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NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

October 31, 1979

Mr. R. F. Heishman, Chief
Reactor Operations and Nuclear Support Branch
Region III
United States Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Heishman:

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Dockets No. 50-282 and No. 50-306

The following is submitted in response to your request for additional information, IE Bulletin 79-01, dated September 21, 1979:

Item No. 1

The equipment discussed in IE Circular 78-08 and IE Bulletin 79-01 is listed by component type in the attached tables. The referenced documentation is available at the plant site and has previously been inspected. See Inspection Reports No. 50-282/78-19 and No. 50-306/78-19.

Item No. 2

Ancillary components such as lubricants, gaskets, hermetic seals, and "O" rings were qualified as part of a major component as indicated in the attached tables. Unqualified substitute ancillary components are not utilized.

Splicing materials, tapes, and coatings are included in the tabulated list of equipment along with the qualification documentation reference.

Item No. 3

In response to IE Circular 78-08, a special Task Force was established to review all pertinent Plant Construction Quality Assurance documents, Motor Lists, Mechanical Components Lists, and Calibration and Maintenance Records. For electrical cable and splice material, it was necessary to assemble all contractor daily work sheets, identify the safety-related items, and determine that proper qualification documentation existed. For instrumentation, it was necessary for Instrument and Control Specialists to enter the containment and directly observe transmitter sub-component part numbers. In fact,

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pressurizer pressure transmitters were replaced with qualified devices on an emergency procurement basis due to the plant task force inspection.

Item No. 4

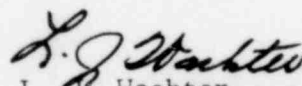
Limit switches of the type described in IE Bulletins 79-01 and 78-04 are used for position indication for valves inside the containment. As a result of IE Bulletin 78-04, qualified "open" limit switches have been installed on all safety-related air-operated valves inside containment. Limit switches for other valve position indications are not qualified.

Item No. 5 - Response to IE Bulletin 79-01A

Asco solenoids are used in safety-related systems at Prairie Island; however, not all valves are required to operate in a LOCA environment. As a result of IE Circular 78-08, all solenoid valve installations or safety systems were identified and a determination was made on the valve operability requirements. All solenoid valves which were required to be functional in a LOCA environment or which are normally energized during operation and thus might fail to vent (close) when de-energized, were replaced with Asco NP-1 valves. The remaining solenoid valves are normally de-energized, are not required to operate in a LOCA environment, and therefore fail-safe in a closed valve position.

A preventive maintenance program for the newly installed solenoid valves will be established within the time requirement recommended by the manufacturer.

Yours very truly,


L. J. Wachter

Vice President - Power Production
and System Operation

cc: Mr. G. Charnoff

Enclosures

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT Containment Electrical Penetrations

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION Containment)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
	Mfg. D. G. O'Brien	10 days	Temp (°F)	270 (1) 140 (2)	(3), (4) & (5)	Test	32	(1) Short term post accident, 10 days
	Model/Type		Press(psig)	46 (1) 5 (2)	(3), (4) & (5)	Test	32	(2) Long term post accident, 1 year
	System		Rel. Hum.	100%	(3), (4) & (5)	Test	32	(3) Ref. 32a: 270°F, 52 psig, 100% for 10 days.
	Plant ID.		Radiation	5x10 ⁷ Rad	Met Spec		31	(4) Ref. 32a: 270°F, 52 psig, 100% for 48 hours
	Function		Chemical	3000 ppm B 9-9.5 pH(1)	(6)			(5) Ref. 32 b & c: 100% and 270°F 52 psig 24 hours
	Mfg.		Temp (°F)					240°F 10 psig 12 hours 230°F 5 psig 6 hours 220°F 2 psig 6 hours
	Model/Type		Press(psia)					(6) Cabling qualified to
	System		Rel. Hum.					spray spec as identified under cable items.
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT INSTRUMENTATION

