



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

July 20, 1979

MEMORANDUM FOR: N. Dye, GPU
B. Elam, GPU

THRU: John T. Collins, Deputy Director, TMI-2 Support *JT*

FROM: A. Ignatonis, TMI-2 Support
S. Newberry, TMI-2 Support

SUBJECT: TMI-2 MINI DECAY HEAT REMOVAL SYSTEM
PRELIMINARY DESIGN CRITERIA, REVISION A

Per your request, enclosed are the NRC's (NRR and I&E) comments to the Three Mile Island Unit No. 2 Mini Decay Heat Removal System Preliminary Design Criteria.

A. Ignatonis
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S. Newberry, TMI-2 Support

Enclosure:
As Stated

cc: R. Vollmer
J. Collins
J. Wermiel
M. Greenberg
W. Raymond
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COMMENTS TO MINI DECAY HEAT REMOVAL SYSTEM

PRELIMINARY DESIGN CRITERIA

General Comments

The design criteria in the subject memo do not address the following:

1. remote leakage monitoring capability;
2. redundant train independence and separation criteria (mechanical and electrical);
3. pump NPSH requirements.

These areas are important and should be considered by the licensee. Train independence and separation criteria (such that leaks or pipe failures are in one train would not effect the other) are especially important, since the system, as proposed, is not Seismic Category I and is a "rapidly" designed and installed type system.

Also, there is an uncertainty on whether or not the proposed design flow rate of 150 gpm through the reactor vessel is sufficient to preclude stratification at boron concentrations greater than 3000 ppm.

The design criteria listed do not address the following in sufficient detail:

1. Collection of leakage - valve packing and pump seals.
2. Overpressure protection - drawing does not show sufficient relief devices on isolable portions of the system for thermal expansion or relief devices on the pump discharge. The design basis flow rate or capacity of the relief devices must be addressed.
3. System Isolation - criteria do not address (if necessary) overpressure isolation; relief devices may be adequate.

4. Instrumentation and controls - no discussion on local operation capability, shielding, location, etc. - only says "provisions shall be made for future installation of controls and remote indicators in the Unit 2 control room."
5. Recognizing that the mini-DHR system is conceptual at this point during the detailed design review the future clean-up system tie-in should include provisions for flush and drain. This would minimize radiation exposure during the tie-in.

Specific Comments

- 3.3.1 Although the system may not be of Seismic Category I design, the piping, components, and restraints should be designed to accommodate OBE loads since the system will be designed for three years' operation.
- 3.5.2 Provide a schematic that depicts tie-in of the mini-DHR system to the Nuclear Services Closed Cooling System. Also, for the proposed system, why not add another return line interconnected to the existing DHR line upstream of DH-V-4A?
- 3.11 Add: "Provisions shall also be made for periodic testing of the redundant components such as the MDHR pump and cooler to demonstrate operation. An automatic alarm annunciation will be provided in the control room."
- 3.3.17 Consider adding the following: "Radiation monitoring shall be provided to detect RCS leakage into the Nuclear Services Closed Cooling System (preferably located on the shell side of the mini-DHR cooler)."

- 3.11.1 Regarding instrumentation, consider adding flow rate measurement from the NSCC to the shell side of the mini-DHR cooler.

- 3.2 Code classification for the balance of piping is probably a typo. It should be in accordance with ANSI B31.1.

- 3.3.16 Although the proposed mini-DHR system will be designed to isolate with double isolation valves, it is not designed for single active failures. Provide justification for omission of this latter design basis.

Date July 31, 1979
TSG-325

[GPU] SERVICE

Subject: Mini Decay Heat Removal System Tie-In

To: Branch Elam

Location

TMI

Telecom - With Mr. Greenber, of the NRC

The use of a safety class 2 valve and safety class 3 valve is satisfactory with NRC for MDHR tie-in. (The class 2 valve must be installed closest to the implant DHS). This arrangement meets Reg. Guide 1.26.

E. C. Dye

E. C. Dye

ECD/jb

cc: Mr. Greenberg (NRC)

*Teletype to
Mark Greenburg*

[Handwritten signature]

Inter-Office Memorandum

Date July 31, 1979
ISC-326

Subject Mini Decay Heat Removal System -
Isolation Valve Motor Operators

To Branch Elam



Location TMI

Telecom - With Mr. J. Weirnel of the NRC

The motor operated system isolation valves for the MDHR were manufactured prior to 1975. The IEEE qualification for IE operators did not apply when the valves were manufactured. (The operators are the same quality as the valve operators currently in the plant). Since the valves will be outside containment (environmental restrictions are minimal) and the low seismic requirements, the valves with operators may be used as is.

E.C. Dye
E. C. Dye

ECD/jb

cc: J. Weirnel (NRC)

*Telecopy to
J. Weirnel*

(Circular stamp)

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