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An Exelon/British Energy Company

For immediate
Public Release
per Pm (Tim Colburn)
2/16/01

February 14, 2001
5928-01-20049

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Dear Sir/Madam:

SUBJECT: THREE MILE ISLAND, UNIT 1 (TMI UNIT 1)
OPERATING LICENSE NO. DPR-50
DOCKET NO. 50-289
EXIGENT TECHNICAL SPECIFICATION CHANGE REQUEST NO. 309 - NUCLEAR SERVICES RIVER WATER SYSTEM

AmerGen is requesting an exigent change to the TMI Unit 1 Technical Specification (TS) Section 3.3.2. This specification requires that both trains of the Nuclear Service River Water (NR) System piping and components remain operable whenever the reactor is critical. The attached TS change will provide a one-time provision to allow the NR System common piping (30" concrete underground pipe) to be removed from service during plant operation for a maximum of 14 days. During this period at least two (2) NR pumps must be operable as specified by Section 3.3.1.4 and be capable of providing adequate cooling to the NR heat exchangers to perform required safety functions. As described in the TMI Unit 1 UFSAR, Section 9.6.1, the Secondary Services River Water (SR) System is capable of being aligned to provide backup cooling to the NR heat exchangers. The SR System piping will be utilized to bypass the common 30" NR System header piping during the proposed 14 day period. Attached is the proposed revision to TS 3.3.2 and detailed justification for this exigent TS change request.

Using the standards in 10 CFR 50.92, AmerGen Energy Company, LLC (AmerGen) has concluded that this proposed change does not constitute a significant hazards consideration, as described in the enclosed analysis performed in accordance with 10 CFR 50.91(a)(1). Pursuant to 10 CFR 50.91(b)(1), a copy of the amendment request is provided to the designated official of the Commonwealth of Pennsylvania, Bureau of Radiation Protection, as well as the chief executives of the township and county in which the facility is located.

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AmerGen requests that the effective date for this change be upon NRC issuance. AmerGen requests that this proposed change be considered under exigent circumstances as described in 10 CFR 50.91(a)(6) in that failure to act quickly could result in the shutdown of TMI Unit 1. As required by 10 CFR 50.91(a)(6), a statement of the exigent circumstances surrounding this request is provided in the enclosure. AmerGen requests the approval of this exigent change by February 17, 2001 to allow for prompt initiation of the repair to the NR system piping.

If any additional information is needed, please contact David J. Distel at (610) 765-5517.

Sincerely yours,

Mark E. Warner
Vice President, TMI Unit 1

MEW/djd

Enclosures: 1) TMI Unit 1 Technical Specification Change Request No. 309 Safety Evaluation and No Significant Hazards Consideration
2) Affected TMI Unit 1 Technical Specification Pages

cc: H. J. Miller, Administrator, Region I, USNRC
T. G. Colburn, Senior Project Manager, TMI Unit 1, USNRC
J. D. Orr, Senior Resident Inspector, TMI Unit 1, USNRC
D. Allard, Director, Bureau of Radiation Protection - PA
Department of Environmental Resources
Chairman, Board of County Commissioners of Dauphin County
Chairman, Board of Supervisors of Londonderry Township
File No. 01025

AMERGEN ENERGY COMPANY, LLC

THREE MILE ISLAND, UNIT 1

Operating License No. DPR-50

Technical Specification Change Request No. 309

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF DAUPHIN)

This Technical Specification Change Request is submitted in support of Licensee's request to change the Technical Specifications for Three Mile Island, Unit 1. As part of this request, the proposed marked up page for the TMI Unit 1 Technical Specifications is also included. All statements contained in this submittal have been reviewed, and all such statements made and matters set forth therein are true and correct to the best of my knowledge.

AmerGen Energy Company, LLC

BY: Mark E Warner
Vice President, TMI Unit 1

Sworn and Subscribed to before me
this 14th day of Feb, 2001.

Carol A. Walton
Notary Public

Notarial Seal
Carol A. Walton, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires May 28, 2002
Member, Pennsylvania Association of Notaries

ENCLOSURE 1

TMI Unit 1 Technical Specification Change Request No. 309

Safety Evaluation and No Significant Hazards Consideration

I. License Amendment Request No. 309

AmerGen Energy Company, LLC (AmerGen) requests that the following changed replacement page be inserted into the existing Technical Specification:

Revised Technical Specification page: 3-23

A marked up page showing the requested changes is provided in Enclosure 2.

II. Reason for Change

This exigent Technical Specification (TS) change to TS Section 3.3.2 permits the Nuclear Services River Water System common piping to be inoperable for a one-time 14 day duration during Operating Cycle 13 only while repair of the underground Nuclear Services River Water System piping is being completed. The existing TS only allows one train of the NR System to be out of service for 72 hours. If both trains are not restored to operable status in 72 hours, then the plant must be placed in a hot shutdown condition within 6 hours. The required repair will take a portion of the NR piping common to both trains out of service for greater than 72 hours. This exigent change is necessary in order to avoid an undesirable transient resulting from the shutdown of TMI Unit 1.