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: Cntmt)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
1	Mfg. Foxboro	1 Day	Temp (°F)	286	*	Sequential	27	*1st Test: 318°F, 90 psig for 1 hour
	Model/Type E11GM-MCA-RRW		Press(psig)	60	*			288°F, 56 psig for 12 hours
	System Reactor Protection		Rel. Hum.	100%	100%			*2nd Test: 300°F, 60 psig for 2 hours
	Plant ID. P-429, P-430, P-431, P-449		Radiation (Rad)	$3 \times 10^6/\text{hr}$ $3.6 \times 10^7/\text{wk}$	2.2×10^8			244°F, 20 psig for 22 hours
	Function Pressurizer Pressure		Chemical (Spray)	--	Yes			
2	Mfg. Barton	2 hrs	Temp (°F)	286	288	Sequential	1	
	Model/Type 386/351		Press(psig)	60	60			
	System Reactor Protection		Rel. Hum.	100%	100%			
	Plant ID. L-426, L-427, L-428		Radiation (Rad)	$3 \times 10^6/\text{hr}$ $3.6 \times 10^7/\text{wk}$	$>2 \times 10^8$			
	Function Pressurizer Level		Chemical	--	--			
3	Mfg. Magnetrol	LONG	Temp (°F)	267	275	TEST	24,25,26	IE Inspection Report Nos. 50-282/78-19 and 50-306/78-19
1215 298	Model/Type A-153-FEPTDM		Press(psia)	60.7	46 & 114.7			Item 12 Page 6
	System RHR		Rel. Hum.	100%	100%			
	Plant ID. # 16796 # 16909		Radiation	$5 \times 10^7 \text{Rads}$	$5 \times 10^7 \text{Rads}$			
	# 16811 # 16910		Chemical	pH 9.5	pH 9.5			
	Function Cntmt Sump "B" ECCS Recirculation Indication							

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT INSTRUMENTATION

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: Aux Bldg)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
4	Mfg. Foxboro	LONG	Temp (°F)	184	*	Sequential	28	* 318°F, 90 psig for 1 hour 288°F, 56 psig for 12 hours
	Model/Type E11GM-MCA		Press(psig)	0.6	*			
	System Main Steam		Rel. Hum.	--	100%			
	Plant ID.		Radiation (RAD)	--	10 ⁷			
	Function		Chemical	--				
5	Mfg. Foxboro	LONG	Temp (°F)	210	*	Sequential	28	* 318°F, 90 psig for 1 hour 288°F, 56 psig for 12 hours
	Model/Type E13DH-MCA		Press(psig)	0.5	*			
	System Feedwater		Rel. Hum.	--	100%			
	Plant ID. F-466, F-467, F-476, F-477		Radiation	--	10 ⁷			
	Function Feedwater Flow		Chemical	--				
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT TERMINAL BLOCK/STRIP/BOX

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: Cntmt)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
1	Mfg. Allen-Bradley		Temp (°F)	None				All terminations are coated with General Electric Corp. Epoxy, type 74010/74010A. Epoxy qualification is listed under Ancillary Components - coatings Item 1.
	Model/Type 1492 CD3		Press(psia)	Specified				
	System		Rel. Hum.	↓				
	Plant ID.		Radiation					
	Function		Chemical					
								All terminal strips are mounted in vented gasketed terminal boxes.
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT MOTOR OPERATORS

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: Cntmt)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
1	Valve Motor Operators	LONG	Temp (°F)	286	329	TEST	1,2,3,4	IE Inspection Reports No. 50-282/78-19 & 50-306/78-19 Item 12 page 6.
	Mfg. Limitorque		Press(psia)	74.7	104.7			
	Type SMB		Rel. Hum.	100%	100%			
	Function Containment Isolation,ECCS		Radiation	1.5x10 ⁸ Rad after 1 yr.	2.0x10 ⁸ Rad			
			Chemical	pH7.0to9.0	7.67			
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT SOLENOID VALVE

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT SOLENOID VALVE

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
2	Mfg. ASCO	IEEE 382, 323,344	Temp (°F)	Ambient	IEEE 382, 323,344	TEST	5	As a result of IE Circular 78-08, those solenoid valves that were determined to be normally energized were replaced with the environmentally qualified ASCO nuclear grade equivalent.
	Solenoid valves located on containment isolation valves are normally energized.		Press(psia)	Ambient				
	Model No. NP 831654E NP 8321A1E		Rel. Hum.	Ambient				
	Function		Radiation	No				
			Chemical	No				
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

