A001

REGULATORY INFORMATION DISTRIBUTION SYSTEM

DOCKET NBR: 50-244 RE GINNA 1 DOC DATE: 781201

RECIPIENT: ZIEMANN, D.L. ACCESSION NBR: 7812050187

ORIGINATOR: WHITE, L.D. COPIES RECEIVED:

COMPANY: ROCHESTER GAS & ELEC CO LTR 3 ENCL 40

SUBJECT: SIZE: 31

Responds to 780906 NRC request for review of environ qual table for elec equip at subj facil. Forwards requested info & rev pages for initial 780224 environ qual rept. Facil does not use connectors or junction boxes.

NOTARIZED:

DISTRIBUTION CODE: A001
DISTRIBUTION TITLE:
GENERAL DISTRIBUTION FOR AFTER ISSUANCE OF OPERATING LICENSE.

NAME	ENCL?	FOR ACTION
BR CHIEF	W/7 ENCL	ORB#2 BC
REG FILE	W/ENCL	
NRC PDR	W/ENCL	
I & E	W/2 ENCL	
OELD	LTR ONLY	
HANAUER	W/ENCL	
CORE PERFORMANCE BR	W/ENCL	
AD FOR SYS & PROJ	W/ENCL	
ENGINEERING BR	W/ENCL	
REACTOR SAFETY BR	W/ENCL	
PLANT SYSTEMS BR	W/ENCL	
EEB	W/ENCL	
EFFLUENT TREAT SYS	W/ENCL	
D BRINKMAN	W/ENCL	
LPDR	W/ENCL	
TERA	W/ENCL	
NSIC	W/ENCL	
ACRS	W/16 ENCL	

TOTAL NUMBER OF COPIES REQUIRED:
LTR 40
ENCL 39

NOTES:

DEC 6 1978

MA-2

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649

LEON D. WHITE, JR.
VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

December 1, 1978

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis L. Ziemann, Chief
Operating Reactors Branch No. 2
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Environmental Qualification of Electrical Equipment
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Ziemann:

This letter is in response to your letter dated September 6, 1978 which requested that we review and complete a table prepared by the NRC Staff summarizing environmental qualification of electrical equipment at Ginna. Enclosure 1 contains the information requested completing the NRC format.

In enclosure 2, we have provided revision pages for our initial environmental qualification report, which was submitted by letter dated February 24, 1978.

In your September 6, 1978 letter, it was noted that we had not addressed connectors, splices, and junction boxes. Splices are now included in both Enclosures 1 and 2. Ginna does not utilize connectors or junction boxes in safety related circuits, therefore they do not appear in our submittals.

Should you have any additional questions, please contact us.

Very truly yours,

L.D. White, Jr.

Enclosures

Enclosure 1

Reactor: Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment Parameter	Environment Spec.	Environment Qual.	Qual. Method	Reference	
1.									
SOLENOID VALVE	1-4/4,5	O	<1	Temp.	220°F	130°F	VENDOR DATA	23	DBE- MSLB IN TURBINE
ASCO/				Pr. (Psia)	17	ATM.	EXPERIENCE.		BUILDING
V-426-9, V-4270				RH	100%	AMB.	EXPERIENCE		FAIL SAFE.
LB.8300.B61.U				Chem.	No	—	—		
V-4271, V-4272				Rad.	No	—	—	—	
LB-8300.B64.U				Sub.	No	—	—	—	
2.									
SOLENOID VALVE	1-2/6	O	SHORT	Temp.	AMB.	150°F.	VENDOR DATA	24	
COPES-VULCAN/				Pr. (Psia)	ATM.	ATM			
D-100-60				RH	AMB.	AMB.			
				Chem.	NO				
V-836A, B				Rad.	No				
				Sub.	No				
3									
SOLENOID VALVE	1-4/1	O	<1	Temp.	215°F	250°F	VENDOR DATA	25	ENCLOSED IN NEMA-2
LAURENCE/				Pr. (Psia)	16	ATM.	EXPERIENCE.		DRIP PROOF ENCLOSURE
V-3516, V-3517.				RH	100%	AMB.	EXPERIENCE		WHICH IS SUBJECTED TO
SUPPLY - 110/114W				Chem.	No	—	—		SALT WATER SPRAY QUAL-
VENT - 125/134W				Rad.	No	—	—	—	IFICATION TEST.
				Sub.	No	—	—	—	
4									
SOLENOID VALVE	1-4/6	I	SECS	Temp.	286°F	200°F	VENDOR DATA	26	FAIL SAFE. PERFORMS
VERSA/				Pr. (Psia)	25	ATM			FUNCTION WITHIN SECONDS
VSG				RH	100%	AMB.			OF START OF DBE. NOT
V-5871, V5872, V-5873				Chem.	YES	YES		27	REQUIRED WHEN ACCIDENT
V-5874, V-5875, V-5876				Rad.	1.7×10^6	No	—	—	CONDITIONS ARE ATTAINED.
				Sub.	No	—	—	—	
5a-									
LIMITORQUE	1-2/7	I	—	Temp.	286°F	320°F	TEST	18,19	
SMB-2				Pr. (Psia)	25	105	TEST	18,19	
RELIANCE				RH	100%	100%	TEST	18,19	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.6×10^6	2×10^8	TEST	18,19	
V-841, V-865				Sub.	YES	No	—	37	

