SOUTH CAROLINA ELECTRIC & GAS COMPANY
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T. C. NICHOLS, JR.
VICE PRESIDENT AND GROUP EXECUTIVE
NUCLEAR OPERATIONS

February 11, 1981

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
NUREG-0588 Revision 2

Dear Mr. Denton:

In our January 15, 1981 letter, South Carolina Electric and Gas Company (SCE&G) filed revision 1 to our NUREG-0588 response. By this letter, SCE&G provides revision 2 to these documents. Also, one (1) copy of Westinghouse Affidavit CAW-80-31 (Non-Proprietary) is provided. This revision updates information provided in the report.

As this submittal contains information proprietary to Westinghouse Electric Corporation, it is supported by an affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.790 of the Commission's regulations.

Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10CFR Section 2.790 of the Commission's regulations. Correspondence with respect to the proprietary aspects of this application for withholding or the supporting Westinghouse affidavit should reference CAW-80-31, and should be addressed to R. A. Wiesemann, Manager, Regulatory and Legislative Affairs, Westinghouse Electric Corporation, P. O. Box 355, Pittsburgh, Pennsylvania 15230.

If you require any additional information, please let us know.

Very truly yours,

T. C. Nichols, Jr.

ND:RBC:TCN:rh

cc: Page Two

PBO1
1/19 P
1/24 NP
CHANGE: E
NRC PDR : NP
LPDR : NP
NSIC : NP

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A

cc: V. C. Summer
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CAW-80-31

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Robert A. Wiesemann, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Corporation ("Westinghouse") and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

Robert A. Wiesemann

Robert A. Wiesemann, Manager
Regulatory and Legislative Affairs

Sworn to and subscribed
before me this 11 day
of June 1980.

Notary Public

Rebecca [illegible]
Monroeville [illegible]
My Commission [illegible]
Member [illegible]

(1) I am Manager, Regulatory and Legislative Affairs, in the Nuclear Technology Division, of Westinghouse Electric Corporation and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing or rulemaking proceedings, and am authorized to apply for its withholding on behalf of the Westinghouse Water Reactor Divisions.

(2) I am making this Affidavit in conformance with the provisions of 10CFR Section 2.790 of the Commission's regulations and in conjunction with the Westinghouse application for withholding accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse Nuclear Energy Systems in designating information as a trade secret, privileged or as confidential commerical or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.790 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

(g) It is not the property of Westinghouse, but must be treated as proprietary by Westinghouse according to agreements with the owner.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information which is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition in those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10CFR Section 2.790, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is appropriately marked information provided to Westinghouse utility customers in WCAP-9745 entitled "Results of Westinghouse Review of Environmental Qualification References for WRD Supplied Category II Equipment with Respect to the Staff Positions in NUREG-0588" for their use in responding to the NRC request to review their qualification programs against the standards established in NUREG-0588.

This information enables Westinghouse to:

(a) Develop test inputs and procedures to satisfactorily verify the design of Westinghouse supplied equipment.

(b) Assist its customers to obtain licenses.

Further, the information has substantial commercial value as follows:

(a) Westinghouse can sell the use of this information to customers.

(b) Westinghouse uses the information to verify the design of equipment which is sold to customers.

(c) Westinghouse can sell testing services based upon the experience gained and the test equipment and methods developed.

Public disclosure of this information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to design, manufacture, verify, and sell electrical equipment for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others having the same or similar equipment to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the equipment described in part by the information is the result of many years of development by Westinghouse and the expenditure of a considerable sum of money.

This could only be duplicated by a competitor if he were to invest similar sums of money and provided he had the appropriate talent available and could somehow obtain the requisite experience.

Further the deponent sayeth not.

VIRGIL C. SUMMER NUCLEAR STATION

ENVIRONMENTAL QUALIFICATION OF SAFETY RELATED

ELECTRICAL EQUIPMENT/NUREG-0588
REVISION 2

Instruction Sheet

The following instructional information and check list is being furnished to help insert Revision 2 into the Virgil C. Summer Nuclear Station response to NUREG-0588

Discard the old sheets and insert the new sheets, as listed below. Keep these instruction sheets in the front of the report to serve as a record of changes.

Remove	Insert
Title Page	Title Page
ii and iii	ii
Table of Contents	Table of Contents
W-1 thru W-23	W-1 thru W-23
W-25	W-25
W-57	W-57
W-58	W-58
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--	W-73
--	B-32a
--	B-39a

SOUTH CAROLINA ELECTRIC & GAS COMPANY
VIRGIL C. SUMMER NUCLEAR STATION

Environmental Qualification Safety Related Electrical Equipment/NUREG-0588

Revision 2

WESTINGHOUSE NON-PROPRIETARY DATA

(W) positions have been established against the staff position for Category II equipment for the (W) scope of supply, based on the overall qualification methodology employed for this equipment.

The review procedures for the BOP equipment were based on the design control program as documented in Chapter 17 of the FSAR and consisted of an adaptation of the existing procedures used for FSAR preparation. The source of all data and the results of the reviews were documented on individual worksheets. The completed worksheets, along with other supplementary material, were first reviewed within the originating discipline. Then the material was reviewed by an interdisciplinary group. For the NSSS, a formal review and sign off was completed by cognizant (W) management to meet quality assurance (QA) requirements.