1215 303

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT CABLE

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION ALL)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
1	Mfg. Okonite	LONG	Temp (°F)	270	306	TEST	10,11,16	IE Inspection Report Nos. 50-282/78-19 & 50-306/78-19 Item 5c Page 4.
	Model/Type Power Cable		Press(psia)	60.7	74.7			
			Rel. Hum.	100%	100%			
			Radiation	3x10 ⁷ Rad after 1 yr	1 x 10 ⁸ Rad			
			Chemical	pH 9.0-9.5	1% NaOH 1% Na ₂ S ₂ O ₃			
	Mfg.		Temp (°F)		10,000 ppm Boron 4 ppm KOH			
2	Model/Type		Press(psia)					IE Inspection Report Nos. 50-282/78-19 & 50-306/78-19 Item 5 Page 3.
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg. Kerrite	LONG	Temp (°F)	270	320	TEST	12,13,14	
	Model/Type Control Cable		Press(psia)	60.7	96.7			
1215 304			Rel. Hum.	100%	100%			
			Radiation	3x10 ⁷ Rad after 1 yr	1 x 10 ⁸ Rad			
			Chemical	pH9.0-9.5	9.5			

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT CABLE

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION ALL)			QUAL . METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
3	Mfg. BIW	LONG	Temp (°F)	270	318	TEST	17,18	IE Inspection Report Nos. 50-282/78-19 & 50-306/78-19 Item 5a Page 3.
	Model/Type Instrument, Signal, Power		Press(psia)	60.7	104.7			
	and Control Cable		Rel. Hum.	100%	100%			
			Radiation	3x10 ⁷ Rad after 1 yr	1 x 10 ⁸ Rad			
			Chemical	pH9.0-9.5	pH4.0-10.0			
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT CABLE SPLICE MATERIALS, TAPES

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: ALL)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
1	Mfg. Okonite	LONG	Temp (°F)	270	306	TEST	6,7,8,9,	IE Inspection Report Nos. 50-282/78-04 & 50-306/78-05
	Model/Type T-95		Press(psia)	60.7	74.7		10,11	
	Insulating Tape		Rel. Hum.	100%	100%			
			Radiation	3x10 ⁷ Rad after 1 yr	1 x 10 ⁸ RAD			
			Chemical	pH9.0-9.5	1% NaOH 1% Na ₂ S ₂ O ₃			
	Mfg.		Temp (°F)		10,000ppm Boron 4 ppm KOH			
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
2	Mfg. Kerrite	LONG	Temp (°F)	270	320	TEST	12,13,14,15	IE Inspection Report Nos. 50-282/78-04 & 50-306/78-05
	Model/Type FR,HT,HTK		Press(psia)	60.7	96.7			
	Jacket and Insulating Material		Rel. Hum.	100%	100%			
			Radiation	3x10 ⁷ Rad after 1 yr	1x10 ⁸ Rad			
			Chemical	pH9.0-9.5	9.5			

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT MOTOR/FAN

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: Cntmt)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
1	Mfg. Westinghouse	LONG	Temp (°F)	270	324	TEST	22	Containment Fan Coil Units have been successfully run during
	Model/Type L1054-1760/875 Fan Coil Units		Press(psia)	60.7	94.7			ILRT at 46 psig and ambient conditions.
	System Containment Ventilation		Rel. Hum.	100%	100%			IE Inspection Report Nos. 50-282/78-19 & 50-306/78-19
	Plant ID. #11,12,13,14, #21,22,23,24		Radiation	5x10 ⁷ Rad	2 x 10 ⁸			Item 7 Page 5.
	Function Containment Cooling		Chemical	pH9.0-9.5	pH9.5 to 10			
2	Mfg. Joy	LONG	Temp (°F)	270	528	TEST	23	IE Inspection Report Nos. 50-282/78-19 & 50-306/78-19
	Model/Type Van-Axial		Press(psia)	60.7	94.7			Item 9 Page 5.
	System Dome Recirculation		Rel. Hum.	100%	100%			
	Plant ID. #11,12,13,14, #21,22,23,24		Radiation	5x10 ⁷ Rad	5x10 ⁷ Rad			
	Function Post-Loca H2 Control		Chemical	pH9.0-9.5	10% NaOH			
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT ANCILLIARY COMPONENTS - COATINGS