Reactor: Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment Parameter	Environment Spec.	Environment Qual.	Qual. Method	Reference	
5b									
LIMITORQUE	1-2/5	O	30MIN	Temp.	AMB	120°F	VENDOR DATA	13	NOT EXPOSED TO DBE
SMB-00	1-3/8	O	24 HRS	Pr. (Psia)	ATM	ATM	EXPERIENCE		ENVIRONMENT
PEERLESS				RH	AMB	AMB	EXPERIENCE		
V-826 A,B,C,D				Chem.	No	—	—	—	
V-896 A,B				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
5c									
LIMITORQUE	1-2/4	O	SECS	Temp.	AMB	320°F	TEST	18,19	NOT EXPOSED TO DBE
SMB-00				Pr. (Psia)	ATM	105	TEST	18,19	
RELIANCE				RH	AMB	100%	TEST	18,19	
				Chem.	No	—	—	—	
V-825 A,B				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
5d									
LIMITORQUE	1-4/23	O	SECS	Temp.	215°F	320°F	TEST	18,19	DBE — TURBINE
SMB-00				Pr. (Psia)	16	105	TEST	18,19	BUILDING MSLB
RELIANCE				RH	100%	100%	TEST	18,19	
V-4007, V-4008 1A,1B				Chem.	No	YES	EVALUATION	27	
V-4027, V-4008				Rad.	No	2×10^8	TEST	18,19	
				Sub.	No	—	—	—	
5e									
LIMITORQUE	1-3/1,4,5,6	O	24 HRS	Temp.	AMB	320°F	TEST	18,19	NOT EXPOSED TO DBE
SMB-00				Pr. (Psia)	ATM	105	TEST	18,19	ENVIRONMENT
RELIANCE				RH	AMB	100	TEST	18,19	
V-850A,B, V-856, V-852A,B,C				Chem.	No	YES	EVALUATION	27	
V-860A,B,C,D				Rad.	No	2×10^8	TEST	18,19	
860A,B,C,D				Sub.	No	—	—	—	
5f									
LIMITORQUE	1-3/2	I	—	Temp.	286°F	120°F	VENDORS DATA	13	NO REQUIRED TO FUNCTION
SMB-00				Pr. (Psia)	75	ATM	EXPERIENCE		FOR DBE. NORMALLY OPEN
		I		RH	100%	AMB	EXPERIENCE		AS REQUIRED FOR S.I.
				Chem.	YES	No	—	—	FUNCTION.
				Rad.	1.7×10^6	No	—	—	
V-851 A,B				Sub.	No	No	—	—	

Reactor: Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment Parameter	Spec.	Qual.	Qual. Method	Reference	
5g									
LIMITORQUE	1-3/7	I	—	Temp.	286°F	120°F	VENDOR DATA	13	NOT REQUIRED TO OPERATE
SMB-00				Pr. (Psia)	75	ATM			FOR DBE. VALVES NORMALLY
PEERLESS				RH	100%	AMB			OPEN AS REQUIRED FOR
				Chem.	YES	—			S.I. FUNCTION.
V-878 B,D				Rad.	1.6×10^8	—			
				Sub.	YES	NO		37	
5h									
LIMITORQUE	1-3/3	I	SHORT	Temp.	286°F	320°F	TEST	18,19	
SMB-1				Pr. (Psia)	75	105	TEST	18,19	
RELIANCE				RH	100%	100%	TEST	18,19	
				Chem.	YES	YES	EVALUATION	27	
V-852 A,B				Rad.	1.6×10^8	2×10^8	TEST	18,19	
				Sub.	YES	NO		37	
6									
MOTOR, PUMP	1-2/3	O	LONG	Temp.	AMB.	120°F	SPEC	2,3	NOT EXPOSED TO DBE.
GE/				Pr. (Psia)	ATM	ATM			TO DATE PUMPS HAVE
TYPE K				RH	AMB	AMB.	—		NOT BEEN INCORPORATED
				Chem.	No	—	—	—	IN TECH SPECS
SAFW PUMP				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
7									
MOTOR, PUMP	1-1/3.4	O	LONG.	Temp.	AMB.	104°F	SPEC	15,16	NOT EXPOSED TO DBE
WESTINGHOUSE	1-2/2	O		Pr. (Psia)	ATM	ATM			
4HH TS TBDP				RH	AMB	AMB			
4HS TS TBDP				Chem.	No	—	—	—	
CONTAINMENT SPRAY, RHR,				Rad.	No	—	—	—	
COMPONENT COOLING				Sub.	No	—	—	—	
8									
MOTOR, PUMP	1-2/1	O	LONG	Temp.	220°F	104°F	SPEC	8,16	HAVE INSTALLED TOTALLY
WESTINGHOUSE				Pr. (Psia)	17	ATM	EXPERIENCE		REDUNDANT SYSTEM NOT
3QS US ABDP		?		RH	100%	AMB	EXPERIENCE		EXPOSED TO DBE
				Chem.	No	—	—	—	
AFWP				Rad.	No	—	—	—	
				Sub.	No				

Reactor:

Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment Parameter	Environment Spec.	Environment Qual.	Qual. Method	Reference	
9									
MOTOR, PUMP	1-1/2	O	LONG	Temp.	AMB	104°F	SPEC	15,16	NOT EXPOSED TO DBE
WESTINGHOUSE	1-1/5			Pr. (Psia)	ATM.	ATM.	EXPERIENCE		
50 GPM, AEDP				RH	AMB	AMB	EXPERIENCE		
600 GPM, ABDP				Chem.	No	—	—	—	
SAFETY INJECTION				Rad.	No	—	—	—	
SERVICE WATER				Sub.	No	—	—	—	
10a									
PENETRATION, ELEC	1-8/4	I	LONG	Temp.	286°F	320°F	TEST	1	
CROSS-HINDS/				Pr. (Psia)	75	105	TEST	1	
No PART #				RH	100%	100%	TEST	1	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.6×10^8	1.17×10^8	TEST	28	
				Sub.	No	—	—	—	
10b									
PENETRATION, ELEC	1-8/4	I	LONG	Temp.	286°F	340°F	TEST	29, 30	
WESTINGHOUSE				Pr. (Psia)	75	75	TEST	29, 30	
No PART #				RH	100%	100%	TEST	29, 30	
				Chem.	YES	YES	EVALUATION	29, 30	
				Rad.	1.6×10^8	2.1×10^8	TEST	29, 30	
				Sub.	No	—	—	—	
11									
TERMINAL BLOCK	1-8/5	I	LONG	Temp.	286°F	340°F	TEST	22	
WESTINGHOUSE				Pr. (Psia)	75	121	TEST	22	
542247				RH	100%	100%	TEST	22	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.6×10^8	2×10^8	TEST	22	
				Sub.	No	—	—	—	
12a									
CABLE	1-7/6	I	LONG	Temp.	286°F	318°F	TEST	18, 19	
KERITE				Pr. (Psia)	75	121	TEST	18, 19	
HT				RH	100%	100%	EVALUATION	11	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.6×10^8	2×10^8	TEST	18, 19	
				Sub.	No	—	—	—	

Reactor:

Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment: Parameter	Spec.	Qual.	Qual. Method	Reference	
12b									
CABLE	1-7/7	I	LONG	Temp.	286°F	318°F	TEST	18,19	
KERITE				Pr. (Psia)	75	121	TEST	18,19	
HT				RH	100%	100%	EVALUATION	11	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.6×10^8	2×10^8	TEST	18,19	
				Sub.	No	—	—	—	
12c									
CABLE	1-8/1	O	LONG	Temp.	220°F	318°F	TEST	18,19	
KERITE				Pr. (Psia)	17	121	TEST	18,19	
HT				RH	100%	100%	EVALUATION	11	
				Chem.	No	YES	EVALUATION	27	
				Rad.	No	2×10^8	TEST	18,19	
				Sub.	No	—	—	—	
13									
CABLE	1-7/8	I	LONG	Temp.	286	318°F	TEST	18,19	
COLEMAN CABLE				Pr. (Psia)	75	75	TEST	18,19	
ROME CABLE				RH	100%	100%	TEST	18,19	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.6×10^8	2×10^8	TEST	18,19	
				Sub.	No	—	—	—	
14									
CABLE	1-8/3	O	LONG	Temp.	220	AMB	EXPERIENCE	5,10	
COLEMAN CABLE				Pr. (Psia)	17	ATM	EXPERIENCE		
ROME CABLE				RH	100%	AMB	EXPERIENCE		
				Chem.	No	—	—	—	
				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
15a									
TRANSMITTER, LEVEL	1-6/4	O	24hr	Temp.	AMB	286	TEST	18,19	NOT EXPOSED TO DBE
FOXBORO				Pr. (Psia)	ATM	75	TEST	18,19	
611 GM-AST				RH	AMB	100%	TEST	18,19	
				Chem.	No	YES	EVALUATION	27	
				Rad.	No	8×10^4	TEST	18,19	
				Sub.	No	—	—	—	

Reactor:

Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment Parameter	Environment Spec.	Environment Qual.	Qual. Method	Reference	
15b									
TRANSMITTER, LEVEL BARTON/ 289		O	24hr	Temp.	AMB	200°F	VENDORS DATA	34	No EXPOSED TO DBE
				Pr. (Psia)	ATM.	ATM.	EXPERIENCE		
				RH	AMB	AMB.	EXPERIENCE		
				Chem.	No	—	—	—	
				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					

