

DOCKET NO. 50-289

PDR

LOCAL PDR



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
August 3, 1984

Docket No. 50-289

MEMORANDUM FOR: Richard Vollmer, Director
Division of Engineering

FROM: Darrell Eisenhut, Director
Division of Licensing

SUBJECT: TMI-1 RESTART PROCEEDING ENVIRONMENTAL QUALIFICATION
CERTIFICATION

The Commission, in CLI-84-11, dated July 26, 1984, has directed the staff to certify, on an expedited schedule, that electrical equipment located in containment and the auxiliary building whose operation is necessary to mitigate small-break LOCAs and loss of main feedwater transients is environmentally qualified with respect to radiation. The qualification is for radiation levels associated with large break LOCAs in accordance with the DOR Guidelines. If any of this equipment will not be properly qualified for radiation prior to restart, then GPU Nuclear is to provide a specific justification for interim operation which the staff is to review and provide recommendations to the Commission.

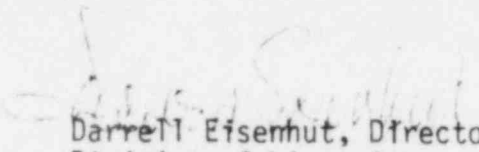
We see three distinct aspects to this review. First, we need to review for completeness the list of equipment falling within the scope of the Commission's order. The licensee has previously provided such a list, which DSI has reviewed and approved (See Enclosures 1 and 2). However, based upon more recent review activities related to the EFW system, we believe that the licensee's list may not be complete insofar as it probably does not include components from interfacing systems whose operation may be necessary to permit safety systems to perform their function (e.g., although the TMI-1 condensate system is not considered safety-related, certain valves in the system are safety-related since they must operate to assure EFW system operability). Specifically, we request that DE, in consultation with DSI as appropriate, promptly advise us as to the completeness of the list of systems from Enclosure 1. In addition, we request that DE review and discuss in its Safety Evaluation the completeness of the licensee's revised list of components which is scheduled for submittal on August 16, 1984.

Second, we request that DE conduct an audit of the TMI-1 environmental qualification files for the affected components and prepare an evaluation. J. Van Vliet has been working with DE staff in this regard and a tentative audit date of August 20-21 has been established.

Accession No. 8408140037XA

Third, we request that DE, in consultation with DSI as appropriate, review any justifications for continued operation which the licensee may submit. No justifications have been submitted to date, but some are expected. The details for this aspect of the review will be established upon receipt of the proposed justifications.

We consider this to be a high priority action. Assuming that licensee provides the required information by about August 16, and can support an audit on August 20-21, then we would expect to receive the DE evaluation by no later than August 31. This schedule will permit us to respond to the Commission by mid-September.


Darrell Eisenhut, Director
Division of Licensing

Enclosures:

1. GPU Ltr. dtd. 5/18/81
2. DSI memo dtd. 5/22/81

cc:

RBernero
LRubenstein
WHouston
BSheron
WJensen
JKnight
VNoonan
RLaGrange
JGoldberg (ELD)
JVan Vliet
JStolz

To: Rick Jacob
From: Courtney Smyr

Met-Ed GPU

Metropolitan Edison Company
Post Office Box 480
Middletown, Pennsylvania 1

Writer's Direct Dial Number

May 18, 1981
LIL 161

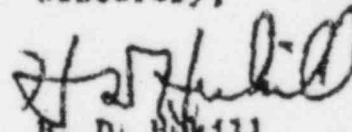
Office of Nuclear Reactor Regulation
Attn: Mr. John F. Stolz, Chief
Operating Reactors Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Equipment Qualification for Small Breaks

This letter is in response to your letter dated May 1, 1981 which requested information on environmental qualification for equipment needed to respond to design basis small break loss of coolant accidents (SB LOCA). Break sizes between 0.01 FT² and 0.5 FT² have been addressed considering a loss of offsite power, loss of Main Feedwater, and a worst case single failure. The adverse environmental parameters associated with the worst case SB LOCA have also been addressed. The qualifications of the various equipment has been referenced from our response to IE Bulletin 79-01B dated January 30, 1981 (LIL 026).

