WCAP 8587

"Equipment Qualification Data Packages"

Supplement 1

EQDP-ESE-4

Differential Pressure Transmitters: Qualification Group B

Revision 6

Instruction Sheet

The following instructional information and checklist is being furnished to help insert the following into WCAP-8587 Supplement 1 EQDP-ESE-4 Class 3 (Non-Proprietary). Discard the old sheet and insert the new sheets as listed below. Revised information is indicated by a bar and number 6 on the outside margin of the page.

Remove (Front/Back)	Insert (Front/Back)
Cover sheet/ / /	Cover sheet/ NRC Letter/NRC Letter Table 1/Table 1
page 2/3	page 2/3
4/5	4/5
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EQDP-ESE-4 Rev. 6 3/83

EQUIPMENT QUALIFICATION DATA PACKAGE

This document contains information, relative to the qualification of the equipment identified below in accordance with the methodology of WCAP-8587. The Specification section (Section 1) defines the assumed limits for the equipment qualification and constitute interface requirements to the user.

Differential Pressure Transmitters: Qualification Group B

**** THIS SOCUMENT HAS BEEN **** REVIEWED AND ACCEPTED BY THE NRC IN ACCORDANCE WITH WCAP 8587 "METHODOLOGY", REVISION 6

ados APPROVED :

D-E, P. Rahe, Manager Nuclear Safety Department

WESTINGHOUSE ELECTRIC CORPORATION NUCLEAR ENERGY SYSTEMS P.O. BOX 355 PITTSBURGH, PENNSYLVANIA 15230



UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D. C. 20555

NOV 1 0 1983

Mr. E. P. Rahe, Jr., Manager Nuclear Safety Department Westinghouse Electric Corporation P. O. Box 355 Pittsburgh, Pennsylvania 15230

Dear Mr. Rahe:

Subject: Acceptance for Referencing of Licensing Topical Reports WCAP-8587, Revision 6 (NP), "Methodology for Qualifying Westinghouse WRD Supplied NSSS Safety Related Electrical Equipment," and WCAP-9714 (P)/9750 (NP), "Methodology for the Seismic Qualification of Westinghouse WRD Supplied Equipment"

We have completed our review of the subject topical reports submitted by Westinghouse Electric Corporation. We find these reports are acceptable for referencing in license applications to the extent specified and under the limitations described in the attached Safety Evaluation Report (SER). The SER defines the bases for acceptance of these reports.

The topical reports accepted for referencing are WCAP-8587, Revision 6 (NP), "Methodology for Qualifying Westinghouse WRD Supplied NSSS Safety Related Electrical Equipment" and WCAP-9714 (P)/9750 (NP), "Methodology for the Seismic Qualification of Westinghouse WRD Supplied Equipment." In addition, numerous equipment-specific non-proprietary Equipment Qualification Data Packages (EQDPs) and proprietary Equipment Qualification Test Reports (EQTRs) have been reviewed and accepted. Table 1 gives a complete list of all of the reports reviewed and accepted and their submittal dates.

The EQDPs and EQTRs have been reviewed and accepted by the staff according to the methodologies in WCAP-8587, Revision 6 (NP) and WCAP-9714 (P), respectively. The EQDPs and EQTRs have unique equipment-specific alphanumeric numbering systems. In order to differentiate the accepted EQDPs and EQTRs from those under review, Westinghouse is requested to mark the cover sheet of the accepted EQDPs and EQTRs with the statement "Accepted for Referencing in Licensing Actions Based on Conformance with WCAP-8587, Revision 5-A (NP), and WCAP-9714 A (P)/9750 A (NP).

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The accepted EQCPs go into Supplement 1 of WCAP-8587 which is the receptacle for non-proprietary data packages, and the accepted EQTRs go into Supplement 2 of WCAP-8687. (The Westinghouse Topical Report identification number WCAP-8687 is designated as a receptacle for the proprietary accepted EQTRs).

