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SEP 12 1978

MEMORANDUM FOR: R. W. Reid, Chief, Operating Reactors Branch No. 4
Division of Operating Reactors

FROM: P. Check, Chief, Reactors Safety Branch
Division of Operating Reactors

SUBJECT: THREE MILE ISLAND 1 - INSERVICE INSPECTION AND TESTING PROGRAM

Plant Name: Three Mile Island 1
NSSS Vendor: B&W
Docket Number: 50-289
Responsible Branch and Project Manager: ORB-4, G. B. Zwetzig
Engineering and Projects Branch Involved: Engineering Branch
Description of Task: Review and Evaluate Three Mile Island 1, Inservice Inspection and Testing Program
Review Status: Requesting Additional Information

The ISI&T Review Group, Division of Operating Reactors, has reviewed Three Mile Island 1 Inservice Inspection and Testing Program. We find that we cannot complete our evaluation until the additional information requested in the enclosure is provided.

Original Signed by
Paul S. Check

P. Check, Chief
Reactor Safety Branch
Division of Operating Reactors

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Enclosure: As stated

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REQUEST FOR ADDITIONAL INFORMATION

THREE MILE ISLAND NUCLEAR STATION

ENGINEERING BRANCH

DIVISION OF OPERATING REACTORS

I. Class I Components

1. For Items B1.2 and B2.1, Examination Category B-B, the ASME Code requires 10% of the longitudinal and 5% of the circumferential welds to be inspected near the end of each inspection interval. Please supply additional justification to support your request for eliminating examinations. Low calculated stress alone is not sufficient to warrant exception.

2. For Items B1.4 and B2.2, Examination Category B-D, the ASME Code requires all nozzles to be examined 100% during the inspection interval. Please supply additional justification to support your request for the proposed selection of nozzles for examination.

3. For Items B1.6 and B4.1, Examination Category B-F, the ASME Code requires volumetric and surface examinations of 100% of all safe end welds during the inspection interval. Please provide additional justification for not complying with the Code requirements and provide an estimate of the following:

   (a) the normal range of expected radiation dose rates in the area of the safe ends,

   (b) the total number of man-hours involved in completing the examinations, and

   (c) the total number of man-rems involved in completing the examinations.

4. For Items B1.13, B1.14, B2.9 and B3.8, Examination Categories B-I-1 and B-I-2, please provide more information to justify your request for elimination for cladding inspection.

5. Are three housings equal to 10% of the peripheral control rod housings required to be examined under Item B1-18, Examination Category B-O?

6. For Item B3.1, Examination Category B-B, do the examinations intended meet the 5% requirement for the circumferential welds and the 10% requirement for the longitudinal welds?

7. For Item B3.2, Category B-D, volumetric examination is required by the Code. Please provide a more detailed technical justification for not meeting the Code requirements.

8. Will the welds chosen to be examined under Items B4.5, B4.7 and B4.8. Examination Category B-J, meet the 25% requirement of the Code?

II. Class 2 Components

1. Will the examinations intended for Items C1.1 and C1.2, Examination Categories C-A and C-B, satisfy the requirements for examination over the service life of the plant?

2. Provide a technical justification for examining the bolting of only three decay heat system flanges over the service life of the unit when the Code requires examination of 100% of the bolting during each inspection interval, a period of ten (10) years. (Items 3.2 and 4.2, Examination Category C-D).

3. Provide a technical justification for examining only one pumps support component of one decay heat system pump when the Code requires that all support components shall be examined during each inspection interval, a period of ten (10) years. (Item 3.4, Examination Category C-E-2).

4. The Code requires that at least part of the required examinations be performed by the expiration of one-third, two-thirds, and the end of each inspection interval, ten (10) years, where the number of required examinations are distributed unformly among the number of inspection intervals.

It is not apparent that the following examinations to be performed during this inspection period, as given in Table B-1 of your submittal, are in compliance with this requirement:

Item C1.1	Examination Category C-A
Item C1.2	Examination Category C-B
Item C1.4	Examination Category C-D
Item C2.1	Examination Category C-F, C-G
Item C2.2	Examination Category C-F, C-G
Item C2.4	Examination Category C-D
Item C2.5	Examination Category C-E-1
Item C2.6	Examination Category C-E-2

III Class 3 Component

For the buried piping systems listed on Table C-2, give their operating pressures and consequences that may result from piping failure.

IV. Pump Testing Program

These questions apply to the justification notes for Table D-2.

1) Applies to Note 2:

In most cases where pump bearings are submerged and cooled by the working fluid, there exists a thrust bearing at the motor or driven end which is accessible. Can bearing temperature measurements be made at this bearing?

