GPU Nuclear

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Writer's Direct Dial Number:

February 22, 1985

Mr. John A. Zwolinski, Chief
Operating Reactors Branch No. 5
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Zwolinski:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Schedular Extensions for Environmental
Qualification of Certain Electrical Components

In accordance with the provisions of 10CFR50.49(g), GPUN hereby requests schedular extensions for certain electrical components required to be environmentally qualified. These components, reasons for schedular extension request, proposed resolution and schedule for qualification are indicated in tabular form provided in ATTACHMENT 1 to this letter. The schedule for qualification was derived by first determining if the qualification action (e.g. replacement) can be conducted while the plant is in operation. Those components which can be replaced without requiring a plant shutdown will be replaced by November 30, 1985 provided that the delivery of the components is made in a timely fashion. GPUN is currently developing a replacement schedule for each component in this category. Some components, however, must be replaced during a plant shutdown as indicated in ATTACHMENT 1. Our New Jersey Pollutant Discharge Elimination System permit (NJPDES) prohibits a planned outage during the December through March time frame because of environmental considerations. Therefore, our next scheduled refueling outage must occur sometime after April 1, 1986. GPUN is planning to replace as many components as possible during unscheduled outages provided that time required for replacement of the components is less than the estimated length of the unscheduled outages. To this end we are currently identifying the required length of time for replacement of each component in this category. If, however, a component cannot be replaced during unscheduled plant shutdowns, it will be replaced during the next refueling outage. Since it is not possible to predict the length and number of future unscheduled outages at this time, identifications of components which cannot be replaced by November 30, 1985 are not now available. It is our plan to request further extension in September, 1985 if any of the components which require a plant shutdown remain unqualified at that time or a late delivery of a component prevents timely installation.

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Also included in ATTACHMENT I is a list of components which fall within the scope of 10CFR50.49 at Oyster Creek Nuclear Generating Station. Our recent re-examination of the previously submitted (November 1, 1980, March 16, 1983 and March 16, 1984) environmental qualification equipment master list and your letter dated May 9, 1984 has resulted in an expanded equipment master list as shown in ATTACHMENT I. Recently identified components are those without TER numbers in the table provided in ATTACHMENT I. As indicated by Note 4 of Attachment I, some components will be deleted from the equipment master list if further analysis shows that they are not subjected to a harsh environment for the accident they are required to mitigate.

For each of the components listed requiring schedular extension we have included a Justification for Continued Operation (JCO). In some cases, the associated JCOs were already submitted by our previous letter dated December 21, 1984. However, for the purposes of expediting your review, all associated JCOs are provided in ATTACHMENT II. We conclude that the JCOs provided are valid until the proposed resolutions are instituted. Please note that out of twenty-three JCOs transmitted by the December 21, 1984 letter, some have been deleted since the associated components are not within the scope of 10CFR50.49 (JCO-OC-84-6 (ID45), 12 (IPO 5A, B, C & D) and 22). Those JCOs in ATTACHMENT II supersede the JCOs in our submittal of December 21, 1984.

ATTACHMENT III includes a list of components which were deleted from the original equipment list submitted on November 1, 1980, March 16, 1983 and March 16, 1984. Reasons for deletions are also provided in the report documenting the methodology utilized to generate the equipment master list and are available in GPUN's corporate office.

We trust that the information provided by this submittal is adequate for your approval of our extension requests; however, should you have any questions, please contact M. Laggart - Manager, BWR Licensing (201-299-2341).

Very truly yours,

Peter B. Fiedler
Vice President & Director
Oyster Creek

PBF:YN
Attachments

cc: Dr. Thomas E. Murley, Administrator
Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

NRC Resident Inspector
Oyster Creek Nuclear Generating Station
Forked River, NJ 08731

ATTACHMENT I
OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION

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NOTES:

Note 1a: This component is expected to be delivered between March 31, 1985 and November 30, 1985.

Note 1b: This component is expected to be delivered after November 30, 1985.

Note 2: Replacement of this component requires a plant shutdown. Next plant shutdown (Cycle 11 refuel outage) is scheduled to commence sometime after March 1986. However, GPUN will attempt to replace this component during the first unscheduled outage of a sufficient length following receipt of the component from the supplier and completion of engineering. Otherwise, the replacement of this component will be accomplished during the Cycle 11 refuel outage.

Note 3 This component has already been qualified at other nuclear plants, and there is a high degree of confidence that qualification will be documented for Oyster Creek. Documentation is being prepared to complete the EQ file.

Note 4 This component will be deleted if further analysis shows that it is not subjected to a harsh environment for the accident it is required to mitigate.

Note 5 Not Used

Note 6 Additional time is required to identify components in order to establish qualification status or to specify replacement parts.

Note 7 Not Used

Note 8 Final qualification of the cable will be confirmed by a supplementary test to be performed by the manufacturer. This test is scheduled to be completed by July 1986.

Note 9 Qualification report is being prepared by vendor for Oyster Creek based on the BWR MCC Qualification Program. Interim letter report concludes that a large majority of the devices are capable of showing qualification. The few remaining devices can be qualified by replacement, similarity analysis, or possibly minor testing. This qualification report will be available by the end of April, 1985

Note 10 Qualification documentation is being prepared by vendor. Interim letter report concludes that there is a high degree of confidence that this component is qualified.

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Standby Gas Treatment/Reactor Building Ventilation (Cont'd)									
V-28-14	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85
V-28-15	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85
V-28-16	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85
V-28-21	Limit Switches (2)	Namco			OC-85-36	Yes	Note 1a	Replace	Before 11/30/85
V-28-22	Limit Switches (2)	Namco			OC-85-36	Yes	Note 1a	Replace	Before 11/30/85
V-28-23	Limit Switch	Contromatics		Qualified					
V-28-24	Limit Switch	Contromatics		Qualified					
V-28-27	Limit Switch	Contromatics		Qualified					
V-28-28	Limit Switch	Contromatics		Qualified					
V-28-48	Limit Switch	Contromatics		Qualified					

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Common Items	(Cont'd)								
	Coaxial Cable	Endevco			OC-85-16	Yes	Note 2	Replace	Next refueling outage
	Cable	Okonite (X-Olene)		Qualified					
Standby Gas Treatment/Reactor Building Ventilation System									
TE28-6A	Temperature Element	Weed		Qualified					
TE28-6B	Temperature Element	Weed		Qualified					
TE28-7A	Temperature Element	Weed		Qualified					
TE28-7B	Temperature Element	Weed		Qualified					
V-6-578	Solenoid Valve	Asco		Qualified					
V-6-580	Solenoid Valve	Asco		Qualified					
V-28-9	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85
V-28-10	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85
V-28-11	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85
V-28-12	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85
V-28-13	Limit Switches (2)	Namco			OC-85-33	Yes	Note 1a	Replace	Before 11/30/85

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Common Items									
	Cable	Anaconda		Qualified					
	Cable	Boston Insulated Wire		Qualified					
	Cable	General Electric (Power)	78	Qualified					
	Cable	General Electric (Control)	79	Qualified					
	Cable	Kerite FR	82	Qualified					
	Cable	Kerite HT	82	Qualified					
	Cable	Rockbestos EP	80		OC-85-20	Yes	Note 8	Test	Note 8
	Cable	Rockbestos Firewall III			OC-85-20	Yes	Note 8	Test	Note 8
	Cable	Tensolite	81	Qualified					
	Electrical Connectors	ITT Cannon	76	Qualified					
	Electrical Connectors	ITT Cannon	77	Qualified					
	Electrical Penetration	General Electric	72		OC-85-50	Yes	Note 10	Analysis	Before 11/30/85
	Splice	Raychem WCSF-N	83	Qualified					
	Splice	Raychem NPKV		Qualified					
	Cable	Okonite (Okozel)		Qualified					
	Terminal Blocks	General Electric		Qualified					
	Terminal Blocks	Weidmuller	71	Qualified					
	Wire Terminals	AMP-PIDG, Plasti-Grip		Qualified					
	Wire Terminals	Thomas and Betts		Qualified					
	Terminal Block	Marathon		Qualified					
	Terminal Block	Buchanan		Qualified					

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460 Volt System									
STD	Static Time Delay Unit for USS 1A1, BKR 011B	General Electric			OC-85-49	Yes	Note 10	Analysis	Before 11/30/85
STD	Static Time Delay Unit for USS 1B1, BKR 021B	General Electric			OC-85-49	Yes	Note 10	Analysis	Before 11/3/085
1A1	460V Unit Substation	General Electric			OC-85-48	Yes	Note 10	Analysis	Before 11/30/85
1A11	460V MCC	General Electric			OC-85-51	Yes	Note 9	Analysis	Before 11/30/85
1A12	460V MCC	General Electric			OC-85-51	Yes	Note 9	Analysis	Before 11/30/85
1A21A	460V MCC	General Electric			OC-85-51	Yes	Note 9	Analysis	Before 11/30/85
1A21B	460V MCC	General Electric	73		OC-85-51	Yes	Note 9	Analysis	Before 11/30/85
1AB2	460V MCC	General Electric	74		OC-85-52	Yes	Note 9	Analysis	Before 11/30/85
1B1	460V Unit Substation	General Electric			OC-85-48	Yes	Note 10	Analysis	Before 11/30/85
1B13	460V MCC	General Electric			OC-85-51	Yes	Note 9	Analysis	Before 11/30/85
1B21A	460V MCC	General Electric	74		OC-85-52	Yes	Note 9	Analysis	Before 11/30/85
1B21B	460V MCC	General Electric	74		OC-85-52	Yes	Note 9	Analysis	Before 11/30/85
125 Volt Station DC System									
Battery Bank C	Batteries	Gould Inc.		Qualified					
C-1	Battery Charger	Power Conversion Products		Qualified					
C-2	Battery Charger	Power Conversion Products		Qualified					
DC-C	Distribution Center	Gould Inc.		Qualified					
DC-1	Motor Control Center	General Electric	73		OC-85-52	Yes	Note 9	Analysis	Before 11/30/85
DC-2	Motor Control Center	ITE Gould	75	Note 3	OC-85-21	No		Analysis	Before 3/31/85

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Hydrogen and Oxygen Monitoring System									
IT-1A	H_2/O_2 Analyzer	Comsip Inc.		Qualified					
IT-1B	H_2/O_2 Analyzer	Comsip Inc.		Qualified					
V-38-22	Solenoid Valve	Asco	29	Replaced/Qual.					
V-38-23	Solenoid Valve	Asco	29	Replaced/Qual.					
V-38-37	Solenoid Valve	Target Rock		Qualified					
V-38-38	Solenoid Valve	Target Rock		Qualified					
V-38-39	Solenoid Valve	Target Rock		Qualified					
V-38-40	Solenoid Valve	Target Rock		Qualified					
V-38-41	Solenoid Valve	Target Rock		Qualified					
V-38-43	Solenoid Valve	Target Rock		Qualified					
V-38-44	Solenoid Valve	Target Rock		Qualified					
V-38-46	Solenoid Valve	Target Rock		Qualified					
V-40-6	Solenoid Valve	Valcor Engineering		Qualified					
SS	CPM Selector Switch	General Electric		Note 4	OC-85-29	Yes	Note 1a	Replace/Reloc.	Before 11/30/85
6K37X	Relay	Agastat		Note 4	OC-85-29	Yes	Note 1a	Replace/Reloc.	Before 11/30/85
6K46X	Relay	Agastat		Note 4	OC-85-29	Yes	Note 1a	Replace/Reloc.	Before 11/30/85
4160 Volt System									
1A	Non-Emergency Switchgear	General Electric			OC-85-47	Yes	Note 10	Analysis	Before 11/30/85
1B	Non-Emergency Switchgear	General Electric			OC-85-47	Yes	Note 10	Analysis	Before 11/30/85
1C	Emergency Switchgear	General Electric			OC-85-47	Yes	Note 10	Analysis	Before 11/30/85
1D	Emergency Switchgear	General Electric			OC-85-47	Yes	Note 10	Analysis	Before 11/30/85

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Reactor Plant Instrumentation System (Cont'd)									
RE18C	Level Indicating Switch	Bar on	60	Qualified					
RE18D	Level Indicating Switch	Barton	60	Qualified					
TE-56-1A	Temperature Element	Pyco		Qualified					
TE-57-2A	Temperature Element	Hy-Cal			OC-85-37	Yes	Note 1a	Replace	Before 11/30/85
TE-58-1B	Temperature Element	Pyco		Qualified					
TE-59-2B	Temperature Element	Hy-Cal			OC-85-37	Yes	Note 1a	Replace	Before 11/30/85
TE-130-450	Temperature Element	Pyco		Qualified					
TE-130-451	Temperature Element	Pyco		Qualified					
TE-130-453	Temperature Element	Pyco		Qualified					
TE-130-454	Temperature Element	Pyco		Qualified					
Reactor Protection System									
RD87C	Level Switch	Magnetrol	59	Replaced/Qual.					
RD88B	Level Switch	Magnetrol	59	Replaced/Qual.					
RD91A	Level Switch	Magnetrol	59	Replaced/Qual.					
RD92D	Level Switch	Magnetrol	59	Replaced/Qual.					
Safety & Relief Valve Monitor System									
MS-VE-1 Thru 21	Accelerometers	Endevco		Note 3	OC-85-16	No		Analysis	Before 3/31/85
MS-VX-1 Thru 21	Line Driver	Uholtz-Dickie			OC-85-16	Yes	Note 2	Relocate	Next refueling outage
TB-NR-28A Thru H, J Thru N, P Thru R. TB-NR-108A Thru E.	Terminal Block	TRW-Cinch			OC-85-16	Yes	Note 2	Relocate	Next refueling outage