III. Safety Evaluation Justifying Change

Background

The Nuclear Services River Water (NR) System provides cooling water to the four Nuclear Services (NS) and two Intermediate Closed (IC) heat exchangers under both normal and emergency conditions. The IC system does not perform any safety function [FSAR Section 9.3.2.2]. IC is required for power operation but is not required for accident mitigation. With cold river water conditions the number of heat exchangers in service is reduced. The components cooled by the NS System are described in Attachment 1.

The plant design provides piping and valves that allow cross-connecting the Nuclear Services River Water System to the Secondary Services River Water System in case nuclear river water is lost. This cross-connecting method is in the TMI emergency procedures and discussed in Section 9.6.1 of the TMI Updated Final Safety Analysis Report (UFSAR), but is not specifically credited in the existing UFSAR design basis accident analysis. Once cross-connected, the cooling loads for both the Nuclear River Water System and the Secondary Services River Water System (SR) can be accommodated by either the NR or SR pumps. The SR System was designed to different quality and seismic standards than the NR System. The NR System was designed and constructed as nuclear safety related and seismic class 1. Secondary Services River System was designed as non-nuclear and non-seismic. Both systems are designed to USAS B31.1 with prestressed concrete piping designed to AWWA Standard C301-64.

The underground portion of the Nuclear Services River Water System must be isolated to repair the leak. While isolated, both the NR and SR systems will be cross-connected allowing river water to be supplied to both systems through the underground SR piping.

The following subsections show that cross-connecting the systems for a short period of time is safe. In summary, the evaluation shows that:

(1) It is extremely unlikely that any critical portions of the SR System pressure boundary will fail.

(2) Even if failure were to occur, the critical sections of piping can be isolated and river water flow reestablished to the NS and IC heat exchangers in less than 30 minutes.

(3) If flow were lost to the NS or IC heat exchangers compensatory actions would ensure that there would be no unacceptable consequences.

Seismic Adequacy of Secondary River

The NR System is Nuclear Safety Related and Seismic Class 1. Cross-connecting this system with the non-safety related, non-seismic SR System was evaluated to ensure that adequate river water cooling could still be provided to the NS and IC heat exchangers during and after a seismic event.

The seismic capability of the SR System was evaluated by review of the design drawings and by visual inspection of key components of the system for seismic adequacy using the SQUG methodology. Based on this review, all portions of the SR System from and including the pump discharge check valves up to and including SR-V-2 in the heat exchanger vault are designed and installed essentially the same as the NR System components. Both systems are designed to USAS B31.1 which recognizes AWWA Standard C301-64 for underground prestressed concrete piping. Therefore, the portions of the cross-connected system that will carry water for the Nuclear Services River Water System would be expected to perform with the same reliability as NR after a seismic event.

Portions of the SR System downstream of SR-V-2 were not evaluated for seismic adequacy. Should this portion of the system fail due to a seismic event, river water to the NR and IC coolers would be significantly reduced. Therefore, while the systems are cross-connected compensatory actions will be established to ensure that cooling water flow is reestablished to the NR heat exchangers within 30 minutes. Compensatory actions are discussed in Section IV below.

Consequences of a Total Loss of Nuclear Services River Water

The Nuclear Services River Water System provides cooling water to the IC and NS heat exchangers. Plant components are then cooled by these two closed cooling water systems. The effect of loss of NR on each component cooled by NS was evaluated in Attachment 1. The IC system does not perform any safety function [FSAR Section 9.3.2.2]. IC is required for power operation but is not required for accident mitigation. In summary, the results are

- Reactor shutdown and natural circulation operation would be required. The reactor and then the Reactor Coolant Pumps would be manually tripped by procedure. This condition is bounded by the FSAR Chapter 14 accident analysis and acceptably mitigated by existing plant procedures.

- Control Building temperature would rise. Alternate means of maintaining control building temperatures would eventually be required. These methods provide adequate cooling for all safety related control building equipment for at least 72 hours. Control building temperature rise would be acceptable because River water flow would be reestablished to the NS coolers within 30 minutes.

- Spent Fuel pool temperatures would slowly rise. With the current spent fuel decay heat load, it would be more than 10 days before the design basis concrete temperature for the fuel pool of 199 deg F is exceeded. Concrete temperature is the most limiting design parameter for the spent fuel pool temperatures. There would be an insignificant rise in Spent Fuel pool temperature because NR flow would be reestablished within 30 minutes.

- Temperatures in the rooms with the pumps for the nuclear and decay closed cooling water pumps would rise but not to unacceptable levels even if NR flow were lost indefinitely. The resultant temperature rise would not affect these components.

