TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
1630 Chestnut Street Tower II

March 24, 1985

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of	)	Docket Nos. 50-390
Tennessee Valley Authority	)	50-391

During a telephone conference call between TVA and NRC representatives on March 6, 1985, TVA was notified of several (14) revisions which are to be made to the Watts Bar Nuclear Plant (WBN) unit 1 final draft technical specifications. These revisions result from NRC's ongoing review of the WBN unit 1 technical specifications. In several instances the revision in question reverses previous agreements between TVA and NRC. As such, we strongly take exception to such changes and are concerned about the WBN technical specification are being revised in this manner.

Enclosed are our responses to nine of the identified revisions. Also, included are copies of WBN Surveillance Instructions K607A, K612A, and K630A; two sets of wiring diagrams 45N600-62-R R7 and 45N600-87-2 R4, and logic diagram 47W611-99-4 R7.

If you have any questions concerning this matter, please get in touch with D. B. Ellis of my staff at FTS 858-2682 in Chattanooga.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D. E. McCloud
Nuclear Engineer

Sworn to and subscribed before me
this 24th day of March 1985

Paulette H. White
Notary Public
My Commission Expires 8-24-88

Enclosure
cc: U.S. Nuclear Regulatory Commission (Enclosure w/o diagrams)
Region II
Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

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50-390

RESPONSE TO REVISIONS TO TECH SPECS RESULTING FROM NRC REVIEW OF UNIT I FINAL DRAFT TECH SPECS

50-390
8503270304
Date of Document: 3/24/85
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Enclosure

NRC recently indicated that TVA would be required to identify a primary and a backup position indicator for the pressurizer safety and relief valves. As a result of TVA's question regarding the basis for this technical specification change request, NRC indicated that a generic letter dated July 2, 1980, provided the regulatory basis. TVA has reviewed that letter and finds that it is not applicable to Watts Bar and, hence, does not provide sufficient regulatory basis to require a change from revision 4 of the Westinghouse Standard Technical Specifications. The letter in question was sent from D. G. Eisenhut to all boiling water reactor licensees on July 2, 1980. Watts Bar is a pressurized water reactor. Regulatory guidance on the technical specification requirements for the valve position indicators was provided to pressurized water reactors in generic letter 83-37. It was sent from D. G. Eisenhut to all pressurized water reactor licensees on November 1, 1983. The Watts Bar certification technical specifications are in agreement with generic letter 83-37, revision 4 to the Westinghouse Standard Technical Specifications, and draft revision 5 to the Westinghouse Standard Technical Specifications.

The NRC provided TVA a description of their internal procedure for making changes to the technical specifications in a letter from R. L. Tedesco to H. G. Parris dated June 22, 1982. The letter states, "the NRC staff will not require the Watts Bar draft technical specifications to be updated to the next revision of NUREG-0452 should it be issued prior to fuel load, except in matters of significant safety importance." NRC has not demonstrated that the change requested is a matter of significant safety importance. In fact, the current specifications are in compliance with the guidance issued by the NRC in generic letter 83-37.

TVA also takes exception to the requested change for technical and economic reason. The technical argument against the change request falls from the intended use of the position indication information. The operator uses this information to identify a breech in the reactor coolant system. The only directly related operator action resulting from these indications is closure of the PORV block valves if a PORV is suspected to be open. No other operator decisions are influenced by these indicators. Positive identification of the open or leaking valve is not required. Positive identification of the breech in the reactor coolant system is all that is required. Specific identification of a primary and backup indicator does not enhance safety because any or all of the indicators can be used to identify the reactor coolant system leak. In fact, identifying a primary and secondary indicator may arbitrarily exclude some useful indication.