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Reactor Plant Instrumentation System (Cont'd)									
RE02B	Level Indicating Switch	Yarway	62		OC-85-14	Yes	Notes 1a&2	Replace	Note 2
RE02C	Level Indicating Switch	Yarway	62		OC-85-14	Yes	Notes 1a&2	Replace	Note 2
RE02D	Level Indicating Switch	Yarway	62		OC-85-14	Yes	Notes 1a&2	Replace	Note 2
RE03A	Pressure Switch	Barksdale	56	Qualified					
RE03B	Pressure Switch	Barksdale	56	Qualified					
RE03C	Pressure Switch	Barksdale	56	Qualified					
RE03D	Pressure Switch	Barksdale	56	Qualified					
RE05A	Level Indicating Switch	Yarway	63		OC-85-22	Yes	Notes 1b&2	Replace	Next Refueling Outage
RE05/19A	Level Indicating Switch	Yarway	61		OC-85-22	Yes	Notes 1b&2	Replace	Next Refueling Outage
RE05B	Level Indicating Switch	Yarway	63		OC-85-22	Yes	Notes 1b&2	Replace	Next Refueling Outage
RE05/19B	Level Indicating Switch	Yarway	61		OC-85-22	Yes	Notes 1b&2	Replace	Next Refueling Outage
RE15A	Pressure Switch	Barksdale	54	Qualified					
RE15B	Pressure Switch	Barksdale	54	Qualified					
RE15C	Pressure Switch	Barksdale	54	Qualified					
RE15D	Pressure Switch	Barksdale	54	Qualified					
RE16A	Pressure Switch	Barksdale		Qualified					
RE16B	Pressure Switch	Barksdale		Qualified					
RE18A	Level Indicating Switch	Barton	60	Qualified					
RE18B	Level Indicating Switch	Barton	60	Qualified					

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Condensate Transfer System									
V-6-457 (For V-11-34)	Solenoid Valve	Asco	32	Replaced/Qual.					
V-6-458 (For V-11-36)	Solenoid Valve	Asco	32	Replaced/Qual.					
V-11-34	Limit Switch	Fisher Governor Co.			OC-85-31	Yes	Note 1a	Replace	Before 11/30/85
V-11-36	Limit Switch	Fisher Governor Co.			OC-85-31	Yes	Note 1a	Replace	Before 11/30/85
Emergency Service Water System									
V-3-87	Control Switch	General Electric		Note 4	OC-85-43	Yes	Note 1a	Replace	Before 11/30/85
V-3-88	Control Switch	General Electric		Note 4	OC-85-43	Yes	Note 1a	Replace	Before 11/30/85
Reactor Plant Instrumentation System									
IA-90A	Differential Press. Transmitter	Rosemount			OC-85-37	Yes	Notes 1b&2	Replace	Note 2
IA-90B	Differential Press. Transmitter	Rosemount			OC-85-37	Yes	Notes 1b&2	Replace	Note 2
IA-91A	Differential Press. Transmitter	General Electric			OC-85-37	Yes	Notes 1b&2	Replace	Note 2
IA-91B	Differential Press. Transmitter	General Electric			OC-85-37	Yes	Notes 1b&2	Replace	Note 2
IA-92A	Pressure Transmitter	Rosemount			OC-85-37	Yes	Notes 1b&2	Replace	Note 2
IA-92B	Pressure Transmitter	Rosemount			OC-85-37	Yes	Notes 1b&2	Replace	Note 2
ID13A	Level Transmitter	General Electric	41		OC-85-8	Yes	Notes 1b&2	Replace	Next Refueling Outage
ID13B	Level Transmitter	General Electric	41		OC-85-8	Yes	Notes 1b&2	Replace	Next Refueling Outage
ID46A	Pressure Indicating Transmitter	GE/MAC	38		OC-85-6	Yes	Notes 1b&2	Replace	Next Refueling Outage
ID46B	Pressure Indicating Transmitter	GE/MAC	38		OC-85-6	Yes	Notes 1b&2	Replace	Next Refueling Outage
RE02A	Level Indicating Switch	Yarway	62	Qualified					

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Main Steam System (Cont'd)									
NS04A (V-1-9) A,B,D	Limit Switches	Namco	64	Replaced/Qual.					
NS04B (V-1-10) A,B,D	Limit Switches	Namco	64	Replaced/Qual.					
V-1-106	Motor Operator Limit Switches	Limitorque	12		OC-85-44	Yes	Notes 1a&2	Partial Replcmt.	Note 2
V-1-107	Motor Operator Limit Switches	Limitorque	12		OC-85-44	Yes	Notes 1a&2	Partial Replcmt.	Note 2
V-1-110	Motor Operator Limit Switches	Limitorque			OC-85-44	Yes	Note 6	Partial Replcmt.	Note 2
V-1-111	Motor Operator Limit Switches	Limitorque			OC-85-44	Yes	Note 6	Partial Replcmt.	Note 2
V-6-2679 (NS-04B-L1)	Solenoid Valve	Asco	19	Qualified					
V-6-2680 (NS-04BL2)	Solenoid Valve	Asco	19	Qualified					
V-6-2681 (NS-04BL3)	Solenoid Valve	Asco	19	Qualified					
V-6-2683 (NS-04A-L1)	Solenoid Valve	Asco	20	Qualified					
V-6-2685 (NS-04A-L2)	Solenoid Valve	Asco	20	Qualified					
V-6-2685 (NS-04A-L3)	Solenoid Valve	Asco	20	Qualified					

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Main Steam System (Cont'd)									
RE22F	Differential Pressure Indicating Switch	Barton	57	Qualified					
RE22G	Differential Pressure Indicating Switch	Barton	57	Qualified					
RE22H	Differential Pressure Indicating Switch	Barton	57	Qualified					
RE23A	Pressure Switch	Meletron	46	Qualified					
RE23B	Pressure Switch	Meletron	46	Qualified					
RE23C	Pressure Switch	Meletron	46	Qualified					
RE23D	Pressure Switch	Meletron	46	Qualified					
NS03A (V-1-7) A,B,D	Limit Switches	Namco		Replaced/Qual.					
NS-03A-L1 (V-1-7)	Solenoid Valve	Asco	17	Qualified					
NS-03A-L2 (V-1-7)	Solenoid Valve	Asco	17	Qualified					
NS-03A-L3 (V-1-7)	Solenoid Valve	Asco	17	Qualified					
NS03B (V-1-8) A,B,D	Limit Switches	Namco		Replaced/Qual.					
NS-03B-L1 (V-1-8)	Solenoid Valve	Asco	18	Qualified					
NS-03B-L2 (V-1-8)	Solenoid Valve	Asco	18	Qualified					
NS-03B-L3 (V-1-8)	Solenoid Valve	Asco	18	Qualified					

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Main Steam System									
IB10A	Temperature Switch	Fenwal	65	Qualified					
IB10B	Temperature Switch	Fenwal	65	Qualified					
IB10C	Temperature Switch	Fenwal	65	Qualified					
IB10D	Temperature Switch	Fenwal	65	Qualified					
IB10E	Temperature Switch	Fenwal	65	Qualified					
IB10F	Temperature Switch	Fenwal	65	Qualified					
IB10G	Temperature Switch	Fenwal	65	Qualified					
IB10H	Temperature Switch	Fenwal	65	Qualified					
IB10J	Temperature Switch	Fenwal	65	Qualified					
IB10K	Temperature Switch	Fenwal	65	Qualified					
IB10L	Temperature Switch	Fenwal	65	Qualified					
IB10M	Temperature Switch	Fenwal	65	Qualified					
IB10N	Temperature Switch	Fenwal	65	Qualified					
IB10P	Temperature Switch	Fenwal	65	Qualified					
IB10Q	Temperature Switch	Fenwal	65	Qualified					
IB10R	Temperature Switch	Fenwal	65	Qualified					
RE22A	Differential Press. Indicating Switch	Barton	57	Qualified					
RE22B	Differential Pres. Indicating Switch	Barton	57	Qualified					
RE22C	Differential Press. Indicating Switch	Barton	57	Qualified					
RE22D	Differential Press. Indicating Switch	Barton	57	Qualified					
RE22E	Differential Press. Indicating Switch	Barton	57	Qualified					

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Drywell & Suppression System (Cont'd)									
V-23-13	Limit Switches (2)	Micro Switch			OC-85-30	Yes	Note 1a	Replace	Before 11/30/85
V-23-14	Limit Switches (2)	Micro Switch			OC-85-30	Yes	Note 1a	Replace	Before 11/30/85
V-23-15	Limit Switches (2)	Micro Switch			OC-85-30	Yes	Note 1a	Replace	Before 11/30/85
V-23-16	Limit Switches (2)	Micro Switch			OC-85-30	Yes	Note 1a	Replace	Before 11/30/85
V-23-17	Limit Switches (2)	Namco			OC-85-30	Yes	Note 1a&2	Replace	Note 2
V-23-18	Limit Switches (2)	Namco			OC-85-30	Yes	Note 1a&2	Replace	Note 2
V-23-19	Limit Switches (2)	Namco		Qualified					
V-23-20	Limit Switches (2)	Namco		Qualified					
V-23-21	Limit Switches (2)	Namco			OC-85-30	Yes	Notes 1a&2	Replace	Note 2
V-23-22	Limit Switches (2)	Namco			OC-85-30	Yes	Notes 1a&2	Replace	Note 2
V-26-16	Limit Switches (2)	Micro Switch		Qualified					
V-26-18	Limit Switches (2)	Micro Switch		Qualified					
V-27-1	Limit Switches (2)	Micro Switch			OC-85-28	Yes	Note 1a	Replace	Before 11/30/85
V-27-2	Limit Switches (2)	Micro Switch			OC-85-28	Yes	Note 1a	Replace	Before 11/30/85
V-27-3	Limit Switches (2)	Namco			OC-85-28	Yes	Note 1a	Replace	Before 11/30/85
V-27-4	Limit Switches (2)	Namco			OC-85-28	Yes	Note 1a	Replace	Before 11/30/85
V-28-17	Limit Switches	Namco			OC-85-32	Yes	Note 1a	Replace	Before 11/30/85
V-28-18	Limit Switches	Namco			OC-85-32	Yes	Note 1a	Replace	Before 11/30/85
V-28-47	Limit Switches (2)	Namco			OC-85-32	Yes	Note 1a	Replace	Before 11/30/85
V-31-2	Limit Switch	Namco			OC-85-45	Yes	Note 1a	Replace	Before 11/30/85

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ATTACHMENT I
OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Drywell & Suppression System (Cont'd)									
TE-109C	Temperature Element	Pyco		Note 4	OC-85-34	Yes	Note 1a	Replace	Before 11/30/85
TE-109D	Temperature Element	Pyco		Note 4	OC-85-34	Yes	Note 1a	Replace	Before 11/30/85
Tip Ball Valves	Solenoid Valves	General Electric			OC-85-39	Yes		Analysis	Before 11/30/85
V-5-147	Motor Operator	Limitorque	14		OC-85-3	Yes	Note 2	Partial Replcmt.	Note 2
V-5-166	Motor Operator	Limitorque	11	Qualified					
V-5-167	Motor Operator	Limitorque	14		OC-85-3	Yes	Note 2	Partial Replcmt.	Note 2
V-6-395	Limit Switch	Namco		Qualified					
V-16-1	Motor Operator	Limitorque	3	Replaced/Qual.					
V-16-2	Motor Operator	Limitorque	4	Replaced/Qual.					
V-16-14	Motor Operator	Limitorque	4	Replaced/Qual.					
V-16-61	Motor Operator	Limitorque	4	Qualified					
V-17-1	Motor Operator	Limitorque	5	Replaced/Qual.					
V-17-2	Motor Operator	Limitorque	5	Replaced/Qual.					
V-17-3	Motor Operator	Limitorque	5	Replaced/Qual.					
V-17-19	Motor Operator	Limitorque	3	Replaced/Qual.					
V-17-54	Motor Operator	Limitorque	1	Replaced/Qual.					
V-17-55	Motor Operator Limit Switch	Limitorque	5		OC-85-40	No		Replace	Before 3/31/85
V-17-56	Motor Operator Limit Switch	Limitorque	5		OC-85-40	No		Replace	Before 3/31/85
V-17-57	Motor Operator Limit Switch	Limitorque	5		OC-85-40	No		Replace	Before 3/31/85
V-22-1	Limit Switches (2)	Namco		Qualified					
V-22-2	Limit Switches (2)	Namco		Qualified					
V-22-28	Limit Switches (2)	Namco		Qualified					
V-22-29	Limit Switches (2)	Namco		Qualified					