THE BOP reviews by the architect/engineers and South Carolina Electric & Gas have confirmed that equipment installed in the plant is generally suitable for its intended use. Problem areas have been primarily in the thoroughness of the test procedure documentation. In many cases, the test plans are not included in the qualification report, nor were detail data, such as, the accuracy of test instrumentation or the exact location of temperature monitoring thermocouples. Additional details have been requested from the manufacturer and vendors. In a limited number of cases the review has identified equipment which is adequate for its intended application, however, the available documentation does not support its continued use under a particular environmental condition. To bring these into compliance with NUREG-0588, minor modifications have been identified. These include changing some solenoid valves from normally energized to normally de-energized during LOCA and SLB, relocating some cables and conduits in Reactor Building for flooding and replacing Raychem high voltage stress relief termination on emergency feedwater pump motors and spray pump motors.

Equipment categorized C_1, or C_2 in the NSSS tables is qualified for normal conditions and is not required to function following a steam line break or loss of coolant accident for mitigation of that accident. South Carolina Electric & Gas review for the NSSS included determining equipment location, identifying normal, abnormal and accidnet environmental parameters and design operability requirements under normal and accident conditions. It also included reviewing Westinghouse qualification reports against NUREG-0588 positions, equipment interfaces against qualification configuration and confirming equipment qualified as equal to equipment in plant. Documentation of the review of NSSS equipment compliance with NUREG-0588 is available in SCE&G's file. Our review shows generally that equipment qualification envelopes design basis accident conditions. Problem areas have been primarily in documentation which does not include all necessary information such as location of temperature monitoring thermocouples, failure criteria or employing Cobalt 60 for gamma irradiation. Chemical spray concentration is not fully representative of short-term plant specific conditions, however, it does represent the long-term condition. Discrepancies with NUREG-0588 will be justified or the equipment will be upgraded or replaced.

Detailed reviews of the degrees of compliance with the criteria and interpretations contained in NUREG-0588 are compelted and this material is incorporated into revision 1 of this document.

In summary, all equipment installed in the V. C. Summer Nuclear Station is adequate for its intended use. In a few minor instances where documentation does not fully support the application of equipment, action is being taken to correct the situation.

TABLE OF CONTENTS

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	LOCATION TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_2, c_1 Peak Temp. Pressure Humidity	Chemistry Condition	NUCLEAR SAFETY EQUIPMENT To Integrated Dose Radiation
Narrow Range Resistance Temperature Detectors	RB, by pass loop	TE-412 A,B,C,D TE-422 A,B,C,D TE-432 A,B,C,D	Rosemount	[ ]a,c	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	4.73 x Rad
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	4.73 Rad

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tal grated ose tion	ENVIRONMENT TO WHICH QUALIFIED (14)							
	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
10^6 s	[ ]a,b,c (see Fig. 5-3 and 6-3)	1.146wt.% Boric Acid and 0.17wt.% N_aOH dissolved in H_2O	[ ]a,b,c	30 sec. Post-SLB	Over 30 sec. Post-SLB	± .2% (8)	[ ]a,b,c (2)	WCAP-9157 (Separate Test)
	[ ]a,b,c							
$\times 10^7$ s								

DELETE PAGE W-2, REVISION 1

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	LOCATION TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1 (21), a_2 (21)			NUCLEAR ST SAFETY RE EQUIPMENT I
						Peak Temp. Pressure Humidity	Chemistry Condition	Integrate Dose Radiatio
Wide Range Resistance Temperature Detectors	RB, RCS loop	TE-410, 413, 420, 423, 430, 433	Rosemount	[ ]a,c		MSB		
					(T)	FSAR FIG. 6.2-5a	(16)	2.4×10^6 Rads
					(P)	FSAR FIG. 6.2-4 LOCA		
					(T)	FSAR FIG. 6.2-7	(16), (17), (18)	2.4×10^7 Rads 30 days
					(P)	FSAR FIG. 6.2-1		

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ENVIRONMENT TO WHICH QUALIFIED (14)

Peak Temp. Preasure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ]a,b,c (see Fig. 5-3 and 6-3) [ ]a,b,c	1.146wt.% Boric Acid and 0.17wt.% N_aOH dissolved in H_2O	[ ]a,b,c	2 weeks Post-SLB	2 weeks Post-SLB	±.2% (8)	[ ]a,b,c (8)	WCAP-9157 (by comparison)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-C_1, C_2 Peak Temp. Pressure Humidity	Chemistry Condition	NUCLEAR ST SAFETY RE EQUIPMENT I Total Integrate Dose Radiation
Reactor Coolant Flow DP Transmitters (5) (15)	RB	FT-414, 415, 416 FT-424, 425, 426 FT-434, 435, 436	Barton	[ ] a,c	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	5×10^6 Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	5×10^7 Rads 4 months

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ENVIRONMENT TO WHICH QUALIFIED (14)							
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span) (7)	Accuracy Demonstrated (% of Span) (7)	Qualification Reference and Method
130°F Atmosphere N/A	None	None	(11)	(11)	± 1	< ± 1	Instruction Manual (Calibration Test) (2)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1, a_2			NUCL SAF EQUIP
					Peak Temp. Pressure Humidity	Chemistry Condition	Total Integrat Dose Radiatio	
Pressurizer Pressure P Transmitter	RB	PT-455, 456, 457	Barton	[ ] a,c (Lot 2)	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	3.4 x 10 Rads	
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	3.4 x 10 Rads	