Since the Westinghouse qualification program is an expansive program, additional reviews of equipment-specific documents will be necessary in the future. Oue to the physical size of the SERs related to these reviews, it is not practical to incorporate the SER in the front of each of the EQTRs and EQDPs. Therefore, Westinghouse is requested to publish Supplement 2 to WCAP-8587, which will be the receptical for NRC acceptance letters, associated Safety Evaluation Reports, and lists of accepted documents. A copy of this acceptance letter should be published and incorporated within the first few pages of each accepted EQDP and EQTR.

When an accepted document appears as a reference in license applications, we do not intend to repeat our review of the matters described therein and found acceptable except to assure that the material presented is applicable to the specific plant involved. Our acceptance applies only to the matters described in each accepted report.

In accordance with procedures established in NUREG-0390, it is requested that Westinghouse publish accepted versions of these reports, proprietary and nonproprietary as outlined below and within three months of receipt of this letter.

The accepted varsions of WCAP-8587 (NP), Revision 6 and WCAP-9714 (P)/9750 (NP) should incorporate this letter between the title page and the abstract. The accepted versions of the above mentioned WCAPs shall include a -A (designating accepted) following the report identification symbol.

Should our criteria or regulations change such that our conclusions as to the acceptability are invalidated, Westinghouse and/or the applicants referencing the subject documents will be expected to revise and resubmit their respective documentation, or submit justification for the continued effective applicability of the documents without revision of their respective documentation.

Sincerely,

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Cecil O. Thomas, Chief Standardization & Special Projects Branch Division of Licensing

Enclosures: 1. List of Accepted Documents 2. Safety Evaluation Report







ENCLOSURE 1



Equipment Description

WCAP-8587, Methodology

WCAP-9714/9750

Medium Pump Motors

Large Motors

Canned Motors

Pressure Transmitters Group A

Pressure Transmitters Group B

DP Transmitters Group A

DP Transmitters Croup B

RTD's-RCS Bypass Manifold

RTD's Well Mounted

RTD's - Fast Response

Nuclear Instrumentation

Indicators

Recorders

Reports Accepted by NRC

TABLE 1

Methodology for Qualifying Westinghouse WRD Supplied NSSS Safety Related Electrical Equipment, Revision 6

Methodology for the Seismic Qualification of Westinghouse WRD Supplied Equipment, May 1980

EQDP-AE-1 EQTR-A01A	Revision Revision	42
EQDP-AE-2 EQTR-A02A	Revision Revision	52
EQDP-AE-3 EQTR-A03A	Revision Revision	53

EODP-ESE-1A EOTR-EO1A EODP-ESE-1B EOTR-EO1B

EODP-ESE-2 EOTR-EO2A EOTR-EO2B

EODP-ESE-3A EOTR-EO3A EODP-ESE-38 EOTR-EC3B

EODP-ESE-4 EOTR-EO4A EOTR-EO4B

EODP-ESE-5 EOTR-F05A

EQDP-ESE-6 EOTR-EO6A

EODP-ESE-7 EQTR-E07A

EODP-ESE-10 EOTR-E10A

EODP-ESE-14 EQTR-E14A

EODP-ESE-15 EOTR-E15A

Revision 3

Revision 4 (Barton) Revision 2 (Barton) Revision 1 (Veritrak) Revision 1 (Veritrak)

Revision 5 Revision 2 (Barton) Revision 2 (Veritrak)

Revision 4 (Barton) Revision 2 (Barton) Revision 1 (Veritrak) Revision 1 (Veritrak)

Revision 6 Revision 2 (Barton) Revision 3 (Veritrak)

Revision 4 Revision 2

Revision 5 Revision 3

Revision 5 Revision 3

Revision 5 Revision 2

Revision 4 **Revision** 2

Revision 4 Revision 1



TABLE 1 (Cont'd)

Equipment Description	NRC Revision Acc	epted				
Solid State Protection System	EQDP-ESE-16 EQTR-E16A EQTR-E16B EQTR-E16C	Revision 5 Revision 2 Revision 2 Revision 0				
SSPS - 3 Train	EQDP-ESE-17 EQTR-E17A EQTR-E17B	Revision 3 Revision 0 Revision 0				
Static Inverter	EQDP-ESE-18 EQTR-E18A	Revision 5 Revision 1				
Instrument Bus Distribution Panels	EQDP-ESE19 EQTR-E19A	Revision 4 Revision 1				
Pressure Sensor	EQDP-ESE-21 EQTR-E21A	Revision 4 Revision 2				
Power Range 4-Section Excore Detector	EQDP-ESE-22 EQTR-E22A	Revision 4 Revision 2				
Solenoid Valves (One Report)	EQDP-HE2/HE5 EQTR-HO2A/HO5A	Revision 4 Revision 2				
Limit Switch (One Report)	EQDP-HE3/HE6 EQTR-HO3A/HO6A	Revision 4 Revision 2				
Motor Operators	EQDP-HE4 EOTR-HO4A	Revision 4 Revision 2				