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OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Containment Spray System (Cont'd)									
V-21-17	Motor Operator	Limitorque	15	Note 4	OC-85-4	No		Partial Rplcmt.	Before 3/31/85
V-21-17	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-18	Motor Operator	Limitorque		Note 4	OC-85-4	No		Partial Rplcmt.	Before 3/31/85
V-21-18	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
1-1	Pump Motor	General Electric	70	Qualified					
1-2	Pump Motor	General Electric	70	Qualified					
1-3	Pump Motor	General Electric	70	Qualified					
1-4	Pump Motor	General Electric	70	Qualified					
Drywell & Suppression System									
DPS-66A	Differential Pressure Switch	ITT Barton		Note 4	OC-85-15	Yes	Notes 1a&2	Replace	Note 2
DPS-66B	Differential Pressure Switch	ITT Barton		Note 4	OC-85-15	Yes	Notes 1a&2	Replace	Note 2
LT-37	Level Transmitter	Rosemount		Qualified					
LT-38	Level Transmitter	Rosemount		Qualified					
PT-53	Pressure Transmitter	Rosemount		Qualified					
PT-54	Pressure Transmitter	Rosemount		Qualified					
RE04A	Pressure Switch	Static-O-Ring	50	Note 4	OC-85-5	Yes	Notes 1a&2	Replace	Note 2
RE04B	Pressure Switch	Static-O-Ring	50	Note 4	OC-85-5	Yes	Notes 1a&2	Replace	Note 2
RE04C	Pressure Switch	Static-O-Ring	50	Note 4	OC-85-5	Yes	Notes 1a&2	Replace	Note 2
RE04D	Pressure Switch	Static-O-Ring	50	Note 4	OC-85-5	Yes	Notes 1a&2	Replace	Note 2
TE-109A	Temperature Element	Pyco		Note 4	OC-85-34	Yes	Note 1a	Replace	Before 11/30/85
TE-109B	Temperature Element	Pyco		Note 4	OC-85-34	Yes	Note 1a	Replace	Before 11/30/85

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OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Containment Spray System (Cont'd)									
V-21-1	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-3	Motor Operator Limit Switch	Limitorque	6		OC-85-41	No		Replace	Before 3/31/85
V-21-3	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-5	Motor Operator	Limitorque	7	Note 4	OC-85-2	No		Partial Rplcmt.	Before 3/31/85
V-21-5	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-7	Motor Operator Limit Switch	Limitorque	6		OC-85-41	No		Replace	Before 3/31/85
V-21-7	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-9	Motor Operator Limit Switch	Limitorque	6		OC-85-41	No		Replace	Before 3/31/85
V-21-9	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-11	Motor Operator	Limitorque	7	Note 4	OC-85-2	No		Partial Rplcmt.	Before 3/31/85
V-21-11	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-13	Motor Operator	Limitorque	13	Note 4	OC-85-4	No		Partial Rplcmt.	Before 3/31/85
V-21-13	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85
V-21-15	Motor Operator	Limitorque		Note 4	OC-85-4	No		Partial Rplcmt.	Before 3/31/85
V-21-15	Key Lock Control Switch	General Electric		Note 4	OC-85-24	Yes	Note 1a	Replace	Before 11/30/85

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OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Containment Spray System									
IP03A	Flow Transmitter	General Electric	45	Note 4	OC-85-12	Yes	Notes 1b& 2	Replace	Next Refueling Outage
IP03B	Flow Transmitter	General Electric	44	Note 4	OC-85-12	Yes	Notes 1b&2	Replace	Next Refueling Outage
IP15A	Pressure Switch	Barton	48	Qualified					
IP15B	Pressure Switch	Barton	48	Qualified					
IP15C	Pressure Switch	Barton	48	Qualified					
IP15D	Pressure Switch	Barton	48	Qualified					
IP18A	Temperature Switch	Ashcroft		Note 4	OC-85-19	Yes	Note 1a	Replace	Before 11/30/85
IP18B	Temperature Switch	Ashcroft		Note 4	OC-85-19	Yes	Note 1a	Replace	Before 11/30/85
V-21-1	Motor Operator Limit Switch	Limitorque	6		OC-85-41	No		Replace	Before 3/31/85

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OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Core Spray and Automatic Depressurization System (Cont'd)									
RV46A	Pressure Switch	Barton	48	Qualified					
RV46B	Pressure Switch	Barton	48	Qualified					
RV46C	Pressure Switch	Barton	48	Qualified					
RV46D	Pressure Switch	Barton	48	Qualified					
V-20-3	Motor Operator Limit Switch	Limitorque			OC-85-42	No		Replace	Before 3/31/85
V-20-4	Motor Operator Limit Switch	Limitorque			OC-85-42	No		Replace	Before 3/31/85
V-20-15	Motor Operator	Limitorque	2	Qualified					
V-20-21	Motor Operator	Limitorque	2	Qualified					
V-20-32	Motor Operator Limit Switch	Limitorque			OC-85-42	No		Replace	Before 3/31/85
V-20-33	Motor Operator Limit Switch	Limitorque			OC-85-42	No		Replace	Before 3/31/85
V-20-40	Motor Operator	Limitorque	2	Qualified					
V-20-41	Motor Operator	Limitorque	2	Qualified					
V-20-92	Limit Switch (2)	Namco			OC-85-25	Yes	Note 1a	Replace	Before 11/30/85
V-20-93	Limit Switch (2)	Namco			OC-85-25	Yes	Note 1a	Replace	Before 11/30/85
V-20-94	Limit Switch (2)	Namco			OC-85-25	Yes	Note 1a	Replace	Before 11/30/85
V-20-95	Limit Switch (2)	Namco			OC-85-25	Yes	Note 1a	Replace	Before 11/30/85

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OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Core Spray and Automatic Depressurization System (Cont'd)									
NZ03C	Pump Motor	General Electric	69	Qualified					
NZ03D	Pump Motor	General Electric	68	Qualified					
RE17A	Pressure Switch	Barksdale	55	Qualified					
RE17B	Pressure Switch	Barksdale	55	Qualified					
RE17C	Pressure Switch	Barksdale	53	Qualified					
RE17D	Pressure Switch	Barksdale	53	Qualified					
RV26A	Flow Transmitter	GE/MAC	43		OC-85-11	Yes	Notes1b&2	Replace	Next Refueling Outage
RV26B	Flow Transmitter	GE/MAC	43		OC-85-11	Yes	Notes1b&2	Replace	Next Refueling Outage
RV29A	Pressure Switch	Mercoid	51		OC-85-9	Yes	Note 1a	Replace	Before 11/30/85
RV29B	Pressure Switch	Mercoid	51		OC-85-9	Yes	Note 1a	Replace	Before 11/30/85
RV29C	Pressure Switch	Mercoid	51		OC-85-9	Yes	Note 1a	Replace	Before 11/30/85
RV29D	Pressure Switch	Mercoid	51		OC-85-9	Yes	Note 1a	Replace	Before 11/30/85
RV40A	Diff. Press. Switch	SOR	52	Replaced/Qual.					
RV40B	Diff. Press. Switch	SOR	51	Replaced/Qual.					
RV40C	Diff. Press. Switch	SOR	52	Replaced/Qual.					
RV40D	Diff. Press. Switch	SOR	51	Replaced/Qual.					

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OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Emergency Condenser System (Cont'd)									
V-14-35	Motor Operator	Limitorque	9	Replaced/Qual.					
V-14-36	Motor Operator	Limitorque	10	Replaced/Qual.					
V-14-37	Motor Operator	Limitorque	10	Replaced/Qual.					
Core Spray and Automatic Depressurization System									
IA83A	Pressure Switch and Controllers	Dresser/Barksdale	49		OC-85-1	Yes	Notes 1a&2	Replace	Next Refueling Outage
IA83B	Pressure Switch and Controllers	Dresser/Barksdale	49		OC-85-1	Yes	Notes 1a&2	Replace	Next Refueling Outage
IA83C	Pressure Switch and Controllers	Dresser/Barksdale	49		OC-85-1	Yes	Notes 1a&2	Replace	Next Refueling Outage
IA83D	Pressure Switch and Controllers	Dresser/Barksdale	49		OC-85-1	Yes	Notes 1a&2	Replace	Next Refueling Outage
IA83E	Pressure Switch and controllers	Dresser/Barksdale	49		OC-85-1	Yes	Notes 1a&2	Replace	Next Refueling Outage
NR-108A	Solenoid Valve	Dresser	37	Qualified					
NR-108B	Solenoid Valve	Dresser	37	Qualified					
NR-108C	Solenoid Valve	Dresser	37	Qualified					
NR-108D	Solenoid Valve	Dresser	37	Qualified					
NR-108E	Solenoid Valve	Dresser	37	Qualified					
NZ01A	Pump Motor	General Electric	67	Qualified					
NZ01B	Pump Motor	General Electric	67	Qualified					
NZ01C	Pump Motor	General Electric	67	Qualified					
NZ01D	Pump Motor	General Electric	67	Qualified					
NZ03A	Pump Motor	General Electric	69	Qualified					
NZ03B	Pump Motor	General Electric	68	Qualified					

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OYSTER CREEK ENVIRONMENTAL QUALIFICATION STATUS

COMPONENT TAG NO.	GENERIC NAME	MANUFACTURER	TER NO.	COMPONENT QUALIFICATION STATUS	JCO NO.	SCHEDULAR EXTENSION REQUESTED	REASON FOR EXTENSION REQUESTED	QUALIFICATION METHOD	SCHEDULE FOR QUALIFICATION
Emergency Condenser System									
IB05-A1	Differential Pressure Switch	Barton	58	Qualified					
IB05-A2	Differential Pressure Switch	Barton	58	Qualified					
IB05-B1	Differential Pressure Switch	Barton	58	Qualified					
IB05-B2	Differential Pressure Switch	Barton	58	Qualified					
IB11-A1	Differential Pressure Switch	Barton	58	Qualified					
IB11-A2	Differential Pressure Switch	Barton	58	Qualified					
IB11-B1	Differential Pressure Switch	Barton	58	Qualified					
IB11-B2	Differential Pressure Switch	Barton	58	Qualified					
IG06-A	Level Transmitter	GE/MAC	42		OC-85-7	Yes	Notes 1b&2	Replace	Next Refueling outage
IG06-B	Level Transmitter	GE/MAC	42		OC-85-7	Yes	Notes 1b&2	Replace	Next Refueling Outage
V-14-1	Limit Switch	Micro Switch			OC-85-26	Yes	Notes 1a&2	Replace	Note 2
V-14-5	Limit Switch	Micro Switch			OC-85-26	Yes	Notes 1a&2	Replace	Note 2
V-14-19	Limit Switch	Micro Switch			OC-85-26	Yes	Notes 1a&2	Replace	Note 2
V-14-20	Limit Switch	Micro Switch			OC-85-26	Yes	Notes 1a&2	Replace	Note 2
V-14-30	Motor Operator	Limitorque	8	Replaced/Qual.					
V-14-31	Motor Operator	Limitorque	9	Replaced/Qual.					
V-14-32	Motor Operator	Limitorque	8	Replaced/Qual.					
V-14-33	Motor Operator	Limitorque	9	Replaced/Qual.					
V-14-34	Motor Operator	Limitorque	9	Replaced/Qual.					

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ATTACHMENT II

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers IA-83A, IA-83B, IA-83C, IA-83D, IA-83E
Description Pressure Switches to open EMRVs on high RPV pressure

OBJECTIVE

The objective of this discussion is to determine:

- that the safety function can be accomplished by some other qualified components;
- that the failure of the identified components as a result of a harsh environment will not degrade other safety functions or mislead the operator.

COMPONENT LOCATION

All of these switches are located in the Reactor Building on elevation 51'3". Pressure switches IA-83A, B are located on the east drywell wall; switch IA-83C is located in the southeast quadrant; and switches IA-83D, E are located in the northwest quadrant.

COMPONENT FUNCTION

These components open the EMRVs on high RPV pressure to provide protection against over-pressurization. These switches would be required to work only for a small break LOCA which is not large enough to remove decay heat and when both isolation condensers are not available.

EVALUATION

These switches are grouped in different areas in the Reactor Building such that the areas will not be in the same harsh environment simultaneously. Consequently, simultaneous failure of all of the switches is not postulated.

In addition, there are 16 safety valves on the steam line which would provide over-pressure protection for the RPV in the event that the EMRVs are unavailable or insufficient to relieve the increasing RPV pressure. Further, the operator can manually operate the remaining operable EMRVs to depressurize the RPV. Only one operable EMRV is required to provide adequate decay heat removal.

The failure of these switches will not mislead the operator, since the operator is instructed in the EOPs to manually operate the EMRVs if they fail to initiate automatically. If a single isolation condenser is available, over-pressurization will not occur and the switches are not required.

CONCLUSION

The failure of any one pressure switch will not prevent over-pressure protection of the RPV and operation of the other EMRVs. The operator will not be misled by this condition.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-21-5, V-21-11
Description Containment Spray Drywell Injection Valve Motor Operators

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade other safety functions nor mislead the operator.

COMPONENT LOCATION

These valves and their associated operators are located in the Reactor Building on the 23'6" elevation. V-21-5 is located in the Southeast quadrant and V-21-11 is located in the northeast quadrant.

COMPONENT FUNCTION

These valves allow containment spray injection into the drywell to remove heat and reduce containment pressure for breaks inside the drywell.

EVALUATION

The valves and their associated operators are located in the Reactor Building and thus are not subject to the harsh environment inside the drywell when they are required to function. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function.

There is a failure mechanism of these motor operators due to radiation which can cause the valves to change state. It will take a considerable period of time for the integrated radiation dose to exceed the qualification value for the switch. A failure of the keylock switch at that time may cause some of the valves to reposition. If the Containment Spray system is lost as a result of this failure, the decay heat from the core would be sufficiently low so that the Containment Spray System would not be required to remove heat from the torus for some time. In addition, ambient losses from the torus shell may be sufficient to provide torus cooling. Further, it is extremely unlikely that all of the valves will reposition themselves in the worst alignment at the same time so that there is no injection path to the containment.

EVALUATION (Continued)

Breaks outside containment are assumed to isolate. The only condition which would require Containment Spray is an event in which both Isolation Condensers were lost. Even under this remote scenario, Containment Spray would not be required to provide torus cooling for several hours. These valves are normally open and are not required to change position except during the monthly surveillance testing of the Containment Spray System. During this test, only one of the two Containment Spray Subsystems is tested at any one time. The operable subsystem provides ample capability to satisfy the function of the system.

The operator in the control room has position indicating lights for these valves and thus, the failure of these valves would not mislead the operator.