Reactor: Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment Parameter	Environment Spec.	Environment Qual.	Qual. Method	Reference	
16d									
TRANSMITTER, FLOW	1-5/4	I	Secs	Temp.	286	320°F	TEST	31	NEMA IV ENCLOSURE
BARTON/	2-6/1			Pr. (Psia)	75	ATM	EXPERIENCE		NOT EXPOSED TO DBE
332				RH	100%	AMB	EXPERIENCE		ENVIRONMENT WHICH RE-
				Chem.	YES	YES	EVALUATION	27	QUIRED FOR DBE.
				Rad.	1.7x10⁶	NO	—		SEE SECTION III F
				Sub.	NO	—	—	—	
16b									
TRANSMITTER, PRESS	1-6/3	O	<30MIN	Temp.	215°F	320°F	TEST	31	FOUR QESIS NOT EX-
BARTON/				Pr. (Psia)	16	ATM	EXPERIENCE		POSED TO DBE. ONE
332				RH	100%	AMB	EXPERIENCE		TWO EXPOSED TO MSLB
				Chem.	No	—	—		OUTSIDE CONTAINMENT
				Rad.	No	—	—		
				Sub.	No	—	—		
17a									
TRANSMITTER, PRESS	1-5/3	I	<30min	Temp.	286°F	286	TEST	18,19	SEE SECTION II G.
FOXBORO				Pr. (Psia)	75	75	TEST	18,19	OF SUBMITTAL
611 GM-OSI				RH	100%	100%	TEST	18,19	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.7x10⁶	3x10⁴	TEST	18,19	
				Sub.	No	—	—	—	
17b									
TRANSMITTER, PRESS	1-6/5,6	O	<30min	Temp.	215	286	TEST	18,19	EXPOSED TO MSLB
FOXBORO				Pr. (Psia)	16	75	TEST	18,19	OUTSIDE CONTAINMENT
611GM-OSI				RH	100%	100%	TEST	18,19	
				Chem.	No	YES	EVALUATION	27	
				Rad.	No	3x10⁴	TEST	18,19	
				Sub.	No	—	—	—	
18a									
TRANSMITTER, LEVEL	1-5/4	I	<30min	Temp.	286°F	318°F	SPEC	33	
FOXBORO/				Pr. (Psia)	75	105	SPEC	33	
613M-MDL MODIFIED				RH	100%	100%	SPEC	33	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.7x10⁶	3x10⁴	EVALUATION	18,19	
				Sub.	No	—	—	—	

Reactor: Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment Parameter	Spec.	Qual.	Qual. Method	Reference	
18									
TRANSMITTER, LEVEL	1-6/2	O	<30min	Temp.	AMB	318°F	SPEC	33	
FOXBORO				Pr. (Psia)	ATM.	105	SPEC	33	
613DM-MST				RH	AMB	100%	SPEC	33	
				Chem.	No	YES	EVALUATION	27	
				Rad.	No	3×10^4	EVALUATION	18,19	
				Sub.	No	No	—	—	
19									
TEMP. ELEMENT	1-5/5	I	—	Temp.	286°F	200°F	SPEC	35	NOT REQUIRED FOR
ROSEMONT/				Pr. (Psia)	75	ATM	EXPERIENCE	—	DBE
176JA				RH	100%	AMB	EXPERIENCE	—	
				Chem.	YES	YES	EVALUATION	27	
				Rad.	1.7×10^6	200 m/h	SPEC	35	
				Sub.	No	—	—	—	
20									
BATTERY	1-5/2	O	LONG	Temp.	AMB	110°F	VENDOR DATA	32	NOT EXPOSED TO DBE
GOULD/				Pr. (Psia)	ATM.	ATM.	EXPERIENCE	—	
ETA-19				RH	AMB	AMB.	EXPERIENCE	—	
				Chem.	No	—	—	—	
				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
21									
DIESEL GENERATOR	1-1/1	O	LONG	Temp.	AMB.	AMB.	EXPERIENCE	—	NOT EXPOSED TO DBE
ALCO				Pr. (Psia)	ATM	ATM	EXPERIENCE	—	
251F				RH	AMB.	AMB.	EXPERIENCE	—	
WESTINGHOUSE				Chem.	No	—	—	—	
1900 KW				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
22									
MOTOR, FAN	1-1/6	E	LONG	Temp.	286	320°F	TEST	20	
WESTINGHOUSE				Pr. (Psia)	75	95	TEST	20	
3588S-CSP		1		RH	100%	100%	TEST	20	
				Chem.	YES	YES	TEST	20	
				Rad.	1.4×10^8	2×10^8	TEST	17,18,19	
				Sub.	No	—	—	—	

Reactor

Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc	Time Needed	Environment: Parameter	Environment: Spec.	Environment: Qual.	Qual. Method	Reference	
23								12	
CIRCUIT BREAKER	I-4/7	O	SECS	Temp.	215°F	AMB	EXPERIENCE		FAIL SAFE
WESTINGHOUSE				Pr. (Psia)	16.	ATM	EXPERIENCE		
DB-50A . 1600A				RH	100%	AMB	EXPERIENCE		
				Chem.	No	—	—	—	
				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
24									
I.C CABINETS	I-5/1	O	LONG	Temp.	AMB	AMB	EXPERIENCE		NOT EXPOSED TO DBE
FOXBORO				Pr. (Psia)	ATM	ATM	EXPERIENCE		
				RH	AMB	AMB	EXPERIENCE		
				Chem.	No				
				Rad.	No				
				Sub.	No				
25									
HVAC	I-6/7	O	—	Temp.	AMB	AMB	EXPERIENCE		NOT EXPOSED TO DBE
WESTINGHOUSE/				Pr. (Psia)	ATM	ATM	EXPERIENCE		
Z-162				RH	AMB	AMB	EXPERIENCE		
STURTEVANT/				Chem.	No	—	—	—	
8015				Rad.	No	—	—	—	
				Sub.	No	—	—	—	
26									
HVAC	I-7/			Temp.	AMB	122°F	SPEC	46	
STURTEVANT				Pr. (Psia)	ATM	ATM	EXPERIENCE		
A-16208 w/WAV-40				RH	AMB	AMB	EXPERIENCE		
A-16216 w/WAV-40				Chem.	No				
				Rad.	No				
				Sub.	No				
27									
SPLICES		I	LONG	Temp.	286	350	TEST	36	
RAYCHEM				Pr. (Psia)	75	85	TEST	36	
WCSF-N		1		RH	100%	100%	TEST	36	
(PRESSURIZER)				Chem.	YES	YES	TEST	36	
				Rad.	1.6×10^8	2×10^8	TEST	36	
				Sub.	No	—	—	—	