The economic arguments fall from the wording of the various action statements. The channel identified as the primary indicator would have an allowable outage time of only 48 hours. The channel identified as the backup indicator would have an allowable outage time of only 7 days. No credit is given for the variety of channels TVA has provided. These include:

PORV Indication

1. Stem-mounted limit switch indication in the main control room
2. Acoustic monitors
3. Tailpipe temperature (common to both PORV's)

Safety Valve Indication

1. Acoustic monitors
2. Individual tailpipe temperature

Common Indication

1. Pressurizer relief tank temperature
2. Pressurizer relief tank pressure
3. Pressurizer relief tank level

In addition, pressurizer pressure low alarms are also available to alert the operator to an open valve.

The foregoing technical argument and the lack of an NRC argument for significant safety importance do not warrant a technical specification change that would impose the 48 hour outage time. The economic penalty imposed by forced outages when the so-called primary indicator is out of service for more than 48 hours is not justified.

TVA requests that the certification copy of the technical specifications, regarding PORV and safety valve position indication, remain as issued in the Feburary 15, 1985, letter from T. M. Novak to H. G. Parris. Any change made to the Watts Bar technical specifications to identify primary and backup indicators for these valves without CRGR review, a revision to generic letter 83-37, and documented proof that the change is a matter of significant safety importance will be considered a backfit.

WATTS BAR NUCLEAR PLANT
TECHNICAL SPECIFICATIONS INPUT

NRC Question D.35
Open Item No. 103
T.S. Page 3/4 4-9

Pressurizer Heater Testing - Surveillance Requirement 4.4.3.3 requires that the heaters be demonstrated OPERABLE once per 18 months by manually transferring power from the normal to the emergency power supply and energizing the heaters. Surveillance Requirement 4.4.3.2 requires verification of heater capacity by current measurement when the heaters are energized. We consider that the requirements imposed by SR 4.4.3.3 are severe from an economic and safety viewpoint. We believe the problem can be resolved once a thorough understanding of our system and test technique are understood.

The normal and emergency power supply for the heaters are one in the same: the 6.9 kV shutdown boards. It is the power supply for the 6.9 kV shutdown boards that changes; offsite power is the preferred source and diesel generators are the emergency source. As part of the 18 month diesel generator testing (SR 4.8.1.1.2.d.7) a blackout coincident with a safety injection signal is simulated. Load shedding and subsequent re-energization of emergency loads are verified. At this time the emergency loads are powered from the emergency power source. However, it is impractical to load the heaters back on the 6.9 kV shutdown board and energize them because this test is typically done during refueling and the pressurizer is empty. The heaters would be damaged if energized in a dry environment. To impose this requirement would limit the flexibility of scheduling the BO/SI test, it could only be scheduled when the pressurizer is full.

We believe verification of the load shed of heaters during this test, with subsequent verification of heater breaker operation before startup (SR 4.4.3.2) satisfies the requirements. The heaters do not 'see' whether the shutdown board is supplied from the normal or emergency power source.

Therefore, the phrase 'and energizing the heaters' should be deleted from SR 4.4.3.3.

References: TVA Drawings:
45W724-1 R6 (FSAR Figure 8.3-16)
45W724-4 R6 (FSAR Figure 8.3-17)
45W760-211-8 (FSAR Figure 8.3-6)
45W760-211-10 (FSAR Figure 8.3-8)
47W611-68-2
45W760-68-4

Submitted to NRC - L.M. Mills to E. Adensam dated 9/15/82

REVIEWED AND APPROVED BY NRC

WATTS BAR NUCLEAR PLANT
TECHNICAL SPECIFICATIONS INPUT

NRC Question C.4, D.38
Open Item No. 111
T.S. Page 3/4 4-20

RCS Water Inventory Balance Requirements - We have proposed that the water inventory balance be performed every 72 hours during steady state operation. The water inventory balance can only be performed during steady-state operation. Consequently, during a heatup, cooldown, or some other transient operation, the surveillance cannot be performed. It will be performed as soon as steady state conditions are re-established. Sequoyah Nuclear Plant unit 1 has already submitted several LERs for this type of situation. We consider this surveillance requirement unreasonably requires TVA to perform a test that occassionally cannot be performed. The resulting paperwork is unnecessary and a burden to both TVA and NRC.

