

#### UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555

February 5, 1992

Docket No. 50-390 50-391

MEMORANDUM FOR: Document Control Desk Personnel

FROM:

Peter S. Tam, Senior Project Manager Project Directorate II-4 Division of Reactor Projects - I/II

SUBJECT:

WATTS BAR NUCLEAR PLANT -- MAKING TWO DOCUMENTS ON ENVIRONMENTAL QUALIFICATION INTERIM REVIEW RESULTS PUBLICLY AVAILABLE (TAC M63591)

The enclosed documents (Enclosures 1 and 2) represent interim review findings on the Watts Bar Environmental Qualification Program. These documents will be provided to TVA personnel to facilitate their preparation for an upcoming teleconference or meeting with the staff.

By copy of this memorandum, the NRC and local PDRs are provided with a copy of the subject documents.

6 - - -

Peter S. Tam, Senior Project Manager Project Directorate II-4 Division of Reactor Projects - I/II

NRC FILE GENTER GOPY

cc. Docket files NRC PDR Local PDR

9202110258 920205

ADOCK OS

PDR

menof

#### APPENDIX A EQUIPMENT QUALIFICATION STATUS

5. A

The attached table lists the status of class 1E equipment for the Watt's Bar Nuclear Plant, Unit 1, (WBN). The codes below are used in the deficiencies/concerns column. Page numbers listed refer to Tab B of the binders for the equipment items.

Q Qualified T Temperature R Radiation S Submergence \_ CS Containment Spray -Α Aging . Operating Time 0T -Qualified Life QL -TS Test Sequence -

SM - Similarity

6/21-

الملا المنعاد والمنا

Enclosure 1

BINDER NUMBER	EQUIPMENT TYPE	VENDOR	DEFICIENCIES/CONCERNS_
WBNEQ-CABL-006	Signal Cable - FR-EP INS/	Anaconda	Open items p. B-3TVA-Type HS C.
WBNEQ-CABL-010	Signal Cable - XLPE INS/ TVA Type MS	Belde	Open items p. B-3
WBNEQ-CABL-012	Signal Cable - XLPE INS/ TVA Type MS	Brand Rex	Open items p. B-2
WBNEQ-CABL-013	Signal Cable - TEFZEL INS/ TVA Type ETFE	Carolina W & C	SM
WBNEQ-CABL-017	Signal Cable - XLPO INS/ TVA Type MS	Eaton	Open items p. B-3, R
WBNEQ-CABL-021	Low Voltage Power and and Control -EPR/CSPE INS/TVA Type PXJ and PXMJ	Essex	Q
WBNEQ-CABL-037	Signal Cable - KXL760D-CXLPE INS/TVA Type MS	Rockbestos	Q
WBNEQ-CABL-043	Low Voltage Power and Control -EPR INS/TVA Types PXJ and PXMJ	Okonite	Open items p. B-3
WBNEQ-CABL-044	Insulated Switchboard Wire - KXL760G - RXLPE INS/TVA Type SIS	Rockbestos	Open items p. B-3

0CT Ø3 '91

08:38AM EG&G ID - SS&RE

P.3/9

•

## TABLE 1. Watts Bar Nuclear Plant, Unit 1, Equipment Qualification Status

1

· 建立二硫酸盐++拉

FROM 208-525-2930

: 0-03-91

:0:41 AM

טי 4-

<u>BINDER NUMBER</u>	EQUIPMENT TYPE	VENDOR	DEFECIENCIES/CONCERNS
WBNEQ-CABL-047	Signal Cable - Tefzel Ins/ TVA Type ETFE	Teledyne	Q
WBNEQ-CABL-049	Signal Cable – KXL780 – CXLPE INS/TVA Types MS and PXMJ	Rockbestos	Open items p. B-3
WBNEQ-CABL-051	Low Voltage Power and Control Cable - FRXLPE INS/TVA Types PXJ and PXMJ	Okonite	Open items p. B-3 (cable not presently in use at WBN)
WBNEQ-CABL-052	Power and Control Cable TVA -Types PXJ and PXMJ	Rockbestos	Open items p. B-3 (cable not presently in use at WBN)
WBNEQ-CABL-053	Power and Control Cable - XLPE INS/TVA -Types PXJ and PXMJ	Rockbestos	Open items p. B-3 (cable not presently in use at WBN)
WBNEQ-CABL-055	Thermocouple Extension Cable TVA Type YPS (TX)	Rockbestos	Open items p. B-3 (cable not presently in use at WBN)
WBNEQ-CABL-063	Low Voltage Power and Control Cable -EPR INS/TVA Type PXJ	Okonite	Open items p. B-2