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	ENVIRONMENT TO WHICH QUALIFIED (14)							
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span) (6)	Accuracy Demonstrated (% of Span) (6)	Qualification Reference and Method
[ ]a,b,c (Fig. 2.2)	1.14wt.% Boric Acid and 0.17wt.% N_aOH dissolved in water	[ ]a,b,c	Trip 5 m.	Trip 5 m. and Post-DBE 4 months	+10% for ≤ 5m.	[ ]a,b,c	NS-IMA-2184 Anderson to Stolz (Sequential Test)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1 (21), a_2 (21)		NUCLEAR SAFETY EQUIPMEN
					Peak Temp. Pressure Humidity	Chemistry Condition	Tota Integr- Dos Radiat
Pressurizer Level DP Transmitters (1)	RB	LT-459, 460, 461	Barton	[ ]a,c (Lot 2)	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	5 x 10 Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	5 x 10 Rads

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ted / on	ENVIRONMENT TO WHICH QUALIFIED (14) Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span) (6)	Accuracy Demonstrated (% of Span) (6)	Qualification Reference and Method
	[ ]a,b,c (Fig. 2.2)	1.14wt.% Boric Acid and 0.17wt.% N_aOH dissolve in water	[ ]a,b,c	Post-DBE 4 months	Post-DBE 4 months	±25%	[ ]a,b,c	NS-TMA-2184 Anderson to Stolz (Sequential Test)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1 (21), a_2		NUCL SAF EQUIP (21)
					Peak Temp. Pressure Humidity	Chemistry Condition	Tota Integr Dos Radiat
Steam Generator Level Narrow Range DP Transmitters	RB	LT-474, 475, 476 LT-484, 485, 486 LT-494, 495, 497	Barton	[ ]a,c (Lot 2)	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	5 x 10 Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	5 x 10^7 Rads

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ted on	ENVIRONMENT TO WHICH QUALIFIED (14)								Qualification Reference and Method
	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span) (6)	Accuracy Demonstrated (% of Span) (6)		
	[ ]a,b,c (Fig. 2.2)	1.14wt.% Boric Acid and 0.17wt.% N_aOH dissolved in water	[ ]a,b,c	Trip 5 m. and Post-DBE 4 months	Trip 5 m. and Post-DBE 4 months	±10% ≤ ∞ < 5 m. 5 m. to 4 mo. ±25%	[ ]a,b,c		NS-TMA-2184 Anderson to Stolz (Sequential Test)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1 (21), a_2 (21)			NUC SA EQUI
					Peak Temp. Pressure Humidity	Chemistry Condition	Tot Integr Dos Radiat	
Reactor Coolant System Pressure Wide Range 2 Transmitter	RB	PT-402, 403	Barton	[ ] a,c (Lot 2)	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	5 x 10 Rads	
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	5 x 10 Rads	

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ted / on	ENVIRONMENT TO WHICH QUALIFIED (14) Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
	[ ]a,b,c (Fig. 2.2)	1.14wt.% Boric Acid and 0.17 wt.% N_2OH dissolved in water	[ ]a,b,c	Post-DBE 4 months	Post-DBE 4 months	+10% (6)	[ ]a,b,c (6)	NS-TMA-2184 Anderson to Stolz (Sequential)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-c_1, c_2			N EQ
						Peak Temp. Pressure Humidity	Chemistry Condition	Tot Integ Do Radia
Steam Flow DP Transmitter	RB	FT-474, 475 FT-484, 485 FT-494, 495	Barton	[ ]a,c (Lot 2)		MSB		
					(T)	FSAR FIG. 6.2-5a	(16)	5 x 1 Rad
					(P)	FSAR FIG. 6.2-4		
						LOCA		
					(T)	FSAR FIG. 6.2-7	(16), (17), (18)	5 x 1 Rad
					(P)	FSAR FIG. 6.2-1		

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	ENVIRONMENT TO WHICH QUALIFIED (14)							
al ated e ion	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
6	[ ]a,b,c (Fig. 7.2)	1.14wt.% Boric Acid and 0.17 wt.% N_aOH dissolved in water	[ ]a,b,c	Trip 5 m. and Post-DBE 4 months	Trip 5 m. and Post-DBE 4 months	-10% + ∞ for ≤ 5 min. 5 min. to 5 mo. +25% (6)	[ ]a,b,c (6)	NS-TMA-2184 Anderson to Stolz (Sequential Test)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-c1, c2			NUCL SAF EQUIP
					Peak Temp. Pressure Humidity		Integrat Dose Radiatio	
Power Range Neutron Detectors, (15)	RB	NC-41, 42, 43, 44	Westinghouse	[ ]a,c	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4 LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16) (16), (17), (18)	Normal Oper Dose Rate 9.7×10^9 n/ Thermal 4.5×10^{10} n/ Fast $3. \times 10^4$ R/h Gamma	