SECTION 1 - SPECIFICATIONS

1.0 PERFORMANCE SPECIFICATIONS

- 1.1 Electrical Requirements
 - 1.1.1 Voltage: 40 VDC + 1V
 - 1.1.2 Frequency: N/A
 - 1.1.3 Load: 4 20 ma

1.1.4 Electromagnetic Interference: None

1.1.5 Other: None

- 1.2 Installation Requirements: Mounted as per References 1 and 3.
- 1.3 Auxiliary Devices: Pressure Sensors (included in the Barton test program) and Containment Pressure Sensor(EQDP-ESE-21)
- 1.4 Preventative Maintenance Schedule: Per the Westinghouse Equipment Qualification test program, no preventive maintenance is required to support the equipment qualified life. This does not preclude development of a preventive maintenance program designed to enhance equipment performance and identify unanticipated equipment degradation as long as this program does not compromise the qualification status of the equipment. Surveillance activities may also be considered to support the basis for/and a possible extension of the qualified life.

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1.5 Design Life: 40 years

1.6 Operating Cycles (expected number of cycles during design life, including test): Continuous duty.

				Containment	DI	SE Condit	ions ^(a)	Post Di	BE Conditions	a)
	Parameter	Normal Conditions	Abnormal Conditions	Test Conditions	FLB/SLB	LOCA	Seismic	FLB/SLB	LOCA	Seismic
1.7.1	Time requirement	Continuous	Included under normal	N/A	Event Duration	Event Dura- tion	Event Dura- tion	Continuous	Continuous	Continuou
1.7.2	Performance (c) requirement	<u>+</u> 1 1 Sec			+1 1 Sec	<u>+1</u> 1 Sec	Note d	* 1 1 Sec	<u>+ 1</u> 1 Sec	$\frac{1}{1}$ Sec
.8 Envi	ronmental Conditions	for Same Funct	ion ^(b)							
1.8.1	Temperature (°F)	50 - 120	Included under normal		Ambient Condi- tions	Am- bient Condi- tions	Ambient Condi- tions	Ambient Conditions	Ambient Conditions	Ambient Condition
1.8.2	Pressure (psig)	0								
1.8.3	Humidity (RH)	0 - 95								
1.8.4	Radiation (R)	<\$00								
1.8.5	Chemicals	Mone								
1.8.6	Vibration	None								
1.8.7	Acceleration (g)	None					Figure 1			
otes:	(a) DBE is the De	esign Basis Ever	nt ne parameters spe	cified in this	section					
	(c) Reference acc	curacy and time	response for sys	tem, including	sensor and	tydrauli	c isolator	, specified.		

(d) Continued operation required, no specified accuracy

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1.7 Performance Requirements for^(b): Boric Acid Tunk Level, Condensate Storage Tank Level, Refueling Water Storage Tank Level

				Containment	DB	E Conditi	ons(a)	Post D	BE Conditions	a)
		Macana	Abnormal	Test						
	Parameter	Conditions	Conditions	Conditions	FLB/SLB	LOCA	Seismic	FLB/SLB	LOCA	Seismic
1.7.1	Time requirement	Continuous	Included under normal	N/A	Event Duration	Event Dura.	E vent Duration	Continuous	Continuous	Continuous
1.7.2	Performance (c)	± 1%			<u>+</u> 1%	<u>+</u> 1%	Note d	<u>•</u> 1%	<u>*</u> 1%	<u>+</u> 1%
	requirement	1 Sec			1 Sec	1 Sec		1 Sec	1 Sec	1 Sec
1.8 Envi	conmental Conditions	for Same Funct	ion ^(b)							
1.8.1	Temperature (°F)	50 - 120	Included under normal		Ambient Conds.	Ambient Conds.	Ambient Conds.	Ambient Conditions	Ambient Conditions	Ambient Conditions
1.8.2	Pressure (psig)	0								
1.8.3	Humidity (% RH)	0 - 95								
1.8.4	Radiation (R)	<400								
1.8.5	Chemicals	None								
1.8.6	Vibration	None								
1.8.7	Acceleration (g)	None					Figure 1			
Notes:	(a) DBE is the De(b) Margin is not	sign Basis Even included in th	t e parameters spec	ified in this	section					
	(c) Reference acc	uracy and time	response for syst	tem including p	ressure sen	sor speci	fied			

