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November 23, 1983

Director
Office of Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Washington, D.C. 20555

Prairie Island Nuclear Generating Plant
Docket No. 50-282 License No. DPR-42
Docket No. 50-306 License No. DPR-60

Resolution of Safety Evaluation Reports
for Environmental Qualification of Safety-
Related Electrical Equipment

The following is transmitted in preparation for the December 1, 1983 meeting with the NRC Staff to resolve outstanding issues associated with the Safety Evaluation Report (SER) regarding Environmental Qualification of Safety-Related Electrical Equipment for this facility. Enclosure 1 to this letter is an agenda for this meeting which includes a discussion of all deficiencies noted in the SER and schedule for qualification. Enclosure 2 contains a detailed list, by equipment type, of SER deficiencies and resolution. Enclosure 3 contains the schedule for qualification of all remaining deficiencies identified both in the SER and in our response to 10 CFR 50.49.

As additional background information relating to this meeting, the following documents are referenced:

- o On April 25, 1983, we received the Safety Evaluation and Technical Evaluation Report for Prairie Island Unit 1 and 2.
- o On May 5, 1983, we transmitted the Ten-Day Response to the SER to provide justification for continued operation for Category IIB items, Rosemount 1153 Series A transmitters. The technical evaluation provided concluded that the environmental qualification of Rosemount 1153 Series A transmitters had been established. We requested that they be reclassified in Category IIC (equipment satisfies all requirements except qualified life or replacement schedule). We have since completed the qualified life evaluation.

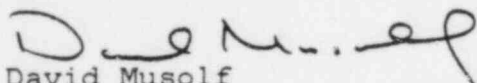
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- o On May 19, 1983, we transmitted our Response to 10 CFR 50.49 which identified equipment important to safety and provided a schedule for either qualification or replacement of equipment not qualified to the provisions of the rule. This response did not reflect resolution of equipment items placed by the SER in categories IB, IIA, IIB and IV. A supplemental response was made on August 10, 1983 to address these equipment items.
- o On May 27, 1983, we transmitted the Thirty-Day Response to the SER. This response provided justification for continued operation for deficiencies identified in the SER.
- o On June 3, 1983, the NRC Staff transmitted a Safety Evaluation relating to the Category IIB items, Rosemount 1153 Series A transmitters. This SE concluded that the items could be reclassified from Category IIB to IIC.
- o On August 10, 1983, we transmitted a supplemental response to provide resolution of equipment qualification open items cited in the SER. This response specifically addressed each item deficiency and is the basis document for the December 1 meeting.
- o On November 3, 1983, we transmitted additional information to update the status reported on May 19, 1983 pertaining to the qualification testing of Allen Bradley Terminal Blocks and GE protective coatings.

Please contact us if you require any additional information.


David Musolf
Manager-Nuclear Support Services

cc: Regional Administrator - III, NRC
NRR Project Manager, NRC
Resident Inspector, NRC
G. Charnoff

Attachment

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ENCLOSURE 1

Agenda for
Northern States Power Company Meeting with
NRC Staff to resolve Environmental Qualification
SER Deficiencies for Prairie Island Unit 1 & 2

1. Overview of Prairie Island Environmental Qualification Program
2. Resolution of Environmental Qualification SER Deficiencies
3. Schedule for Qualification

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ENCLOSURE 2

PRAIRIE ISLAND UNIT 1 & 2

RESOLUTION OF ENVIRONMENTAL QUALIFICATION

SER DEFICIENCIES

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Component Type: Valve Controllers