Reactor:

Systematic Evaluation Program

Equipment Type	SEP Submittal Reference	Loc.	Time Needed	Environment Parameter	Environment Spec.	Environment Qual.	Qual. Method	Reference	
28									
SPLICES		I	LONG	Temp.	286°F	350°F	TEST	36	PRESENTLY UNDER TEST
RAYCHEM				Pr. (Psia)	75	85	TEST	36	
WCSF-N				RH	100%	100%	TEST	36	
(FAN COOLERS)				Chem.	YES	YES	TEST	36	
				Rad.	1.6x10^8	2x10^8	TEST	36	
				Sub.	No	—	—	—	
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					
				Temp.					
				Pr. (Psia)					
				RH					
				Chem.					
				Rad.					
				Sub.					

Enclosure 2

The report regarding environmental qualification of electrical equipment which was submitted by letter dated February 24, 1978, for L. D. White, Jr., Rochester Gas and Electric Corporation to Mr. A. Schwencer, Chief, Operating Reactors Branch No. 1 should be revised as follows:

DELETE	ADD
-	Title Page
-	Table of Contents
-	List of Figures
-	List of Tables
26	26
27	27
28	28
29	29
Table 3 (all pages)	Table 3 (all pages)

Environmental Qualification of Electrical Equipment

R.E. Ginna Nuclear Power Plant
Docket No. 50-244

February 24, 1978

Rev. 1, December 1, 1978

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

The highest credible temperature that this type cable could be exposed to would be a 220°F temperature associated with a DBE in the turbine building. Thus, a failure of this type control cable is unlikely.

Instrumentation cable outside containment for all low level analog signals was supplied by Rome Cable Company, with "Synthenol" insulation covered with glass braid with an overall synthenol jacket. Test reports verify that this cable was heat aged for a temperature of 248°F for 168 hours and the jacket heat aged at 212°F for 120 hours. This cable is not required for safe shutdown of the plant during a MSLB accident in the Intermediate Building. The safety related instrumentation cable used inside containment was supplied by Coleman Cable and Wire Company. The insulation is silicone rubber with glass jacketing. Silicone rubber insulated cable was qualified for LOCA conditions as described in WCAP 7410-L.

K. Reactor Coolant System Temperature Detectors

The reactor coolant system temperature detectors (RTD) are not required for a loss of coolant accident. In a steam line break accident, low Tave plus high steam flow plus a safety injection signal will close the main steam line isolation valves. As described in Section IV.C above, for a break upstream of the non-return check valves, which includes all breaks inside containment, closure of the main steam isolation valves is not required.

For breaks downstream of the check valves, closure of the main steam isolation valves is required, however, in this case the RTDs are not subjected to an adverse environment. Therefore, the RTDs do not require environmental qualification to provide their required safety function.

L. Safety Related Cable Splices Subject to LOCA and MSLB Effects

Cable for the safety related pressurizer instrumentation, the core deluge valves, MOV 852 A and B, and the 480V power cable for the fan coolers utilizes Raychem Thermofit, WCSF-N, heat shrink sleeves on the splices subject to LOCA and MSLB effects. These sleeves have been qualified in tests which exceed the worst case Ginna accident environments. Refer to Franklin Institute Research Laboratories Test Report F-C4033-3. This report has been submitted to the NRC by Raychem Corporation.

M. Aging of Equipment Prior to Qualification Testing

Electrical equipment in general consists of components and materials with widely diverse physical properties. When establishing the design lifetime for such equipment, a program for accelerated aging is appropriate only when there is sufficient empirical data or a well understood aging mechanism upon which to base a quanti-

tative estimate. Such bases exist for thermally accelerated aging of motor and cable insulation. When electronic components are involved, such as in transmitters, no such bases exist and accelerated aging is not appropriate. This type of equipment normally exhibits a failure rate of the "bathtub curve" type. That is a period of relatively high failure rate early in life, "infant mortality", followed by a long period of low, constant, random failure rate, which finally terminates at what might be called the "end of design life", characterized by a very rapidly increasing failure rate.

The objective of aging is to put samples in a condition equivalent to the end-of-life condition. When the equipment or component is of the first type described above, this objective is met by a period of thermal aging, which, based on the data available, can be shown to be equivalent to the design lifetime under normal operation conditions. qualification tests for motor and cable insulation used in the Ginna Nuclear Plant were conducted using this approach as described in references.

For equipment of the second type there is a large amount of evidence to indicate that after an initial "burn in", sufficient to eliminate components which will be subject to "infant mortality", the failure mechanisms are truly random. That is, the probability of failure, per unit time, is low and constant, and most importantly there is no particular predominant failure mechanism.

Under these conditions there is no coupling between the design basis event for which the equipment is to be qualified and the age of the equipment. For such equipment, the "end-of-life condition" is identical with the condition immediately after "burn in". At the Ginna Nuclear Plant the period of operation of such equipment has been long enough to assure that "burn in" has been accomplished. In addition periodic testing and maintenance assures that any equipment degradation is detected and thoroughly investigated for corrective action.