CONCLUSION

The failure of one of these valves to operate does not degrade the effectiveness of the Containment Spray System to perform its function.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-5-167, V-5-147
Description RBCCW Containment Isolation Valve Motor Operators

OBJECTIVE

The objective of this discussion is to determine:

- that the failure of these components (V-5-167, 147) will not degrade other safety functions;
- that the safety function can be accomplished by some other qualified equipment.

COMPONENT LOCATION

Both of these valves and their associated motor operators are located in the southeast quadrant in the Reactor Building on the 23'6" elevation.

COMPONENT FUNCTION

These components function to isolate the drywell upon a containment isolation signal resulting from a design basis accident.

EVALUATION

Both components are located outside the drywell and are not expected to be affected by inside containment breaks. In the event of a break inside the drywell, both valves will close upon a receipt of a containment isolation signal.

For breaks outside containment, V-5-167 is in series with a redundant qualified isolation valve (V-5-166) inside containment which would function for those breaks (outside containment) which could create a harsh environment near V-5-167. The inlet RBCCW valve (V-5-147) is in series with a check valve (V-5-165) located inside containment which would function to prevent releases from containment in the event of a break (outside the drywell) which creates a harsh environment near V-5-147.

CONCLUSION

The failure of these components will not degrade the isolation of containment since both are in series with components which will function to isolate the drywell in the event of a DBA.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-21-13, V-21-15, V-21-17, V-21-18
Description V-21-13, 17 -Containment Spray Dynamic Test Valve Motor Operators
V-21-15, 18 -Containment Spray Torus Spray Valve Motor Operators

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade other safety functions nor mislead the operator.

COMPONENT LOCATION

These valves and their associated motor operators are located in the Reactor Building on the 23'6" elevation. V-21-13, 15 are located in the southeast quadrant, and V-21-17, 18 are located in the northeast quadrant.

COMPONENT FUNCTION

These valves allow containment spray injection into the torus to remove heat and reduce pressure for breaks inside the drywell. The V-21-15, 18 valves are used in the normal mode of containment spray to provide a small spray flow to the torus. The V-21-13, 17 valves are used in the dynamic test mode to provide cooling to the torus pool.

EVALUATION

These valves and their associated operators are located in the Reactor Building and are not subject to the harsh environment inside the drywell when they are required to function. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function.

There is a failure mechanism of these motor operators due to radiation which can cause the valves to change state. It will take a considerable period of time for the integrated radiation dose to exceed the qualification value for the switch. A failure of the keylock switch at that time may cause some of the valves to reposition. If the Containment Spray system is lost as a result of this failure, the decay heat from the core would be sufficiently low so that the Containment Spray System would not be required to remove heat from the torus for some time. In addition, ambient losses from the torus shell may be sufficient to provide torus cooling. Further, it is extremely unlikely that all of the valves will reposition themselves in the worst alignment at the same time so that there is no injection path to the containment.

EVALUATION (Continued)

Bre s outside containment are assumed to isolate. The only condition which would require Containment Spray is an event in which both Isolation Condensers were lost. Even under this remote scenario, Containment Spray would not be required to provide torus cooling for several hours.

The operator in the control room has indication of valve position and thus, the failure of these valves would not mislead the operator.

CONCLUSION

The failure of these valves to operate for outside containment breaks does not degrade the effectiveness of the Containment Spray System to perform its function. They are not expected to fail for breaks inside containment.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers RE-04A, RE-04B, RE-04C, RE-04D
Description High Drywell Pressure Switches

OBJECTIVE

The objective of this discussion is to determine that there is a basis for concluding that the existing component will perform its required function.

COMPONENT LOCATION

All of these pressure switches are located in the northwest quadrant of elevation 51'3" in the Reactor Building.

COMPONENT FUNCTION

These switches generate scram, drywell and reactor building isolation signals and initiate the Standby Gas Treatment System.

EVALUATION

These switches are located outside the primary containment and are required to mitigate events inside the containment. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function. The switches may be in a harsh environment for breaks outside containment; however, they are not required to function to mitigate these events. Their failure for outside containment breaks will not mislead the operator since he is provided with a qualified drywell pressure indication from which he can determine that the break is outside the drywell. The operator may initiate containment spray if he thinks that he has exceeded the drywell pressure action level in the EOPs. This, however, should not result in unacceptable consequences.

CONCLUSION

The switches will perform their function whenever they are required to perform their safety function.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers ID-46A, ID-46B
Description ID46A,B are RPV Wide Range Pressure Transmitters

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade other safety functions or mislead the operator.

COMPONENT LOCATION

These transmitters are located in the Reactor Building on elevation 51'3"; ID-46B is located in the southeast quadrant and ID-46A is located in the northwest quadrant.

COMPONENT FUNCTION

These transmitters feed the wide range instruments in the control room. They do not provide any safety related function.

EVALUATION

These transmitters are located outside the primary containment. For breaks inside the containment, the environment in the Reactor Building is not expected to become harsher that that for which the component can be qualified. Hence they will function normally. For breaks outside the containment, their failure will not affect the operation of any safety system.

Also, these transmitters are located in different areas of the Reactor Building such that they will not see a harsh environment simultaneously. The operator has alternate RPV pressure indications available in the Control Room so that he would not be misled.

CONCLUSION

These transmitters do not provide any safety related function with respect to the automatic actuation of a safety system. A single break should not result in the failure of both of these components and alternate pressure indicators such that pressure indication would not be completely lost.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers IG-06A, IG-06B
Description Isolation Condenser Secondary Side Level Transmitter

OBJECTIVE

The objective of this discussion is to determine that the failure of the identified components as a result of a harsh environment will not degrade other safety functions or mislead the operator.

COMPONENT LOCATION

These transmitters are located in the east area of the Reactor Building on the 95' elevation.

COMPONENT FUNCTION

The components sense and transmit to the control room the water level on the secondary (shell) side of the isolation condensers.

EVALUATION

The isolation condensers can operate for at least 45 minutes each without makeup to the secondary side. Makeup water is added from the Condensate Transfer System by operator action. Loss of level indication would not prevent the operator from adding makeup to the shell side of the isolation condensers.

If, after 45 minutes (or 100 minutes if 2 condensers are in service), the operator does not take action to makeup to the secondary side, heat transfer capacity will be reduced, and the reactor vessel will begin to re-pressurize. The operator has the means to determine pressure and can take action to depressurize the RPV by using alternate pressure control systems.

CONCLUSION

The failure of the level transmitters will not degrade the function of the isolation condensers since the system can operate for up to 100 minutes on the inventory of water contained on the shell side of both condensers. The failure of these transmitters will not mislead the operator since other indications will allow the operator to make use of alternate decay heat removal systems.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers ID-13A, ID-13B
Description GEMAC Water Level Transmitters

OBJECTIVE

The objective of this discussion is to determine:

- that the failure of these components will not degrade other safety functions nor mislead the operator;
- that the function may be accomplished by some other qualified components.

COMPONENT LOCATION

Transmitter ID-13A is located in the northwest quadrant of the Reactor Building on the 51'3" elevation. Transmitter ID-13B is located in the southeast quadrant of the Reactor Building on the 51'3" elevation.

COMPONENT FUNCTION

These level transmitters are only one of several means used by the operator for indications of RPV water level. These transmitters have nearly the same span as the YARWAY transmitters and thus provide redundancy to the YARWAYS. One of two GEMACs is selected to provide an input to feedwater level control which is not safety related.

EVALUATION

These transmitters are located in the Reactor Building and are not subject to the harsh environment inside the drywell when they are required to function. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function. For breaks outside the containment, the loss of these transmitters does not prevent any plant safety function from occurring since no safety-related trips are based on the GEMAC transmitters. The two GEMAC transmitters are located in different areas of the Reactor Building and will not see the same harsh environment simultaneously. The GEMAC transmitters provide diverse level indication to the YARWAY level instruments which are the operator's primary level indication. Also, the operator would use additional control room indication to make his determination. Even in the event the operator judges that he cannot determine the level, the EOPs provide the operator with guidance to prevent uncovering the core.

CONCLUSION

The failure of these transmitters does not significantly degrade the ability of the operator to monitor the RPV water level. There are no safety related trips which are based on the GEMAC transmitters.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers RV-29A, RV-29B, RV-29C, RV-29D
Description These are pressure switches which provide core spray booster pumps start permissive and indication of backup main pump start based on core spray main pumps discharge pressure.

OBJECTIVE

The objective of this discussion is to show that the failure of these switches will not degrade core spray safety function and will not mislead the operator.

COMPONENT LOCATION

These switches are located in the Reactor Building on the -19'6" elevation. RV-29A,C are located in the northwest corner room; RV-29B,D are located in the southwest corner room.

COMPONENT FUNCTION

These pressure switches start core spray booster pumps based on core spray main pumps discharge pressure.

EVALUATION

These switches are located outside the containment and are not subject to the harsh environment inside the drywell when they are required to function. For breaks inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence they will perform their safety function as required. The break which would cause a harsh environment in the area of the switches is a rupture of the Main Steam Line in the Reactor Building. For this event, both Isolation Condensers would be available for decay heat removal. Breaks outside containment are all assumed to isolate. Thus, if core spray would be necessary, it would only be required for RPV inventory makeup. Then, only one core spray subsystem would be required to function. These switches are grouped in different areas and it is not expected that all of these switches would be exposed to a harsh environment simultaneously. Thus, at least one core spray subsystem would be functional.

The operator has multiple indications in the control room of main and booster pump status so that the failure of these pressure switches will not cause him to be misled.

CONCLUSION

The operator can take manual control, hence the failure of these switches will not degrade core spray safety function nor mislead the operator.

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OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers RV-26A, RV-26B
Description Core Spray System Flow Transmitters

OBJECTIVE

The objective of this discussion is to determine:

- that the failure of these components will not degrade other safety functions nor mislead the operator;
- that the function may be accomplished by some other qualified components.

COMPONENT LOCATION

The RV-26A transmitter is located in the northwest quadrant of the Reactor Building on elevation 51'3". The RV-26B transmitter is located in the southwest quadrant of the Reactor Building on elevation 75'3".

COMPONENT FUNCTION

These flow transmitters provide core spray flow indication to the operator during a break condition.

EVALUATION

For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function. For breaks outside the drywell, the operator may confirm Core Spray System operation using RPV water level in the event that the flow transmitters were lost due to a harsh environment. In addition, the operator has indication that the core spray pumps are running and that the valves are open. The flow transmitters provide no input to other safety systems and thus will not impact other safety functions. Further, the transmitters are located in different areas of the Reactor Building and will not simultaneously experience the harsh environment.

CONCLUSION

The failure of these transmitters does not preclude the operator from confirming Core Spray System operation and does not degrade other safety functions.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers IP-03A, IP-03B
Description Containment Spray Flow Transmitters (IP-03A,B)

OBJECTIVE

The objective of this discussion is to determine:

- that the failure of these components will not degrade other safety functions nor mislead the operator;
- that there is a basis for concluding that the existing components will perform their required function.

COMPONENT LOCATION

Transmitter IP-03A is located in the northeast quadrant of the Reactor Building on elevation 23'6". Transmitter IP-03B is located in the southeast quadrant in the Reactor Building on elevation 23'6".

COMPONENT FUNCTION

These components provide the operator indications of flow to confirm the performance of the containment spray pumps. The Containment Spray System is required to remove heat and reduce pressure inside the containment for breaks inside the drywell.

EVALUATION

These components are required to function for breaks inside the drywell. However, the components are located outside containment. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function. Breaks outside the containment are assumed to isolate. The only outside containment break which would require Containment Spray is an event in which both Isolation Condensers were lost. Even under this remote scenario, Containment Spray would not be required to provide torus cooling for several hours. In addition, the failure of the instrument components will not mislead the operator because he can determine from drywell parameters that the break is not inside containment and that for outside containment breaks, the Containment Spray System is not required until at least several hours after the event. If containment spray should start inadvertently as a result of the failure, there should be no safety consequence. Further, there is control room indication of pump actuation.

CONCLUSION

The failure of these components does not degrade the effectiveness of the Containment Spray System to perform its function because the components will function for events for which they are required to operate.

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JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers RE-02B; RE-02C, RE-02D
Description LOW-LOW Level Switches

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade other safety functions or mislead the operator.

COMPONENT LOCATION

RE-02,C is located on rack RK01 in the northwest quadrant of the Reactor Building at elevation 51'3". RE-02B,D are located on rack RK02 in the southeast quadrant of the Reactor Building at elevation 51'3".

COMPONENT FUNCTION

The Low-Low switches function is to turn on core spray pumps, containment spray pumps (high drywell pressure is also needed), primary and secondary containment isolation, trip recirculation pumps, and initiate the isolation condensers.

EVALUATION

If the break is inside the containment, the switches will perform their safety function as required because, for a break inside the containment, the environment in the Reactor Buidling is not expected to become harsher than that for which the component can be qualified. For any condition which results in Low-Low level, the operator is trained to initiate manually all systems which should have initiated automatically but failed to do so. It is a general operator training concept that the operator is to backup all automatic actuations. There are sufficient control room indications to do so. This is not a misleading condition. For large and intermediate breaks, it is expected that Low-Low level will be reached very quickly before the effect of the harsh environment becomes severe. Further, pairs of switches are located at different locations in the Reactor Building and would not be susceptible to the same harsh environment simultaneously. For a small break, even though Low-Low may not be reached quickly, the operator would have a longer period of time to act, and the break would not affect more than one pair of instruments so that auto actuation would occur.