References: SQNP LER 81-08, date of event 2/5/81
SQNP LER 81-084, date of event 7/10/81
SQNP LER 81-132, date of event 10/29/81

Submitted to NRC - L.M. Mills to E. Adensam
dated 9/15/82

REVIEWED AND APPROVED BY NRC

Snubber Bases

In a conference call with NRC on March 8, 1985, Bob Perch, Standard Technical Specifications reviewer, indicated that a change to the Watts Bar snubber bases would be made; however, no specific wording was discussed. The snubber bases have been compared with revision 5 of the Standard Technical Specifications (STS). The changes to the snubber bases from the STS were submitted to NRC in a letter from L. M. Mills to E. Adensam dated May 8, 1984 (A27 840508 003). These changes were approved by NRC and incorporated into the final draft of the Watts Bar Technical Specifications. Any changes to the snubber bases in the final draft will be addressed when the change has been clearly identified.

Surveillance Requirement 4.8.1.1.2.f.10

TVA requested that the wording for surveillance requirement 4.8.1.1.2.f.10 be changed to read as follows:

> Verifying that the automatic load sequence timers are OPERABLE and their setpoints are within the specified bands.

This request was made and justification provided in a letter from L. M. Mills to E. Adensam dated September 15, 1982 (copy attached). The draft version of the Watts Bar technical specifications was subsequently revised.

NRC has recently indicated that the wording in the certification copy of the technical specifications will be changed back to the wording in the standard technical specifications. TVA disagrees with the NRC position. The Watts Bar design has individual load sequence timers for each piece of equipment. The nominal setpoint for each load is currently specified in FSAR table 8.3-3. This table will be revised to replace the nominal setpoint with the acceptable timer setpoint range. A copy of the proposed revision is attached. The acceptable setpoint ranges are based on equipment operating requirements and diesel generator loading limitations.

A single percent tolerance is not appropriate because of the large variation in nominal timer setpoints (2 seconds for charging pumps and 90 seconds for pressurizer heaters) and other operating requirements. For example, using the setpoint range midpoint as the setpoint, the largest setpoint range is plus or minus 10.6 percent and the smallest setpoint range is plus or minus 1.02 percent. TVA believes that the wording presented in the September 15, 1982, submittal is correct and the appropriate place for the design information on the setpoint tolerance bands is the FSAR.

WATTS BAR NUCLEAR PLANT
TECHNICAL SPECIFICATIONS INPUT

NRC Question A.14
Open Item Nos. 182, 183
T.S. Page 3/4 8-6

Diesel Generator Load Sequencers - The Watts Bar design has individual load sequence timers for each piece of equipment. The nominal setpoint for each load is specified in FSAR table 8.3-3. TVA preoperational tests specify an acceptable operating band for each timer. The acceptable bands are based on equipment operating requirements and diesel generator loading limitations. Percent tolerance is not applicable because of the large variation in nominal timer setpoints (two seconds for charging pumps and 90 seconds for pressurizer heaters).

Diesel Generator Lockout Features - We have inserted the D.G. lockout features. These were previously provided in our original submittal of the draft technical specifications.

References: FSAR Section 8.3
Preoperational Test TVA-13B 'Onsite AC Distribution System'

Attachment to letter:
L.M. Mills to E. Adensam
dated September 15, 1982
Reviewed and approved
by NRC.