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d	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
ting	[ ]a,b,c	N/A	(4)	8 hr. at 175°F	[ ]a,b,c	N/A	N/A	W Test 1/69 (Separate Test)
m^2s								
m^2s								

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1, c_2		NUCLEAR SAFETY EQUIPME
					Peak Temp. Pressure Humidity	Chemistry Condition	Total Integrat Dose Radiati
Hydrogen Recombiner Heaters(15)	RB	XHR0004A(19) SHR0004B(19)	Westinghouse Sturtevant	Electric Type A	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	7.1 x 10 Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	7.1 x 10 Rads

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	ENVIRONMENT TO WHICH QUALIFIED (14)							
d Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ] a,b,c (See Supp. 2 Sect. 3.4.3)	2500 ppm Boron as Boric Acid with N_aOH to give a pH of 10	[ ] a,b,c	1 yr. Post-LOCA	1 yr. Post-LOCA	N/A	N/A	WCAP-7820 and Supp. 1-4 WCAP-7709-1 and Supp. 1-4 (Separate Test)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1, c_2			NUCL SAF EQUIP
					Peak Temp. Pressure Humidity		Chemistry Condition	Total Integrat Dose Radiatio
Valve Motor Operators 2 inch Globe Valve	RB	8112	Limitorque	[ ]a,c	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4		(16)	7.1 x 10[6] Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 5.2-1		(16), (17), (18)	7.1 x 10 Rads

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	ENVIRONMENT TO WHICH QUALIFIED (14)							
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ]a,b,c	2500 ppm Boric Acid buffered with 0.24% N_3OH	[ ]a,b,c	1 year Post DBE	200°F for 30 days*	N/A	N/A	WCAP-7744 WCAP-7410 NS-CE-692 (Test)

*NOTE: This test was not intended to demonstrate post-DBE thermal aging, it however, does demonstrate post-DBE operability consistent with the recommendations of IEEE-382-1972

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a1, c2		NUCLEAR SAFETY EQUIPMENT
					Peak Temp. Pressure Humidity	Chemistry Condition	Total Integrated Dose Radiation
Valve Motor Operators 12 in. Gate Valves	SB	8701 A, B; 8702 A, B	Limitorque	[ ]a,c	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	7.1×10^6 Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	7.1×10^7 Rads

STEAM SUPPLY SYSTEM
RELATED ELECTRICAL
INSIDE CONTAINMENT

	ENVIRONMENT TO WHICH QUALIFIED (14)						
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ]a,b,c	2500 ppm Boric Acid buffered with 0.24% N_aOH	[ ]a,b,c	1 year Post DBE	200°F for 30 days*	N/A	N/A	WCAP-7744 WCAP-7410 NS-CE-692 (Test)

*NOTE: This test was not intended to demonstrate post-DBE thermal aging, it however, does demonstrate post-DBE operability consistent with the recommendations of IEEE-382-1972

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1, a_2			NUCL SAF EQUIP
					Peak Temp. Pressure Humidity	Chemistry Condition		To Inte D Radi
2 inch Globe Valves	RB	8149 A, B, C	ASCO	[ ] a,c Solenoids	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)		6.6 Ra
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)		6.6 Ra

R STEAM SUPPLY SYSTEM
Y RELATED ELECTRICAL
NT INSIDE CONTAINMENT

ted / on	ENVIRONMENT TO WHICH QUALIFIED (14) Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
0[4]	[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)
0[5]								

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category a1, a2			NU S EQU
						Peak Temp. Pressure Humidity	Chemistry Condition	To Integ Do Radia
1 inch Globe Valve	RB	8154	ASCO	[ ]a,c Solenoid		MSB		
					(T)	FSAR FIG. 6.2-5a	(16)	6.6 Ra
					(P)	FSAR FIG. 6.2-4		
						LOCA		
					(T)	FSAR FIG. 6.2-7	(16), (17), (18)	6.6 Ra
					(P)	FSAR FIG. 6.2-1		

EAR STEAM SUPPLY SYSTEM
ETY RELATED ELECTRICAL
MENT INSIDE CONTAINMENT

	ENVIRONMENT TO WHICH QUALIFIED (14)							
ted on	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
10^4	[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip 1 hr.	N/A	N/A	NS-CE-755 (Analysis)
10^5								

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a1, c2			NUCL SA EQUI
					Peak Temp. Pressure Humidity		Chemistry Condition	Total Integrat Dose Radiatio
1 inch Globe Valve	RB	8153	ASCO	[ ]a,c Solenoid	MSB			
					(T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4		(16)	6.6 x 10 Rads
					LOCA			
					(T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1		(16), (17), (18)	6.6 x 10 Rads

LEAR STEAM SUPPLY SYSTEM
ETY RELATED ELECTRICAL
MENT INSIDE CONTAINMENT

	ENVIRONMENT TO WHICH QUALIFIED (14)							
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1, c_2		NUCLEAR SAFETY EQUIPMENT
					Peak Temp. Pressure Humidity	Chemistry Condition	Total Integrated Dose Radiation
3 inch Globe Valve	RB	LCV-460, LCV-459	ASCO	[ ]a,c Solenoid	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	6.6 x 10 Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	6.6 x 10 Rads