- Temperatures in the rooms with the motor driven emergency feedwater pumps would rise but remain within design limits for at least 72 hours. There would be an insignificant rise in room temperatures because NR flow would be reestablished within 30 minutes.

Based on the above, with the established compensatory actions, there are no unacceptable consequences if NR flow were lost.

Adequacy of NR and SR Pumps to Supply both NR and SR Flow Requirements

The capability of either the NR or SR pumps to supply the combined NR and SR flow requirements while the systems are cross-connected for both normal and accident conditions was evaluated. The evaluation concluded that with river water temperatures below 50 deg. F two NR or SR pumps can provide normal operating or accident NS flow requirements. If an operating pump trips, additional pumps will be started or SR-V-2 closed to reestablish adequate flow and to preclude prolonged pump runout. These compensatory actions are described in Section IV below. If an operating NR or SR pump trips, a standby pump in the respective system is designed to automatically start.

During accident conditions, the heat loads for NS and IC are equivalent to or less than they are during normal operation. Use of the SR System as a backup supply of water to the NR System is within the design basis of the SR System. As described in Section 9.6.1 of the TMI Unit 1 Updated Final Safety Analysis Report (UFSAR), one of the design functions of the Secondary River Water System is to supply water to the Nuclear Services and Intermediate Services heat exchangers if the normal supply from the Nuclear River water pumps is lost. Both the NR and SR pumps are available following loss of offsite power.

Evaluation of NR and SR Pump Operation on EDG Load

For a design basis accident (Loss of Coolant Accident with Loss of Offsite Power and single failure) all NR and SR Pumps will shutdown when offsite power is lost. Two of the NR Pumps will receive an Engineered Safeguards Actuation System start signal. If the single failure results in a system configuration with one NR Pump or one SR pump powered from the Emergency Diesel, the Emergency Diesel load would be bounded by the existing analysis. In accordance with the pre-established contingency actions SR-V-2 will be closed and the NR Pump will

provide adequate flow for post-accident NS System heat loads. Either closing SR-V-2 or starting an additional SR or NR Pump will relieve pump runout operation. At least one other 1E powered pump (1 NR or 1 SR) would be available to start from the control room. As discussed previously, there is ample time for performing the compensatory actions to reestablish river water flow by either closing SR-V-2 or restarting additional river water pumps.

Risk Assessment

The potential risk impacts of continuing power operation for up to 14 days with the Secondary Services River Water System and the Nuclear Services River Water System cross-connected was evaluated.

Cross-connecting the Nuclear Services River Water System with the Secondary Services River Water System provides additional 1E powered pumps (the Secondary Services River Water Pumps) available for supplying water if required, which increases the availability of the system. However, the system is negatively affected by adding additional piping and components as possible failure mechanisms, but these new failures are passive failures with low failure rates, not active components failing to operate. The additional components are heat exchangers and the piping to the heat exchangers. These components have very low probabilities of failing during the time period of the piping repair effort.

There is no significant difference in nuclear safety risk by repairing the damaged piping either with the plant operating or at hot shutdown. Removing this section of piping as well as all three nuclear river water pumps although prohibited during power operation is not prohibited by technical specifications at hot shutdown conditions. The flow and heat load requirements for the Nuclear Services River Water System are essentially the same at hot shutdown as they are with the plant at full power. The consequences of a total loss of NR is the same under either conditions and the CDF risk increase is the same at either condition.

Based on the above, operating TMI Unit 1 with the Nuclear River Water System and the Secondary River Water System cross connected causes a small but acceptable risk increase of approximately 2.2e-07 incremental conditional core damage probability (ICCDP) for a conservatively assumed 14 day duration. This incremental increase in total core damage frequency (CDF) is less than 1% of the total calculated internal events core damage frequency.

The location of the leaking nuclear river water line is about 100 feet from the secondary river water line that will provide flow during the repair. This distance and existing excavation maintenance controls is more than adequate to ensure that the excavation and repair activities will not endanger the Secondary Services River Water System piping. Work on or near the operating portions of the SR or NR system that could endanger pressure boundary integrity or component operation will be prohibited while the systems are cross-connected.

IV. Compensating Measures

Proposed Temporary Operation During Repair

The underground portion of the Nuclear Services River Water System must be isolated to repair the leak. While isolated, both the NR and SR systems will be cross-connected allowing river water to be supplied to both systems through the underground SR piping. The following subsections describe the system configuration during the repair, additional monitoring requirements, and required contingency actions.

System Configuration

Prior to and during the repair, NR will be cross-connected to SR by opening NR-V-6, NR-V-2, and NR-V-7. The leaking line will be isolated by closing NR-V-3 and NR-V-5. Three NR and three SR pumps will be available. At least two pumps will be operating. Flow will then be provided through the SR underground piping to both SR and NR systems. Two NR pumps, powered from separate 1E buses, will be available to automatically start on Engineered Safeguards (ES) actuation. Attachment 2 shows the key portions of the system.