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
	Limitorque Motorized Valve Actuators Models SMB-00, SMB-3, SMB-1, SMB-0, SMB-3, SMB-000			
1,2,3,4, 5,6,7,8, 9,10,11, 12,13,14, 15,74, [1,2,3,4, 5,6,7,8, 9,10,11,12, 13,14,15, 74]	ID MV-32064,32065,32067,32069, 32166,32206,32207,32163,32162, 32077,32078,32075,32076,32084, 32085,32184,32185,32186,32096, 32097,32103,32105,32073,32074, [32167,32168,32170,32064,32194, 32208,32209,32190,32191,32178, 32179,32180,32181,32187,32188, 32081,32082,32083,32108,32109, 32114,32116,32177,32176,32172]	IIA	Similarity, Aging Degradation, Qualified Life	Qualification submittals have been based on Westinghouse WCAP reports and specific vendor test reports. In order to address specific defi- ciencies, a project was initiated to re-evaluate environmental quali- fication of Limitorque valve opera- tors. For the motor actuators identified we expect that justifi- cation for environmental qualifica- tion can be established and will be completed by January 1, 1984.
	ID MV-32199,32043,32040,32191, 32196,32023,32024,32016,32017, [32210,32046,32049,32197,32198, 32028,32029,32019,32020]	IIA	Similarity, Aging, Degradation Qualified Life	As indicated above, a project was initiated to re-evaluate environ- mental qualification of the identi- fied motor actuators. We anticipate that some modification will be required to justify qualification. This will be completed by March 31, 1985.
	ID MV-32070,32068,32165,32231, 32066,32164,32230,32242,32243, 32271,32273,32274,32276,32132, 32138,32141 [32290,32292,32293, 32295,32147,32150,32153,32156, 32171,32173,32172,32193,32233, 32169,32192,32232]	IIA	Similarity, Aging Degradation Qualified Life	These motor actuators have been removed from the Master Equipment List. Reasons for the removal from the list are: valves are locked open; valves are for cold shutdown only and not within the scope of 10 CFR 50.49; or system modifications have been made and they are no longer required.

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Component Type: Solenoid Valves

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
16 [16]	ID SV-37035,37037,37039,37036, 37038,37040 [37091,37093,37095 37092,37094,37096] Target Rock Reactor Head Vent	IV	Documentation not provided.	Qualified
17,18,20, 21,22,23, [17,18,20 21,22,23]	ID 33440,33441,33990,33991, 33281,33201,33202,33255,33256, 33371,33372,33373,33374,33375, 33376,33377,33378,33761,33762, 33738,33282 [33515,33516,33992, 33993,33283,33260,33261,33265, 33266,33392,33763,33764,33740, 33741,33284] Asco NP Series Solenoid Valves	1A	None	Qualified
19 [19]	ID 33199,33200,33204,33254, [33258,33259,33263,33264] Asco Solenoid Valve	11A	Documentation	Removed from Master List.

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Component Type: Switches (Indication)

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
24 [24]	ID 31624,31625 [31630,31631] Honeywell Micro Switch Valve Limit Switch	IIA	Steam Exposure	Item is not exposed to a steam environment. The item is qualified for the environment it is exposed to.
25,29,30, 31,32 [25, 29,30,31, 32]	ID 34072,34074,34076,34078, 31231,31232,32098,31099,31084, 31089,31325,31326,31327,32019, 31092,31637,31638,31741 [34080,34082,34084,34086,31233, 31234,31116,31117,31102,31107, 31347,31348,31349,31643,31129, 31639,31640,31743] Under Item 32 [32] ID 31313,31570,31311, 31634 [31317,31575,31315,31636] have been removed from the master list due to system modification. Namco EA-180 Limit Switch	IIA (Item 25 [25]) IIC all others	Documentation Qualified Life	Item is fully qualified by applicable vendor test reports and qualified life has been evaluated. Conax Electric Conductor Seal Assemblies have been installed to seal the switch enclosure.
26 [26]	ID 33651,33653,33655 [33657, 33659,33661] Valcor Solenoid Valve (Replacement) Sample Valves	IB	Modification Required	Modification has been completed. Item is fully qualified.
27 [27]	ID 31235,31236,31237 [31238, 31239,31240] Name EA-170 Limit Switch	IA	None	Qualified
28 [28]	ID 31621, 31622 [31627,31628] Namco EA-170 Valve Limit Switch	IIA	Aging, Qualified Life, Pressure pro- file steam exposure.	Analyses have been performed to address qualified life, replacement schedule and pressure profile. The item is not exposed to a steam environment. This item is fully qualified.

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Component Type: Switches (Indication) Cont.

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
67 [67]	ID 18252,18253 [18268,18269] Barton Flow Switch Component Cooling	IIC	Aging, Qualified Life or Replacement	Additional analysis have been performed to address deficiencies. The item is fully qualified.