Sincerely,


H. D. Hill
Director, TMI-1

NDH:CWS:hb
Attachment
cc: L. Barrett
H. Silver
R. Jacobs

U.S. NUCLEAR REGULATORY
COMMISSION
1981 MAY 19 PM 1 19
TELECOM-BR-DFO5

8105220177
22pp

Equipment Qualification
for Small Break Loss of Coolant Accidents (SB LOCA)

The essential systems and components list consists of those Class IE electrical items, located in a SB LOCA harsh environment that are required to bring the plant to a safe shutdown. The following systems, or portions thereof, from the response to IE Bulletin 79-01B are required:

- Main Steam
- Makeup and Purification
- Decay Heat Removal
- Reactor Building Isolation
- Reactor Protection
- Engineered Safeguards Actuation
- Reactor Building Emergency Cooling
- Core Flood
- Nuclear Services Closed Loop Cooling
- Additional Accident Monitoring Equipment

The following systems from the response to IE Bulletin 79-01B are required but are not located in a SB LOCA harsh environment:

- Emergency Feedwater
- Decay Heat Closed Loop Cooling
- Reactor Building Emergency Cooling River Water

The analysis has considered the worst single failure in addition to the loss of offsite power which results in a loss of Main Feedwater. The worst single failure is the loss of one emergency diesel generator. This results in only one reactor building fan coil unit being available for cooling.

2.

The Component List Sheets are arranged by system. The equipment qualification is based upon our January 30, 1981 response to IE Bulletin 79-01B. The attached table makes appropriate reference to the submission for each component. The building location is shown for each component including the common equipment. The only harsh environments resulting from the small break LOCA are those in the Reactor Building and the Auxiliary Building. The most severe small break LOCA harsh environment is shown for each component on the Component List Sheets. For components located in the Auxiliary Building the only harsh environment is radiation. The remarks column provides qualification information in addition to that previously submitted. Where there is no comment or reference in the remarks column, the SER of March 24, 1981 indicated no deficiency that would be applicable for those small break LOCA's.

The evaluation has considered break sizes in the range from 0.01 FT^2 to 0.5 FT^2 . The lower limit of 0.01 FT^2 insures that emergency feedwater will be activated, since it is required for breaks smaller than 0.02 FT^2 . The most severe credible small break is that of the largest Reactor Coolant System branch line with a cross-sectional area of less than 0.5 FT^2 . The sleeved 14 inch diameter core flood line which has a break area of 0.44 FT^2 is the largest such line. This break results in a reactor building peak pressure of slightly below 30 PSIG. The Reactor Building Spray System will not activate until 30 psig is reached so chemical spray on the equipment is not considered. The Reactor Building pressure and temperature resulting from this 0.44 FT^2 break are assumed as an upper bound for qualification requirements for the equipment.

The calculation of the accumulated radiation dose is based on the degree of fuel failures predicted for a 0.44 FT² break (i.e., no fuel failures beyond those assumed in the PSAR for worst case normal operation is predicted to occur by licensing basis SB LOCA analyses). A methodology similar to that of Appendix D to NUREC 0588 was then used to evaluate the equipment radiation exposure due to the small break fuel failures. The 40 year integrated dose was added to the 180 day post accident dose to obtain the total dose.

COMPONENT LIST NOTES

Note 1 - SUBMERGENCE

- Valve will perform its function of containment isolation prior to becoming submerged.

Note 2 - RADIATION DEGRADATION

DOR Guidelines Appendix C, Table C-1 were used in the evaluation conducted. Other documentation was also reviewed where DOR Guidelines did not address specific materials or where more definitive data was available elsewhere. Review was based upon 80% retention of the appropriate property based upon the prudent engineering judgement of the materials function. The January 30, 1981 submittal contains supplemental pages to each Systems Component Evaluation Worksheet where a materials evaluation was done stating the materials, the documentation reference, and the radiation value from that reference.