TEAM SUPPLY SYSTEM
ELATED ELECTRICAL
INSIDE CONTAINMENT

d	ENVIRONMENT TO WHICH QUALIFIED (14)							
	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
	[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a1, c2			NUCLEA SAFE EQUIPM
						Peak Temp. Pressure Humidity	Chemistry Condition	Total Integrate Dose Radiation
2 inch Globe Valve	RB	8145	ASCO	[ ]a,c Solenoid		MSB		
					(T) FSAR FIG. 6.2-5a		(16)	6.6×10^4 Rads
					(P) FSAR FIG. 6.2-4			
						LOCA		
					(T) FSAR FIG. 6.2-7		(16), (17), (18)	6.6×10^5 Rads
					(P) FSAR FIG. 6.2-1			

AR STEAM SUPPLY SYSTEM
Y RELATED ELECTRICAL
NT INSIDE CONTAINMENT

ENVIRONMENT TO WHICH QUALIFIED (14)							
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category a1, c2		NUCLE SAFE EQUIPM
					Peak Temp. Pressure Humidity	Chemistry Condition	Total Integrat Dose Radiati
1 inch Diaphragm	RB	8047	ASCO	[ ]a,c Solenoid	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	6.6 x 1 Rads
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17), (18)	6.6 x 1 Rads

R STEAM SUPPLY SYSTEM
Y RELATED ELECTRICAL
NT INSIDE CONTAINMENT

ENVIRONMENT TO WHICH QUALIFIED (14)								
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ] a,b,c	1.2% Boric Acid	[ ] a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	MS-CE-755 (Analysis)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category a1, c2			NUCLEA SAFET EQUIPME
						Peak Temp. Pressure Humidity	Chemistry Condition	Total Integra Dose Radiati
1 inch Globe Valve	RB	8875 A, B, C	ASCO	[ ]a,c Solenoid		MSB		
					(T) FSAR FIG. 6.2-5a		(16)	6.6 x 1 Rads
					(P) FSAR FIG. 6.2-4			
						LOCA		
					(T) FSAR FIG. 6.2-7		(16), (17), (18)	6.6 x 1 Rads
					(P) FSAR FIG. 6.2-1			

R STEAM SUPPLY SYSTEM
Y RELATED ELECTRICAL
NT INSIDE CONTAINMENT

ENVIRONMENT TO WHICH QUALIFIED
(14)

ed / n	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
4	[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)

5

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a1, c2			
					Peak Temp. Pressure Humidity	Chemistry Condition	Int Rad
1/4 inch Globe Valve	RB	8871	ASCO	[ ]a,c Solenoid	MSB (T) FSAR FIG. 6.2-5a (P) FSAR FIG. 6.2-4	(16)	6.6 Ra
					LOCA (T) FSAR FIG. 6.2-7 (P) FSAR FIG. 6.2-1	(16), (17) (18)	6.6 Ra

EAR STEAM SUPPLY SYSTEM
TY RELATED ELECTRICAL
ENT INSIDE CONTAINMENT

	ENVIRONMENT TO WHICH QUALIFIED (14)							
AI nted e ion	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
10^4	[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)
10^5								

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a1, c2			NUCL SAF EQUIP
						Peak Temp. Pressure Humidity	Chemistry Condition	Tota Integra Dose Radiati
3 inch Globe Valve	RB	LCV-1003	ASCO	[ ]a,c Solenoid		MSB		
					(T)	FSAR FIG. 6.2-5a	(16)	6.6 x 1 Rads
					(P)	FSAR FIG. 6.2-4		
						LOCA		
					(T)	FSAR FIG. 6.2-7	(16), (17), (18)	6.6 x 1 Rads
					(P)	FSAR FIG. 6.2-1		

AR STEAM SUPPLY SYSTEM
TY RELATED ELECTRICAL
ENT INSIDE CONTAINMENT

	ENVIRONMENT TO WHICH QUALIFIED (14)							
ed n	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
4	[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip ≤ 5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a_1, c_2			NUC SA EQUI
						Peak Temp. Pressure Humidity	Chemistry Condition	Total Integrat Dose Radiati
3/4 inch Globe Valve	RB	7126	ASCO	[ ] a,c Solenoid	MSB			
					(T) FSAR FIG. 6.2-5a		(16)	6.6 x 10 Rads
					(P) FSAR FIG. 6.2-4			
					LOCA			
					(T) FSAR FIG. 6.2-7		(16), (17), (18)	6.6 x 1 Rads
					(P) FSAR FIG. 6.2-1			

LEAR STEAM SUPPLY SYSTEM
FETY RELATED ELECTRICAL
PMENT INSIDE CONTAINMENT

	ENVIRONMENT TO WHICH QUALIFIED (14)							
ed n	Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
4	[ ]a,b,c	1.2% Boric Acid	[ ]a,b,c	Trip 1.5 m.	Trip <1 hr.	N/A	N/A	NS-CE-755 (Analysis)