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Component Type: Motors

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
33 [33]	ID 15-9,16-01 [25-9,26-01] Electric Machinery Containment Spray Pump Motor	IIA	Qualified Life, Aging, Radiation	Additional analysis based on vendor contact have been performed to address deficiencies. Item is fully qualified.
34 [34]	ID 116-18,126-18,116-9,126-32 [216-18,226-18,216-19,226-32] Joy/Reliance Dome Recirc Fan	IIA	Similarity, Aging Qualified Life, Criteria regarding Radiation	Environmental Qualification was re-evaluated based on additional qualification reports from the vendor. All deficiencies have been satisfactorily addressed.
35 [35]	ID 117-2,127-2,117-3,127-3 [217-2,227-2,217-3,227-3] Westinghouse Electric Containment Fan Coil Unit Motors	IIA	Similarity, Aging, Qualified Life, Criteria regarding Temperature/Pressure exposure	Additional qualification analysis have been performed based on additional vendor information. All deficiencies have been satisfactorily addressed.
36,37 [36,37]	ID 15-1,16-5,15-4,16-4 [26-3, 25-5,25-4,26-4] Westinghouse RHR & SI Pump Motor	IIA	Similarity	A project has been initiated to re-evaluate environmental qualification. Vendor has been contacted to identify documentation. This will be completed by February 15, 1984. Any necessary modification or replacement will be completed by March 31, 1985.

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Component Type: Transmitters

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
38 [38]	ID 23073,23074 [23075,23076] Barton Model 332 SI Flow	IB	Modification required	Item will be replaced with qualified Rosemount 1153 Series B qualified transmitters prior to March 31, 1985.
39,48,49 [39,48,49]	ID 23021,23022,23023,23024, 21203,21204,21205,21200,21201, 21202 [23025,23026,23027,23028, 21209,21210,21211,21206,21207, 21208] Foxboro Ei3PH (MCA), FW Flow Foxboro E11GM (MCA), Stm Gen Pres	IIA	Required accuracy	Instrument accuracy consideration are included in the Emergency Procedure Upgrade required by NUREG 0737 I.C.1.
44 [40]	ID 1PT-709,1PT-710 [23017,23018, 23019,23020] Rosemount 1153 Series A Unit 1 Wide Range RCS Press Unit 2 Steam Flow	IIB	Not Qualified	All deficiencies have been addressed and accepted. Reference NRC letter from Robert Clark to D.M. Musolf (NSP) dated June 3, 1983. Aging qualification has been addressed by additional analysis.
40 [44]	ID 23013,23014,23015,23016 [2PT-709,2PT-710] Unit 1 Steam Flow Unit 2 Wide Range RCS Press	IB	Modification required	Transmitters have been replaced with Rosemount 1153 Series D transmitters which are fully qualified.
41 [41]	ID 1LT-725,1LT-726,1LT-727A, 1LT-727B [2LT-725,2LT-726, 2LT-727A,2LT-727B] Magnetrol Transmitters Containment Sump Level	IB	Modification required	Transmitters have been replaced with Delaval Level Transmitters (Model XM-54854-323) which are fully qualified.

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Component Type: Transmitters (Cont.)

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
43,45	ID 1LT-487,1LT-488,21164,21165 21166, 21167 [2LT-487,2LT-488, 21168,21169,21170,21171] Wide Range Stm Gen Level Accumulator Pressure	IB	Modification required	Transmitters have been replaced with Foxboro NE Series Transmitters which are fully qualified.
42 [42]	ID 24042,24042,24043 [24046, 24047,24048] Barton Model 386/351 Pressurizer Level	IB	Modification required	Transmitters will be replaced with Barton Model 764/351 transmitters which are fully qualified. Unit 2 has been completed. Unit 1 will be completed during the refueling out- age scheduled to start December 28, 1983.
46 [46]	ID 21146,21147,21148,21150 [21154,21155,21156,21157] Foxboro E11GM (MCA-RRW) Pressurizer Pressure	IB	Modification required	Transmitters are fully qualified.
47 [47]	1PT-729 [2PT-729] Rosemount 1153 Series A	IIB	Not Qualified	Item removed from master equipment list.