V. CONCLUSIONS

It has been determined that the facility will adequately respond to the design basis events as presented in this report and is acceptable for continued operation.

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
1. Mechanical				
1A, 1B Diesel Generators and Auxiliaries	Area #4 Elev. 253'	Diesel: ALCO 251F Generator: Westinghouse 1900 KW	*110°F Atm Amb 40C Max. Amb. 70C Rise	Not exposed to DBE Environment Gilbert Spec RO-2239 DEMA Standard Vendor Data
1A, 1B, 1C Safety Injection Pumps	Area #2 Elev. 236'	Pump: Worthington 3-WTS-811 Motor: Westinghouse 509-US AFDP, Thermal Epoxy	104°F Atm Amb 40F Max. Amb. 80C Rise	Not exposed to DBE Environment Westinghouse Spec 676370 & 676427
1A, 1B Containment Spray Pumps	Area #2 Elev. 236'	Pump: Ingersoll Rand 4x11A Motor: Westinghouse 444TS TBDP, Class B Insul	104°F Atm Amb 40C Max. Amb. 80C Rise	Not Exposed to DBE Environment Westinghouse Spec 676370 & 676427
1A, 1B Residual Heat Removal Pumps	Area #2 Elev. 219'	Pump: Pacific SVC-6L Motor: Westinghouse 445TS TBDP, Class B Insul	104°F Atm Amb 40C Max.Amb. 80C Rise	Not Exposed to DBE Environment Westinghouse Spec 676370 & 676427
1A, 1B, 1C, 1D Service Water Pumps	Area #5 Elev. 253'	Pump: Worthington 20H-500-WZ Motor: Westinghouse 509-UPH ABDP, Class F Insul	104°F Atm Amb 40C Max.Amb. 105C Rise	Not Exposed to DBE Environment Westinghouse Spec 676370 & 676427
1A, 1B, 1C, 1D Containment Recirc. Units	Area #1 Elev. 252'	Fan: Sturtevant 8530-D Motor: Westinghouse 588.5-CSP, Thermal Epoxy	80 psig, 320F 2×10^8 RADS, 100% RH	WCAP-7343-June, 1969 WCAP-7410-L-Vol. II WCAP-7744-Vol. II WCAP-9003-January, 196

*ATM - Atmospheric Pressure, AMB - Ambient Relative Humidity

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
1. Mechanical Cont'd				
1A, 1B Motor Driven Auxiliary Feedwater Pumps	Area #3 Elev. 253'	Pump: Worthington 2-WTF-87 Motor: Westinghouse 505-US ABDP, Thermal Epoxy	104°F Atm Amb 40C Max.Amb. 80C Rise	Gilbert Spec RO-2267 Westinghouse Spec 676427 See Text, Section [illegible]-A
1A, 1B Component Cooling Water Pumps	Area #2 Elev. 272'	Pump: Ingersoll Rand 8SD Motor: Westinghouse 444TS TBDP, Class B Insul	104°F Atm Amb 40C Max.Amb. 80C Rise	Not Exposed to DBE Environment Westinghouse Spec 676370 & 676427
1C, 1D Standby Auxiliary Feedwater Pumps	Area #6 Elev. 272'	Pump: Ingersoll Rand Motor: General Electric Type K Class B Insul	120°F Atm Amb 50C Max.Amb. 80C Rise	Not Exposed to DBE Environment Gilbert Spec 520 & 711
2. Valves				
MOV 825A, B Safety Injection Suction from RWST	Area #2 Elev. 236'	Limitorque Smb-00 Reliance, Class B Insul	90 psig, 320F 2×10^8 RADS 100% RH	Not Exposed to DBE Environment WCAP 7410-L Vol. I WCAP 7744 Volume I
MOV 826A,B,C,D Safety Injection Suction from BAST	Area #2 Elev. 253'	Limitorque Smb-00 Peerless, Class B Insul	120°F Atm Amb	Not Exposed to DBE Environment Westinghouse Spec 676258
AOV 836A,B NaOH Addition to CS Pumps Discharge	Area #2 Elev. 236'	Copes Vulcan D-100-60	150°F Atm Amb	Not Exposed to DBE Environment Westinghouse Spec 676270 Vendor Data

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
2. Valves Cont'd				
MOV 841, 865 Accumulator Discharge Valves	Area #1 Elev. 236'	Limitorque Smb-2 Reliance, Class B Insul	90 psig, 320°F $2x10^8$ RADS 100% RH	WCAP 7410-L Vol. I WCAP 7744 Volume I WCAP 7153, June 16, 1975 Letter to Purple from White
MOV 850A,B Containment Sump B Isolation Valves	Area #1 Elev. 219'	Limitorque Smb-00 Reliance, Class B Insul	90 psig, 320°F $2x10^8$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153
MOV 851A,B RHR Pump Suction From Sump B	Area #2 Elev. 230'	Limitorque Smb-00 Limitorque, Class B Insul	120°F Atm Amb	Westinghouse Spec 676258
MOV 852A,B RHR Core Deluge Valves	Area #1 Elev. 236'	Limitorque Smb-1 Reliance, Class B Insul	90 psig, 320°F $2x10^8$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153 June 16, 1975 Letter to Purple from White
MOV 856 RWST to RHR Pumps Suction	Area #2 Elev. 236'	Limitorque Smb-00 Reliance, Class B Insul	90 psig, 320°F $2x10^8$ RADS, 100% RH	Not Exposed to DBE Environment WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153
MOV 857A,B,C RHR Pump Discharge to SI and CS Pumps	Area #2 Elev. 236	Limitorque Smb-00 Reliance, Class B Insul	90 psig, 320°F $2x10^8$ RADS, 100% RH	Not Exposed to DBE Environment WCAP 7410-L Volume I WCAP 7410 Volume I WCAP 7153