DELETE PAGE W-23, REVISION 1

TYPE OF EQUIPMENT	LOCATION BUILDING (20)	TAG NUMBER	MANUFACTURER	MODEL NUMBER IDENTIFICATION	ABNORMAL OR ACCIDENT ENVIRONMENT Category-a1, c2			NUCL SAF EQUIP
						Peak Temp. Pressure Humidity	Chemistry Condition	Integr Dos Radiat
Stem Mounted Limit Switches	RB	7126, 87018, 8702A, 8047, 8149A, B, C LCV-460, LCV-459 8871, PCV 444B PCV 445A, PCV 445B	NAMCO	[ ] a,c		MSB		
					(T) FSAR FIG. 6.2-5a		(16)	6.1 Rad
					(P) FSAR FIG. 6.2-4			
						LOCA		
					(T) FSAR FIG. 6.2-7		(16), (17), (18)	6.1 x Rad
					(P) FSAR FIG. 6.2-1			

AR STEAM SUPPLY SYSTEM
TY RELATED ELECTRICAL
ENT INSIDE CONTAINMENT

	ENVIRONMENT TO WHICH QUALIFIED (14)							
Peak Temp. Pressure Humidity (13)	Chemistry Condition	Integrated Dose Radiation Type	Operability Requirements	Operability Demonstrated	Accuracy Requirements (% of Span)	Accuracy Demonstrated (% of Span)	Qualification Reference and Method
[ ]a,b,c	A Mixture of Boric Acid, Water Sodium Thisolfate, and Sodium Hydroxide with a pH of between 10 and 11.	[ ]a,b,c	1 year Post-DBE	200°F for 30 days*	N/A	N/A	NAMCO Test Report (Revision 1) 9/5/78 (Test)

*NOTE: This test was not intended to demonstrate post-DBE thermal aging, it however, does demonstrate post-DBE operability consistent with the recommendations of IEEE-382-1972

(15) Equipment that could experience environmental conditions of design basis accident (SLB or LOCA), through which it need not function for mitigation of accidents, and whose failure is not detrimental to plant safety or accident mitigation, and need not be qualified for any accident environment, but is qualified for non accident service envrionment. See table 3.11.3 of FSAR for normal environment.

(16) For 47 minutes at 40°F to 120°F the spray consists of demineralized water containing 1950 ppm to 4000 ppm born in the form of boric acid ($H_3 BO_3$) and HaOH (.68% by weight PH ranges from 10 to 10.7), see FSAR figures 6.2-51s, followed by a solution PH of 8.7 (.23% by weight) for approximately 73 minutes.

(17) For the next 6 hours at 240°F the spray consists of demineralized water contain 1730 ppm to 3500 ppm boron in the form of H_3BO_3 and N_aOH (0.23% by weight) at a pH of 8.7.

(18) For the next 24 hours at 190°F, the spray has the same constituents as described in 17, above.

(19) Virgil Summer identification number.

(20) Refer to Table 3.11-3 for associated postulated environmental conditions.

(21) Post accident monitoring only.

EQUIPMENT MODEL		BARTON [ ]a,c TRANSMITTER	BARTON LOT 2 TRANSMITTERS
QUALIFICATION DOCUMENTATION REVIEWED		INSTRUCTION MANUAL	NS-TMA-2184
NUREG-0588			
Item 2.1.	(1)a	NA	A
	(1)b	A *	NA
	(2)	NA	(A)
	(3)	NA	A
	(3)a	NA	A
	(3)b	NA	A
	(3)c	(4)	NA
	(4)	NA	NA
2.2.	(1)	NA	A
	(2)	NA	A
	(3)	A *	A
	(4)	NA	A
	(5)	A	(2)
	(6)	NA	A
	(7)	NA	A
	(8)	NA	A
	(9)	NA	A
	(10)	NA	A
	(11)	A	A
	(12)	NA	A
2.3	(1)a	(5)	NA
	(1)b	NA	A
	(2)	NA	A
	(3)	A *	A
	(4)	(4)	A
2.4		NA	A
3	(1)	NA	A
	(2)	NA	(3)
	(3)	NA	A
	(4)a	NA	(1)
	(4)b	NA	A
4	(1)	A *	A
	(2)	A *	A
5	(1)	A *	A
	(2)	A *	A

*Per IEEE Standard 323-1974

TABLE 1

EQUIPMENT LOCATED INSIDE CONTAINMENT

ROSEMOUNT RTD's WCAP-9157	LIMITORQUE [ ]a,c RELIANCE MOTOR OPERATORS WCAP-7410 NS-CE-692
A	A
NA	NA
(6)	A
A	A
A	A
A	(12)
NA	(12)
NA	NA
A	A
A	A
A	A
(7)	A
A	A
A	A
A	A
A	A
A	A
A	(17)
A	A
A	A
NA	NA
(7)	(15)
A	A
A	A
A	(15)
A	A
A	A
A	A
A	A
(7)	A
A	A
A	A
A	A
A	A
A	A

WESTINGHOUSE SU

EQUIPMENT MODEL		NEUTRON DETECTORS
QUALIFICATION DOCUMENTATION REVIEWED		W TEST 1/69
NUREG-0588		
Item 2.1.	(1)a	NA
	(1)b	A
	(2)	NA
	(3)	NA
	(3)a	NA
	(3)b	(9)
	(3)c	NA
	(4)	NA
2.2	(1)	NA
	(2)	NA
	(3)	A
	(4)	NA
	(5)	A
	(6)	NA
	(7)	NA
	(8)	NA
	(9)	NA
	(10)	NA
	(11)	A
	(12)	NA
2.3	(1)a	(10)
	(1)b	NA
	(2)	NA
	(3)	A
	(4)	(9)
2.4		NA
3	(1)	NA
	(2)	NA
	(3)	NA
	(4)a	NA
	(4)b	NA
4	(1)	A
	(2)	A
5	(1)	A
	(2)	A

TABLE 1 (Cont.)