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: Cntmt, AB)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
1	Mfg. General Electric	LONG	Temp (°F)	None	500	TEST	19,20,21	Pressure cured at 75 psig.
	Model/Type Epoxy Varnish		Press(psia)	Specified	75			IE Inspection Report Nos. 50-282/78-19 & 50-306/78-19
	System 74010A/74010		Rel. Hum.		Submerged			Item 2 Page 2.
	Function Moisture Protection in		Radiation		1x10 ⁹ Rad			
	Cntmt and Aux Building.		Chemical		10% H ₂ SO ₄ 20% NaOH			
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT ANCILLARY COMPONENTS - LUBRICANTS, GASKETS, HERMETIC SEALS, "O" RINGS

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
2	Major Westinghouse Cntmt Component Fan Coil Units	--	Temp (°F)	See Doc. Ref.	See Doc. Ref.	See Doc. Ref.	22	Ancillary Components qualifie with the Major Component
	Major Joy Axivane Fans Component/Dome Recirc.		Press(psia)	↓	↓	↓	23	"
	Major Limitorque Motor Component/Valve Operators		Rel. Hum.	↓	↓	↓	1,2,3,4,30	"
	Major Instrumentation Component/Sump B Level		Radiation	↓	↓	↓	24,25,26	"
	Switches		Chemical	↓	↓	↓		
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT

ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

COMPONENT ANCILLARY COMPONENTS - FUSEHOLDERS

ITEM	EQUIPMENT DESCRIPTION	TIME QUAL.	ENVIRONMENT (LOCATION: Aux Bldg)			QUAL. METHOD	DOC. REF.	REMARKS
			Parameter	Spec.	Qual.			
3	Mfg. Bussman	LONG	Temp (°F)	None Specified	149	TEST	29	IE Inspection Report Nos. 50-282/78-19 & 50-306/78-19 Item 11 Pages 5 and 6.
	Model/Type KLM with TKon Waterproof		Press(psia)		Ambient			
	Fuseholder Type HEB-A		Rel. Hum.		Immersion			
			Radiation		20 MR/hr			
	Function Moisture Protection		Chemical	✓	NaCL(sat)			
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					
	Mfg.		Temp (°F)					
	Model/Type		Press(psia)					
	System		Rel. Hum.					
	Plant ID.		Radiation					
	Function		Chemical					

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DOCUMENTATION REFERENCES

1. WCAP-7410-L Volume I and II and WCAP-7744
2. Franklin Institute Research Laboratories report, F-C2232-01, "Test of a Limitorque Valve Operator Under a Simulated Reactor Containment Post-Accident Steam and Chemical Environment", November, 1968.
3. Philadelphia Gear Corporation report, "Test of Limitorque Valve Operator to meet General Requirements of an Electric Valve Actuator in Nuclear Reactor Containment Environment - Addendum Number 1", January 2, 1969.
4. Franklin Institute Research Laboratories report, F-C2485-01, "Tests of a Limitorque Valve Operator and Motor-Brake Assembly, both with Class B Insulation Under Simulated Reactor Containment Post-Accident Steam and Chemical Environments", April, 1969.
5. ASCO 3 and 4 Way Solenoid Valves for Pilot Control of Diaphragm and Cylinder Operated Valves used in Nuclear Power Plants, Catalog No. NP-1. Test report AQS-21678, ASCO, Florham Park, New Jersey.
6. The Okonite Company, "Certificate of Compliance" (typical) for Splicing Kits, T 95 Insulating Tape Tested in Accordance with Okonite PL Spec # 602-25 (6-1-71) and ASTM D 1373, Radiation Resistance as per Certification 1-6-72.
7. The Okonite Company, "Radiation Certification", certification of splice made using Okonite's T-95 insulating tape, January 6, 1972.
8. The Okonite Company, "Nuclear Qualification Test on T-95 Tape", J.R. Cancelosi, August 22, 1978, testing done October 1970. Transmittal letter L.J. Kelly, Okonite, to A.D. Smith, NSP, August 31, 1978.
9. The Okonite Company, T.C. Spriggs correspondence to Pioneer Service and Engineering, A. Sapphire, February 5, 1971.
10. The Okonite Company, "Qualification of Okoguard Ethylene-Propylene Rubber Insulation for Nuclear Plant Service (5 KV Cable and field splice)". September 7, 1977.
11. The Okonite Company, "Radiation Certification", Cable Qualification information, May 7, 1971.
12. Franklin Institute Research Laboratories report, F-C2737, "Qualification Tests of Electrical Cables Under Simulated Post-Accident Reactor Containment Service Conditions", April 15, 1970.
13. The Kerite Company, W.H. Garrels correspondence to G. Yanagita, transmittal letter for qualification report F-C2737, March 1, 1971.
14. The Kerite Company, Addendum B to FIRL report F-C2737, "Report on the Effects of Gamma Radiation and Autoclaving on Kerite Power and Control Cables", April 30, 1970.
15. The Kerite Company, Addendum C to FIRL report F-C2737, "Splicing and Termination Kits required", March 1, 1971.
16. The Okonite Company, Appendix C, "EPM Qualification Specification".

