Three Mile Island Nuclear Station, Unit I
Operating License No. DPR-50
Docket No. 50-289

Technical Specification Change Request No. 91

The licensee requests that the attached pages replace pages 4-11, 4-12, 4-13, 4-13a, and 4-27a (Table 4.2-2) of the existing Technical Specifications.

Reasons for Change Request

TMI-1 does not have holder tubes for housing RVMSP capsules. However, TMI-1 is a participant in the B&W 177FA integrated reactor vessel surveillance program in accordance with Appendix H to 10 CFR 50. TMI-2 was the host reactor for the TMI-1 capsules. Due to the TMI-2 incident it is anticipated that TMI-2 will be non-operating for a longer period of time than TMI-1. Provisions must be made for the TMI-1 RVMSP in the interim until TMI-2 is operating. To date only one of the remaining five TMI-1 capsules have been inserted into the TMI-2 reactor. Therefore, capsules are available for irradiation at another host reactor. It has been decided to irradiate one TMI-1 capsule in the Crystal River Unit Three (CR-3) host reactor. CR-3 was selected as the host for the TMI-1 capsule because of an available insertion/withdrawal envelope with only minimal impact on the other RVMSP's being conducted at CR-3. It is planned that the TMI-1 capsule will be inserted into Crystal River 3 during the next refueling outage (scheduled for the second quarter of 1980). Therefore, TMI-1 will have an ongoing RVMSP. The irradiation in CR-3 will be substantially equivalent to irradiation in TMI-1 due to the similarity of the two units. Any differences can be accounted for by appropriate adjustments of the data.

Safety Evaluation Justifying Change

This change does not constitute an unreviewed safety question in that this change only allows the placement of a surveillance capsule in the Crystal River Unit 3 reactor.

The accumulated neutron fluence of capsule TMI-1C (8.2×10^{18} n/cm^2) corresponds to a fluence equivalent to 12 EFPY at the reactor vessel inner surface and 22 EFPY at the vessel 1/4T location. Data from this capsule should be available by 1983. Since the TMI-1 reactor has operated for approximately 4 EFPY to date, the accumulated operation in 1983 will be approximately 6 EFPY, assuming restart in early 1980. Therefore, the capsule accumulated fluence will still lead the reactor vessel accumulated fluence. The method of upgrading the Technical Specification pressure temperature curves beyond the current 5 EFPY applicability period is discussed in BAW 1439. The acceptability and conservative nature of this method was verified by the results of testing capsule TMI-1E also discussed in BAW 1439.

To supplement the data generated by the TMI-1 RVMSP, additional irradiation data on weld WF 25 is being generated from several other sources. First, one of two research capsules being irradiated in the CR-3 reactor contain tensile, Charpy V-Notch, and several sizes of compact fracture specimens of WF 25. This capsule is scheduled for pull-out and tests in 1982. The second source of data is the HSST program, Task 3. This program also includes tensile, Charpy V-Notch, and several sizes of compact fracture specimens. The final source of data is the NRC sponsored NRL In-Place Annealing Program. Part 1 of the program contains one inch thick compact fracture specimens and Part 2 contains Charpy V-Notch. Since the above programs will generate data at several irradiation levels, this data will be very complimentary to the data of the TMI-1 RVMSP.

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Amendment Classification (10 CFR 170.22)

This change is administrative in nature and has no environmental or safety issue, therefore, it can be considered a Class II License Amendment. Enclosed please find the prescribed remittance of $1200.00.

4.2 REACTOR COOLANT SYSTEM INSERVICE INSPECTION

Applicability

This technical specification applies to the inservice inspection of the reactor coolant system pressure boundary and portions of other safety oriented system pressure boundaries as shown on Figure 4.2-1.

Objective

The objective of this inservice inspection program is to provide assurance of the continuing integrity of the reactor coolant system while at the same time minimizing radiation exposure to personnel in the performance of inservice inspections.

Specification

4.2.1 The inservice inspection program to be followed is outlined in Table 4.2-1. Except as provided for in this table and as discussed herein, the inservice inspection program is in accordance with the ASME Code, Section XI, Rules for Inservice Inspection of Nuclear Reactor Coolant Systems, dated January 1, 1970, as modified by the Winter 1970 Addenda. Prior to initial plant operation a preoperational inspection of the plant will be performed of at least the areas listed in the ASME Code; provided accessibility and the necessary inspection techniques are available for each of these areas. The only exception to this will be areas where the necessary base line data is already available and has been obtained by the same techniques as will be used during inservice inspection.

4.2.2 The reactor vessel material surveillance capsules removed from TMI-1 during 1976 shall be inserted, irradiated in and withdrawn from the Three Mile Island Unit No. 2 (TMI-2) and Crystal River Unit No. 3 (CR-3) in accordance with the schedule shown in Table 4.2-2. (The insertion/withdrawal schedule shown in Table 4.2-2 may be revised at a later date pending the restart of TMI-2.) The licensee shall be responsible for the examination of these specimens and for submission of reports of test results in accordance with 10 CFR 50, Appendix H.

4.2.3 The accessible portions of one reactor coolant pump motor flywheel assembly will be ultrasonically inspected within 3-1/3 years, two within 6-2/3 years, and all four by the end of the 10 year inspection interval. However, the U.T. procedure is developmental and will be used only to the extent that it is shown to be meaningful. The extent of coverage will be limited to those areas of the flywheel which are accessible without motor disassembly, i.e., can be reached through the access ports. Also, if radiation levels at the lower access ports are prohibitive, only the upper access ports will be used.