Table 8.3-3

DIESEL GENERATOR LOAD SEQUENTIALLY APPLIED FOLLOWING A LOSS OF NUCLEAR UNIT AND PREFERRED (OFFSITE) POWER

Equipment Name	Time in Seconds*	Total HP Load	Starting kVA	Load Applied: Nonaccident Condition	Load Applied: Accident Condition
Miscellaneous Loads	0			Yes	Yes
Centrifugal Charging Pump & AHU	2.0-2.38	603	3840	Yes	Yes
Safety Injection Pump & AHU	4.8-5.7	403		No	Yes
Residual Heat Removal Pump & AHU	8.45-10.45	403	2240	No	Yes
Essential Raw Cooling Water Pump	13.75-15.2	800	4060	Yes	Yes
Component Cooling System Pump	18.95-19.5	350**	1810	Yes	Yes
Fire Pump	24.2-24.7	200		Yes	Yes
Auxiliary Feedwater Pump	29.5-30.4	600	3240	Yes	Yes
Containment Spray Pump & AHU	108.08-132.0	705		No	Yes
Shutdown BD Rm Chiller Pkg	42.75-47.25	250***	911	Yes	Yes
Pressurizer Heaters	87.75-91.0	485 kw	485 kw	Yes	No

Diesel Generator Set Rating: 4400 kw continuous and 4840 kw for 2 hours out of 24

*Time is Measured from the time of closing of the generator breaker connecting the diesel generator to the shutdown board. Values given are nominal times. Actual times are consistent with the diesel generator loading analyses and will be verified during preoperational testing.

**Diesel generator 1A or 2B will have two component cooling system pumps loaded

AHU - Air Handling Unit

***On diesel generator 1B and 2A only.

Revised by Amendment 52

WATTS BAR NUCLEAR PLANT
TECHNICAL SPECIFICATIONS INPUT

NRC Question D.62
Open Item No. 186
T.S. Page 3/4 8-7

Diesel Generator Battery Testing - The requirements to perform a battery service test, performance discharge test, and monitor battery capacity should be deleted. These batteries are not load carrying batteries. They function to flash the generator field and close the breaker to connect the generator to the 6.9 kV shutdown board. A battery capacity test does not provide any additional assurance that the required safety function will be accomplished. Proper voltage and some minimum charge is all that is required.

Note: This same discussion was used to delete these requirements from the Sequoyah Technical Specifications.

Submitted to NRC - L.M. Mills to E. Adensam dated 9/15/82

Reviewed and Approved by NRC.

b. At least once per 92 days and within 7 days after a battery discharge with a battery terminal voltage below [redacted] 104 volts or a battery overcharge with a battery terminal voltage above [redacted] 143 volts by:

1. Verifying that the parameters in Table 4.8-2 meet the Category B limits,

2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of 6 connected cells is above 60°F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.

3. The resistance of each cell to terminal connection is less than or equal to 150 x 10^{-6} ohms.

~~d. At least once per 18 months by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test.~~

~~e. At least once per 60 months, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test may be performed in lieu of the battery service test required by Surveillance Requirement 4.8.1.1.2 d.~~

~~f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.~~

Surveillance Requirement 4.8.2.1.c.4

TVA has proposed that the vital battery charger test be done at 150 amperes and 125 volts for a minimum of 8 hours. The 150 ampere acceptance criteria is based on the documented worst-case dc bus loading with approximately 15 percent margin added. The worst-case dc bus loading is documented in the Final Safety Analysis Report (FSAR). The worst-case loading was also the subject of a letter from L. M. Mills to E. Adensam dated October 9, 1981. NRC has reviewed this information and documented the fact in section 8.3.2.1 of the safety evaluation report. TVA has installed 200 ampere capacity chargers at Watts Bar. This is also documented in the FSAR.

TVA disagrees with the NRC position that surveillance requirement 4.8.2.1.c.4 should require testing at 200 amperes. The purpose of the technical specifications is to ensure that minimum design requirements are met. In this case, the minimum requirement is that the charger be capable of supplying the worst-case dc bus loading of 132 amperes. TVA has chosen to include an additional margin of approximately 15 percent. Testing at 150 amperes more than adequately demonstrates that the system can perform its safety-related function.

The change in philosophy that appears to be emerging, that of writing technical specifications for equipment design capability rather than minimum safety requirements, unnecessarily penalizes utilities that build in margin over safety-related requirements. In this particular case, a charger that failed to deliver 200 amperes would be declared inoperable and plant shutdown started in 2 hours. This would be true even if the charger delivered 199 amperes. However, 199 amperes still provides 50 percent margin over the worst-case dc bus loading. Clearly, this sort of regulation is excessive. In fact, it may be detrimental to safety in the long run because it may force designers to design only to the safety requirement without adding additional margin because that margin becomes a technical specification requirement.