17. Boston Insulated Wire and Cable Co., "Flame and Radiation Resistant Cables for Nuclear Power Plants", Report No. B901, September, 1969.
18. Boston Insulated Wire and Cable Co., "Effect of H_3BO_3 Solution on Irradiated Rubber Wire Insulations", Report No. B904, July 15, 1970.
19. General Electric, H.C. Lauroesch correspondence to A.D. Smith, NSP, November 21, 1978.
20. General Electric, H.C. Lauroesch correspondence to J. King, General Electric, August 7, 1978.
21. General Electric, "Insulating Materials Product Data", 74010A Epoxy Resin and 74010 Epoxy Catalyst, March 24, 1964 and "Effect of Radiation on Materials".
22. WCAP 7829, "Fan Cooler Motor Unit Test", Westinghouse Electric Corporation, April, 1972.
23. Joy Manufacturing Company, Report No. X-411, "Joy Axivane Fans for Nuclear Containment Definition and Comparison of Motor Insulation Systems", October 23, 1972.
24. Purchase Order X-Hiawatha 408, March 8, 1972, Level Alarms and Controls.
25. Magnetrol test report 9306, "Control Model A-153-PEP/UPX-Y-TDM-SIM3H-SIM3H for Schaub Engineering Company under Purchase Order No. 41546" performed by ACTON Environmental Testing Corporation, April 26, 1972.
26. Magnetrol Supplier Certificate of Conformance No. M-408225 for Serial Numbers 504490, 504491, 504492, and 504493, May 9, 1972.
27. WCAP 8541, "Topical Report, Seismic and Environmental Testing of Foxboro Transmitters", R.A. Krazewski and R.B. Miller, July, 1975.
28. The Foxboro Co. Test Report No. Q9-6005, "Maximum Credible Accident (MCA), Test on Differential and Gauge Pressure Transmitters", J.A. Sears, April, 1971.
29. Bussman Manufacturing Division, R.E. Mollet correspondence A.D. Smith, NSP, October 24, 1978, and Enclosure Method 104A Immersion dated October, 24, 1956 and M:1-STD-202D dated April 14, 1969.
30. Limitorque Corporation, Certificate of Compliance (typical), states the adverse environmental parameters and certifies the type of "O" ring, insulation and seals were are used.
31. D.G. O'Brien Inc., R. J. Crowell correspondence to Pioneer Service and Engineering Co., January 24, 1972.
32. D. G. O'Brien Inc., Prototype Test Reports "Electrical Penetration",
 - a) DGO Report No. C19QA049, W.F. Gorman, June 11, 1971
 - b) DGO Report No. C19QA053, J.R. Mazzola, Sept. 3, 1971
 - c) DGO Report No. C19QA059, L.F. Miskell, Feb. 11, 1972