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10CFR50.55a

September 24, 2003
5928-03-20194

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Three Mile Island, Unit 1
Operating License No. DPR-50
NRC Docket No. 50-289

Subject: Submittal of a Request for Relief to the Requirements of 10CFR50.55a Concerning Third and Fourth Ten-Year Interval Inservice Testing Program

Attached for your review and approval is a proposed relief request in accordance with 10CFR50.55a, associated with the third and fourth ten-year interval Inservice Testing (IST) program for Three Mile Island (TMI), Unit 1. This relief request concerns pump testing requirements for the Nuclear Service Closed Cooling Water pumps. Based on a start date of September 22, 1995, the TMI, Unit 1 third interval IST program is required by 10CFR50.55a(f)(4) to comply with the requirements of the ASME OM Code-1987, Operation and Maintenance of Nuclear Power Plants, including the OMa-1988 Addenda. This relief is also being requested for the fourth interval. Based on a start date of September 22, 2004, the TMI, Unit 1 fourth interval IST program is expected to comply with the requirements of the ASME OM Code-1998, Code for Operation and Maintenance of Nuclear Power Plants, including the OMb-2000 Addenda.

The third ten-year interval began on September 22, 1995, and will conclude by September 22, 2004. The fourth ten-year interval will begin on September 23, 2004, and conclude on September 22, 2014.

We request your review and approval by September 30, 2004.

If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,

JJ Barnagel for

Michael P. Gallagher
Director, Licensing and Regulatory Affairs
AmerGen Energy Company, LLC

Attachment – Relief Request

A047

cc: H. J. Miller, Administrator, Region I, USNRC
D. M. Kern, USNRC Senior Resident Inspector, TMI
D. M. Skay, USNRC Senior Project Manager
File No.02078

RELIEF REQUEST P5

1. ASME Code Component(s) Affected:

The NSCCW (Nuclear Service Closed Cooling Water) pumps:

Tag No.	Component	Type
NS-P-1A	Nuclear Service Closed Cooling Pump "A"	Centrifugal
NS-P-1B	Nuclear Service Closed Cooling Pump "B"	Centrifugal
NS-P-1C	Nuclear Service Closed Cooling Pump "C"	Centrifugal

2. Applicable Code Edition and Addenda:

ASME OM Code-1987, Operation and Maintenance of Nuclear Power Plants, including the OMa-1988 Addenda for the third interval, and the ASME OM Code-1998, Code for Operation and Maintenance of Nuclear Power Plants, including the OMb-2000 Addenda for the fourth interval.

3. Applicable Code Requirements:

OMa-1988 Part 6 (paragraph 5.1, "Frequency of Inservice Tests") and OMb-2000 (ISTB-3400, "Frequency of Inservice Tests") require testing of each pump quarterly, as specified in each version of the code.

Additionally, OMa-1988 Part 6 (§4.6.5, "Flow Rate Measurement") and OMb-2000 (ISTB-3550, "Flow Rate") require flow rate measurement of each pump. OMa-1988 Part 6 (§5.2, "Test Procedure" item (d)) and OMa-1999 (ISTB-5121, "Group A Test Procedure" item (b)) requires the determination of flow rate as it applies to testing an individual pump.

4. Impracticality of Compliance:

In accordance with 10 CFR 50.55a(f)(5)(iii), AmerGen Energy Company, LLC (AmerGen) requests relief from the requirements discussed in the "Applicable Code Requirements". In order to comply with these code requirements, plant modifications would be necessary to install flow instrumentation to accurately determine individual pump flow rates. The current piping configuration would need to be modified by adding straight pipe runs to allow for accurate individual pump flow measurements. As an alternative, the three pumps will be tested on a

quarterly basis in three-paired combinations during the operating cycle. Allowable ranges will be established for bearing vibration. This would allow mechanical degradation of the pump to be identified. Individual pump flow rates will be measured during refueling outages and compared against individual pump reference values.

The NSCCW (Nuclear Service Closed Cooling Water) system includes four (4) 33 and 1/3 percent capacity nuclear services coolers, and three (3) 50 percent capacity Nuclear Services Closed Cooling Cycle Pumps (see attached diagram (Drawing Number 302-610)). This system, along with the Intermediate Cooling System, satisfies the cooling requirements of all nuclear oriented services other than decay heat and reactor building emergency cooling. In the event of a Loss-of-Coolant Accident, 100 percent redundancy of all nuclear services equipment is obtained by isolating nonessential items so that flow requirements are reduced to approximately half that of normal operation. Normally, with two pumps in service, system flowrate is approximately 5,500 GPM or greater, as compared to a single-pump accident-required design flowrate of 1,972 GPM. Individual pump testing demonstrates a flowrate 25% greater than the single pump, accident-required design flowrate for the NSCCW pumps. Therefore, both the normal system flowrate and the single pump flowrate exceed the accident-required design flowrate by a significant margin.

The system has three pumps that are arranged in parallel, and run in pairs by design. To ensure adequate cooling to these loads, two pumps are required to be in service. The flow instrumentation for these pumps is a single flow indicator located in the common piping for all three pumps. Consequently, flow for any given pump can only be measured when only that single pump is running in the system.

System flow / heat removal requirements mandate that two pumps be kept in service while at power per the plant design. As a result, individual pump flow can not be determined during the operating cycle without causing the potential to overheat components essential to power plant operation. The alternate test method would provide a quarterly assessment of pump mechanical performance and a refueling-frequency assessment of both pump mechanical and hydraulic performance.

The quarterly tests to measure paired pump vibration coupled with the refueling outage test to measure individual pump flow rates, ensure the system will be capable of performing its accident design function. The alternate testing regime will ensure continued operability of the NSCC water pumps whose normal full-power operation continuously exceeds accident design flow requirements.

5. Burden Caused by Compliance:

As described above, in order to comply with these code requirements, plant modifications would be necessary to install flow instrumentation to accurately determine individual pump flow rates during unit operation.

6. Proposed Alternative and Basis for Use:

As described above, the alternate test method would be to test pumps in paired operation on a quarterly basis. Additionally, allowable ranges will be established for bearing vibration. This will allow mechanical degradation of the pump to be identified. These actions are in addition to: 1) individual pump testing performed during refueling outages, and 2) a system design that provides significant margin between normal power operation and accident design flow requirements. The alternate test methods will provide reasonable assurance that pump degradation will be detected and corrective actions taken to resolve pump performance issues prior to degrading individual pump design accident performance capabilities.

7. Duration of Proposed Alternative:

This relief is being request for the third ten-year interval, which began on September 22, 1995, and will conclude by September 22, 2004, and the fourth ten-year interval, which will begin on September 23, 2004, and conclude on September 22, 2014.

nuclear services coolers

flow instrumentation

Nuclear Service Closed Cooling Water Pumps