PLIED EQUIPMENT LOCATED INSIDE CONTAINMENT

HYDROGEN RECOMBINER (MODEL A)	ASCO SOLENOIDS [ ]a,c
WCAP-7709L	NS-CE-755
A	(11)
NA	NA
A	(11)
A	(11)
A	(11)
A	(12)
NA	(12)
NA	NA
A	NA
A	NA
A	NA
(8)	NA
A	NA
A	NA
A	NA
A	NA
A	NA
(16)	(17)
A	A
A	NA
NA	NA
(8)	NA
A	NA
A	NA
A	(11)
A	A
A	A
(8)	(13)
A	A
A	(13)
A	NA
(8)	A
(8)	A
A	A
A	NA

14. DELETED.

15. No single reported test sequence included both [radiation and chemical spray]^{b,c,e}. However, one of the units employed in the 1972 series of tests had previously been exposed to [radiation, a seismic test and a steam/chemical]^{b,c,e} environment. The successful retesting of this unit demonstrates that this model of operator is not marginal with respect to any of the qualification parameters.

    The original NRC review of WCAP-7410 resulted in a request for additional information concerning these operators, contained in an NRC evaluation letter; Vassallo to Eicheldinger dated March 12, 1974. As a result Westinghouse submittals NS-CE-692, 756 and 847 provided the requested information. An internal Staff review of this material (Ref 5) concluded that the environmental test results for MOV's utilizing type H or HR insulation were acceptable.

16. The hydrogen recombiner qualification to simulated LOCA conditions was completed employing varying electrical power levels to verify functional performance, as reported in WCAP-7709-L.

17. Sufficient difficulty exists in monitoring the performance of equipment exposed to the rapidly changing adverse environment generated by a HELB that applying variations to the electrical supply concurrently could mask the true performance of the equipment. Westinghouse believes that the requirement for operation at the extremes of power supply voltage and frequency must be recognized

WESTINGHOUSE SUPPLIED E
QUALIFIED FOR A

EQUIPMENT MODEL	ASCO SOLENOIDS [ ]a,c	LIMITOR [MOTOR C
QUALIFICATION DOCUMENTATION REVIEWED	NS-CE-755	LIMITOR REPORT DATED 6
NUREG-0588		
Item 2.1.(1)a	(1)	(5)
(1)b	NA	NA
(2)	(1)	A
(3)	(1)	A
(3)a	(1)	A
(3)b	(3)	(3)
(3)c	(3)	(3)
(4)	NA	NA
2.2.(1)	NA	A
(2)	NA	A
(3)	NA	A
(4)	NA	A
(5)	NA	A
(6)	NA	A
(7)	NA	A
(8)	NA	A
(9)	NA	A
(10)	(4)	(4)
(11)	A	A
(12)	NA	A
2.3.(1)a	NA	NA
(1)b	NA	A
(2)	NA	A
(3)	NA	A
(4)	(1)	A
2.4.	A	A
3 (1)	A	A
(2)	(2)	A
(3)	A	A
(4)(a)	(2)	A
(4)(b)	NA	A
4 (1)	A	A
(2)	A	A
5 (1)	A	A
(2)	NA	A

TABLE 2

QUIPMENT LOCATED OUTSIDE CONTAINMENT
DVERSE ACCIDENT ENVIRONMENTS

QUE	PUMP MOTORS	BARTON
]a,c	USED FOR	LOT 2
PERATORS	RECIRCULATION	TRANSMITTERS
QUE	DESIGN SPEC.	
NO. B0003	AND	
/7/76	WCAP 8754	NS-TMA-2184
	(6)	Table 1
	NA	Assessment
	(6)	is applicable
	A	
	A	
	NA	
	NA	
	NA	
	A	
	A	
	A	
	(7)	
	A	
	NA	
	NA	
	NA	
	NA	
	(4)	
	A	
	A	
	NA	
	(6)	
	A	
	A	
	NA	
	(6)	
	A	
	(7)	
	A	
	A	
	(7)	
	A	
	A	
	A	
	A	

At the time this qualification program was completed, significant practicality problems existed in completing full scale environmental and seismic type tests. As a consequence, Westinghouse believed that a reliable qualification could be established by employing well established separate effects methods to address environmental parameters and analysis to address seismic capability, after a test to confirm the natural frequency of a prototype motor.

The qualification program required in WCAP-8754 was completed on thermalastic Epoxy insulation system test samples that are representative of the insulation systems contained in these motor applications when supplied by Westinghouse. The bearings employed in these motor applications are selected according to the recommendations of the Anti-Fraction Bearing Manufacturers Association as stated in WCAP-8754.

The completed test program provides the requisite assurance that the only material likely to be affected by radiation during the post-accident operating phase, i.e., the insulation system, will continue to perform within specification. This assurance is enhanced by the additional margin included in the qualification program (see footnote 7) and previous tests on similar insulation systems (WCAP-7829).