Note 3 - REFER TO LER 80-17

- Qualification of motor brakes for certain Limitorque operators.

Note 4 - RELOCATION

- Equipment was relocated to an elevation above the calculated Flood Level. New transmitters LT-775, 776, 788 and LT-789 are being installed for control room and remote shutdown panel indication. These Rosemount 1153D type transmitters are undergoing NUREG-0588 Cat. #1 qualification program (NRC EQ Branch participation).

Note 5 - MODEL PL-14R2

- Used on Rosemount narrow range RC pressure transmitters.

Note 6 - MODEL SA-1000

- New electrical seal assemblies are being installed on the other 79-01B listed transmitters, RTD(s), and pressure switches located inside containment. Qualification to 75 PSIG, 340°F, 100% humidity and 2×10^8 R per Conax Bulletin SA-1000/IPS-409/IPS-325.

Note 7 - RB ENVIRONMENT

- 30 PSIG/245°F/100% humidity/ 5.4×10^4 R.

Note 8 - FOXBORO TRANSMITTER POTENTIAL DEFICIENCIES

The Foxboro transmitters used at TMI-1 are the 4-20 mA type and are not subject to the concern identified by NRC letter dated April 23, 1981 or IE Circular 81-06 for 10-50mA type transmitters.

COMPONENT LISTSystem Main Steam

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
SP6A-PT1 <i>eval. on 5-1-86</i>	OTSG Discharge Press. Transmitter	RB	EDS Vol. I MS Sheet 9	Note 7	Note 8	Yes
SP6A-PT2	OTSG Discharge Press Transmitter	RB	EDS Vol. I MS Sheet 10	"	"	"
SP6B-PT1	OTSG Discharge Press Transmitter	RB	" 11	"	"	"
SP6B-PT2	OTSG Discharge Press Transmitter	RB	" 12	"	"	"

COMPONENT LISTSystem Make-up and Purification

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Marsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
MU-P1A 40-T	Pump Motor	AB	EDS Vol. 1 MU Sheet 1	3.5 x 10 ⁴ R	- ✓	Yes
MU-P1B	Pump Motor	AB	" 2	"	- ✓	"
MU-P1C	Pump Motor	AB	" 3	"	- ✓	"
MU-P2A 40-A	Pump Motor (Aux. Oil)	AB	" 4	"	- ✓	"
MU-P2B	Pump Motor (Aux. Oil)	AB	" 5	"	- ✓	"
MU-P2C	Pump Motor (Aux. Oil)	AB	" 6	"	- ✓	"
MU-P3A	Pump Motor (Main Oil)	AB	" 7	"	- ✓	"
MU-P3B	Pump Motor (Main Oil)	AB	" 8	"	- ✓	"
MU-P3C	Pump Motor (Main Oil)	AB	" 9	"	- ✓	"
MU-P4A 40-T	Pump Motor (Gear Oil)	AB	" 10	"	- ✓	"
MU-P4B	Pump Motor (Gear Oil)	AB	" 11	"	- ✓	"
MU-P4C	Pump Motor (Gear Oil)	AB	" 12	"	- ✓	"
MU-V-2A	Let down cooler outlet Valve Motor Operator	RB	" 13	Note 7	Note 1	"
MU-V-2B	Letdown cooler outlet Valve Motor Operator	RB	" 14	Note 7	Note 1	"
LSA/MUV-3 40-A	Letdown cooler outlet Valve Limit Switch	AB	" 15	1.8 x 10 ⁴ R	Note 2 10 ⁶ (BUNA-N)	"