Actions Required Prior to Cross Connecting SR and NR and Repairing Pipe

1. The valves used to isolate the leaking pipe (NR-V-3 and NR-V-5) will be verified acceptably leak tight prior to starting the repair.

2. After the systems are cross connected and the leaking pipe isolated, the breakers will be opened on NR-V-2, 7, 6, 5, and 3 to prevent inadvertent repositioning.

3. Makeup pumps MU-P-1A and MU-P-1C will be operable for ES actuation with component cooling supplied from decay closed cooling water. They will not be lined up to NS. This ensures they are available regardless of NR condition.

4. Maintenance that could endanger the pressure boundary or component reliability for the SR and NR systems will be prohibited while the systems are cross-connected.

5. An operator will be stationed in the auxiliary building and designated to manually close SR-V-2 when commanded by the control room staff. The designated operator will have no other emergency response duties. This valve can also be closed remotely from the control room.

6. River water temperature will be verified less than 50 °F prior to cross-connecting the NR and SR systems.

Monitoring Requirements

The following monitoring requirements will be established to ensure that compensatory actions are taken immediately should flow be lost to the NR System:

- Common NR/SR System pressure will be alarmed and monitored continuously in the control room to detect indications of gross system leakage or failure. System and component temperatures will also be monitored and alarmed by the plant computer.

- The SR and NR system will be walked down once per day to verify integrity of the system. The repair location will be inspected each shift to ensure isolation valves NR-V-3 and 5 remain acceptably leak tight.

Compensatory Actions

Compensatory actions are required if (1) an operating NR or SR pump trips and a standby pump fails to automatically start or (2) if a seismic event causes a portion of the SR System to fail. The following compensatory actions will be added to plant procedures while the systems are cross-connected:

- If NR/SR system pressure drops below expected values or component temperatures rise unexpectedly, then additional NR or SR pumps will be started. If pressure or temperatures cannot be maintained, then the reactor will be shutdown and SR-V-2 closed. NR and SR pumps will be started as needed to restore NR flow after SR-V-2 is closed.

- Each shift will be briefed on the above compensatory actions.

V. Determination of No Significant Hazards Consideration

AmerGen has determined that this License Amendment Request poses no significant hazards considerations as defined by 10 CFR 50.92.

1. Operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The Nuclear Services River Water pumps remain operational and capable of performing their intended safety function. The Secondary Services River Water System (SR) is capable of supporting the required Nuclear Services River Water System (NR) normal and post accident cooling water flow requirements as specified in the TMI Unit 1 Updated Final Safety Analysis Report (UFSAR). The critical portions of the SR System piping supporting the proposed operating configuration are essentially equivalent in design and construction to the safety related NR System piping. Compensatory action will ensure adequate cooling by the NR system if there is a seismic event. Operator actions to restore NR flow will ensure there are no unacceptable consequences. The proposed change results in an insignificant increase in the TMI Unit 1 incremental conditional core damage probability for the 14 day duration.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

   As described in the TMI Unit 1 Updated Final Safety Analysis Report (UFSAR), one of the design functions of the Secondary Services River Water System is to supply water to the Nuclear Services and Intermediate Services heat exchangers if the normal supply from the Nuclear Services River Water Pumps is lost. The two systems will still be

operated as described in the UFSAR when they are cross-connected to allow repair of the damaged piping section. This configuration does not create a new accident initiator. In addition, the loss of Nuclear Services system was evaluated and there is ample time to perform any required compensatory actions.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Operation of the facility in accordance with the proposed amendment would not involve a significant reduction in a margin of safety.

The Nuclear Services River Water Pumps remain operational and capable of performing their intended safety function. The Secondary Services River Water piping, using either NR or SR pumps is capable of supporting the required Nuclear Services River Water System normal and post accident cooling water flow requirements. Compensatory action will ensure adequate cooling by the NR system if there is a seismic event. Therefore, the ability to safely shutdown the plant is assured.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

VI. Environmental Considerations

10 CFR 51.22(c)(9) provides criteria for and identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration, (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (3) result in a significant increase in individual or cumulative occupational radiation exposure.

AmerGen has reviewed this license amendment and has determined that it meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(c), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the proposed license amendment. The basis for this determination is as follows:

1. The proposed license amendment does not involve a significant hazards consideration as described in Item V of this evaluation.

2. The proposed license amendment will not result in a significant change in the types or increase in the amounts of any effluents that may be released offsite. The proposed amendment ensures operation within applicable safety limits and margins of safety. The changes do not modify the reactor coolant pressure boundary nor make any physical changes to the facility design, material, or construction standards.