(d) Continued operation required, no specified accuracy

1.7 Performance Requirements for (b): Containment Pressure

		Normal Abnormal		Containment Abnormal Test			ons ^(a)	Post DBE Conditions ^(a)			
	Parameter	Conditions	Conditions	Conditions	FLB/SLB	LOCA	Seismic	FLB/SLB	LOCA	Seismic	
1.7.1	Time requirement	Continuous	Included under normal	N/A	<5 min	<5 min	Event Duration	Continuous	Continuous	Continuous	
1.7.2	Performance (c) requirement	+ 1.0% 1 Sec			+ 1% 1 Sec	+ 1% 1 Sec	+ 10% 1 Sec	+ 1% 10 Sec	+ 1% 10 Sec	+ 1 [%] 1 Sec	
l.8 Envir	conmental conditions	for Same Funct	ion(b)	•							
1.8.1	Temperature (°F)	50 - 120	Included under normal		Ambient Condi- tions	Ambient Condi- tions	Ambient Condi- tions	Ambient Conditions	Ambient Conditions	Ambient Conditions	
1.8.2	Pressure (psig)	0									
1.8.3	Humidity (% RH)	0 - 95									
1.8.4	Radiation (R)	<400									
1.8.5	Chemicals	None									
1.8.6	Vibration	None									
1.8.7	Acceleration (g)	None					.e 1				
Notes:	(a) DBE is the De(b) Margins are n(c) Reference area	esign Basis Even	t the parameters in	n this section	contairmor	t process	a cancor	FODD F (F . 21)			

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1.9 Qualified Life: The Westinghouse Aging Evaluation Program has demonstrated a qualified life of five (5) years. The qualified life due to radiation service is dependent on the location of the transmitter (Example: 10⁴R/year yields a 10 year qualified life). Also see Table 1.

1.10 Remarks: None

SECTION 2 - QUALIFICATION BY TEST

2.0 TEST PLAN

2.1 Equipment Description: Barton and Veritrak Differential Pressure Transmitters (See Section 2.10.2)

2.2 Number Tested: Four (4) Barton units Six (6) Veritrak units

2.3 Mounting: As described in References 1 and 3.

2.4 Connections: a) Electrical Connections, Two Wires,b) Process Connections, Capillary Tube

2.5 Aging Simulation Procedure

By a separate component test program as described by Subprogram C of Appendix B to WCAP-8587

			Required	Not •Required
2.7.5	Category	V - Electrical		
	Characte	ristics		
	2.7.5.1	Insulation Resistance		A,B
	2.7.5.2	Output Voltage		Α,Β
	2.7.5.3	Output Current	А, В	
	2.7.5.4	Output Power		А, В
	2.7.5.5	Response Time	А	В
	2.7.5.6	Frequency Characteristics		Α,Β
	2.7.5.7	Simulated Load		А,В
2.7.6	Category	VI - Mechanical		
	Characte	ristics		
	2.7.6.1	Thrust		A,B
	2.7.6.2	Torque		А,В
	2.7.6.3	Time		A,B
	2.7.6.4	Load Profile		Α,Β
2.7.7	úategory	VII - Auxiliary Equipment		

None

A: Operational Test, Normal and Abnormal Conditions

B: Seismic Testing

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2.8 Test Sequence Preferred

This section identifies the preferred test sequence as specified in IEEE-323-74.