COMPONENT LISTSystem Make-up and Purification

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Marsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
LSB/MUV-3 40-A	Letdown cooler outlet Valve Limit Switch	AB	EDS Vol. I MU Sheet 16	$1.8 \times 10^4 R$	Note 2 ¹⁰⁶ B-11A	Yes
SV/MUV-3 11-A	Letdown cooler outlet Valve Solenoid Valve	AB	" 17	"	Note 2 ¹⁰⁵ Nylon Robin + Celcon Diaphragm Valve	"
MU-V-12 40-T	Pump Suction Valve Motor Operator	AB	" 18	$1.8 \times 10^4 R$	- ✓	"
MU-V-14A	Pump Suction From BWST Valve Motor Operator	AB	" 19	$1.8 \times 10^4 R$	- ✓	"
MU-V14B	Pump Suction From BWST Valve Motor Operator	AB	" 20	$1.8 \times 10^4 R$	- ✓	"
MU-V16A	Pump discharge Valve Motor Operator	AB	" 21	$1.8 \times 10^4 R$	- ✓	"
MU-V-16B	Pump discharge Valve Motor Operator	AB	" 22	"	- ✓	"
MU-V-16C	Pump discharge Valve Motor Operator	AB	" 23	"	- ✓	"
MU-V-16D	Pump discharge Valve Motor Operator	AB	" 24	"	- ✓	"
SV/MUV-18 40-A	Charging line isolation valve-Solenoid Valve	AB	" 25	"	Note 2 ¹⁰⁶ B-N	"

COMPONENT LIST

System Make-up and Purification

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Marsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
LSA/MUV-18 40-A	Charging Line Isolation Valve - Limit Switch	AB	EDS Vol. I MU Sheet 26	1.8 x 10 ⁴ R	Note 2 10 ⁵ BUNA N	Yes
LSB/MUV-18 "	Charging Line Isolation Valve - Limit Switch	AB	" 27	"	" "	"
LSA/MUV-20 "	Seal Isolation Valve Limit Switch	AB	" 28	"	" "	"
LSB/MUV-20 "	Seal Isolation Valve Limit Switch	AB	" 29	"	" "	"
SV/MUV-20 "	Seal Isolation Valve Solenoid Valve	AB	" 30	"	" "	"
MU-V-25 40-T	RCP Letdown Cooler Isola- tion Valve Motor Operator	RB	" 31	Note 7	-	"
LSA/MUV-26 40-A	RCP Letdown Cooler Isolation Valve - Limit Switch	AB	" 32	3.5 x 10 ⁴ R	Note 2 "	"
LSB/MUV-26 "	RCP Letdown Cooler Isola- tion Valve - Limit Switch	AB	" 33	"	" "	"
SV/MUV-26 11-A	RCP Letdown Cooler Isola- tion Valve - Solenoid Valve	AB	" 34	"	" 10 ⁵ Celcon & Nylon	"
MU-V-36 40-T	Recirculation Valve Motor Operator	AB	" 35	1.8 x 10 ⁴ R	- ✓	"
MU-V-37 "	Recirculation Valve Motor Operator	AB	" 36	"	- ✓	"

COMPONENT LIST

System Make-up and Purification

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
PS480A 6-A	Pressure Switch Lube Oil	AB	EDS Vol. I MU Sheet 37	3.5 x 10 ⁴ R	Note 2 10 ⁵ B-N	Yes
PS480B	Pressure Switch Lube Oil	AB	" 38	"	"	"
PS480C	Pressure Switch Lube Oil	AB	" 39	"	"	"

COMPONENT LIST

System Decay Heat Removal

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Marsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
A DH-P1A 40-T	Pump Motor	AB	EDS Vol. I DHR Sheet 1	$1.8 \times 10^4 R$	- ✓	Yes
" DH-P1B	Pump Motor	AB	" 2	"	- ✓	"
" DH-V-1	Drop line Valve Motor Oper.	RB	" 3	Note 7	- ✓	"
" DH-V-2	Drop line Valve Motor Oper.	RB	" 4	"	- ✓	"
A DH-V-3	Suction Valve Motor Oper.	AB	" 5	$1.8 \times 10^4 R$	- ✓	"
A DH-V-4A	Discharge Valve Motor Oper.	AB	" 6	$1.8 \times 10^4 R$	- 4.5×10^4 injection	yes (Note 3)
" DH-V-4B	Discharge Valve Motor Oper.	AB	" 7	$1.8 \times 10^4 R$	- "	"
" DH-V-5A n. data yet	BWST Suction Valve Motor Operator	AB	" 8	$1.8 \times 10^4 R$	- "	"
" DH-V-5B	BWST Suction Valve Motor Operator	AB	" 9	$1.8 \times 10^4 R$	- "	"
A DH-V-6A 40-T	RB Sump Pump Suction Valve Motor Operator	AB	" 10	$1.8 \times 10^4 R$	- ✓	yes
" DH-V-6B	RB Sump Pump Suction Valve Motor Operator	AB	" 11	$1.8 \times 10^4 R$	- ✓	"
" DH-V-7A	MU System Discharge Valve Motor Operator	AB	" 12	$1.8 \times 10^4 R$	- ✓	"
" DH-V-7B	MU System Discharge Valve Motor Operator	AB	" 13	$1.8 \times 10^4 R$	- ✓	"