CONCLUSION

The operator should manually perform all actions required by Low-Low setpoint in case the switches fail. Both pairs of switches would not be subjected to the same harsh environment because of their diverse locations.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers DPS-66A, DPS-66B
Description Switches to open vacuum breakers based on Reactor Building to torus dP

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade other safety functions or mislead the operator.

COMPONENT LOCATION

These components are located in the southeast quadrant of the Reactor Building at elevation 23'6".

COMPONENT FUNCTION

These switches provide opening and closing signals to the Reactor Building - torus vacuum breakers. These vacuum breakers are used to purge air from the Reactor Building into the torus to prevent exceeding the negative design pressure of the containment during an event.

EVALUATION

For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function. For breaks outside the containment, a harsh environment may cause these switches to fail. However, for breaks outside containment, it is not expected that there will be a need to open these vacuum breakers since containment spray would not normally be required. If these switches fail and they are needed, the operator can manually open and close the vacuum breakers from the control room. The failure of these switches will not mislead the operator since there are indications of vacuum breaker position in the control room.

CONCLUSION

The failure of these switches will not prevent the operator from manually opening and closing the torus to Reactor Building vacuum breakers from the control room. The operator has indication of vacuum breaker position available so that he will not be misled.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Number VMS (Valve Monitoring System)
Description Monitors status of EMRVs and SVs

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade other safety functions nor mislead the operator.

COMPONENT LOCATION

The acoustic monitors for the VMS are located inside the drywell.

COMPONENT FUNCTION

The VMS is used to detect flow through or leaks from an EMRV or SV. The sensing components are all located inside the drywell and hence are unaffected by a break outside the containment.

EVALUATION

For breaks inside containment, the operator can determine from other parameters (tail pipe temperatures, EMRV position indication) that an EMRV or SV is open in the event that the VMS fails. Following a LOCA, it is not likely that a SV will be required to function, therefore, there is no concern for a stuck SV. For a small break LOCA, ADS will actuate and open all EMRVs. A stuck open EMRV will not be a concern under these conditions. For a large break LOCA, the system will be completely depressurized without EMRV actuation. Thus, the loss of the VMS has no safety significance for a break inside containment. For a break outside containment, the VMS is unaffected and will function normally. The failure of the VMS does not affect the normal operation of the EMRVs or the ADS.

CONCLUSION

The failure of the VMS will not degrade any other plant safety function nor mislead the operator.

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JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers IP-18A, IP-18B
Description Containment Spray Pump Hi Temperature Trip

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the components will perform their intended function;
- that failure of the components will not degrade other safety systems or mislead the operator.

COMPONENT LOCATION

These switches are located on the discharge piping of the containment spray heat exchangers at elevation 23'6" in the Reactor Building. IP-18A is in the northeast corner and IP-18B is in the southeast corner.

COMPONENT FUNCTION

These components function to trip the containment spray pumps upon receipt of a high temperature indication at the outlet of the containment spray heat exchangers.

EVALUATION

These components are located outside the drywell on the containment spray heat exchangers discharge piping. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function. Breaks outside containment are assumed to isolate. The only outside containment break which would require Containment Spray is an event in which both Isolation Condensers were lost. Even under this remote scenario, Containment Spray would not be required to provide torus cooling for several hours. By that time, any appropriate manual actions could be taken. The failure of the temperature switches due to the resulting environment will not cause an unsafe condition.

These switches do not interface with or control any other components and their failure would not affect any other safety or accident mitigation systems.

The failure of these switches will not mislead the operator since there exist separate temperature elements for each system which will give indication of heat exchanger discharge temperature in the control room.

CONCLUSION

These components will function during an inside containment LOCA when the Containment Spray System is required to operate. The failure of the components due to a harsh environment created by an outside containment break does not degrade any other safety systems nor will it mislead the operator.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Cable: Rockbestos Firewall and Rockbestos EP

DESCRIPTION

Manufacturer: The Rockbestos Company

Model:	Firewall EP	Firewall III
Function:	Power Cable	Control Cable
Voltage:	600 Volts	600 Volts
Rating:	90°C	90°C
Insulation:	EPR	Cross Linked Polyethylene
Jacket:	Hypalon	Hypalon

OBJECTIVE

The objective of this engineering justification for continued operation is to demonstrate that (1) the Rockbestos cable will perform its safety function in the event of a design basis accident at OCNGS, and (2) that the plant can be safely operated in the interim until the completion of the environmental qualification program by the Rockbestos Company.

EQUIPMENT FUNCTION

The cable connects nuclear safety-related equipment in the plant. The most severe function with respect to loading and environment has been evaluated. A combination of analysis and inadequately documented tests indicates that cable is acceptable for the intended functions.

EQUIPMENT LOCATION

The cable is installed in the Reactor Building, including the drywell. High radiation areas which include the cleanup demineralizer room and cleanup room do not contain any nuclear safety related equipment.

EVALUATION

An evaluation of current test information and analyses of the Rockbestos cable indicates that full qualification is not demonstrated; however, partial test data does provide a basis for concluding the cable will perform its function. These findings are based upon the results of both the NRC audit of Rockbestos (Reference 6) and the GPUN audit accomplished August 21-23, 1984 (Reference 1). GPUN has concluded, as has the NRC staff (Reference 3), that "at this time no immediate safety problem exists in the use of Rockbestos cables".

It was the intent of Rockbestos to conduct tests in accordance with IEEE Standards 323-1974 and 383-1974. Inadequate traceability, inadequate documentation and the general poor auditability of the supporting documentation does not conform with NRC requirements. The responses on the part of Rockbestos provides limited support, however, for partial test data. Rockbestos tests and analyses on Firewall EP cable (Reference 5) demonstrated a thermal qualified life of 40 years at 90°C and radiation tolerance of 2×10^8 rads. Franklin Research Center tests (Reference 10) on Firewall III with a Neoprene jacket instead of Hypalon, indicated acceptability of the insulation. Since Hypalon is superior to Neoprene for thermal qualified life and in light of the Rockbestos test results, it is anticipated that the Firewall III cable for nuclear service is superior to that with Neoprene.

As a consequence of generic problems with the Rockbestos test program for these Class 1E cables (Reference 3), Rockbestos has committed to conduct a new test program. This will be completed in July 1986. In the meantime, GPUN will verify the results of the Rockbestos supplemental program. Also GPUN conducts its surveillance on nuclear safety related equipment. The periodic review of cable performance will provide a measure of confidence of the performance function of the cable; any indications of degradation will be evaluated for its potential impact on the cable performance during and after the accident.

CONCLUSION

GPUN concludes that the OCNGS can be safely operated pending completion of equipment qualification as required by 10CFR50.49, Section i, and the NRC letter of May 25, 1984 "Request for Additional Information". This consideration includes, as appropriate, items 1 through 5 as follows:

Item 1 - Accomplishing the safety function by some designated alternative equipment if the principal equipment has not been demonstrated to be fully qualified.

This is not appropriate for the equipmert involved.

Item 2 - The validity of partial test data in support of the original qualification.

This is the basis for justification for continued operation as provided above.

Item 3 - Limited use of administrative controls over equipment that has not been demonstrated to be fully qualified.

This is not appropriate for the equipment involved.

Item 4 - Completion of the safety function prior to exposure to the accident environment resulting from a design basis event and ensuring that the subsequent failure of the equipment does not degrade any safety function or mislead the operator.

This is not appropriate for the equipment involved.

Item 5 - No significant degradation of any safety function or misleading information to the operator as a result of failure of equipment under the accident environment resulting from a design basis event.

This is not appropriate for the equipment involved.

Based upon the evaluation provided in Section 6, GPUN concludes that the cable is qualified to perform its safety function in the interim period before completion of the Rockbestos tests. No significant degradation of any safety function or misleading information to the operator is expected under the accident environment resulting from a design basis event.

REFERENCES

1. GPUN Memorandum QA-D/P-84-828 dated November 30, 1984 (Finding No. 3).

2. Oyster Creek Nuclear Generating Station - Environmental Qualification of Safety Related Equipment dated November 1, 1980.

3. IE Information Notice No. 84-44 dated June 8, 1984.

4. File EQ-OC-311, Revision 0, Rockbestos EP.

5. Rockbestos Report No. QR 1804 dated April 6, 1981.

6. NRC Trip Report - Audit of Rockbestos Company Qualification Documents, dated September 12, 1983.

7. GPUN - TDR 297, Revision 1 dated August 19, 1982.

8. Letter to Kearny (GPUN) from Littlehales (Rockbestos) dated June 28, 1984.

9. File EQ-OC-312, Revision 0, Rockbestos Firewall.

10. Franklin Research Center Final Report F-C3798 dated March 1974.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers DC-2
Description 125V DC Power Supply

OBJECTIVE

The objective of this discussion is to determine that failure of this component will not degrade other safety systems nor mislead the operator.

COMPONENT LOCATION

This power supply is located in the northeast quadrant of the Reactor Building on elevation 75'3".

COMPONENT FUNCTION

This component provides power to the vent valves and one of the condensate return valves for one of the isolation condensers.

EVALUATION

The component sees a harsh environment for the isolation condenser break outside the drywell. It is likely that DC-2 satisfies its function before a harsh environment causes it to fail. If DC-2 supplies power to the affected isolation condenser and subsequently failed, it would not result in a degradation of the isolation function of the affected condenser because other redundant isolation valves which are not powered from DC-2 will remain closed. If the power supply was associated with the intact condenser and subsequently failed, it would at worst cause the condenser to isolate. The operator would then make use of alternate decay heat removal systems.

If DC-2 failed prior to satisfying its function, decay heat removal would be through the EMRVs with RPV inventory makeup supplied by Core Spray. This mode could be sustained for a lengthy period due to the large heat capacity of the torus pool. The Containment Spray system could be subsequently used to provide torus pool heat removal.

The operator would not be misled by the loss of DC-2 since the valve position indicating lights for the valves would inform him of the incorrect situation and would allow him to take the appropriate actions.

CONCLUSION

The loss of DC-2 will not degrade other plant safety functions and will not provide misleading information to the operator.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers RE-05A, RE-05B; RE-05/19A, RE-05/19B
Description RPV Level Switches

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade other safety functions or mislead the operator.

COMPONENT LOCATION

RE-05A and RE-05/19A are located on rack RK01 in the northwest quadrant of the Reactor Building at elevation 51'3". RE-05B and RE-05/19B are located on rack RK02 in the southeast quadrant of the Reactor Building at elevation 51'3".

COMPONENT FUNCTION

The function of the level switches is to generate a scram signal on low RPV level and a turbine trip on high RPV level. Further, RE-05/19A,B provide YARWAY level indication in the control room.

EVALUATION

For breaks inside the containment these switches will perform their safety function as required because, for breaks inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. For large breaks outside containment, a low level scram would be expected to occur very quickly. Redundancy exists via a low pressure MSIV closure scram. Also, a Low-Low level MSIV closure scram would also occur if low level scram failed. For small breaks outside containment, there exist redundant scram signals or indications which would assure that the scram function is accomplished. Further, the switches are located at different locations in the Reactor Building such that they will not see the same harsh conditions simultaneously. The operator has diverse level instrumentation in the control room so that the loss of one YARWAY indicator or even both would still not result in a misleading condition. However, only one indicator would be expected to fail from a single break location.

CONCLUSION

The failure of these switches will not degrade the scram function which would occur by diverse means, or they may perform their scram function before the harsh environments occur. In addition, the operator can scram manually. There is sufficient diversity of level instrumentation to prevent a misleading condition. Further, only one of the two YARWAY indicators would be expected to fail from a single break location.

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JUSTIFICATION FOR CONTINUED OPERATION (JCO)

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OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers	V-21-1, V-21-3, V-21-5, V-21-7, V-21-9, V-21-11, V-21-13, V-21-15, V-21-17, V-21-18
Description	Local Key Lock Control Switches for Containment Spray System Valves V-21-1, 3, 7, 9 - Pump Suction Valves V-21-5, 11 - Drywell Injection Valves V-21-13, 17 - Dynamic Test Valves V-21-15, 18 - Torus Spray Inlet Valves

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

Switches for V-21-1, 3 and V-21-7, 9 are located in the southeast and northeast corner rooms in the Reactor Building on the -19'6" elevation respectively. The switches for valves V-21-5, 13, 15 are located in the southeast quadrant in the Reactor Building on elevation 23'6". The switches for valves V-21-17, 18 are located in the northeast quadrant on Reactor Building elevation 23'6". The switch for valve V-21-11 is located in the northeast quadrant on Reactor Building elevation 51'3".

COMPONENT FUNCTION

These components provide the operator with the ability to locally operate the identified Containment Spray System valves for surveillance/maintenance. They are not required to operate when the containment spray system is actuated.

EVALUATION

These switches are located in the Reactor Building and are not subject to the harsh environment inside the drywell when they are required to be functional. Contact radiation doses have been calculated for general areas inside the Reactor Building for breaks within the drywell. Radiation doses to specific target components are expected to be lower. GPUN is obtaining the specific radiation doses in the Reactor Building which are expected to be less than that for which the component can be qualified. Hence these components are expected to function. There is a failure mechanism of the key lock control switch due to radiation which can cause the valve to change state. It will

EVALUATION (Continued)

take a considerable period of time for the integrated radiation dose to exceed the qualification value for the switch. A failure of the keylock switch at that time may cause some of the valves to reposition. If the Containment Spray system is lost as a result of this failure, the decay heat from the core would be sufficiently low so that the Containment Spray System would not be required to remove heat from the torus for some time. In addition, ambient losses from the torus shell may be sufficient to provide torus cooling. Further, it is extremely unlikely that all of the valves will reposition themselves in the worst alignment at the same time so that there is no injection path to the containment. We believe that the likelihood of this one failure would be sufficiently low when consideration is given to the time the failure may occur, and other options available to the operating staff to accomplish the safety function.