- 2.8.1 Inspection of Test Item
- 2.8.2 Operation (Normal Condition)
- 2.8.3 Operation (Performance Specifications Extremes, Section 1)
- 2.8.4 Simulated Aging
- 2.8.5 Vibration
- 2.8.6 Operation (Simulated High Energy Line Break Conditions)
- 2.8.7 Operation (Simulated Post HELB Conditions)
- 2.8.8 Inspection

2.9 Test Sequence Actual

This section identifies the actual test sequence(s) which, in total, constitutes the overall qualification program for this equipment. The separate subsections indicate the separate test sequences completed on differing, but essentially identical, equipment and/or components. Ninety five percent humidity, noise rejection and response time testing has been successfully performed via type testing. Auditible results for all tests are maintained by \underline{W} and owners receive calibration/production unit data. The justification for employing anything other than the preferred sequence is as follows:

The DBE is simulated by the Seismic Test sequence of Section 2.9.2. Since no mechanism exists which would degrade time response and not affect calibration, after a seismic event, the calibration check is sufficient to identify potential changes in time response. The HELB Tests (Section 2.8.6 and 2.8.7) have been excluded since the Group B Differential Pressure Transmitters are not exposed to the HELB environment due to their location. The production test of Section 2.9.1 is performed on all production units to verify their performance at normal and abnormal

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temperatures of 80°F and 130°F respectively. The Abnormal Extremes Test of Section 2.9.3 was performed on similar equipment as permitted by IEEE-323-74 Section 6.3.2(3). The aging test employs the preferred test sequence (Section 2.8 excluding HELB, Abnormal Extremes and mechanical cycling Sections 2.8.6, 2.8.7, and 2.8.3) on a representative sample of components from the Group B Differential Pressure Transmitters. Mechanical cycling has been included in the Group A Program and is referenced to as a type test for the Group B program. The Aging Tests will demonstrate that during the qualified life there are no in-service aging mechanisms capable of reducing the capability of the Group B Differential Pressure Transmitters 1.3 perform during or after a seismic event. As a consequence, the seismic testing on the un-aged Group B Differential Pressure Transmitters, is not prejudiced by any in-service aging mechanisms.

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Notes

.9.1	Production Test	Sequence
	2.8.1	Calibration performed at $80^{\rm O}F$ and $130^{\rm O}F$
	2.8.2	completes a performance test on all
	2.8.3	production units
	2.8.8	

2.9.2 Seismic Test Sequence
 2.8.1
 2.8.2 Seismic (DBE) test sequence
 2.8.5
 2.8.8

2.9.3	Environmental	Test Sequence
	2.8.1	Environmental type test sequence on similar
	2.8.2	picce of equipment as permitted by
	2.8.3	IEEE-323-74 Section 6.3.2(3).
	2.8.8	

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2.9.4 Aging Test Sequence

2.8.1		Aging to be addressed by separate testing as
2.8.2	•	described in Subprogram C of Appendix B to
2.8.4		WCAP-8587
2.8.5		
2.8.8		

2.10 Type Test Data

2.10.1 Objective

The objective of this test program is to demonstrate, employing the recommended practices of Reg. Guide 1.89 (IEEE-323-1974) and Reg. Guide 1.100 (IEEE 344-1975), the capability of the Differential Pressure Transmitters (Qualification Group B) to complete their safety related functions described in EQDP Section 1.7 while exposed to the applicable environments defined in EQDP Section 1.8.

2.10.2 Equipment Tested

2.10.2.1 Normal Environment Testing

The normal environment calibration tests are performed on each production transmitter.

2.10.2.2 Seismic Testing

Four Barton Differential Pressure Transmitters (Qualification Group B) were tested. For more details see Table 1 of Reference 1.

Six Veritrak Differential Pressure Transmitters (Qualification Group B) were tested. For more details see Tables 1 and 2 of Reference 3.

2.10.2.3 Aging Evaluation Program

A representative sample of critical components from the Differential Pressure Transmitters will be included in the Aging Evaluation Program described in Appendix B to WCAP 8587.

2.10.3 Test Summary

2.10.3.1 Normal and Abnormal Environment Testing

Westinghouse requires that the Qualification Group B Differential Pressure Transmitters be located such that they do not experience a consequent adverse environment when required to operate following a high energy line break either inside or outside containment. Therefore the only environmental testing required is to demonstrate equipment capabilities under normal and abnormal extremes.