COMPONENT LIST

System Reactor Building Isolation

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
A LSA/AHV-1A 40-A	RB Purge Valve Limit Switch	AB	EDS Vol. I RBIS Sht. 1	$3.5 \times 10^4 R$	Note 2 10 ⁶ B-N	Yes
LSB/AHV-1A	RB Purge Valve Limit Switch	AB	" 2	"	"	"
SV/AHV-1A1 11-A	RB Purge Valve Solenoid Valve	AB	" 3	"	" 10 ⁵ Celcon	"
SV/AHV-1A2	RB Purge Valve Solenoid "	AB	" 4	"	"	"
CA-V-1 40-T	Pz Sample Valve Motor Oper.	RB	" 11	Note 7	-	"
LSA/CAV-2 40-A	RCS Sample Valve Limit Valve	AB	" 13	$3.5 \times 10^4 R$	Note 2 10 ⁶ B-N	"
LSB/CAV-2	RCS Sample Valve Limit Valve	AB	" 14	"	- 10 ⁶	"
SV/CAV-2 11-A	RCS Sample Valve Solenoid "	AB	" 12	"	- 10 ⁵ Celcon	"
CA-V-3 40-T	Pz Water Sample Valve Motor Operator	RB	" 15	Note 7	- nylon	"
CA-V-4A	SG FW Isolation Valve Motor Operator	RB	" 16	"	-	"
CA-V-4B	SG FW Isolation Motor Operator	RB	" 17	"	-	"
CA-V-13	RCS Letdown Sample Valve Motor Operator	RB	" 24	"	-	"
LSA/CAV-189 6-A	Demin. Water Isolation Valve Limit Switch	AB	" 25	$1.8 \times 10^4 R$	Note 2 10 ⁶ phenolic	"
LSB/CAV-189 6-A	Demin. Water Isolation Valve Limit Switch	AB	" 26	"	"	"

COMPONENT LIST

System Reactor Building Isolation

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
SV/CAV-189 11-A	Demin. Water Isolation Valve Solenoid Valve	AB	EDS Vol. I RBIS Sht. 27	$1.8 \times 10^4 R$	Note 2 10 ⁵ C/Vane Nylon	"
AH-V-1B 40-T	RB Purge Valve Motor Oper.	RB	" 5	Note 7	Note 3	"
AH-V-1C 11	RB Purge Valve Motor Oper.	RB	" 6	"	"	"
IC-V-2 11	IC Closed Loop Isolation Valve Motor Operator	RB	EDS Vol. I RBIS Sht. 40	"	-	"
20/ICV-3 11-A	IC Return Isolation Solenoid Valve	AB	" 41	$1.8 \times 10^4 R$	Note 2 10 ⁵ Delvin	"
33/ICV-3 40-A	IC Return Isolation Limit Switch	AB	" 42	"	" 10 ⁶ B-N	"
LSB/ICV-3 11	IC Return Isolation Limit Switch	AB	" 43	"	" 11	"
WDG-V-3 40-T	RB Vent header Isolation Valve Motor Operator	RB	" 54	Note 7	-	"
SV/WDG-V4 11-A	RB Vent header Isola. Valve Solenoid Valve	AB	" 55	$3.5 \times 10^4 R$	- 10 ⁵	"
LSA/WDG-V4 6-A	RB Vent header Isola. Valve Limit Switch	AB	" 56	"	Note 2 Nylon 10 ⁶ phend.	"
LSB/WDG-V4 6-A	RB Vent header Isola. Valve Limit Switch	AB	" 57	"	" 11	"
WDL-V-303 40-T	RCS Drain tank Outlet Isola. Valve Motor Operator	RB	" 58	Note 7	-	"
LSA/WDL-V304 40-A	RCS Drain Isolation Valves Limit Switch	AB	" 59	$3.5 \times 10^4 R$	Note 2 10 ⁶ B-N	"