3. The proposed license amendment will not result in a significant increase in individual or cumulative occupational radiation exposure. The consequences of any design basis accident are not affected by this change. The proposed changes do not affect the integrity of the reactor coolant pressure boundary or any fission product barrier. Occupational exposures are not affected by the proposed changes. Therefore, the proposed amendment will not result in a significant increase in individual or cumulative occupational radiation exposure.

VII. Statement of Exigent Circumstances

10 CFR 50.91(a)(6) states that whenever an exigent condition exists, a licensee requesting an amendment must explain why this exigent situation occurred and why it could not be avoided.

Background

Leakage was confirmed by test from the Nuclear Services River Water (NR) System 30 inch underground common header piping. This section of piping is located approximately 12 feet below grade. This header is the main supply line from the Nuclear Services River Water Pumps in the Service Water Screen and Pump House to the nuclear service heat exchangers in the Heat Exchanger Vault. The identified leak was estimated to be approximately 20 gpm. This leakage does not affect the ability of the NR System to perform its design basis function. The NR System is operable per TS 3.3. The exact cause of the leak will be determined during the excavation and repair process.

Upon concurrence with this request, the leaking section of underground nuclear services river water piping will be isolated and repaired. During this period, water will be supplied to both the NR System and the Secondary River Water (SR) System through the essentially identical underground secondary river water supply line. This will be accomplished by using existing valves and piping to cross-connect the two systems. The discharge of the Nuclear Service River Water pumps will be realigned to the Secondary River Water supply header and the Secondary Services River Water System cross-connected to the nuclear river water system to continue to provide cooling water supply to the nuclear service heat exchangers. This backup function is described in the TMI Unit 1 UFSAR Section 9.6.1. The details of how the system will be cross-connected, required monitoring and contingency actions are described in Section IV.

Exigent Circumstances

AmerGen is requesting an exigent Technical Specification change to Section 3.3.2 in order to avoid placing TMI Unit 1 in a shutdown condition, and cycling the unit through a thermal transient. The integrity of the Reactor Coolant System, fuel and other components of the primary system of a nuclear plant can be adversely affected by the number of thermal or power transients that they are subjected to during their lifetime. As each additional thermal transient can affect this integrity, it is prudent to avoid such transients provided the health and safety of the public is preserved. Additionally, the cycling of the unit through a thermal transient cycles the secondary plant systems as well as increase challenges to the operators. Placing the unit into hot shutdown requires additional routine surveys and inspections within the reactor building that increases personnel exposure. As discussed previously, there is no significant difference in nuclear safety risk by repairing the damaged piping either with the plant operating or in hot shutdown. Therefore, requiring this repair to be performed during hot shutdown would result in additional plant equipment and personnel challenges and increase personnel exposure without any significant benefit to the safety of the plant or the health and safety of the public.

In addition, approval of this change is needed to facilitate prompt repair of the degraded NR piping and will minimize the potential further degradation of the piping, potential erosion of the backfilled regions and the associated NR system vulnerabilities. The location of the NR system leak is underground and although several probable types of degradation have been identified and repair contingencies developed, the exact nature of the degradation is not known, and it is therefore prudent to eliminate the uncertainty. In at least one occurrence (Perry Unit 1, March 26, 1993), a small leak in a buried section of service water pipe washed away the fill supporting the pipes, resulting in a break in the unsupported pipe span. This prompt repair of the NR line also takes advantage of very favorable seasonal river water temperature conditions which minimizes the impact of the requested change.

AmerGen believes that a prompt repair of this line and identification of the failure mechanism is prudent for safe operation and ultimately the health and safety of the public. AmerGen could not have foreseen the need for change prior to the indication of the leakage and this submittal was made as soon as practical after the determination to repair was made.

The expected duration of the repair to the underground pipe and the temporary alignment of the Secondary Services River Water System to the Nuclear Service Heat Exchangers will not exceed 14 days. The current Technical Specification Section 3.3.2, would require that the reactor be placed in a hot shutdown condition to accomplish a repair to this NR line. Therefore, AmerGen requests that the proposed Technical Specification change to allow the isolation and repair of the underground pipe with the NR and SR systems cross-connected be considered under exigent circumstances as described in 10 CFR 50.91(a)(6).

VIII. Implementation

AmerGen requests that the amendment authorizing this change become effective upon issuance.