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Reference 2 summarizes the results of available radiation testing of organic and inorganic materials and justifies that, for radiation doses less than 10⁴ rads, no deterioration in material structural properties is detectable. As a consequence, a radiation simulation is not required on this equipment, since estimated in-service radiation doses will not prejudice the capability of the equipment to perform under design basis event (i.e. seismic event) conditions.

Westinghouse requires a calibration at $80^{\circ}F$, d $130^{\circ}F$ on every production unit. Peak to peak

noise, time response and ability to meet performance requirements at 95% RH have been verified by type test. The ability to survive a containment pressure test will be verified by analysis.

2.10.3.2 Seismic Tests

The single design basis event capable of producing an adverse environment at the equipment location is a seismic event. The seismic testing reported in References 1 and 3 was completed on new equipment employing multi-axis multi-frequency inputs in accordance with Reg. Guide 1.100 (IEEE-344-1975). The generic required response spectra (Figure 1) contains significant margin with respect to any single plant application referencing this program⁽¹⁾. Each plant should compare to the required respone spectra (RRS) to assure that a 10 percent margin exists based on their actual plant location.

2.10.3.3 Aging Evaluation

The Westinghouse Aging Evaluation Program (Appendix B, WCAP 8587) will incorporate a representative sample of components from the Qualification Group B Differential Pressure Transmitters. The objective of the program is to demonstrate that during the qualified life there are no in-service aging mechanisms capable of reducing the capability of the Qualification Group B Differential Pressure Transmitters to perform during or after a seismic event. As a consequence, the seismic testing on the un-aged transmitters described above, is not prejudiced by any in-service aging mechanism.

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2.10.4 Conclusion

The demonstrated qualified life of the Qualification Group B Differential Pressure Transmitters will be established by the Westinghouse Aging Evaluation Program. The results of the aging program, together with the seismic and environmental testing described herein, demonstrate the qualification of the Group B Differential Pressure Transmitters employing the practices recommended by Reg. Guide 1.89 and 1.100.

2.11 Section 2 Notes

 The generic tests completed by Westinghouse employ parameters designed to envelope a number of plant applications. Margin is a plant specific parameter and will be established by the applicant.

2.12 References

- McElhaney, D. L., R. B. Miller "Equipment Qualification Test Report Differential Pressure Transmitters Qualification Group B (Seismic Design Verification Testing)" WCAP-8687 Supp. 2 E04A (Proprietary), WCAP-8587 Supp. 2 E04A (Non-Proprietary).
- WCAP-8587 (Non-Proprietary), Appendix C "Effects of Gamma Radiation Doses Below 10⁴ Rads on the Mechanical Properties of Materials"

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 Skeers, D. M., "Equipment Qualification Test Report Differential Pressure Transmitters Qualification Group B (Sesimic Design Verification Testing) WCAP-8687 Supp. 2 E04B (Proprietary), WCAP-8587 Supp. 2 E04B (Non-Proprietary).

SECTION 3 QUALIFICATION BY EXPERIENCE

Westinghouse does not employ operating experience in support of the qualification program for the Differential Pressure Transmitters - Qualification Group B.

SECTION 4 QUALIFICATION BY ANALYSIS

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A review of materials utilized in Barton Model 752 and Veritrak Model 76DP1 differential pressure transmitters has been performed. Since teflon is not used in these transmitters a radiation life of 10^{5} R is applicable based on the radiation analysis documented in Reference 2.

