



GPU Nuclear Corporation
Post Office Box 480
Route 441 South
Middletown, Pennsylvania 17057-0191
717 944-7621
TELEX 84-2386
Writer's Direct Dial Number:

May 7, 1984
5211-84-2110

Office of Nuclear Reactor Regulation
Attn: J. F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Environmental Qualification of Electrical Equipment
(Supplement 3)

As discussed in a telephone conversation between members of our respective staffs on April 17, 1984, enclosed please find additional information concerning deficiencies as applied to radiation from the December 10, 1982 TER, items 2, 49, 50 and 109. This supplements our response of February 10, 1984.

Sincerely,

H.D. Hukill
VP-TMI-1

cc: R. conte
J. Van Vliet

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I. Specific

A. Limiterorque Motor Operators

1. TER Item 2 [AHV-1]

Limiterorque model SMB-2 is shown to be similar to models tested/age analyzed/qualified life in Limitorque Generic Report B0058 Section 4.1.4. Ding motor brake model 6-71010-6 is qualified by similarity to model 6-63009-50 which was tested as described in test report 600198. Both models are constructed of similar materials and rated for approximately the same torques but differ only in size.

The Dings brake is qualified to 1×10^8 rads by GPUN analysis (material list from vendor) which is documented in GPUN calculation 1101X-5350-018, Rev. 1. This calculation shows Polyimide (not Polyamide) as the limiting material [EPRI NP-1558 p C-2]. SCEW sheets will be updated in the fall 1984 revision.

These motor brakes are located in the containment where the total integrated dose (TID) is 2×10^7 rads based upon the DOR Guidelines.

B. Westinghouse Motors

1. TER Items 45, 46, 49, 50 & 51 [MUP-4; MUP-1; BSP-1; DHP-1; EFP-2]

- a. Motorettes (stators) testing included silicon rubber insulated lead wires. Aging analysis of the assembly showed a 40 years life expectancy.
- b. Bearing Analysis showed that the bearings could withstand LOCA/HELB (ref. GPUN calculation 1101X-5350-020 and GPUN memo R. Spragg to D. Slear dated 5/14/81).
- c. Motor Lubrication (Exxon Terisstic 32) is controlled within the preventive maintenance program and is rated by Exxon at a radiation level of 10^8 rads with a flash point of 410°F. (This lubricant is not used on MUP-4 which has sealed bearings.)
- d. Qualification of lead splices is controlled within the corrective maintenance program by GPUN procedure 1420-Y-15.

EFP-2 was analysed in Westinghouse Report dated 1/81 for motor insulation life analysis which envelopes the thermal lag peak for the Intermediate Building of 326°F.

Westinghouse Report WCAP 7829 thermally aged the motors for 21 days at 200°C and tested to 2×10^8 rads and LOCA (324°F at 80 psia and 9.5 pH). Verbal verification that this report applies to these motors has been obtained. GPUN is awaiting a letter confirming report applicability. SCEW sheets will be updated in our fall 1984 revision.

Item 49 is located in an area of the auxiliary building where the TID is 3.4×10^6 rads based upon GPUN's analysis.

Item 50 is also located in the auxiliary building in an area where the GPUN analysis resulted in a TID of 1.6×10^6 rads.

II. Generic

A. GE Penetration

1. TER Item 109

GPUN had reevaluated the penetrations installed at TMI-1 and have determined that they are all above flood level; and that the hyperlon paint is only used for cosmetic effects and is immune to caustic spray. GPUN has also performed an aging analysis on the penetrations.

The irradiation data referenced on the SCEW sheet was not for the exact type of sealant used in the FOI penetrations. Subsequently, irradiation data has been obtained for the exact type of epoxy sealant used in the penetration. This epoxy is a "Scotchcast" type produced by the 3M Company. The irradiation test data shows no damage at 1×10^8 rads and little or no damage at 5×10^8 rads. The required TID dose for these containment penetrations is 2×10^7 rads based upon the DOR Guidelines. The SCEW sheet will be updated in the fall 1984 revision.