7. Margin is included in this qualification program by:

   - employing multiple samples (8) during radiation testing

   - employing a conservative radiation dose of [2×10^8]b,c,e Rads. For current qualification programs, Westinghouse specifies 2×10^7 Rads (Figure 6-8, WCAP 8587) for 1 year post-LOCA for the gamma dose in the center of the pipe carrying recirculated water from the sump. Westinghouse further reduces this dose by a factor of 5 to allow for the motor being located outside the pipe boundary.

   - addressing potential in-service aging mechanisms due to thermal steady state conditions and cycling, start-up cycles, moisture and radiation.

PURCHASE ORDER NUMBER	TYPE OF EQUIPMENT	MANUFACTURER	MODEL NUMBER OR IDENTIFICATION	LOCATION		ABNORMAL OR ACCIDENT ENVIRONMENT	ENVIRONMENT TO WHICH QUALIFIED
				BUILDING AND ROOM	TAG NUMBER		
10231	RTD, WIDE RANGE TEMPERATURE DECTORS	PYCO	22-3006	RB, PCS LOOP	TE-410,413, 420,423, 430,433	LOCA CONDITIONS TEMP: FSAR FIGURE 6.2-7 PRESS: FSAR FIGURE 6.2-1 SPRAY: 2 HOURS TID: 4.73+7 RADS SUBMERGENCE: NO HSB CONDITIONS TEMP: FSAR FIGURE 6.2-5A PRESS: FSAR FIGURE 6.2-4 SPRAY: 2 HOURS TID: 4.73+6 RADS SUBMERGENCE: NO	LOCA CONDITIONS TEMP: FIGURE 13 PRESS: FIGURE 13 SPRAY: 96 HOURS TID: 2+8 RADS SUBMERGENCE: N/A WAS ONE PROTOTYPE SUBJECTED TO ALL TESTS IN SERIES? YES MSB CONDITIONS TEMP: FIGURE 13 PRESS: FIGURE 13 SPRAY: 96 HOURS TID: 2+8 RADS SUBMERGENCE: N/A WAS ONE PROTOTYPE SUBJECTED TO ALL TESTS IN SERIES? YES

OPERABILITY REQUIREMENTS	OPERABILITY DEMONSTRATED	ACCURACY OR RESPONSE TIME REQUIREMENTS	ACCURACY OR RESPONSE TIME DEMONSTRATED	QUALIFICATION REPORT AND METHOD
TIME WITHOUT FAILURE: 30 DAYS POST LOCA TIME AT FULL ACCURACY: 30 DAYS POST LOCA	TIME WITHOUT FAILURE: 30 DAYS (LOCA ENV.) TIME AT FULL ACCURACY: 30 DAYS (LOCA ENV.)	FULL ACCURACY TOLERANCE: +/-5%	FULL ACCURACY TOLERANCE: +/-5%	GENERAL REPORT I.D: PYCO #770831 METHOD: TEST QUALIFIED LIFE: 2-1/2 YEARS AGING TIME: 168 HOURS AGING TEMP: 121 C DR-46

PURCHASE ORDER NUMBER	TYPE OF EQUIPMENT	MANUFACTURER	MODEL NUMBER OR IDENTIFICATION	LOCATION BUILDING AND ROOM	LOCATION TAG NUMBER	ABNORMAL OR ACCIDENT ENVIRONMENT	ENVIRONMENT TO WHICH QUALIFIED
10109	STEM MOUNTED LIMIT SWITCH	NAMCO	EA-180	RB	7126,8701B, 8702A,8047, 8149A,B,C LCV-463, LCV-459, 8871, PCV444B PCV445A PCV445B	LOCA CONDITIONS TEMP: FSAR FIGURE 6.2-7 PRESS: FSAR FIGURE 6.2-1 SPRAY: 2 HOURS TID: 7.1+7 RADS SUBMERGENCE: NO MSLB CONDITIONS TEMP: FSAR FIGURE 6.2-5A PRESS: FSAR FIGURE 6.2-4 SPRAY: 2 HOURS TID: 7.1+6 RADS SUBMERGENCE: NO	LOCA CONDITIONS TEMP: FIGURE 17 PRESS: FIGURE 18 SPRAY: 96 HOURS TID: 2.04 + 8 RADS SUBMERGENCE: N/A WAS ONE PROTOTYPE SUBJECTED TO ALL TESTS IN SERIES? YES MSLB CONDITIONS TEMP: FIGURE 17 PRESS: FIGURE 18 SPRAY: 96 HOURS TID: 2.04 + 8 RADS SUBMERGENCE: N/A WAS ONE PROTOTYPE SUBJECTED TO ALL TESTS IN SERIES? YES

OPERABILITY REQUIREMENTS	OPERABILITY DEMONSTRATED	ACCURACY OR RESPONSE TIME REQUIREMENTS	ACCURACY OR RESPONSE TIME DEMONSTRATED	QUALIFICATION REPORT AND METHOD
NOTE 37	NOTE 38	NOT APPLICABLE	NOT APPLICABLE	GENERAL REPORT I.D: NAMCO CONTROLS, REV. 1 METHOD: TEST QUALIFIED LIFE: NOTE 6 AGING TIME: 200 HOURS AGING TEMP: 200 F DR-59