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Component Type: Detectors, Sensors, Transducers, Primary Elements & Connectors

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
[54]	ID [15314] Wide Range RCS Temp Rosemount RTD	IIA	Documentation; Aging; Qualified Life; Required Profile; Spray Criteria; Functional Testing Criteria; Instrument Accuracy	References provided previously were re-evaluated to address qualifica- tion deficiencies including qualified life and replacement schedule.
55 [55]	ID 15331,15332,15333,15334 [15315,15322,15323] Wide Range RES Temp Sostman RTD	IIA	Documentation; Aging; Qualified Life; Required Profile; Spray Criteria; Functional Testing Criteria; Instrument Accuracy	References provided previously were re-evaluated to address qualifica- tion deficiencies including qualified life and replacement schedule.
52 [52]	ID SC-35085,SC-35028 [SC-35084, SC-35029] Fisher Signal Converter	IIA	Qualification not established	Component has been removed from master list.
50,51	ID 1EQ-443,1EQ-444,1EQ-445, 1EE-443,1EE-444,1EE-445 [2EQ-443, 2EQ-444,2EQ-445,2EE-443,2EE-444, 2EQ-445] Endevco Accelerometer, Unholtz- Dickey Amplifier Pressurizer Relief Valve Leak Detection System	IB	Equipment modification required.	Qualification Testing of this item is nearly completed. Some modifica- tion of installed equipment may be required as a result of this test. This will be completed by March 31, 1985.
53 [53]	ID 15456,15457,15458,15459 [15610,15611,15612,15613] Incore Thermocouple System	IB	Equipment modification required	A new system utilizing qualified incore thermocouple cable exiting containment through qualified containment penetrations has been installed. The new equipment is included in the Master Equipment List.

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Component Type: Electrical Cable & Splices

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
56 [56]	BIW Control Cable	IIA	Submergence	References provided previously were re-evaluated to address submergence. This evaluation is summarized in the SER response. It was concluded that the environmental parameters are enveloped by reference documents.
57 [57]	Kerite Control Cable	IIA	Similarity; Aging Degradation; Qualified Life; Criteria regarding Spray	Identified additional vendor qualification documentation to address deficiencies.
58 [58]	Okonite Cable	IIA	Submergence	References provided previously were re-evaluated to address submergence. This evaluation is summarized in the SER response. It was concluded that the environmental parameters are enveloped by reference documents.
59 [59]	Okonit Cable Splice	IIA	Similarity; Aging Degradation; Qualified Life, Submergence	Deficiencies were addressed through additional vendor correspondence and test data. It was concluded that the environmental parameters are enveloped by reference documents.
71 [71]	Kerite Cable Splice	IIA	Similarity	Deficiencies addressed by additional vendor correspondence.
72 [72]	Okonite Splicing Tape T95	IIA	Submergence	Deficiency was addressed through additional vendor correspondence and test data. It was concluded that the environmental parameters are enveloped by reference documents.

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Component Type: Electrical Cable & Splices (Cont.)

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
73 [73]	Okonite Splicing Tape T35	IIA	Submergence	Deficiency was addressed through additional vendor correspondence and test data. It was concluded that the environmental parameters are enveloped by reference documents.

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Component Type: Terminal Blocks & Protection Coatings

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
60 [60]	Allen Bradley Terminal	IB	Equipment modification required to establish qualification	Environmental qualification testing has recently been completed. Our letter dated November 3, 1983, provided: test summary, justification for continued plant operation, and schedule for qualification.
61 [61]	Strips and GE Epoxy			

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Component Type: Electrical Penetrations & Seals

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
68,69,70 [68,69,70]	DG O'Brien Electrical Penetrations	IA	None	Qualified

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Component Type: Lubricants

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
62,63	Chevron Lubricant	IA	None	Qualified
[62,63]	Mobile Lubricant			

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Component Type: Fuses & Fuseholders

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
64 [64]	Bussman Fuseholder	IIA	Criteria regarding steam exposure	References provided previously were re-evaluated and installation enclosures were discussed. It was concluded that environmental parameters are enveloped by ref- erence documents.

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Component Type: Load Centers

[] Denotes Unit 2 Item No. and ID

<u>Item No.</u>	<u>Description</u>	<u>NRC Category</u>	<u>Deficiencies</u>	<u>Resolution</u>
66 [66]	DC Distribution Panel Creiger	IB	Equipment modifica- tion required	Safety related loads to these panels have been relocated. Distribution panels in the auxiliary building have been added to the equipment master list and qualification has been completed.
65 [65]	GE Motor Control Centers	IB	Equipment modifica- tion required	Required loads will be relocated to new motor control centers located in a mild environment. This will be completed prior to March 31, 1985.