4.2.4 The inspection schedule may be modified to coincide with those refueling or maintenance outages most closely approaching the inspection schedule.

4.2.5 Sufficient records of each inspection shall be kept to allow comparison and evaluation of future inspections.

4.2.6 The inservice inspection shall be reviewed at the end of five years to consider incorporation of new inspection techniques and equipment which have been proven practical, and a possible extension of the program to additional examination areas. The conclusions of this review shall be submitted to the NRC for evaluation.

4.2.7 The licensee shall submit a report or application for license amendment to the NRC within 90 days after any time that Crystal River Unit Three fails to maintain a cumulative reactor utilization factor of at least 65%.

The report shall provide justification for continued operation of TMI-1 with the reactor vessel surveillance program conducted at Crystal River Unit No. 3, or the application for license amendment shall propose an alternate program for conduct of the TMI-1 reactor vessel surveillance program.

For the purpose of this technical specification, the definition of commercial operation is that given in Regulatory Guide 1.16, Revision 4. The definition of cumulative reactor utilization factor is: Cumulative reactor utilization factor = (Cumulative megawatt hours (thermal) since attainment of commercial operation at 100% power x (100)) divided by (licensed power (MWt) x (Cumulative hours since attainment of commercial operation at 100% power)).

4.2.8 In addition to the reports required by Specification 4.2.7, a report shall be submitted to the NRC prior to September 1, 1982, which summarizes the first five years of operating experience with the TMI-1 integrated surveillance program performed at a host reactor. If, at the time of submission of this report, it is desired to continue the surveillance program at a host reactor, such continuation shall be justified on the basis of the attained operating experience.

Inspection Bases

a. The nuclear plant was designed prior to the issuance of Section XI of the ASME Code, Rules for Inservice Inspection of Nuclear Reactor Coolant Systems dated January 1, 1970. However, sufficient accessibility was included in the design to perform most inspections discussed in the code. The proposed inspection program follows the code except that inspections are focused on areas which engineering analysis has indicated are subject to the more critical stress, radiation, or transient conditions. The areas selected for inspection on this basis are listed in Table 4.2-1. These areas are exposed to the more severe conditions (which are still well within code limits) in the reactor coolant system. Therefore, they are expected to indicate potential problems before significant flaws develop in the selected areas or in other areas. It is considered that the focused approach specified herein will result in a meaningful inspection program in that it will provide assurance of continuing plant integrity.

In those areas where inspection methods are developmental, such as for remote inspection of the reactor vessel welds, reactor vessel nozzle inside radii and welds, and ultrasonic inspection of pressurizer support bracket welds, the inspection methods will be developed and tested to the extent practicable during preoperational inspections. (Development of inspection techniques will not be attempted on radioactive equipment unless necessary to explore a specified problem.) A preoperational inspection is planned of areas listed in the ASME Code which are within the inservice inspection boundaries and which are accessible for inspection. However, as discussed above, in areas where inspection methods are developmental, the inspections will only be performed to the extent practicable. Once an inspection method is selected for a particular inspection (e.g., U.T. for most volumetric inspections), it is intended that all subsequent inservice inspections be performed using the identical method and on the same component parts wherever practicable.

In addition to the above inspection, if any of the components within the inservice inspection boundary are disassembled for maintenance, the accessible parts will be given a normal visual examination as part of the routine plant maintenance operations.

b. Because of damage to the surveillance capsule holder tubes originally installed in TMI-1, irradiation of the TMI-1 capsules was to be conducted in TMI-2 pursuant to 10 CFR 50, Appendix H, Section II.C.4. One of the five remaining TMI-1 capsules (Capsule E had been withdrawn and tested earlier) was installed in a holder tube in the TMI-2 reactor at the initial startup of TMI-2. The other four capsules were scheduled for later insertions. However, due to the TMI-2 Incident, Unit 2 may be out of operation for a considerably longer period of time than will be TMI-1. So that TMI-1 will have an ongoing surveillance program, a TMI-1 capsule will be inserted into a holder tube in the Crystal River Unit 3 (CR-3) reactor. Because of the similarity of TMI-1 and CR-3, irradiation in TMI-1, and appropriate adjustments and margins can be imposed in applying the irradiation data to account for such differences as do exist.

The withdrawal schedule has been formulated to optimize the availability of irradiation data from all the capsules being irradiated in the CR-3 reactor.

Because the irradiation program is dependent upon the successful operation and a reasonable utilization of CR-3, reporting requirements are included to permit re-evaluation of the program if CR-3 suffers extended outages.

c. The reactor coolant pump motor flywheel ultrasonic test procedure is being developed to detect flaws of a small enough size to provide assurance of continued integrity based upon a conservative fracture mechanic's evaluation.

TABLE 4.2-2

A. SURVEILLANCE CAPSULE INSERTION & WITHDRAWAL SCHEDULE AT TMI-2

(Note: This schedule will be revised at a later date pending the restart schedules of TMI-1 and TMI-2)

Capsule Designation	Schedule: Insertion	Schedule: Withdrawal
TMI-1A	TMI-2 Start-up	End of 3rd Cycle
TMI-1B	End of 1st Cycle	End of 6th Cycle
TMI-1D	End of 6th Cycle	End of 15th Cycle
TMI-1E	Removed end of 1st Cycle of TMI-1	
TMI-1F	End of 10th Cycle	End of 24th Cycle

B. SURVEILLANCE CAPSULE INSERTION & WITHDRAWAL SCHEDULE AT CR-3

Capsule Designation	Insertion	Withdrawal
TMI-1C	End of 2nd Cycle	End of 5th Cycle