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
2. Valves Cont'd				
MOV 860A,B,C,D CS Pumps Discharge Valves	Area #2 Elev. 236'	Limitorque Smb-00 Reliance, Class B Insul	90 psig, 320°F $2x10^8$ RADS, 100% RH	Not Exposed to DBE Environment WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153
MOV 878B,D High Head SI to RCS Cold Legs	Area #1 Elev. 236'	Limitorque Smb-00 Peerless, Class B Insul	120°F Atm Amb	Westinghouse Spec 676258 See Text, Section IV-B
MOV 896A,B RWST Isolation Valves	Area #2 Elev. 236'	Limitorque Smb-00 Peerless, Class B Insul	120F Max.Amb.	Not Exposed to DBE Environment Westinghouse Spec 676258
AOV 3516, 3517 Main Steam Isolation Valves	Area #3 Elev. 278'	Valve: Attwood Morrill Operator: Chicago Fluid Power A3I	-	See Text, Section IV-C
		Solenoids: Laurence 110114W, 125434W	250°F, Atm Amb	Vendor Data
MOV 4007, 4008 1A, 1B MDAFW Pumps Discharge Valve	Area #3 Elev. 253'	Limitorque Smb-00 Reliance, Class B Insul	90 psig, 320°F $2x10^8$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153
MOV 4027, 4028 SW Supply Valve to MDAFW Pumps	Area #3 Elev. 253'	Limitorque Smb-00 Reliance Class B Insul	90 psig, 320°F $2x10^8$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153
AOV 4269, 4270 Main Feedwater Control Valves	Area #7 Elev. 272'	Operator: Fisher 473-1-4-5	-	See Text, Section IV-D
		Solenoids: ASCO-LD830061U	130°F, Atm Amb	Vendor Data

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
2. Valves Cont'd				
AOV 4271, 4272 Main Feedwater Bypass Valves	Area #7 Elev. 272'	Operator: Copes Vulcan D-100-160	-	See Text, Section IV-D
		Solenoids: ASCO LB8300B64BU	130°F, Atm Amb	Vendor Data
AOV 5871, 5872, 5873 AOV 5874, 5875, 5876	Area #1 Elev. 248'	Operator: Henry Pratt RIA Solenoids: VERSA VSG	- 200°F, Atm Amb	See Text, Section -E Vendor Data, WCAP 7153
3. Electrical				
The controls, power, and protection circuitry for mechanical equipment previously listed as well as:				
Reactor Trip Breakers	Area #3 Elev. 253'	Westinghouse DB-50 1600A Frame	-	NEMA Standard SG-3
Reactor Instrumentation and Control Cabinets	Area #8 Elev.	Foxboro	FSAR Section 9.9	Not Exposed to DBE Environment See Text, Section III-I
1A, 1B Batteries	Area #8 Elev. 253'	Gould FTA-19	110°F Atm Amb	Not Exposed to DBE Environment Gilbert Spec RO-2400 Gould Instruction Manu
4. Instrumentation				
Pressurizer Pressure PT 429, 430, 431, 449	Area #1 Elev. 236'	Foxboro 611GM-DSI	60 psig, 286°F $3x10^4$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I See Text, Section IV-G WCAP 7153

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
4. Instrumentation (Cont'd)				
Pressurizer Level	Area #1 Elev. 236'	Foxboro 613M-MDL Modified	318°F, 90 psig $3x10^4$ Rads, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I See Text, Section IV-H WCAP 7153 Westinghouse Spec Sht
Reactor Coolant System Loop Temperature Elements TE 401A,B, 402A,B, 403A,B 404A,B, 405A,B, 406A,B 407A,B, 408A,B, 409A,B 410A,B	Area #1 Elev. 247'	Rosemount Engineering Company 176JA	200°F, Atm Amg	See Text, Section IV- Vendor Spec WCAP 7153
A Steam Line Flow FT 464, 465	Area #1 Elev. 278'	Barton 332, NEMA IV Enclosure	320°F, Atm Amb	See Text, Section IV- WCAP 7354-L WCAP 7153
B Steam Line Flow FT 474, 475	Area #1 Elev. 278'	Barton 332, NEMA IV Enclosure	320°F, Atm Amb	See Text, Section IV-F WCAP 7354-L WCAP 7153
BAST Level LT 102, 106, 171, 172	Area #2 Elev. 272'	Foxboro 631DM-MSI	318°F, 90 psig $3x10^4$ RADS, 100% RH	Not Exposed to DBE Environment WCAP 7153 Westinghouse Spec Sht
Containment Vessel Pressure PT 945, 946, 947, PT 948. 949, 950	Area #3 Elev. 253'	Barton 332, NEMA IV Enclosure	320°F, Atm Amb	Not Exposed to Contain ment DBE Environment WCAP 7354-L
RWST Level LT 920	Area #2 Elev. 236'	920: Foxboro 611GM-ASI	$3x10^4$ RADS, 100% RH 60 psig, 286°F	Not Exposed to DBE Environment WCAP 7410-L Volume I WCAP 7744 Volume I