1

;

,

i t

: 9 Ę

С С

u ⊢

00.00HI- 6686

Ę

UUUAR

ר. ע

ينغن

1454 SUS-255-

Û E E E E

3

ป ว ต

BINDER NUMBER	EQUIPMENT TYPE	VENDOR	DEFECIENCIES/CONCERNS
WBNEQ-CSC-001	Electric Conductor Conduit Seal Assemblies (ECSA)	Conax Corp.	Q
WBNEQ-CSC-002	Conduit Seal Assemblies	Namco	Qualified to specified conditions (seals not presently in use at WBN)
WBNEQ-HS-001	Handswitches	Square D	Q
WBNEQ-HS-002	Handswitches	Cutler Hammer	Qualified to specified conditions (seals not presently in use at WBN)
WBNEQ-HTR-001	Electric Heaters/Hydrogen Recombiners	Westinghouse	Open item p. B-3
WBNEQ-IFS-001	Flow Switches	FCI	Open items p. B-3
WBNEQ-ILCV-001	Electropneumatic Valve Positioner	Masoneilan	Open items p. B-3
WBNEQ-ILP-001	Hydrogen Analyzers	Comsip Delphi	R
WBNEQ-ILT-001	E13DM Pressure Transmitter	Foxboro	Open items p. B-4
WBNEQ-IMIK-001	Heater and Heater Controls	Nutherm	Open item p. B-3

The triad play that is

1

G

J

<u>BINDER NUMBER</u>	EQUIPMENT TYPE	VENDOR	DEFECIENCIES/CONCERNS
WBNEQ-IPT-001	Pressure Transmitters	Westinghouse	Q
WBNEQ-IRE-001	<b>Radiation Monitors</b>	General Atomic Company	Open item p. B-2
WBNEQ-ITE-001	Strap-On RTD	Westinghouse (Minco)	Open item p. B-2, S
WBNEQ-ITE-003	Resistance Temperature Detector (RCS Well- Mounted)	RdF	Open items p. B-5, S
WBNEQ-ITE-004	Resistance Temperature Detector (Fast Response Well-Mounted)	RdF	Open item p. B-5, S
WBNEQ-ITS-001	Temperature Switches	Fenwal	Open item p. B-4, R
WBNEQ-ITS-002	Temperature Switches	Static-O-Ring	Open items p. B-5
WBNEQ-IZS-001	EA 180 Series Limit Switches Manufactured after 7/30/80	Namco	Open items p. B-2, T
WBNEQ-IZS-002	EA 180 Series Limit Switches Manufactured between 9/5/78 and 7/30/80	Namco	Open item p. B-2

OCT 03 '91 08:39AM EG&G ID - SS&RE

P.6/9

.13

:

;

A.L. M. South

1

÷

BINDER NUMBER	EQUIPMENT TYPE	VENDOR	DEFECIENCIES/CONCERNS
WBNEQ-IZS-003	EA 740 Limit Switches Manufactured after 10/01/81	Namco	Open item p. B-5
WBNEQ-IZS-004	EA 740 Limit Switches Manufactured between 2/20/78 and 10/01/81	Namco	Open items p. B-3
WBNEQ-IZS-005	EA 180 Limit Switches Manufactured after December 1986	Namco	Qualified to specified conditions (Switches not presently in use WBN)
WBNEQ-JBOX-001	Junction Boxes	Various	Open items p. B-3
WBNEQ-MOT-001	Large Electric Induct- tion Motors - Outside Containment	Westinghouse	Open item p. B-2, T
WBNEQ-MOT-002	Electric Induction Motors with Type RH Insulation - Inside Containment	Reliance Electric	Open item p. B-2, CS
WBNEQ-MOT-003	Electric Induction Motors with Type RH Insulation - Outside Containment	Reliance Electric	Open item p. B-2