2) Applies to Note 3:

Where flow meters are not installed, it may be possible to estimate flow rate from other pressure drop components already in the system such as elbows. While the absolute accuracy of such a device may be questionable, its repeatability would satisfy the intent of the code. Please re-examine the pump systems affected and comment on these possibilities. In cases where this is not practical, power measurements may be useful in estimating flow.

3) Applies to Note 4:

Calculated inlet static pressure based on height measurements will meet the intent of the code. Some method for the measure-of system pressure, allowing ΔP to be calculated, should be proposed.

4) Applies to Note 5:

In cases where bearings are immersed in oil, can oil temperature prior to cooling be obtained?

5) Applies to Table D-1:

Please indicate which pumps are constant speed. The Table implies that all except turbine drive emergency feedwater.

V. Valve Testing Program

These questions apply to the notes 1 to 6, to Table E-1, and the request for relief paragraphs A to E in the Licensee's submittal, and to drawings and table discrepancies.

1) Applies to Note 1 & Paragraph A:

In the case of normally closed check valves such as BSV30A/B, there exists an upstream vent or drain connection between the valve in question and a block valve. This arrangement should

allow testing, or as a minimum, demonstration of valve opening or unseating, using a substitute fluid during cold shutdowns or refueling. Please review all valves in this category and propose such alternatives where possible.

2) Applies to Note 2:

The drawing does not show valve function. The note implies containment isolation, but the table does not indicate a leak test for these valves. Please clarify.

3) Applies to Note 3:

Only one valve (SF-V23) is tagged with this note. What is the safety-related function of this valve?

4) Applies to Note 5, Paragraph F:

This note applies to one valve (WDL-V362), but Paragraph F is missing. What is Paragraph F and what is the safety-related function of this valve?

5) For Category A valves, where leak check "L" is listed in table, type of leak test should be noted. The following NRC position on Category A valves may be used as a guide:

a. Those valves that perform both a pressure isolation and containment isolation function shall be leak tested to meet both Section XI of the applicable edition of the ASME Code and Appendix J of 10 CFR 50 requirements.

b. Those valves that perform a pressure isolation function only shall be required to meet Section XI of the applicable edition of the ASME Code.

c. Those valves that perform a containment isolation function only shall be required to meet Appendix J of 10 CFR 50.

The inservice testing program should clearly identify which valves are applicable to each of the categories listed above.

6) Describe the operations or tests intended under the submittal type "F -- Functional check of valve operation". In some cases, this may fall under the code as a "partial stroke" test. Explain why full stroke is impractical or unwarranted.

7) Category E Valves: There are no Category E valves listed, but examination of the drawings shows many locked position valves in the flow paths of safety-related systems. Please review and correct.

8) All relief valves in safety-related systems should be listed.

Particular

9) Reactor Building Spray System: Please review for containment isolation function. Valves selected should be Category A and leak checked. (FSAR shows Type 1 arrangement, indicating BSV1A/B & BSV30A/B are containment isolation valves, CIV .)

10) Decay Heat Removal System: Please review for containment isolation function. (FSAR shows Type 1 arrangement, indicating for penetration 310 & 503 that valves DH-4A/B and DH-22A/B are CIV, and Type 4 arrangement for penetration 320, indicating valves DH64 and DH69 are CIV.) Also review for pressure isolation, and using guide outlined in Question 5) above, specify leak check required.

11) Decay Heat River Water System: Where are valves DR-V21A/B and DR-V22A/B located and what is their safety-related function?

12) Core Flooding System: Valves CF-V4A/B and CF-V5A/B serve a pressure isolation function and should be reclassified AC and leak checked as outlined in Question 5 above. Valves CF-VIA/B should be classified and listed, and other valves in this system should be reviewed for their safety-related function.

13) Reactor Building Emergency Cooling System: What is the safety-related function of valves RR-V3A/B/C and RR-V4A-D? Also, please review function of RR-V9A/B/C and NS-VII to determine whether these valves should also be listed and categorized.

14) Nuclear Service River Water System: Drawing missing.

15) Screen Wash and Sluice System: What is safety-related function of these valves?

16) Make-Up System: Please review function of valves MU-V16A-D and MU-V107A-D to determine correct classification. Also review all valves on drawing C-300-017 to determine if they should be categorized and listed.

17) Intermediate Cooling System: Please review function of valves IC-V16 and IC-V18 to determine if they should be listed and categorized.

18) Reactor Coolant System: What is safety-related function of RC-V2 and RC-RV2?

19) Emergency Feedwater System: Please review all valves shown on drawing C-300-009 GNI to determine safety-related function and whether or not they should be listed and categorized.