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
4. Instrumentation Cont'd				
LIC 921		921: Barton 289	200°F, Atm Amb	Vendor Data
A Steam Line Pressure PT 468, 469, 482	Area #3 Elev. 253'	Foxboro 611GM-DSI	60 psig, 286°F $3x10^4$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153
B Steam Line Pressure PT 478, 479, 483	Area #3 Elev. 253'	Foxboro 611GM-DSI	60 psig, 286°F $3x10^4$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I WCAP 7153
5. HVAC Systems				
Control Building Air Conditioning & Chilled Water System	Area #8 Elev. 253'	Air Handling Unit: Westinghouse Z162 Return Fan: Sturtevant 8015 A-16208 W/WAV-40 Emergency Fan: Sturtevant 8015 A-16216 W/WAV-40	122°F, Atm Amb	Not Exposed to DBE Environment Gilbert Spec 5201 Gilbert Spec 5542
RHR Pump Cooling System	Area #2 Elev. 236'	Sturtevant A-16208 with WAV-4D Coil 2HP Motor, Class A Insulation	122°F Max.Amb. 40°C Max.Amb. 40°C Rise	Not Exposed to DBE Environment Gilbert Spec 5342 5201
SI/CS Pump Cooling System	Area #2 Elev. 236'	Sturtevant A-16216 with WAVF-4D Coil 3 HP Motor, Class A Insulation	122°F Max.Amb. 40°C Max.Amb. 40°C Rise	Not Exposed to DBE Environment Gilbert Spec 5342,5201
6. Miscellaneous Equipment				
Residual Heat Removal System	Area #2	N/A	-	Not Exposed to DBE Environment
Service Water System	Area #2,3	N/A	-	Not Exposed to DBE Environment

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
6. Miscellaneous Equipment Cont'd				
Component Cooling Water System	Area #2	N/A	-	Not Exposed to DBE Environment
7. Cables-Safeguard Circuits				
Power Circuits	Area #1 *	Kerite HT Insulation FR Jacket	60 psig, 318°F $2x10^8$ RADS, 100% RH	Kerite Memo 7/22/68 WCAP 7410-L Volume I WCAP 7744 Volume I Gilbert Spec 5313, WCAP 7153
Control Circuits	Area #1 *	Kerite HT Insulation FR Jacket	60 psig, 318°F $2x10^8$ RADS, 100% RH	Kerite Momo 7/22/68 WCAP 7410-L Volume I WCAP 7744 Volume I Gilbert Spec 5314, WCAP 7153
Instrumentation Circuits	Area #1 *	Coleman Cable Silicone Rubber Insulation Glass Braid Jacket Aluminum Mylar Shield	60 psig, 287°F $2x10^8$ RADS, 100% RH	WCAP 7410-L Volume I WCAP 7744 Volume I IPCEA S-19-81-P-3.17 P 5.2 WCAP 7153
Power Circuits	All Areas except #1	Kerite HT Insulation FR Jacket	60 psig, 318F $2x10^8$ RADS	Kerite Mome 7/22/6 WCAP 7410-L Volume I WCAP 7744 Volume I Gilbert Spec 5312 WCAP 7153

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
7. Cables-Safeguard Circuits Cont'd				
Control Circuits	All Areas except #1	General Cable PVC Insulation Glass Braid Jacket with overall Jacket	Rated for continuous operation at 75°C (167°F)	Gilbert Spec 5315 IPCEA Standard S-61-402 Section 3.8
Instrumentation Circuits	All Areas except #1	Rome Cable & Coleman Cable PVC Insulation Glass Braic Jacket with overall PVC Jacket	Rated for continuous operation at 75° (167°F)	Gilbert Spec 5324 IPCEA Standard S-61-402 Section 3.8
8. Penetrations				
Electrical	Area #1	Crouse Hinds	90 psig, 320°F 1.17×10^8 RADS, 100% RH	WCAP 7153, Letter White to Ziemann 5/21/78 NRP Penetration Steam Incident Test Report, Crouse Hinds Westinghouse letter to CPL CPL-77-550 11/29/7
	Westinghouse:		60 psig, 340°F 100% RH, 2.1×10^8 RADS	WCAP 7153 Gilbert Spec 504 Westinghouse Penetra. Proposal Sept. 4, 1974
9. Terminations				
Terminal Blocks	Area #1	Westinghouse: 542247	106 psig, 340°F 2×10^8 RADS, 100% RH	See Text, Section IV-1 Westinghouse letter to E.E. Hoellen from A.P. Colaiaco, Manager of Swgr Developments, WCAP 7153

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED ELECTRICAL EQUIPMENT

TABLE 3

EQUIPMENT	LOCATION*	VENDOR & MODEL	QUALIFICATION DESIGN PARAMETERS	QUALIFICATION PROCEDURES/ DOCUMENTATION
10. Splices				
	Area #1	Raychem WCSF-N	350°F, 70 psig 2×10^8 RADS, 100% RH	Some Typical Splices are Presently Under Test

*For Location Drawing See Figure 3.