OCT 03 '91 08:39AM EG&G ID - SS&RE

P.7/9

BINDER NUMBER	EQUIPMENT TYPE	VENDOR	DEFICIENCIES/CONCERNS
WBNEQ-MOT-004	Electric Squirrel Cage Induction Motor - Outside Containment	Louis Allis	Open items p. B-2, OT, T
WBNEQ-MOV-001	Motorized Valve Actuators with Type RH Insulation	Limitorque	Open items p. B-2, T, S
WBNEQ-MOV-003	Motorized Valve Actuators with Class B Insulation	Limitorque	Open items p. B-5
WBNEQ-PENT-002	Primary Containment Elec- trical Penetrations, Low Voltage Power and Control	Conax Corp.	Open item p. B-6
WBNEQ-PENT-003	Primary Containment Elec- trical Penetrations, Instrumentation and Indication	Conax Corp.	Open item p. B-6
WBNEQ-SOL-001	Solenoid Operated Valves Target Rock for NSSS Systems	Target Rock	A, OT
WBNEQ-SOL-002	Solenoid Operated Valves Target Rock for B.O.P. Systems	Target Rock	Open items p. B-3

ID - SS&RE

: 9 OCT

16, 20

<u>6</u>Ε:80

EC&C

÷,

P.8/9

.

<u>BINDER NUMBER</u>	EQUIPMENT TYPE	VENDOR	DEFICIENCIES/CONCERNS
WBNEQ-SOL-003	Solenoid Operated Valves - ASCO Model 206-381	ASCO	Open items p. B-4, R
WBNEQ-SOL-004	MSIV Air Manifold Assembly Solenoid Operated Valves	Gould Allied	QL
WBNEQ-SOL-005	Solenoid Operated Valves - ASCO Model 206-380	ASCO	R
WBNEQ-SOL-006	Solenoid Operated Valves - ASCO Model NP8316	ASCO	Open items p. B-5, R, S
WBNEQ-SOL-007	Solenoid Operated Valves - ASCO Model NP8320	ASCO	Open items p. B-4
WBNEQ-SPLC-001	Heat Shrink Cable Splices (600 VAC or less)	Raychem	S, T
WBNEQ-TB-001	Terminal Blocks	General Electric	Open items p. B-3
WBNEQ-XMTR-001	Transmitter 764 Lots 7 & 4 (Westinghouse)	Barton	Open items p. B-5, TS
WBNEQ-XMTR-004	Transmitter 763 Lot 7	Barton	Open item p. B-5, TS, T, S

P.9/9

OCT Ø3

16,

08:39AM EG&G ID -

SS&RE

ţ.

9

÷,

The following binders were not available for pre-audit review

363-0

WBNEQ-CABL-002 WBNEQ-CABL-003 WBNEQ-CABL-005 WBNEQ-CABL-008 WBNEQ-CABL-015 WBNEQ-CABL-022 WBNEQ-CABL-032 WBNEQ-CABL-033 WBNEQ-CABL-036 WBNEQ-CABL-050 WBNEQ-CABL-056 WBNEQ-CABL-061 WBNEQ-INM-001 WBNEQ-IPT-002 WBNEQ-ITE-005 WBNEQ-ITE-006 WBNEQ-IXT-001 WBNEQ-MOV-002 WBNEQ-SOL-009 WBNEQ-XMTR-006