Breaks outside containment are assumed to isolate. The only outside containment break which would require Containment Spray is an event in which both Isolation Condensers were lost. Even under this remote scenario, Containment Spray would not be required to provide torus cooling for several hours. The operator has position indication available in the control room so that he will not be misled.

CONCLUSION

It is expected that these components will be qualified for the environment. If the analysis shows that the radiation at the component is less than the value at which it can be qualified, an EQ file will be prepared. If the analysis shows that the radiation at the component is greater than the value for which it is qualified, corrective action will be taken. Based on the above evaluation, it is concluded that the Plant can be operated with no adverse affect to the health and safety of the public in the interim until qualification is documented or corrective action is taken.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-20-92, V-20-93, V-20-94, V-20-95
Description Limit Switches for Valves

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

The switches for valves V-20-93, 95 are located in the southwest quadrant of the Reactor Building on elevation 23'6". The switches for valves V-20-92, 94 are located in the northwest quadrant of the Reactor Building on elevation 51'3".

COMPONENT FUNCTION

These components provide the operator with indication of the position of the minimum flow valves which recirculate core spray flow back to the torus during the period when the pumps are running, but the RPV injection valves are closed.

EVALUATION

These switches are located in the Reactor Building. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Thus, for these breaks, the limit switches are expected to perform their indicating function. For breaks outside containment, these switches are located in different areas of the Reactor Building and will not see the harsh environment simultaneously. These valves fail to the required position upon loss of air or loss of power to the solenoid.

There exists a failure mechanism of the limit switch due to radiation which can cause the valve to change state. The consequences of this valve failure will drain the Core Spray System piping if the core spray pumps are not running. However, it will take a considerable period of time (approximately 24 hours) for the integrated radiation dose to exceed the qualification value for the switch. It is expected that if the Core Spray System is required to mitigate the event that it will be required to function prior to the radiation exceeding the qualification value for the switch. Since breaks outside containment are assumed to isolate, core spray would only be required to provide the initial level recovery. Long term inventory makeup to accomplish decay heat removal could be provided by alternate systems. Once the core

spray pumps have started, the failure of the limit switch has no effect. In addition, prior to exceeding the qualification value of the switch, it is expected that the RPV will be depressurized to a safe shutdown condition.

The failure of these limit switches does not affect any other safety function and will not lead the operator to take any unsafe actions.

CONCLUSION

Tne failure of these switches will not significantly degrade the effectiveness of the Core Spray System and will not cause the operator to take any unsafe actions.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-14-1, V-14-5, V-14-19, V-14-20 (Switch)
Description Position Switches for Isolation Condenser Vent Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

These position switches are located in the Reactor Building at elevation 95'3", east.

COMPONENT FUNCTION

These components function to energize status lights located in the control room to give indication of the position of the isolation condenser vent valves.

EVALUATION

The position switches give status only of the isolation condenser vent valves and are not interlocked to or depended upon for any other safety function. Since the vent valves will go to the required (i.e. closed) position upon initiation of the isolation condensers, there are no operator actions which require the status of the valves. In addition, a failure of the solenoid operated valves or of the air supply to the vent valves will cause the vents to go to the closed position. The failure of these switches may cause the condensate return valves to spuriously change position. Under the worst case, this would result in an isolation of both condensers. The operator would then make use of alternate decay heat removal systems. The failure of the position switches will not cause the operator to take any unsafe actions.

CONCLUSION

The failure of the position switches will not degrade the safety function since the indicated valves will go to the required position upon initiation of the isolation condensers or upon failure of the air supply or electric power supply. No other safety functions are interlocked with these switches, hence their failure will not degrade any other safety functions. There are no operator actions contingent upon these status lights, and the failure will not cause the operator to take any unsafe actions.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

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OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-27-1, V-27-2, V-27-3, V-27-4
Description Limit Switches for Drywell Vent and Purge Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

The switches for valves V-27-1, 2 are located in the Torus Room of the Reactor Building at elevation -19'6". The switches for valves V-27-3, 4 are located in the northwest quadrant of the Reactor Building on elevation 75'3".

COMPONENT FUNCTION

These switches provide the operator with indication of the position of the drywell vent and purge valves, and are required to be closed for containment isolation post-accident.

EVALUATION

These limit switches only provide the operator with position indication for the vent and purge valves and are not interlocked with any other safety function. These valves revert to their required position on loss of power to their associated solenoid valves. These valves are equipped with accumulators so that on loss of air to the solenoid, the valves will also revert to their required (closed) position. The failure of these switches may cause a short which would result in a loss of indication to a number of containment isolation valves which are only required to close. However, the loss of position indication would not prevent operation of the valves. The operator would be aware of the loss of position indication by the loss of both indicating lights for the valves. Since the valves fail in their required position, the loss of the limit switches would not mislead the operator into taking any unsafe action.

CONCLUSION

The failure of the limit switches for the identified valves will not degrade any safety function since these switches are for indication only. Also, the valves fail in their required position. The operator will not be misled by the failure of these switches.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers SS, 6K37X, 6K46X
Description Valve Control Switch for CPM (SS)
Relays (6K37X, 6K46X)

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

All of the components identified above are located in the northeast quadrant of the Reactor Building on elevation 23'6".

COMPONENT FUNCTION

These components are utilized as part of the Containment Particulate Monitoring System to detect the concentrations of gas within the containment for breaks within the containment.

EVALUATION

These components are located in the Reactor Building and thus are not subject to the harsh environment inside the drywell when they are required to function. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence, these components are expected to function. For breaks outside containment, the Containment Particulate Monitoring System is not required to function to mitigate the event. Thus, the failure of these components would not cause the operator to take any unsafe actions.

The possibility exists that these control switches may cause containment isolation valves V-38-9, 10, 16 or 17 not to close. However, if this occurred, the containment barrier would still be maintained; a closed loop system of small diameter instrument piping would result which would exit and return to the containment through the Containment Particulate Monitor. There would be no radiation release to the environment or significant radiation exposure due to the instrument piping loop.

These components are not interlocked with any other safety function and thus, their failure would not prevent any other safety related actuation.

CONCLUSION

The failure of the components will not degrade the function of the Containment Particulate Monitoring System nor be misleading to the operator.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-23-13, V-23-14, V-23-15, V-23-16, V-23-17, V-23-18, V-23-21, V-23-22
Description Limit Switches for Drywell Nitrogen Purge & Relief Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

The switches for V-23-13, 14 and V-23-17, 18 are located in the northeast and southwest quadrants of the Reactor Building on the 75'3" elevation respectively. The switches for V-23-15, 16 are located in the southwest quadrant of the Reactor Building on elevation 23'6". The switches for V-23-21, 22 are located in the Torus Room of the Reactor Building on elevation -19'6".

COMPONENT FUNCTION

These switches provide the operator with indication of the position of the drywell nitrogen purge and makeup valves (V-23-13, 14, 15, 16, 17, 18) and the drywell nitrogen relief valves (V-23-21, 22).

EVALUATION

These limit switches only provide the operator with position indication of the purge and relief valves and are not interlocked with any other safety function. These valves revert to their required closed position as a result of a loss of power or air to their associated solenoid valves. The failure of these switches may cause a short which could result in a loss of position indication for a number of containment isolation valves which are only required to go to the closed position. However, the loss of the position indication would not prevent the operation of the valves. The operator would be aware of the loss of position indication by the loss of both indicating lights for the valves. Since the valves fail to their required position, the loss of the limit switches would not cause the operator to take any unsafe actions.

CONCLUSION

The failure of the limit switches for the identified valves will not degrade any safety function since these switches are for indication only. Also, the valves fail in their required position. The operator will not be misled by the failure of these switches.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-11-34, V-11-36
Description Limit Switches for Valve Position Indication

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

These components are located in the northeast quadrant of the Reactor Building at elevation 95'3".

COMPONENT FUNCTION

These components energize the position indicating lights for the valves supplying makeup water to the isolation condensers from the Condensate Transfer System.

EVALUATION

The isolation condensers can operate for at least 45 minutes each without makeup to the secondary side. Addition of water to the condenser shells is a manual action and requires that the makeup vaives (V-11-34, V-11-36) be open. Failure of the position indicators would not prohibit makeup since the failure of the limit switch does not affect valve position. Failure of the indicators would not mislead the operator into taking an unsafe action since there are other methods to determine if there is sufficient heat removal with the isolation condensers (i.e. shell side level, reactor pressure). Failure to makeup to the isolation condensers will result in a reduction of heat transfer and repressurization of the reactor. The operator is instructed by the Emergency Procedures to augment depressurization through the use of the EMRV, if the Isolation Condenser System is shown to be inadequate.

CONCLUSION

The failure of th limit switches to indicate valve position will not degrade any safety functions since these switches do not affect valve position. The operator will not be misled into taking actions which are unsafe since there are methods to determine the effectiveness of the Isolation Condenser System and actions can be taken to augment reactor pressure control.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-28-47, V-28-17, V-28-18
Description Limit Switches for Torus Ventilation Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

These limit switches are located in the Torus Room in the Reactor Building on elevation -19'6".

COMPONENT FUNCTION

These limit switches provide the operator with indication of the position of the torus exhaust ventilation valves.

EVALUATION

For a break inside the containment, the environment to which these components are subjected is not expected to become harsher than that for which the component can be qualified. Hence these components are expected to function. Should the limit switch fail as a result of a harsh environment from a break inside the containment, it will not cause the valve to reposition itself. Thus, the isolation function is preserved. For breaks outside the drywell, these switches may see a harsh environment. However, these valves are normally closed and are required to remain closed during and following an event. The failure of these switches may cause a short which would result in a loss of indication to a number of containment isolation valves which are only required to go closed. These valves are normally closed so that the operator will not be misled by the potential loss of indication. These limit switches are not interlocked with any other safety function and thus, the failure will not affect any safety actuation.

CONCLUSION

These limit switches are only used for position indication by the operator. Their associated valves are normally closed and are required to be closed following the event. The operator will not be misled by the failure of these switches.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-28-9, V-28-10, V-28-11, V-28-12, V-28-13, V-28-14, V-28-15, V-28-16
Description Limit Switches for Reactor Building HVAC Isolation Valves

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

These switches for V-28-9, 10 and V-28-11, 12 are located in the southwest and northwest quadrants of the Reactor Building on elevation 75'3" respectively. The switches for V-28-13, 14 and V-28-15, 16 are located in the southwest and northwest quadrants of the Reactor Building on elevation 51'3" respectively.

COMPONENT FUNCTION

These switches provide the operator with the position status of the Reactor Building HVAC isolation valves.

EVALUATION

These limit switches are located in the Reactor Building and thus are not subject to the harsh environment inside the drywell when they are required to function. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. Hence, these components are expected to function. For breaks outside containment, these valves would close quickly on a secondary containment isolation signal before the environment became harsh. Thus, the limit switch would perform its indicating function to the operator. Once the valves are closed, there is no spurious mechanism for re-opening these valves. Then, the failure of the limit switches would not cause the operator to take any incorrect action since he had previously confirmed that the valves were closed. In addition, the valves fail to their required closed position on loss of air or loss of power to their solenoid valves.

CONCLUSION

The failure of these limit switches would not degrade the ability to isolate the secondary containment nor any other safety function and would not mislead the operator into taking any unsafe actions.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers TE-109A, TE-109B, TE-109C, TE-109D
Description Torus Water Temperature Elements

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

These temperature elements are located in thermowells in the torus shell in the Torus Room of the Reactor Building on elevation -19'6".

COMPONENT FUNCTION

These temperature elements provide the operator with indication of the temperature in the torus pool. There are no automatic actuations which occur based on these temperature elements.

EVALUATION

For a break inside the containment, the environment to which these components are subjected is not expected to become harsher than that for which the component can be qualified. The integrated radiation dose for these components due to a break inside containment is expected to take a considerable period of time to reach the qualification limit for these temperature elements. It is expected that these components will be required to function for a fairly short period of time (about one week), and that by that time, the RPV will be depressurized and in a safe shutdown condition. In addition, if these temperature elements fail, the operator has alternate indications by which he can estimate torus pool temperature so that he will not be misled.

CONCLUSION

There are no automatic safety actuations based on these temperature elements. Thus, the operator will not be misled if these temperature elements fail due to a harsh environment, since there are alternate indications available.

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JUSTIFICATION FOR CONTINUED OPERATION (JCO)

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OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-28-21, V-28-22
Description Limit Switches for Reactor Building Ventilation Exhaust Valves

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

These switches are located in the pipe tunnel which connects the Turbine Building to the base of the stack.

COMPONENT FUNCTION

These switches provide the operator with the position status of the Reactor Building HVAC exhaust valves.

EVALUATION

These limit switches are located in the pipe tunnel and thus are not subject to the harsh environment inside the drywell when they are required to function. For a break inside the containment, the environment in the pipe tunnel is not expected to become harsher than that for which the component can be qualified. Hence these switches are expected to function. In addition, for breaks inside the containment these valves would close quickly on a containment isolation signal. For breaks outside containment, these valves would also close quickly on a secondary containment isolation signal before the environment becomes harsh. Thus, the limit switch would perform its indicating function to the operator. The failure of the limit switches would not cause the operator to take any incorrect actions since he had previously confirmed that the valves were closed. In addition, these valves fail to their required closed position on loss of air or loss of power to their solenoid valves.

