted for II.B.3, it is possible, using presently installed equipment, to obtain a containment atmosphere sample which could be analyzed for hydrogen in less than one hour.

The licensee plans to complete all of the above items prior to the targeted restart date, but is concerned that unexpected delays may prohibit implementation and thereby limit restart. The licensee's concerns are based on experiences that have occured at other facilities during final system testing and calibration. For example, at the Oconee Nuclear Station the Containment Hydrogen Monitor (Item II.F.1.6) was installed and being tested in Unit 1 when it was determined that the monitor would not properly calibrate. Investigation disclosed a malfunction of the pressure regulators (six per monitor) which required their replacement. Obtaining replacement regulators, their installation and system calibration delayed implementation of this item for approximately four months. Accordingly, GPU Nuclear's proposed scheduled delay commitment is to provide the additional time needed to correct these types of deficiencies.

Conclusions

Since the licensee has been pursuing implementation of NUREG-0737 Items II.B.3, II.F.1.4, II.F.1.5 and II.F.1.6 and is attempting to complete implementation prior to December 1, 1982 on a best efforts basis the staff finds good faith efforts have and are being fulfilled. Based on experience of other licensees regarding unexpected problems during final installation and testing, there is good cause for the licensee's need for the proposed delayed schedule commitment. The staff concludes that adequate compensating measures exist for the short interim period of possible plant operation for deferral of the NUREG-0737 Items II.B.3, II.F.1.4, II.F.1.5 and II.F.1.6 until March 31, 1983 or restart whichever is later.

12/81

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MEETING DATE: 10/6/82 Open X Closed ___

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