COMPONENT LISTSystem Reactor Building Isolation

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
LSB/WDL-V304 40-A	RC Drain Isolation Valve Limit Switch	AB	EDS Vol. 1 RBIS Sht. 60	$3.5 \times 10^4 R$	Note 2 10^6 P-22	Yes
SV/WDL-V304 11-A	RC Drain Isolation Valve Solenoid Valve	AB	" 61-	"	" 10^5 Nylon	"
SV/WDL-V534 11-A	RB Sump Outlet Isolation Solenoid Valve	AB	" 64	$1.8 \times 10^4 R$	" 10^5 Nylon + Celcon	"
LSA/WDL-V534 40-A	RB Sump Isolation Limit Switch	AB	" 62	"	" 10^6 O-22	"
LSB/WDL-V534 40-A	RB Sump Isolation Limit Switch	AB	RDS Vol. I RBIS Sht. 63	"	" L	"
LSA/WDL-V535 40-A	RB Sump Isolation Limit Switch	AB	" 65	"	" L	"
LSB/WDL-V535 40-A	RB Sump Isolation Limit Switch	AB	" 66	"	" L	"
SV/WDL-V535 11-A	RB Sump Isolation Solenoid Valve	AB	" 67	"	" 10^5 Celcon + Nylon	"

COMPONENT LIST

System Reactor Protection

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
RC3A-PT1 40-T XR	RC NR Pressure Transmitter	RB	EDS Vol. 1A RPS Sht.1	Note 7	Note 2 5x10 ⁴	Yes
RC3A-PT2 40-T XR	RC NR Pressure Transmitter	RB	" 2	"	"	"
RC3B-PT1 40-T XR	RC NR Pressure Transmitter	RB	" 3	"	"	"
RC3B-PT2 40-T XR	RC NR Pressure Transmitter	RB	" 4	"	"	"
RC4A-TE2 40-A	RC Outlet Temp RTD	RB	" 5	"	-	"
RC4A-TE3 40-A	RC Outlet Temp RTD	RB	" 6	"	-	"
RC4B-TE2 40-A	RC Outlet Temp RTD	RB	" 7	"	-	"
RC4B-TE3 40-A	RC Outlet Temp. RTD	RB	" 8	"	-	"
PS-672 6-A	RB Pressure Switch	AB	" 13	3.5 x 10 ⁴ R	Note 2 10 ⁶ B-N BZ-A	"
PS-673 6-A	RB Pressure Switch	AB	" 14	"	"	"
PS-674 6-A	RB Pressure Switch	AB	" 15	"	"	"
PS-675 6-A	RB Pressure Switch	AB	" 16	"	" 5x10 ⁴ (4.5x10 ⁴) teflon	"

COMPONENT LISTSystem Engineered Safeguards Actuation

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
PS-283 6-A	RB Pressure Switch	AB	EDS Vol. 1A ESAS 2	$3.5 \times 10^4 R$	Note 2	Yes
PS-284	RB Pressure Switch	AB	" 3	"	"	"
PS-286	RB Pressure Switch	AB	" 5	"	"	"
PS-287	RB Pressure Switch	AB	" 6	"	"	"
PS-289	RB Pressure Switch	AB	" 8	"	"	"
PS-290	RB Pressure Switch	AB	" 9	"	"	"
RC3A-PT3 None	RC WR Pressure Transmitter	RB	" 10	Note 7	"	"
RC3A-PT4	RC WR Pressure Transmitter	RB	" 11	"	"	"
RC3B-PT3	RC WR Pressure Transmitter	RB	" 12	"	"	"
PT-282	RB Pressure Transmitter	AB	" 1	$3.2 \times 10^5 R$	" ✓	"
PT-285	RB Pressure Transmitter	AB	" 4	"	" ✓	"
PT-288	RB Pressure Transmitter	AB	" 7	"	" ✓	"