CONCLUSION

The failure of these limit switches would not degrade the ability to isolate the secondary containment nor any other safety function and would not mislead the operator into taking any unsafe actions.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers	IA-90A, IA-90B; IA-91A, IA-91B; IA-92A, IA-92B; TE-57-2A, TE-59-2B
Description	dP Transmitters for RPV Fuel Zone Level (IA-90A, IA-90B; IA-91A, IA-91B; IA-92A, IA-92B) Temperature Elements for RPV Fuel Zone Level (TE-57-2A, TE-59-2B)

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

The dP transmitters IA-90A,B, IA-91A,B and IA-92A,B and temperature elements TE-57-2A and TE-59-2B are located in the northwest quadrant of the Reactor Building on elevation 51'3".

COMPONENT FUNCTION

The dP transmitters drive the fuel zone level indicators which provide the operator with RPV water level monitoring. The temperature elements provide input to the dP transmitters to compensate the indications for changes in drywell and Reactor Building temperatures.

EVALUATION

The transmitters are located in the Reactor Building and thus are not subject to a harsh environment for breaks inside the drywell. For a break inside the containment, the environment in the Reactor Building is not expected to become harsher than that for which the component can be qualified. For breaks outside the containment, the loss of these transmitters does not prevent any plant safety actuations from occurring, since no safety related trips are based on the fuel zone transmitters. If the failure of the transmitters or temperature elements resulted in conflicting RPV level indication to the operator, he would make use of other level indicators available in the control room. Even in the event that the operator judges that he cannot determine the RPV water level, the Emergency Operating Procedures provide the operator with guidance to prevent uncovering the core.

CONCLUSION

The failure of these transmitters and temperature elements does not significantly degrade the ability of the operator to monitor the RPV water level. There are no automatic safety related actuations which are based on the fuel zone transmitters. The EOPs provide the operator with guidance if he cannot determine RPV level so that he will not be misled into taking any unsafe actions.

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JUSTIFICATION FOR CONTINUED OPERATION (JCO)

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OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENT

Tag Numbers: TIP Ball Valves
Description: Solenoid Operated Valves

OBJECTIVE

The objective of this discussion is to determine that there is a basis for concluding that the required function will be satisfied by other equipment.

COMPONENT LOCATION

The four (4) TIP ball valves are located outside the drywell in the northwest quadrant of the Reactor Building at elevation 33'5".

COMPONENT FUNCTION

The ball valves close to isolate the drywell upon a reactor protection signal.

EVALUATION

The ball valves are the primary means of isolating the TIP system penetrations to the containment. These valves are open in order to insert the traversing incore probes for calibration of incore monitors. The ball valves are on small diameter instrument tubing. They are fail-safe, i.e., upon loss of power they automatically close and are spring-loaded to close. They are normally closed and activated only during a calibration check with the system on-line. Normal operation is to run the TIP in one at a time; so that only one ball valve is open at a given time. The system is designed so that upon an isolation signal, the TIP detectors are withdrawn and the ball valves go to the closed position. The detectors are quickly withdrawn in this situation, so that the ball valve is required to operate in a harsh environment for only a short period of time while isolating. Should the power be lost with the TIP in, the ball valve will de-energize and try to close. The incomplete closure would be minimal (perhaps less than 10% of the 0.273" I.D.). This would not result in a significant release of radioactivity into the Reactor Building. Incomplete closure of the ball valve will result in a signal that the ball valve is de-energized. In addition, there exist four (4) shear valves (one per guide tube) which would be electrically fired manually with a key switch from the control room (redundant circuits), and would cut and seal the TIP tubes for containment isolation. The shear valves are primarily mechanical components and are thus not subject to the normal failure modes of electrical equipment. Therefore, capability to isolate the drywell is assured.

CONCLUSION

The ball valves are located in small diameter instrument tubing and are of a fail-safe design. Therefore, the radioactivity released would be minimal should these valves fail to close completely. The failure of these components does not affect containment isolation since this function can be satisfied by other redundant equipment.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-17-55, V-17-56, V-17-57
Description Limit Switches for Shutdown Cooling Loop Isolation Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

These components are located in the Shutdown Cooling Room in the Reactor Building on elevation 51'3".

COMPONENT FUNCTION

These limit switches provide the operator with position indication for the outlet isolation valves for each of the three shutdown cooling loops.

EVALUATION

The Shutdown Cooling System is not required to operate to bring the plant to a safe shutdown condition. The above valves are normally closed and are required to remain closed during and after the event. Thus, these valves do not have to change state in order to satisfy their containment isolation function. The Shutdown Cooling System is a closed loop system outside of containment. The failure of the limit switches would not cause the valves to change state nor degrade any safety system. These valves do not open automatically. The operator must take manual action to open these valves. Thus, the failure of the switches would not mislead the operator.

CONCLUSION

The failure of these limit switches will not degrade the effectiveness of any safety system nor mislead the operator.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-21-1, V-21-3, V-21-7, V-21-9
Description Limit Switches for Containment Spray Suction Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components do not degrade any safety functions and will not mislead the operator.

COMPONENT LOCATION

These components are located on the motor operators. V-21-1 and V-21-3 are located in the southeast corner room of the Reactor Building at elevation -19'6"; V-21-7 and V-21-9 are located in the northeast corner room at elevation -19'6".

COMPONENT FUNCTION

These limit switches provide the operator with position indication for the suction valves for each of the containment spray pumps.

EVALUATION

These valves are normally open and are required to remain open in order for the Containment Spray System to function. Failure of the limit switches would not cause the valves to change position; the valves do not function automatically but require operator action to change position. Since manual action is required to close the valves, failure of the limit switches will not mislead the operator.

CONCLUSION

Failure of these switches will not degrade any safety functions nor mislead the operator since the valves cannot change position without operator action.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-20-3, V-20-4, V-20-32, V-20-33
Description Limit Switches for Core Spray Suction Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components does not degrade any safety functions and will not mislead the operator.

COMPONENT LOCATION

These components are located on the motor operators. V-20-3 and V-20-32 are located in the northwest corner room of the Reactor Building at elevation -19'6"; V-20-4 and V-20-33 are located in the southwest corner room at elevation -19'6".

COMPONENT FUNCTION

These limit switches provide the operator with position indication for the suction valves for each of the main core spray pumps.

EVALUATION

These valves are normally open and are required to remain open in order for the Core Spray System to function. Failure of the limit switches would not cause the valves to change position; the valves do not function automatically, but require operator action to change position. Since manual action is required to close the valves, failure of the limit switches will not mislead the operator.

CONCLUSION

Failure of these switches will not degrade any safety functions nor mislead the operator since the valves cannot change position without operator action.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-3-87, V-3-88
Description Key Lock Control Switches for ESW Valves

OBJECTIVE

The objective of this discussion is to determine:

- that there is a basis for concluding that the existing components will perform their required function;
- that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

Switches are located in the Reactor Building at elevation 23'6"; the switch for V-3-87 is in the northeast quadrant; the switch for V-3-88 is in the southeast quadrant.

COMPONENT FUNCTION

These components provide the ability to locally operate the subject valves for surveillance/maintenance. They are not required to operate when the containment spray system is actuated.

EVALUATION

These switches are located in the Reactor Building and are not subject to the harsh environment inside the drywell when they are required to be functional. Contact radiation doses have been calculated for general areas inside the Reactor Building for breaks within the drywell. Radiation doses to specific target components are expected to be lower. GPUN is obtaining the specific radiation doses in the Reactor Building which are expected to be less than that for which the component can be qualified. Hence these components are expected to function. There is a failure mechanism of the key lock control switch due to radiation which can cause the valve to change state. It will take a considerable period of time for the integrated radiation dose to exceed the qualification value for the switch. A failure of the keylock switch at that time may cause some of the valves to reposition. If the Containment Spray system is lost as a result of this failure, the decay heat from the core would be sufficiently low so that the Containment Spray System would not be required to remove heat from the torus for some time. In addition, ambient losses from the torus shell may be sufficient to provide torus cooling. Further, it is extremely unlikely that all of the valves will reposition themselves in the worst alignment at the same time so that there is no injection path to the containment.

EVALUATION (Continued)

We believe that the likelihood of this one failure would be sufficiently low when consideration is given to the time the failure may occur, and other options available to the operating staff to accomplish the safety function.

Breaks outside containment are assumed to isolate. The only outside containment break which would require Containment Spray is an event in which both Isolation Condensers were lost. Even under this remote scenario, Containment Spray would not be required to provide torus cooling for several hours. The operator has position indication available in the control room so that he will not be misled.

CONCLUSION

It is expected that these components will be qualified for the environment. If the analysis shows that the radiation at the component is less than the value at which it can be qualified, an EQ file will be prepared. If the analysis shows that the radiation at the component is greater than the value for which it is qualified, corrective action will be taken. Based on the above evaluation, it is concluded that the Plant can be operated with no adverse affect to the health and safety of the public in the interim intil qualification is documented or corrective action is taken.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Numbers V-1-106, V-1-107, V-1-110, V-1-111
Description Limit Switches for Main Steam Line Drain Valves

OBJECTIVE

The objective of this discussion is to determine that the failure of these components will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

The limit switches for valves V-1-106, 107 are located inside the drywell, and the limit switches for V-1-110, 111 are located in the steam line tunnel in the Reactor Building on elevation 23'6".

COMPONENT FUNCTION

These limit switches provide the operator with position status for each of the four drain valves listed above.

EVALUATION

The above valves are normally closed and are required to remain closed during and after an event. Thus, these valves do not have to change state in order to satisfy their containment isolation function. These valves do not open automatically. However, a failure of the limit switch could cause the valve to reposition itself spuriously. In that event, the operator will be able to detect the blown power fuse by the indicating lights in the control room. Normally, the operator must take manual action to open these valves. Thus, the failure of the switches would not mislead the operator.

In addition, these valves are paired in series so that the outside containment valve is expected to function for a break inside containment and vice versa. Thus, the containment isolation function is preserved regardless of break location.

CONCLUSION

The failure of these limit switches will not degrade any safety system nor mislead the operator.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Number V-31-2
Description Limit Switch for Reactor Head Cooling Isolation Valve

OBJECTIVE

The objective of this discussion is to determine that the failure of this component will not degrade any safety function nor mislead the operator.

COMPONENT LOCATION

This limit switch is located in the northeast quadrant of the Reactor Building on elevation 75'3".

COMPONENT FUNCTION

This limit switch provides the operator with position indication for the isolation valve on the Reactor Head Cooling System.

EVALUATION

The Reactor Head Cooling System is not required to operate to bring the plant to a safe shutdown condition. Valve V-31-2 is normally closed and is required to remain closed during and after the event. Thus, this valve does not have to change state in order to satisfy its containment isolation function. The failure of the limit switch would not cause the valve to change state nor degrade any safety system. This valve does not open automatically. The operator must take manual action to open this valve. Thus, the failure of the switch would not mislead the operator.

CONCLUSION

The failure of this limit switch will not degrade the effectiveness of any safety safety nor mislead the operator.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

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OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Nos. 1A, 1B, 1C, 1D
Description: 4160 V Switchgear Equipment

OBJECTIVE

The objective of this discussion is to justify interm operation of the Oyster Creek facility in accordance with the Federal Code of Regulations 10CFR50.49 section (i)(2).

COMPONENT LOCATION

Turbine Building

ENVIRONMENT

Temperature	83°F for 40 years
Radiation	3.5 X 10^3 Rad TID
Accident condition	Rise from 102°F to 172°F in 15 seconds
	Fall to 86°F 340 seconds after time zero
Relative humidity	100%

EVALUATION

Oyster Creek Turbine Building environmental parameters indicate that on the MSLB in the turbine building a peak temperature of 172°F is reached in 15 seconds and that the area temperature of 93°F is achieved after approximately 1 hr.

A simple lumped mass analysis of the switchgear units to determine their response to the temperature transient indicates that the unenergized units will not exceed an internal component temperature of 120°F (50°C) throughout the MSLB scenario. Energized units carrying 80% of the rated load will experience a 45°C temperature rise which will not exceed the ANSI C37.04-31 limit of 105°C for continuous operation.

ANSI Standard C37.04-31 provides guidelines for the design of switchgear equipment and states that this equipment should have a maximum heat rise of 65°C above ambient and should therefore have components designed for 105°C (40°C ambient + 65°C heat rise).

Conservatism in switchgear design in conjunction with the actual loading of the switchgear in this scenario of 80% (max.) of nameplate capacity will assure that the switchgear will not be thermally overloaded during the 10°C expected excursion.

This can be demonstrated by referring to the General Electric Co. "Switchgear Application Handbook" #53-02 page 1 issue 3 dated 8-15-72. This paragraph describes the technique used for de-rating switchgear equipment for use in high temperature (greater than 40°C environment).

Use of this technique gives an 8% de-rating factor for application at 50°C ambient.

4160 V Switchgear (continued)

ANSI Standard C37.20 requires switchgear designs to be subjected to the following prototype and production tests:

Basic Impulse Level Testing - 60,000 KV
Dielectric Withstand Test 19 KV (production test)

It is expected that the switchgear units will pass these tests regardless of ambient relative humidity.

Plate out of condensate on current carrying conductors and insulating materials should be considered here. It is expected that the enclosed energized switchgear units will have sufficient self heating to keep local relative humidity below 100%. Unenergized units necessary for engineered safeguard loads should be kept clean to avoid short circuit conduction paths in the event some condensation occurs. A maintenance/surveillance program can assure that conductors and insulators are cleaned on a regular basis.

CONCLUSION

Continued Operation is justified based on the above evaluation.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Nos. 1A1, 1B1
Description Unit Substations

Unit substations 1A1 and 1B1 are comprised of the following

- 4160/460 3 phase step down sub-station transformer
- AKD-5 switchgear

OBJECTIVE

The objective of this discussion is to justify interim operation of the Oyster Creek facility in accordance with the Federal Code of Regulations 10 CFR50.49 section (i)(2).

