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US Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Recovery Operations Plan Change Request No. 44

Dear Sirs:

Attached for NRC review and approval is Recovery Operations Plan Change Request (ROPCR) No. 44. This proposal modifies the surveillance requirements for the Onsite A.C. Power Distribution System specified in Section 4.8.2.1 of the TMI-2 Recovery Operations Plan.

Sincerely,

J. J. Byrne for
M. B. Roche
Director, TMI-2

EDS/emf

Attachment

cc: W. T. Russell - Regional Administrator, Region I
J. F. Stolz - Director, Plant Directorate I-4
L. H. Thonus - Project Manager, TMI Site
F. I. Young - Senior Resident Inspector, TMI

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Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320

Recovery Operations Plan Change Request (ROPCR) No. 44

The Licensee requests that the attached page 4.8-2 of the Recovery Operations Plan (ROP) replace the existing page 4.8-2. This change request proposes to revise the surveillance requirements for the Onsite A.C. Power Distribution System (i.e., ROP Section 4.8.2.1.1) based on the events fully described in Licensee Event Report (LER) 89-04 and summarized below.

Description of Change

The proposed revision to the surveillance requirements for the Onsite A.C. Power Distribution Supply states that following a failure of any transformer supplying power to 480V A.C. busses 2-35, 2-36, 2-45, or 2-46, cross-ties between the redundant 480V busses (i.e., 2-35/2-45 and 2-36/2-46) are allowed to remain closed for the duration of Facility Mode 1 and that a report shall be submitted to the NRC pursuant to 10 CFR 50.73.

Reason for Change

Technical Specification (Tech. Spec.) 3.8.2.1.1 requires that the A.C. electrical busses listed in Section 4.8.2.1.1 of the Recovery Operations Plan (ROP) be operable and energized with tie breakers open between redundant busses. The redundant busses of interest are 2-35/2-45 and 2-36/2-46; the applicability of this Limiting Condition of Operation is during Facility Mode 1.

On July 26, 1989, 480V A.C. bus 2-46 transformer failed and the bus was re-energized via a cross-tie with power supplied from bus 2-36. However, bus 2-46 transformer could not be restored to operable status within the 8-hour period specified in Tech. Spec. 3.8.2.1.1. Thus, pursuant to 10 CFR 50.73, an LER (i.e., 89-04) is being submitted to the NRC which describes the conditions and root cause of this event.

The options available to mechanically resolve this condition are either to procure a new transformer or refurbish the failed transformer. The lead time to procure a new transformer is approximately one (1) year; the estimated time to refurbish the failed transformer is 12 to 16 weeks. GPU Nuclear currently plans to enter Facility Mode 2 by December 31, 1989, at which time the Tech. Spec. 3.8.2.1.1 requirement is no longer applicable. The proposed revision to ROP 4.8.2.1.1 recognizes that schedular considerations significantly reduce the efficacy of repair or replacement of the failed transformer. Thus, GPU Nuclear does not believe it necessary or appropriate to repair or replace bus 2-46 transformer.

In addition, the proposed revision provides flexibility in operation should one of the remaining redundant bus transformers (i.e., those transformers supplying power to busses 2-35, 2-36, or 2-45) fail. The proposed revision would allow a cross-tie between redundant busses in the event of another transformer failure. However, the proposed revision does not obviate GPU Nuclear's responsibility to maintain each pair of redundant busses energized

and to notify the NRC pursuant to 10 CFR 50.73. should a subsequent transformer fail and cannot be returned to operability within the 8-hour period allowed by Tech. Spec. 3.8.2.1.1.

Safety Evaluation Justifying Change

The primary purpose of 480V A.C. busses 2-35, 2-36, 2-45, and 2-46 is to supply power to the Reactor Building (RB), Auxiliary Building (AB), and Fuel Handling Building (FHB) HVAC.

The specific loads on each of these Unit Substation (USS) busses are as follows:

2-35

FHB Supply Fan B
FHB Exhaust Fans A/B
FHB Preheat Heating Coils
FHB Power Receptacle (Welding equipment)
RB Purge Supply Fan A*
RB Purge Exhaust Fan A*
RB Purge Heaters*
RB Power Receptacle (Welding equipment)
Heat Trace Panel (Miscellaneous items)
Misc. Power Panel MP2-35 (Miscellaneous inconsequential loads)
FHB Canister Handling Bridge
Portable Power Distribution Center (PPDC) #2 (RB Service Crane, D-Ring Jib Cranes, Miscellaneous items)

2-45

AB Supply Fan B
AB Exhaust Fans C/D
AB Duct Heaters
PPDC #1 (Miscellaneous defueling items)

*The "B" RB Purge Supply/Exhaust Fans along with another set of RB Purge Heaters are powered from USS Bus 2-47.

2-36

AB Supply Fan A
AB Exhaust Fans A/B
AB Duct Preheaters

2-46

FHB Supply Fan A
FHB Exhaust Fans C/D
FHB Preheat Heating Coils
RB Power Receptacle (RB area cameras)
Misc. Power Panel MP2-46 (RB boronmeter and miscellaneous inconsequential loads)
MCC 2-46A (Miscellaneous Diesel Gen. Room items)

As discussed above, the 2-36 bus is currently tied-in with the 2-46 bus; the same tie-in can be accomplished between the 2-35 bus and the 2-45 bus. Each redundant bus pair (i.e., 2-35/2-45 and 2-36/2-46) supplies power to one-half of the HVAC in the AB and FHB; USS bus 2-35 supplies power to one-half of the HVAC in the RB. Therefore, loss of power from either bus pair would not interrupt ventilation in any of these three (3) buildings.