Attachment 1

Evaluation of the Impact of Loss of River Water Cooling on Components Cooled by Nuclear Service Cooled

Component Cooled	Component Description	Component Function and Evaluation of impact of loss of River Water Cooling
AH-C-4A/B	Control Building chillers	Function: Provides condenser water cooling for the centrifugal chillers. Operation of the chillers is required to: 1) Provide heat removal for ventilation system which maintains RB Penetration concrete temperature within design limits. 2) Provide heat removal for the Control Building Ventilation system as necessary to maintain control building cubicle and room temperatures within required limits. Evaluation: Loss of river water cooling of NS will cause the operating chiller to trip after NS heats up above 100 DegF. With the contingency actions established to secure the reactor coolant pumps if closed cooling water temperature cannot be controlled, the control building chillers would be expected to remain operating for up to an hour. However, if the river water is not re-established by that time, Abnormal Procedure 1203-34 (Control Building Ventilation System) for a Loss of Control Building Chilled Water System will be implemented. The procedure directs operators to take actions to reduce heat loads and increase air flow to critical components. With the actions taken in accordance with this procedure control tower cooling will be adequate for at least 72 hours with design basis electrical heat loads. This conclusion is based on an analysis performed in support of Appendix R.
AH-E-15A/B	Ventilation Coolers for NS & DC Pump Room	Function: Provide heat removal from NS & DC pump room to maintain area at or below the ambient air temperature design limit of 104 degrees F. NS & DC are closed cooling water systems with nuclear safety related functions. Evaluation: An evaluation was performed which concluded that the peak air temperature in the pump cubicles after loss of ventilation cooling would be 99 deg. F. Therefore, loss of cooling water to the room coolers will not have an adverse affect on any of the equipment in the rooms.
AH-E-1A/B/C	Reactor Building Normal and Emergency Fans	Function: These fans provide air movement for Reactor Building Normal and Emergency Cooling. Nuclear services closed system provides fan motor stator cooling. Based on motor specifications, the design flow of the cooling water through the stator jacket is 15 gpm. Evaluation: Per Manufacturer's Report, the motors have the capability of continuous operation without cooling water flow. Therefore, the RB fans remain capable of performing their design bases function.

Attachment 1

Evaluation of the Impact of Loss of River Water Cooling on Components Cooled by Nuclear Service Cooled

AH-E-24A/B	Ventilation Coolers for EF-P-2A/B Room	Function: Provide heat removal from Emergency Feed Pump rooms to maintain area within design limits. Evaluation: An evaluation was previously performed which concluded that the maximum temperature during a 72 hour period after a loss of ventilation cooling would be 113 deg. F. This temperature is within the equipment operating limits (122 degrees F). Therefore, loss of cooling water will not have an adverse affect on any of the equipment in the rooms (including the EFW Pump Motors).
AH-E-8A/B	Ventilation Coolers for Spent Fuel Pump Room	Function: This cooler provide local area cooling of the Spent Fuel Pumps room. Evaluation: Current air temperature in the spent fuel pump & cooler room is approximately 75 DegF. If the ventilation system [AH-E-10 provides outside air] were lost concurrent with a loss of nuclear river water, the ambient temperature in the room would increase with NS temperature and SF pool temperature [the room temperature would remain within a few degrees of SF pool cooler temperature]. If the ambient temperature exceeded the alarm limit at 120 DegF, the SF pump would be shutdown until ambient cooling was restored. This would not adversely impact nuclear safety. SF pump cooling could be lost for more than 10 days without any adverse consequences. (see SF Pool Cooler evaluation).
CA-C-1/2A/2B	RCS / Pressurizer and OTSG Sample Coolers	Function: These heat exchangers cool RCS & OTSG samples to allow chemical analysis. Evaluation: The inability to draw Reactor Coolant System (Pressurizer or Letdown) and OTSG samples for the period of time it takes to resume river water cooling is acceptable. When a post accident RCS sample is required, the sample cooler will be needed after approximately 2 hrs. Due to the heat capacity of the nuclear services closed cooling system, the sample cooler would be functional without the river water cooling. However, it is expected that river water cooling would be restored in less than 30 minutes.
FW-C-1A/B	OTSG hot drain coolers	Function: These coolers are used during outages to drain the OTSGs. They have no function during power operation or emergency operations. These coolers have no safety function. Evaluation: The OTSG Drain Coolers will not be in service during this operating condition.

Attachment 1

Evaluation of the Impact of Loss of River Water Cooling on Components Cooled by Nuclear Service Cooled