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ENCLOSURE 3

SCHEDULE FOR QUALIFICATION

As of this date, all equipment items identified as SER deficiencies and all equipment items on the Prairie Island harsh environment safety-related equipment master list are fully qualified with the exception of the items listed below:

1. Allen Bradley 1492CD3 Terminal Blocks and GE 74010/74010A Protective Coating.

Our letter dated November 3, 1983 provided current status pertaining to qualification testing, justification for continued plant operation, and a schedule for replacing certain instrument related terminals with qualified splices. For Unit 1 this work will be completed during the Cycle 8/9 refueling outage scheduled to start on December 28, 1983. Unit 2 work will be completed by December 31, 1983.

2. Plant ID No's 113-54, 123-55, 213-53, 223-54, 113-55, 123-56, 213-54, 223-55, 113-53, 123-54, 213-52, 223-53; Gould-Century unit cooler motors; System ZH & ZE:

Motors are subject to radiation during recirculation only. We are confident that these motors can be qualified for radiation, however, documentation of materials used has been difficult to establish. Replacement motors have been ordered and will be delivered by July 1984. Motors will be replaced prior to March 31, 1985.

3. Plant ID No's Pnl 151, 161, 191, 162 Creiger Electric and Commonwealth Electric DC Panels:

Qualification by test/analysis has been completed. Some modification is required for Unit 1 installed panels as a result of qualification. This work will be completed during the cycle 8/9 refueling outage scheduled to start on December 28, 1983.

4. Plant ID No. Pnl 19 Commonwealth Electric DC Panel:

We have been unable to adequately document qualification for this load center. This panel will be removed. Work will be completed during the Unit 1 cycle 8/9 refueling outage scheduled to start December 28, 1983.

5. Plant ID No's 24041, 24042, 24043 Pressurizer Level Transmitters:

Qualified replacement transmitters are on site and will be replaced during the Unit 1 cycle 8/9 refueling outage scheduled to start December 28, 1983. Unit 2 related work has been completed.

6. ID No's 1EQ-443, -444, -445, [2EQ-443, -444, -445] 1EE-443, -444, -445 [2EQ-443, -444, -445]; Endevco 2273 AM20 Accelerometer and Unholtz Dickey 22CA-2TR Charge Amp, Pressurizer Relief Valve Leak Detection System:

The qualification test is nearly complete. Some modification of installed equipment may be required as a result of this test. This will be completed prior to March 31, 1985.

7. Plant ID No's 23073, 23074 [23075, 23076] Barton 332 Transmitters, SI Flow Transmitters:

These transmitters are subject to radiation during recirculation only. Qualified transmitters are on site and will be installed prior to March 31, 1985.

8. Plant ID 1LA1, 1LA2, 1M1, 1MA2 [2LA1, 2LA2] General Electric 7700 Motor Control Centers:

Affected starters are for safeguards chiller loads and main steam supply valve to TD AFW pumps. New motor control centers have been purchased for required loads and new plant installations. Procurement lead time has been affected because several projects will utilize these load centers. Installation will be completed during Unit 1 Cycle 9 and Unit 2 Cycle 8 and prior to March 31, 1985.

9. Limitorque Motorized Valve Actuators Plant ID No's. 32199, 32043, 32040, 32195, 32196, 32023, 32024, 32016, 32017, [32210, 32046, 32049, 32197, 32198, 32028, 32029, 32019, 32020]

A project has been initiated to re-evaluate the environmental qualification of all safety-related Limitorque valve controllers as a result of the equipment qualification open items cited in the SER. This qualification evaluation is expected to be completed by January 1, 1984. Any modification or replacements following this evaluation will be completed prior to March 31, 1985.

10. Plant ID 15-1, 16-5, 15-4, 16-4 [26-3, 25-5, 25-4, 26-4]
Westinghouse SI and RHR Pump Motors:

A project has been initiated to re-evaluate the environmental qualification of these motors as a result of the equipment qualification open items cited in the SER. This qualification evaluation should be completed by February 15, 1984 and is expected to result in full qualification.

11. Containment Spray pH

Plant modifications to the containment spray caustic addition system will be made to prevent spray pH from exceeding 10.5 during certain RHR and CS pump combinations as noted in our April 30, 1982 letter and in our May 14, 1983 response to 10 CFR 50.49. These modifications and a change in the Technical Specifications related to caustic addition standpipe level and concentration were the subject of a License Amendment Request dated June 10, 1983. Required modifications have been completed on Unit 2 and will be completed for Unit 1 during the cycle 8/9 refueling outage scheduled to start December 28, 1983.