The rated capacity of each transformer is 2000 kva at 480V A.C.; the load on each one of the four (4) transformers is as follows:

- During the winter months, less than 15% of rated capacity;
- For the remainder of the year, less than 5% of rated capacity.

Therefore, with either bus pair being supplied power from only one (1) transformer, the maximum load on that transformer is less than 30% of rated capacity.

The existing condition is that bus 2-46 transformer is inoperable and bus 2-46 is tied-in to bus 2-36. In the event of failure of bus 2-36 transformer, the redundant bus pair 2-35/2-45 would be tied together and one (1) of the transformers (i.e., either the transformer supplying power to bus 2-35 or bus 2-45) would be isolated from the bus. The isolated transformer would then replace the failed bus 2-36 transformer and power would be restored to the bus pair 2-36/2-46. It is noteworthy that bus 2-36 transformer was refurbished following failure in February 1987 (reference TMI-2 Incident Event Report 87-016) and is, therefore, less likely to fail than either bus 2-35 transformer or bus 2-45 transformer. In the event of failure of either bus 2-35 transformer or bus 2-45 transformer, the bus tie-in between them would be effected and power restored in accordance with approved procedures. The proposed ROP revision would allow either of the above operations to continue during Facility Mode 1; the NRC would be notified via a report submitted pursuant to 10 CFR 50.73.

Following Facility Mode 1, there is less reason to replace failed bus 2-46 transformer since TMI-2 will be in a defueled, subcritical condition and there will no longer exist a requirement for a redundant power supply to the remaining Tech. Spec. HVAC systems.

10 CFR 50.59 Evaluation

10 CFR 50.59 allows a licensee to make changes in the facility without prior Commission approval provided the proposed change does not involve a change in the Tech. Specs. incorporated in the license or an unreviewed safey question. The proposed revision to the ROP does not involve a change to the TMI-2 Tech. Specs. currently incorporated in the license. The proposed change shall be deemed to involve an unreviewed safety question:

1. If the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or

2. If the possibility of an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or

3. If the margin of safety, as defined in the basis for any Technical Specification, is reduced.

Has the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report been increased?

The proposed revision does not increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the Safety Analysis Report (SAR) because sufficient power to HVAC systems would be available. The consequences of failure of a transformer supplying power to either bus 2-35, 2-36, or 2-45 is discussed in the above safety evaluation. No accident or malfunction of equipment important to safety would result from such failure. Further, the Safety Evaluation Report (SER) attached to Tech. Specs. Change Request (TSCR) No. 46 transmitted via GPU Nuclear letter 4410-84-L-0154, dated November 6, 1984, and approved by NRC Amendment of Order dated August 1985, provides a reliability study that postulates an accident involving the loss of both on-site and off-site A.C. power and shows that A.C. power can be restored within five (5) hours without affecting the safe shutdown condition of the plant. This catastrophic total loss of both on-site and off-site A.C. power clearly bounds the effects of a single transformer failure. Thus, any potential accident germane to this proposed ROP revision is bounded by previous analyses.

Has the possibility of an accident or malfunction of a different type than any evaluated previously in the safety analysis report been created?

The proposed revision does not create the possibility of an accident or malfunction of a different type than any evaluated previously in the SAR since existing analyses circumscribe the potential transformer failures identified in the above "Safety Evaluation Justifying Change."

Has the margin of safety, as defined in the basis for any Technical Specification, been reduced?

Tech. Spec. Basis 3/4.8, "Electrical Power Systems," states: "The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems ensures that sufficient power will be available when required." The proposed revision does not reduce the margin of safety as defined in this Tech. Spec. Basis because sufficient power to HVAC systems would be available.

Therefore, pursuant to 10 CFR 50.59, this proposed change does not result in an unreviewed safety question.

4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

4.8.2.1 A.C. DISTRIBUTION

4.8.2.1.1 The specified A.C. busses shall be determined OPERABLE with tie breakers open between redundant busses at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4160 volt Bus # 2-1E
4160 volt Bus # 2-2E
4160 volt Busses # 2-3 and 2-4
480 volt Busses # 2-11E and 2-12E
480 volt Busses # 2-21E and 2-22E
480 volt Busses # 2-32, 2-35*, 2-36*, 2-42, 2-45*, and 2-46*

*In the event that these redundant A.C. bus pairs are not able to be restored to OPERABLE status within 8 hours as specified in Tech. Spec. 3.8.2.1.1, the tie breakers between these busses may remain in the closed position and a report shall be submitted to the NRC pursuant to 10 CFR 50.73.

4.8.2.1.2 The specified A.C. busses shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

120 volt A.C. Vital Bus # 2-1V
120 volt A.C. Vital Bus # 2-2V
120 volt A.C. Vital Bus # 2-3V
120 volt A.C. Vital Bus # 2-4V

4.8.2.2 D.C. DISTRIBUTION

4.8.2.2.1 Each D.C. bus train shall be determined OPERABLE and energized with tie breakers open at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.2.2 Each 250/125-volt battery bank and charger shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that:

1. The electrolyte level of each pilot cell is between the minimum and maximum level indication marks.

2. The pilot cell specific gravity, corrected to 77°F and full electrolyte level, is greater than or equal to 1.20.

3. The pilot cell voltage is greater than or equal to 2.13 volts.

4. The overall battery voltage is greater than or equal to 250/125 volts.