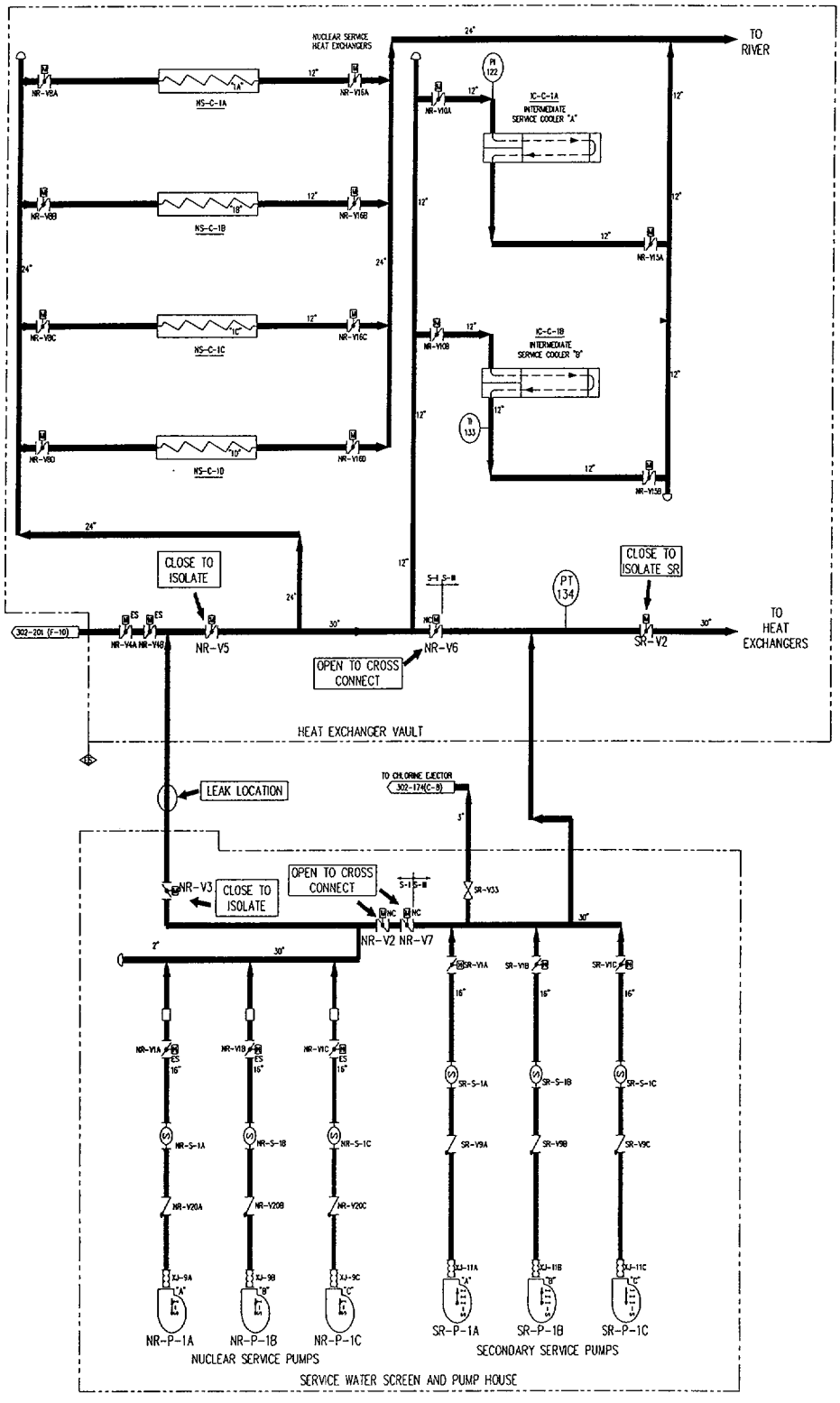
MU-C-2A/B	Reactor Coolant Pump Seal Return Coolers	Function: Provide cooling of RCP seal return and MU pump recirculation flow to maintain MU tank temperature. Evaluation: This is not a significant heat load. NS flow will be maintained. If NS temperature cannot be controlled, MU-P-1A (cooled by DC A) will be started and MU-P-1B will be shutdown. MU tank temperature will slowly increase with NS temperature. If MU tank temperature exceeds its alarm limit (120 DegF) the isolation valves from the BWST [MU-V-14A or B] will be opened to mix cool BWST water in the MU pump suction. If a LOCA occurs and HPI is actuated, the MU pump recirculation flowpath is actuated and the RCP seal return coolers will not adversely affect MU pump operation. The NS flow to the seal return coolers can be isolated by closing NS-V-32 (typically they would only be isolated if the plant were shutdown). These loads (those isolated by NS-V-32) were designated as non-essential in the FSAR.
MU-P-1B	Make Up Pump	Function: MU-P-1B is the normally operating RCS make up pump. It will not be selected for HPI during this special operating condition. NS provides pump & motor cooling for MU-P-1B Evaluation: This Makeup pump is not required for ES operation. MU-P-1A & MU-P-1C will be operable and ES-selected. These pumps will be lined up for cooling from DCCW (cooled by Decay River Water System). If problems occur and NS temperature is not being controlled, MU-P-1A will replace MU-P-1B as the normal MU pump and MU-P-1B will be shutdown to reduce the NS system heat load.
RC-P-1A/B/C/D	Reactor Coolant Pump motor coolers	Function: Provides oil and air coolers for RCP motors. Evaluation: The reactor coolant pumps represent greater than 50% of the nuclear services closed cooling system heat load. In accordance with the interim operating procedure, if nuclear service closed cooling outlet temperature cannot be maintained below 85 DegF, the reactor will be shutdown and the RCPs will be secured. This action provides conservative margins to protect the reactor coolant pump motors and maximizes the availability of the nuclear service closed cooling system for other cooling requirements. Shutdown of the reactor coolant pumps has been evaluated. Natural circulation mode of cooling is a design mode of operation and has been demonstrated by test and following loss of offsite power in June 1997. Compensatory actions to restore river water would limit the time in this mode of operation.