COMPONENT LIST

System Reactor Building Emergency Cooling

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
AH-E1A 40-T	RB Cooler Fan Motor	RB	EDS Vol. 1A RB 1	Note 7	-	Yes
AH-E1B	RB Cooler Fan Motor	RB	2	"	-	"
AH-E1C	RB Cooler Fan Motor	RB	3	"	-	"

COMPONENT LIST

System Core Flood

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
CF-V-2A 40-T	CF Sample Isolation Valve Motor Operator	RB	EDS Vol. 1A CF Sht. 3	Note 7	-	Yes
CF-V-2B "	CF Sample Isolation Valve Motor Operator	RB	" 4	"	-	"
CF-V-3A L	CF Vent Valve Motor Operator	RB	" 5	"	-	"
CF-V-3B "	CF Vent Valve Motor Operator	RB	" 6	"	-	"
SA/CFV-19A 6-A	CF Makeup Valve Limit Switch	AB	" 7	35 x 10 ⁶ R	Note 2	"
SB/CFV-19A 6-A	CF Makeup Valve Limit Switch	AB	" 8	"	"	"
SA/CFV-19B 6-A	CF Makeup Valve Limit Switch	AB	" 9	"	"	"
SB/CFV-19B 6-A	CF Makeup Valve Limit switch	AB	" 10	"	"	"
20/CFV-19A 11-A	CF Makeup Valve Solenoid Valve	AB	" 11	"	"	"
20/CFV-19B 11-A	CF Makeup Valve Solenoid Valve	AB	" 12	"	"	"
LSA/CFV-20A 6-A	CF Sample Isolation Limit Switch	AB	" 13	"	"	"
LSB/CFV-20A 6-A	CF Sample Isolation Limit Switch	AB	" 14	"	"	"

COMPONENT LIST

System Core Flood

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
SV/CF-V20A 11-A	CF Sample Isolation Solenoid Valve	AB	EDS Vol. 1A CF Sht. 17	3.5×10^4 R	Note 2 105 Nylon	Yes
LSA/CFV-20B 6-A	CF Sample Isolation Limit Switch	AB	" 15	"	" 106 phenol	"
LSB/CFV-20B 6-A	CF Sample Isolation Limit Switch	AB	" 16	"	" 5	"
SV/CF-V20B 11-A	CF Sample Isolation Solenoid Valve	AB	" 18	"	" 105 Nylon	"

COMPONENT LIST

System Nuclear Services Closed Loop Cooling

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
NS-V-4 40-T	RCP Cooler Isolation Valve Motor Operator	AB	EDS Vol. 1A NSCIC Sh. 4	3.5 x 10 ⁴ R	- ✓	Yes
NS-V-15 40-T	RCP Cooler Inlet Isolation Valve Motor Operator	AB	" 5	"	- ✓	"
NS-V-32 40-T	Non-nuclear Equip. Cooler Isolation Valve Motor Oper.	AB	" 6	"	- ✓	"
NS-V-35 40-T (ins rad. data)	RCP Cooler Isolation Valve Motor Operator	RB	" 7	Note 7	Materials list not yet received from Limatorque for evaluation for rad- iation affects, how- ever, radiation dose for SB LOCA is not high enough to be of concern.	"