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TABLE 1 (Sheet 1 of 2)

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ACTUAL QUALIFICATION TEST CONDITIONS

								10 mint cy /		~	~		QUAL
EQUIPMENT (1)	LOCATION	MANUCALTURER	ABNORMAL/ACCIDE	NT ENVIRONMENTAL	EXTREMES	OPERABI	LIIT	ALLUKALT	* 1	QUAL	QUAL	QUAL	PROGRAM
SYS*EM/CATE ODRY	STRUCTURE/AREA	TYPE/MODEL	PARAMETER	SPECIFIED (2)	QUALIFIED (3)	REQ	DEM	REQ	DEM	LIFE	METHOD	REF	STATUS
RCS	Containment	Barton	Temperature		130*5	Contin-	Con-	+1 <	+1	5	Seq.	ESE-	Completed
flow	Bida /outside	752	Pressure		150 7	HOUS	tin-			vrs.	Test	4	
transmitter/	missile shield	and Voritrak	Pol humidity		d LINOS.		HOUS			(4)			
DDC/	missile shield	76001	Radiation		35		0003						
Catogory c (E)		70071	Chomistry		10- K(1)								
category c (5)			chemistry		None								
Containment	Safeguards	Barton	Temperature		130°F	Conti-	Con-	+1	+1	5	Seq.	ESE-	Completed
pressure	building	752	Pressure		Atmos.	nuous	tinu	-		yrs.	Test	4	
transmitter/		and	Rel. humidity		95		ous			(4)			
RPS-PAM/		Veritrak	Radiation		$10^{5}R(x)$								
Category d		76DP1	Chemistry		None								
Boric acid	Auxiliary	Barton	Temperature		130°F	Conti-	Con-	+1	+1	5	Seq.	ESE-	Completed
level	building	752	Pressure		Atmos.	nuous	tinu			yrs.	Test	4	
transmitter/		and	Rel. humidity		95		ous			(4)			
PAM/		Veritrak	Radiation		$10^{5} R(r)$								
Category d		76DP1	Chemistry		None								
										A			
Refueling	Auxiliary	Barton	Temperature		130°F	Conti-	Con-	+1	+1	5	Seq.	ESE-	Completed
water	building	752	Pressure		Atmos.	nuous	tinu			yrs.	Test	4	
storage		and	Rel. humidity		95		ous			(4)			
tank level		Veritrak	Radiation		10 ⁵ R(-)								
transmitter/		76DP1	Chemistry		None								
PAM/													
Category d													

WESTINGHOUSE CLASS 3

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ACTUAL QUALIFICATION TEST CONDITIONS

EQUIPMENT (1)	LOCATION	MANUFACTURER	ABNORMAL /ACC IDE	ENT ENVIRONMENTA SPECIFIED (2)	L EXTREMES OUALIFIED (3)	OPE RABI	LITY ACCURACY DEM REQ	() DEM	QUAL	QUAL	QUAL REF	QUAL PROGRAM STATUS
Condensate Storage Tank Leve?/ PAM/ Category d	Auxiliary building	Barton 752 and Veritrak 76DP1	Temperature Pressure Rel. humidity Radiation Chemistry		130°F Atmos. 95 <10 ⁵ R(_Y) None	Conti- nuous	Con- *1 tinu- cus	<u>+</u> 1	5 yrs. (4)	Seq. Test	ESE- 4	Completed
Feedwater Flow/ ECS/Category d	Auxiliary Building	Barton 752 and Veritrak 76DP1	Temperature Pressure Rel. humidity Radiation Chemistry		130°F Atmos. 95 <10 ⁵ R(_Y) None	Conti- nuous	Con- <u>+</u> 1 tinu- ous	<u>*</u> 1	5 yrs. (4)	Seq. Test	ESE- 4	Completed

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NOTES

- 1. For definition of the category letters, refer to NUREG 0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," Appendix E, Section 2.
- 2. Plant specific ~ .ironmental parameters are to be inserted by the applicant.
- The values listed represent the design conditions plus margin. For completed programs, the values listed were met in the test. Any variations from
 the values listed were in a conservative direction or were not considered significant.
- 4. Phase I of the Westinghouse Aging Evaluation Program as described in WCAP-8587 Appendix B will establish a qualified life of at least 5 years for this equipment, Phase II of this program will extend the qualification life to a maximum of 70 years or as far as is achievable.
- 5. The reactor coolant flow transmitter is only required to perform a safety function for contained faults. There are no adverse environments present when this instrument must perform its safety function. As a consequence a qualification Group B flow transmitter is normally employed. Where, at the specific request of the utility, Westinghouse supplies a Group A qualified flow transmitter for this function the parameters specified in the table associated with EQOP-ESE-3 are applicable except for HELB inaccuracies.

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