Attachment 1

Evaluation of the Impact of Loss of River Water Cooling on Components Cooled by Nuclear Service Cooled

SF-C-1A/B	Spent Fuel Pool Coolers	Function: Provide heat removal to maintain Spent Fuel Pool temperatures. Evaluation: The fuel pool contains approximately 650,000 gallons of water. If river water cooling is lost during this special operating condition, the pool temperature will slowly rise with NS temperature and due to residual heat in the off-loaded fuel. With the current spent fuel decay heat load, temperatures would not exceed the design basis concrete temperature for the fuel pool of 199 deg F (FSAR Section 9.7.2.3) for more than 10 days after loss of NR. River water flow will be re-established to the NS heat exchangers during this time period.
WDG-P-1A/B	Waste Gas Compressors	Function: Provides cooling for seal water for waste gas compressors. Waste gas compressors operate periodically to control the waste gas header pressure. Evaluation: This is a very small heat load. The compressor seal will function with elevated NS temperatures. However, loss of the waste gas compressors is not a safety concern. The NS flow to the waste gas compressor seal coolers can be isolated by closing NS-V-32. These loads (those isolated by NS-V-32) were designated as non-essential in the FSAR.
WDL-Z-1 & 2	Reactor Coolant & Miscellaneous Waste Evaporators	Function: The evaporators are used to purify liquid radwaste prior to release. NS provides cooling water for operation of evaporators. Evaluation: The evaporators will not be operated during this time period with the NR line out of service. This will eliminate this potential heat load on NS.

ATTACHMENT #2



SECONDARY & NUCLEAR SERVICES RIVER WATER SYSTEMS

ENCLOSURE 2

Affected TMI Unit 1 Technical Specification Page

3.3 EMERGENCY CORE COOLING, REACTOR BUILDING EMERGENCY COOLING AND REACTOR BUILDING SPRAY SYSTEMS (Contd.)

3.3.2 Maintenance or testing shall be allowed during reactor operation on any component(s) in the makeup and purification, decay heat, RB emergency cooling water, RB spray, BWST level instrumentation, or cooling water systems which will not remove more than one train of each system from service. Components shall not be removed from service so that the affected system train is inoperable for more than 72 consecutive hours. If the system is not restored to meet the requirements of Specification 3.3.1 within 72 hours, the reactor shall be placed in a HOT SHUTDOWN condition within six hours.*

3.3.2.1 If the CFT boron concentration is outside of limits, or NaOH tank is outside the limits of 3.3.1.3.b or any manual valve in the NaOH tank discharge lines are not locked open, restore the system to operable status within 72 hours. If the system is not restored to meet the requirements of Specification 3.3.1 within 72 hours, the reactor shall be placed in a HOT SHUTDOWN condition within six hours.

3.3.3 Exceptions to 3.3.2 shall be as follows:

a. Both CFTs shall be OPERABLE at all times.

b. Both the motor operated valves associated with the CFTs shall be fully open at all times.

c. One reactor building cooling fan and associated cooling unit shall be permitted to be out-of-service for seven days.

3.3.4 Prior to initiating maintenance on any of the components, the duplicate (redundant) component shall be verified to be OPERABLE.

* **In accordance with AmerGen License Change Application dated February 14, 2001, and any requirements in the associated NRC Safety Evaluation, a portion of the Nuclear Service Water System piping between valves NR-V-3 and NR-V-5 may be removed from service and Nuclear Services River Water flow realigned through a portion of the Secondary Services River Water System piping for up to 14 days. This note is applicable for one time use during TMI Unit 1 Operating Cycle 13.**

Bases

The requirements of Specification 3.3.1 assure that, before the reactor can be made critical, adequate engineered safety features are operable. Two engineered safeguards makeup pumps, two decay heat removal pumps and two decay heat removal coolers (along with their respective cooling water systems components) are specified. However, only one of each is necessary to supply emergency coolant to the reactor in the event of a loss-of-coolant accident. Both CFTs are required because a single CFT has insufficient inventory to reflood the core for hot and cold line breaks (Reference 1).

The operability of the borated water storage tank (BWST) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA (Reference 2). The limits on BWST minimum volume and boron concentration ensure that 1) sufficient water is available within containment to permit recirculation cooling flow to the core, and 2) the reactor will remain at least one percent subcritical following a Loss-of-Coolant Accident (LOCA).

The contained water volume limit of 350,000 gallons includes an allowance for water not usable because of tank discharge location and sump recirculation switchover setpoint. The limits on contained water volume, NaOH concentration and boron concentration ensure a pH value of