a tha lan a lan a lan a

**e** 12

all and a second se	· · · · · · · · · · · · · · · · · · ·																																	
closure 2		C A B L * 0 0 6	C A B L * 0 1 0	C   1   1   1   1   1   1   1   1   1	C C A A B E L L A C O C O L 1 3 7	C A B L * 0 2 1	C A B L * 0 3 7	C A B L * 0 4 3	CABL*044	CA BL * 04	C C A A B E L I * * 0 0 4 5 9 1	C C A A B B L 1 + 0 5 5 2		C C A B L * 0 5 5 5	C A B L * 0 6 3	C S C * 0 0 1	C   1 S C + 0 0 1 2	H H S S * * 0 0 1 2	H H R 0 + 0 0 1	I F S * 0 1	I L C V * 0 0 1	I P * 0 1	I L T * 0 0 1	I M I K * 0 1	I P T * 0 0 1	I R E * 0 0 1	I 1 T 7 E 1 * 4 0 0 0 0 1 3	I T S * 0 0 1	I T S * 0 0 2	I Z S * 0 0 1	I   I Z   Z S   S * * 0   0 0   0 2   3		I Z S * 0 0 5	J B O X * 0 0 1
Ũ	Questions: 1) Test temperature discrepancy between reported and calculated values indicate reported values too low for thermal aging. [H(4)d]																VATU ONLY																	
	2) Were the insulation resistance (IR) and LOCA test a simultaneous test? Was leakage identified?													.~														·		ļ				
	3) What is meant by fail safe circuit? [K(7)] Failur mote & failth ??																						T		T							T		T
	4) Why were the mechanical, electrical and process stresses not considered in the test? [H(2)]	Ş																																
	5) Need to list Activation Energies when employing the Arrehnius Method. [H(4)f] Need explanation?	~											V	,									į							, ,				
	6) Does IEEE 383-1974, para. 1.3.4.1 and 2.3.1 justify equipment as being sat. for vibrational characteristics? [H(2), H(6) & H(7)] $N/A$																			•														
	7) Is "nomal" misspelled to $W/A$ mean normal or nominal? [J(5)a, Justification and Comments]																																	•
	8) Anomalies concluded as having no significant impact must be listed. Some anomolies seem subject to scrutiny. [M(5)]									V			2										5 - 5- - 25-											
	9) Should jacketed (sacrificial) NA material be listed as a material susceptible to significant thermal/ radiation degradation? [I]												~																					
	. i (			-									:									i												
	· .																		-															

1

		C A B L * 0 0 6	C A B L * 0 1 0	C A B L * 0 1 2	C A B L * 0 1 3	C C C A J B E I J C Z J C Z J	C C A A B B L L * * 0 2 3 L 7	C A B L + 0. 4 3	CABL*044	CABL * 047	C A B L * 0 4 9	C ( A ) B   L   * + 0 ( 5 ) 1 )	C C A A B B L L * * 0 0 5 5 2 3	CABL*055	C A B L * 0 6 3	C S C * 0 0 1	C 1 S C + 0 0 2		H H S T R D 0 0 0 1	I F S * 0 1	I L C V * 0 0 1	I L P * 0 0 1	I L T * 0 0 1	I M I K * 0 1	I : P   T   # : 0 (0 1 :	I 1 R 7 E 1 * 1 0 0 1 1	L I E E * * 0 0 0 0 L 3	I T E * 0 0 4	I T S * 0 0 1	I 1 T 2 * 1 0 (0 2 :		I Z S * 0 0 3	I Z S * 0 4	I Z S * 0 5	J B O X * 0 1	- , ,	
	Questions (cont.) 10) Footnote missing/ improperly referenced in text. [K]												~									•															
	11) Need to address submergence by stating what the component is going to be used for and where it will be installed to preclude submergence. [K(7), L(1), L(2), O(11)]																				$\checkmark$		1 · ·					,									
JA	12) How was the demonstrated operating time determined? [L(1)]																								T				$\overline{\mathbf{v}}$		Τ	Γ					
ેપ	13) Why was test temperature elevated to a value to cause equipment degradation and what was the magnitude of the value? [P(2)b]	L	2	7	ħ			л	e e	, ee	,e'ı	.e\$	2	7	5	ł	20	c	Ċ	h	<del>بر</del>		2														
	14) Pages missing.		Ť		T	╈	$\uparrow$	Π		╈	T	╈	$\uparrow$			1	T			$\Box$		1	╞	╈	╈	T	ϯ	Π		+	Ŧ	T	Ħ	T	1		
	15) Why were there different doses for each item? [G(III), 1 & H(5)d]	n	h	at	-i	Ŧ	-7	Ī	D	2	Ť							1					T			T	1				T	1					
	16) How can the requirement for synergism be satisfied when all known synergistic effect were N/A'd per H(3)? [O(18)] What is Threshold in			se Se	Jez	G		0	, ,	Å			4.0		-4		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	, , ,																			
	17) Why wasn't the equipment thermally aged? $[G(1), H(1), H(2) \& H(4)]$ $g_{00}$ guisting,										•																										
	18) Why wasn't the equipment aged to the end of life? $[O(6)d]$											Τ										100101	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		144.10.10	T		Π		T			Π				
	19) Wrong/ incomplete report number referenced. [H(4)b], [K(6)]									Ţ	~		ł					Ţ							1	ŀ	+-	┟╶┨		Ţ	1						
	. i	ı	I	'	I	1	1		I	1	I	I	1		1 f	I	I	1	1	11	1	1	1	I	1	1	I	I I	1 1	ł	I	I	1		I		
	• ,		-																			i		•													
	×												1.						· ;																		
																			•																		
																			:																		