COMPONENT LIST

System Additional Accident Monitoring Equipment

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Harsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
SP1A-LT2 <i>eval. ongoing</i>	OTSG Level Transmitter	RB	EDS Vol. 1A AAME/RCS Sheet 1	Note 7	Note 4	Yes
SP1B-LT2 "	OTSG Level Transmitter	RB	" 2	"	"	"
RC1-LT1 "	PZ-Level Transmitter	RB	" 5	"	-	"
RC1-LT2 "	PZ Level Transmitter	RB	" 6	"	-	"
RC1-LT3 "	PZ Level Transmitter	RB	" 7	"	-	"
RC5A-TE1 <i>1.5-A (40)</i>	RC Inlet Temp. RTD	RB	" 8	"	-	"
RC5A-TE2 "	RC Inlet Temp. RTD	RB	" 9	"	-	"
RC5A-TE3 "	RC Inlet Temp. RTD	RB	" 10	"	-	"
RC5A-TE4 "	RC Inlet Temp. RTD	RB	" 11	"	-	"
RC5B-TE1 "	RC Inlet Temp. RTD	RB	" 12	"	-	"
RC5B-TE2 "	RC Inlet Temp. RTD	RB	" 13	"	-	"
RC5B-TE3 "	RC Inlet Temp. RTD	RB	" 14	"	-	"
RC5B-TE4 "	RC Inlet Temp. RTD	RB	" 15	"	-	"
SP1A-LT4 <i>eval. ongoing</i>	OTSG Level Transmitter	RB	" 3	"	Note 4	"
SP1B-LT4 "	OTSG Level Transmitter	RB	" 4	"	"	"

COMPONENT LIST

System Common Equipment

<u>Plant ID No.</u>	<u>Description</u>	<u>Location</u>	<u>Reference to I&E 79-01B Submittal</u>	<u>Marsh Environment</u>	<u>Remarks</u>	<u>Qualified</u>
40-T	Heat Shrink Tubing	RB	EDS Vol. 1A Comm. Sheet 1	Note 7	-	Yes
40-T	Elec. Penetration Assy.	RB	" 3	"	-	"
40-T	Instrument Cable	RB/AB	" 4	"	- ✓	"
40-T	Power & Control Cable	RB/AB	" 5	"	- ✓	"
(to be replaced)	Conax Connectors	RB	" 9, 10 + 11	"	Note 5 and 6	"
40-T/A	Terminal Block	AB	" 2	3.5 x 10 ⁴ R	Note 2 10 ⁵ Pylor	"

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20545

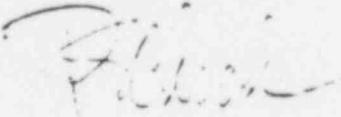
MAY 22 1981

MEMORANDUM FOR: Thomas M. Novak, Assistant Director for Operating Reactors, DOL

FROM: Paul S. Check, Assistant Director for Plant Systems, DSI

SUBJECT: EQUIPMENT REQUIRED TO MITIGATE A SMALL BREAK LOCA AND LOSS
OF MAIN FEEDWATER FOR TMI-1

As requested by R. Jacobs of ORB-4 we have reviewed the list of equipment identified by the licensee in the letter of May 18, 1981 from H. Hukill, Metropolitan Edison to J. Stolz, NRC. We believe that the licensee has identified all the equipment required to protect the core in the event of a loss of feedwater/small break LOCA event. We note that this equipment has been identified as environmentally qualified. We did not review containment isolation provisions. Our review consisted of a comparison of the equipment listed by the licensee with that identified in the TMI-1 small break LOCA procedures and with the following previously filed NRC staff testimony: (1) ECNP 1d, "Instrumentation Requirements" (2) UCS-8, "Small Break LOCA Analysis" (3) UCS-3, "Pressurizer Heaters" (4) UCS-5 "PORV and Block Valve." We note that the licensee has not identified the Reactor Coolant Pump trip breakers as necessary to cope with the LOFW, SBLOCA. We understand that the breakers are located in the turbine building and would therefore not be exposed to a LOCA environment.


Paul S. Check, Assistant Director
for Plant Systems
Division of Systems Integration

cc: R. Mattson
D. Eisenhut
J. Stolz
H. Silver
[REDACTED]
B. Sheron

CONTACT: Walton Jensen
X 29459

8 106050048