COMPONENT LOCATION

These units are located in the turbine building basement columns B-3 and E-3 respectively.

ENVIRONMENT

Temperature	85°F for 40 years
Radiation	3.5×10^3 Rad TID
Accident condition	Rise from 102°F to 180°F in 25 seconds
	Fall to 93°F 9000 seconds after time zero
Relative humidity	100%

EVALUATION

The sub-station transformers are sealed oil bath units with external heat exchangers. Based on the accident environmental data (ie. area temperature return to 93°F in approx. 2.5 hr. with peak temperature of 180°F @ t = 25 sec) and a high transformer thermal time constant (large mass), it is believed that the transformer coil temperature will undergo an insignificant heat rise during a MSLB in the turbine building.

The AKD-5 switchgear units approximately 10 per sub-station have had environmental qualification evaluations performed. Literature search has determined that switchgear similar to the Oyster Creek units (AKD-5s) have component qualification documentation to support an extended qualified life for this equipment. The manufacturer recommends a maintenance replacement program for the parts identified as age susceptible or having defined life endpoints (ie. 10 yrs; 1000 cycles of operation, etc.). The equipment was evaluated against the following environmental service conditions:

	Qualification Level
Ambient temp.	120°F
Relative Humidity	90% R.H.
Radiation	$\leq 10^4$ Rads

Unit Substation (continued)

Oyster Creek Turbine Building environmental parameters indicate that on the MSLB in the turbine building a peak temperature of 180°F is reached in 25 seconds and that the area temperature of 93°F is achieved in approx. 2.5 hr.

A simple lumped mass analysis of the switchgear units to determine their response to the temperature transient indicates that the unenergized units will not exceed an internal component temperature of 120°F (50°C) throughout the MSLB scenario. Energized units carrying 80% of the rated load will experience a 45°C temperature rise which will not exceed the ANSI C37.04-31 limit of 105°C for continuous operation.

ANSI Standard C37.04-31 provides guidelines for the design of switchgear equipment and states that this equipment should have a maximum heat rise of 65°C above ambient and should therefore have components designed for 105°C (40°C ambient + 65°C heat rise).

Conservatism in AKD switchgear design in conjunction with the actual loading of the switchgear in this scenario, 80% (max.) of nameplate capacity, will assure that the switchgear will not be thermally overloaded during the 10°C expected excursion.

This can be demonstrated by referring to General Electric Co. "Switchgear Application Handbook" #53-02 page 1 issue 3 dated 8-15-72. This paragraph describes the technique used for de-rating switchgear equipment for use in high temperature (greater than 40°C environments).

Use of this technique gives an 8% de-rating factor for application at 50°C ambient.

Based on the above analysis, the only remaining concerns would be radiation and humidity exposure. Radiation dose is $\leq 10^4$ rads T.I.D. and therefore considered insignificant.

Humidity tests have been performed on GE AK-2-25 600 V, 600A circuit breakers carrying 460 VAC with exposure to 100% r.h., after which the equipment functioned properly. Similar data can be found on the other components commonly used in AKD-5s such as EB-5 and EB-25 terminal blocks, bus bar insulators, transformers, roof entrance bushings and certain types of control wiring.

CONCLUSIONS:

Continued operation is justified for this equipment based on the following.

- 8% derating required for application at 50°C ambient vs. 20% minimum conservatism factor of component and system design.
- Existence of thermal aging documentation.
- Test data that indicates exposure to extremes of temperature and humidity does not effect AK-25 breakers.
- Maintenance/surveillance program provides assurance that units are clean and operate properly and within limits of calibration.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag number(s): STD - Static Time Delay unit for: (1) USS1A1BKR011B, (2) USS1B1BKR021B

Description: Static Time Delay unit model number TAKYUVT-3.

OBJECTIVE

The objective of this discussion is to justify the continued operation of the Oyster Creek Facility by demonstrating that the safety function can be accomplished by the Static Time Delay unit in the specified environment.

COMPONENT LOCATION

Turbine building at elevation 3.6'.

ENVIRONMENT

Temperature	85°F for 40 years
Radiation	3.5×10^3 TID
Accident condition	Rise from 102°F to 180°F in 25 seconds
	Fall to 93°F 9000 seconds after time zero
Relative humidity	100%

COMPONENT FUNCTION

The Static Time Delay unit is used in conjunction with an Undervoltage (UV) Trip device. The UV device protects against harmful drops in line voltage by automatically tripping the substation breaker. The Static Time Delay unit provides a field adjustable delay between under-voltage fault and breaker trip to prevent nuisance tripping due to momentary loss of voltage.

EVALUATION

The evaluation is based on the results of qualification tests performed on other static devices (example General Electric SFF relays) that contained a comparable assembly of solid state components and non-metallic materials (i.e., similar materials of construction). This testing included:

1. Exposure to 95% R.H. at 140°F for a period of 24 hours with a safety function check in the test environment at the end of the 24 hour test period.

2. Exposure to 1×10^5 rads gamma

3. Thermal aging (unenergized) in a 212°F temperature environment for a period of three (3) months. Based on Arrhenius calculations, this test produced thermal aging of the critical non-metallic materials equivalent to 104 °F for a period of 40 years.

Ability to perform the safety function was demonstrated at the beginning, during and at completion of the test program.

Static Time Delay Unit (continued)

CONCLUSION

Qualification data in GE's possession supports the conclusion that the Static Time Delay unit will perform the safety function in the specified environment. Therefore, continued operation is justified in accordance with the Federal Code of Regulations 10CFR50.49 section (i)(2).

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Nos. Various
Description Containment Electrical Penetrations

OBJECTIVE

The objective of this discussion is to justify interim operation of the Oyster Creek facility in accordance with the Federal Code of Regulations 10 CFR50.49 section (i)(2).

COMPONENT LOCATION

These penetrations are located in the primary containment wall at various elevations.

ENVIRONMENT

Operating time - 48 days
Peak conditions (°F/psig/RH%/duration) - 335/38/100/16 sec.
Radiation - 6.5E7 Rad (Gamma) TID (40 yr + 1 yr. DBE)
9.6E8 Rad (Beta) TID (1 year DBE)
Spray - Demineralized water

EVALUATION

The General Electric FOl series penetrations are presently being qualified for Oyster Creek. DBE test data concerning the FOl series penetration envelops all the conditions of the most severe Oyster Creek profile. Traceability/similarity has been established between the tested penetrations and those installed at Oyster Creek. In addition, testing and analyses have been performed to determine a qualified life estimate for the Penetrations in excess of 20 years (thermal and radiation). Similar FOl series penetrations are presently being successfully qualified for Three Mile Island Unit 1.

CONCLUSION

Test data exists to qualify the penetration for the Oyster Creek DBE environment. Analyses are being concluded to complete the qualification of the Oyster Creek Electrical Penetrations with no problems encountered to date. Therefore, in accordance with 10CFR50.49 section (i)(2) interim operation is justified.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Nos. MCC-1A11, MCC-1A12, MCC-1A21A, MCC-1A21B, MCC-1B13,
Oescription Motor Control Centers

OBJECTIVE

The objective of this discussion is to justify the interim operation of the Oyster Creek facility in accordance with 10CFR50.49 (i)(2).

COMPONENT LOCATIONS

Reactor and turbine buildings

COMPONENT FUNCTION

The Motor Control Centers are used to protect and operate motorized valve actuators and pumps.

ENVIRONMENT

Temperature	192°F/25 sec. return to 93°F/9000 sec. (see zone T profile), Normal 85°F
Pressure	18.0 psia @ 1 sec., ramp to normal ambient 100 secs.
Relative Humidity	100%
Radiation	3 x 10^6 Rads TID

EVALUATION

A preliminary assessment of the test data applicable to the environmental qualification of the General Electric IC7700 Motor Control Center has been made. The qualification data has been evaluated per DOR Guidelines and by applying Arrhenius techniques.

This test data can be used to demonstrate qualification of the Motor Control centers to Oyster Creek Power Plant's normal and postulated accident conditions. (Reference - Environmental Qualification Assessment Report - GE letter G-EN-4-206)

General Electric is currently preparing a qualification report for these MCCs, including an analysis of all sub-assemblies (devices of the MCCs i.e. circuit breakers, starters). The devices and MCC structures are being examined and evaluated in detail to ascertain qualification of the components comprising the MCC assembly to the specified Oyster Creek Power Plant environment. This effort, along with the preparation of qualification documentation for IC7700 MCC installed in other power plants, with similar environments, indicates that the test data demonstrates qualification of the IC7700 motor control center to Oyster Creek Power Plant's normal and postulated accident conditions.

CONCLUSION

Based upon the test data obtained and the assessments performed to date, this analysis meets the criteria of 10CFR50.49, paragraph (i)(2).

Therefore, continued operation is justified.

OYSTER CREEK NUCLEAR GENERATING STATION

JUSTIFICATION FOR CONTINUED OPERATION (JCO)

COMPONENTS

Tag Nos. MCC-1AB2, MCC-IB21A, MCC-IB21B, MCC-DCI
Description Motor Control Centers

OBJECTIVE

The objective of this discussion is to justify the interim operation of the Oyster Creek facility in accordance with 10CFR50.49 (i)(2).

COMPONENT LOCATIONS

Reactor building

COMPONENT FUNCTION

The Motor Control Centers are used to protect and operate motorized valve actuators and pumps.

ENVIRONMENT

Temperature	peak 150°F/50 sec. return to 100°F/1600 sec., Normal 85°F
Pressure	18.0 psia @ 1 sec., ramp to normal ambient 100 secs.
Relative Humidity	100%
Radiation	9.5 x 10^7 Rads TID

EVALUATION

A preliminary assessment of the test data applicable to the environmental qualification of the General Electric IC7700 Motor Control Center has been made. The qualification data has been evaluated per DOR Guidelines and by applying Arrhenius techniques.

This test data can be used to demonstrate qualification of the Motor Control centers to Oyster Creek Power Plant's normal and postulated accident conditions. (Reference - Environmental Qualification Assessment Report - GE letter G-EN-4-206)

General Electric is currently preparing a qualification report for these MCCs, including an analysis of all sub-assemblies (devices of the MCCs i.e. circuit breakers, starters). The devices and MCC structures are being examined and evaluated in detail to ascertain qualification of the components comprising the MCC assembly to the specified Oyster Creek Power Plant environment. This effort, along with the preparation of qualification documentation for IC7700 MCC installed in other power plants, with similar environments, indicates that the test data demonstrates qualification of the IC7700 motor control center to Oyster Creek Power Plant's normal and postulated accident conditions.

The specified radiation environment exceeds that to which the MCC's have previously been qualified. General Public Utilities is in the process of recalculating the specified dose at the exact device location. The result is expected to fall within the qualifiable limits of the established test and analyses.

Motor Control Centers (continued)

CONCLUSION

Based upon the test data obtained and the assessments performed, this analysis meets the criteria of 10CFR50.49, paragraph (i)(2).

Therefore, continued operation is justified.

ATTACHMENT III

Components Deleted from the Original Equipment List

Equip. ID NO.	Generic Name
Containment Spray System	
IP-05-A	D. P. Transmitter
IP-05-B	D. P. Transmitter
IP-05-C	D. P. Transmitter
IP-05-D	D. P. Transmitter
V-21-1*	Motor Operated Valve
V-21-3*	Motor Operated Valve
V-21-7*	Motor Operated Valve
V-21-9*	Motor Operated Valve
Control Rod Drive System	
RD-08-A	Level Switch
RD-08-B	Level Switch
RD-08-C	Level Switch
RD-08-D	Level Switch
RD-08-E	Level Switch
RD-08-F	Level Switch
Drywell & Supression System	
V-5-148	Motor Operated Valve
V-17-55*	Motor Operated Valve
V-17-56*	Motor Operated Valve
V-17-57*	Motor Operated Valve
V-22-1	Solenoid Valve
V-22-2	Solenoid Valve
V-22-28	Solenoid Valve
V-22-29	Solenoid Valve
V-23-13	Solenoid Valve
V-23-14	Solenoid Valve
V-23-15	Solenoid Valve
V-23-16	Solenoid Valve
V-23-17	Solenoid Valve
V-23-18	Solenoid Valve
V-23-19	Solenoid Valve
V-23-20	Solenoid Valve
V-23-21	Solenoid Valve
V-23-22	Solenoid Valve
V-26-16	Solenoid Valve
V-26-18	Solenoid Valve
V-27-1	Solenoid Valve
V-27-2	Solenoid Valve
V-27-3	Solenoid Valve

*Limit switch for these MOVs will be qualified for position indication purpose per Reg. Guide 1.97

Equip. ID No.	Generic Name
V-27-4	Solenoid Valve
V-28-17	Solenoid Valve
V-28-18	Solenoid Valve
V-28-47	Solenoid Valve
V-31-2	Solenoid Valve
PT-52	Pressure Transmitter
PT-IP-12	Pressure Transmitter
PT-IP-07	Pressure Transmitter
Isolation Condenser System	
IB-06-A	Area Temp. Detector
IB-06-B	Area Temp. Detector
IB-06-C	Area Temp. Detector
IB-06-D	Area Temp. Detector
Reactor Instrumentation	
IA-12	Level Transmitter
IA-45	Pressure Transmitter
Combustible Gas Monitoring	
V-38-9	Solenoid Valve
V-38-10	Solenoid Valve
V-38-16	Solenoid Valve
V-38-17	Solenoid Valve

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