,	· · ·	C A B L * 0 0 6	CA BL * 0 1 0	CABL*012	C A B L * 0 1 3	CABL * 017	CABL*021	CABL*0,37	CA BL * 0,4 3	C A B L * 0 4	C A B L * 0 4 7	CA BL * 0 4 9	CABL * 051	CABL*052	CA BL * 05 3	CABL *055	C A B L * 0 6 3	C S C * 0 1	C S C * 0 0 2	H S * 0 0 1	H S * 0 2	H T R * 0 0 1	I F S * 0 1	I L C V * 0 0 1	I L P * 0 0	I L T * 001	I M I K * 0 1	I P T * 0 0 1	I R E * 0 0	I ] F ] E F F O () D () 1 ]					I Z S * 0 0 2	I Z S * 0 0 3	I Z S * 0 0 4	I Z S * 0 0 5	J B O X * 0 0 1	
	Questions (cont.) Meed A Mplanakon 20) Why is max flood level N/A'd? [Submergence Evaluation]																																	,						
	21) Should this item be addressed as an open issue in B? [M] open them	Π																			1	1		T		1			Ť	+	T	ľ		†-	T	<u>†</u>			ſ	1
	22) Why wasn't degradation investigated and does failure constitute a satisfactory test? [M(5,2,3,4)]																										-+							,						
~	23) Clarify what is meant by "Nylon rollers are not acceptable and are controlled through TVA's maintenance program."? $\frac{B(7)f}{Pase} B-9 [F]$																																							
?	24) Wrong comment #/ comment not referenced.					-														Ť		Ť	Ť	1.			T	Ť	T	T	Ť		Ť		ļ		×			
J	25) TVA EQ. program states to check only one block. Further 10CFR50.49 (f) states "Each item of electric equipment important to safety must be qualified by <u>one</u> of the following methods:". [D]	:												Y																										
	26) Why so many equipment location disclaimers? [B]																	┦					╋				+		╋	╀╴	┢	┼╌	-	×		✓ /	Y			
	27) Clarify which industry standard. [I]	T		*	7									+			+	╉	+	╈		†-		+				+-		+-	┢		t							
	28)Explain how years equivalence was arrived for various hours of testing [H(4)d]																			†					1			•		T										

·····

))

•

----

4

-

	ic	lc	lċ	lc	lc	Icl	cl	cl	clo	cie	clo	: c	Ici	CI	clo	lc	l H l	н	нI	, 1	Il:	<b>1</b>   1	:1 <b>1</b>	T	T	Il	TI	<b>1</b> ]:	r I 1	τlτ	ΙT.	T	тł	T
	A B L * 0 0	A B L * 0 1	A B L * 0 1	A B L * 0 1 2	A B L * 0 1	A B L () 2	A B L * 0 3 7	A B L * 0 4	A / B / J L / J * 1 0 / 4	A / B H L I * * 0 (0 4 4	A A B B L L * * D 0 1 5	A B L * 0 5	A B L * 0 5 2	A B L * 0 5	A S B C L * 0 0 6 1	S C + 0 0 2	S * 0 0 1	S * 0 0 2	T R * 0 0	F S * 0 0 1			M I K * 0 1	P T * 0 1	R E * 0 0	T E * 0 0	T E * 0 0 3	T E * 0 0 4		T Z 5 S * * 0 0 0 0 2 1	Z S * 0 0 2	Z S * 0 3	Z S * 0 0 4	-Z S * 0 5
uestions (cont.) 9) What methodology was employed for hermal aging? [H(4)]				3			4	3					3																					
1) Why is there a range of values or dose rate? [B],[H]																																		
																								•										
<b>රැ.</b> ත්																									-									
					-																											,		
																						-												
																			,		and the			「「「「「「「「」」」										
,																								ľ										