NRC also expressed concern that the dc bus loads could be increased above the 150 ampere value as justification for using a 200 ampere acceptance criteria. This concern is not warranted. 10CFR Part 50.59 requires adequate control of plant modifications. 10CFR Part 50.59(a)(2)(iii) identifies changes that reduce the margin of safety afforded by technical specifications as an unreviewed safety question. NRC approval is required prior to implementation for changes so identified. In this particular case, the worst-case dc bus loading could not be increased above 150 amperes without creating an unreviewed safety question and requiring a technical specification change.

Containment Isolation Valves, Table 3.6-2

TVA has developed Table 3.6-2 to include only those valves that receive a containment isolation signal (phase A, phase B, or containment ventilation isolation) and those manual valves that must be opened on a routine basis for system operations testing. Table 3.6-2 was never intended to duplicate the listing of containment isolation valves in the final Safety Analysis Report (FSAR). The reasons for this decision include the following:

1. The FSAR is the appropriate place to list all the containment isolation valves. Duplicating the list in the technical specifications would create another administrative roadblock for plant modifications that involve additions, deletions, or changes to containment isolation valves that are not automatically isolated. This duplication, coupled with the recent changes to NRC administrative procedures regarding technical specification changes, takes away authority granted to the utility by 10 CFR Part 50.59.

2. 10 CFR Part 50 Appendix T and surveillance requirement 4.6.1.2.d require testing of containment isolation valves regardless of whether they are listed in Table 3.6-2.

3. The surveillance requirements for specification 3.6.3 require testing of the automatic isolation signal and valve stroke time. These requirements only apply to containment isolation valves that receive an automatic isolation signal.

4. The limiting condition for operation requires that the valves listed in Table 3.6-2 be operable with the isolation times designated. This implies that the table should include only automatically isolated valves.

5. Previous NRC practice has been to include only those valves that are automatically isolated or required to be open in excess of one hour for system operation or testing.

6. Specification 3.6.1.1 requires that containment integrity be maintained. Deviations must be corrected within one hour except as provided in Table 3.6-2.

7. Surveillance requirement 4.6.1.1.a addresses all penetrations containing containment isolation valves that are <u>not</u> listed in Table 3.6-2. However, this surveillance requirement does not require a listing of all affected equipment.

TVA believes that only automatically isolated valves and manual valves that must be opened routinely in excess of one hour should be listed in Table 3.6-2 for the reasons stated above. In addition, TVA believes this position is consistent with the philosophy expressed by Harold Denton in a March 1, 1985 meeting with utility representatives on the subject of technical specification improvements. It is also inconsistent with the philosophy expressed in generic letter 84-13 which deleted the equipment listing for snubbers.

The FSAR containment isolation valve Table 6.2.4-1 has been reviewed for valves which do not receive a containment isolation signal but would be required to be opened with an isolation signal present. These valves should be included in technical specification Table 3.6-2. The marked-up technical specification pages and a justification for this change are attached.

Justification for Change to Technical Specification Table 3.6-2

Attached is a marked-up Table 3.6-2 from the Watts Bar Technical Specification. This change will add remote manual containment isolation valves which would be required to be open with a containment isolation signal present. This change was requested by NRC in a February 6, 1985, meeting with TVA representatives to discuss Watts Bar open technical specification issues.

The valves which are being added to Table 3.6-2 are containment isolation valves in the Watts Bar sampling system. These valves would be required to be open during post accident conditions in order to take containment air samples, reactor coolant system samples, and hydrogen analyzer samples. The opening of these valves will be performed under administrative controls.

These sampling system remote manual valves receive no automatic isolation signal; therefore, no maximum isolation time should be specified in Table 3.6-2.

TABLE 3.6-2 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
3. Phase "A" Containment Vent Isolation (Cont.)		
FCV-30-19#	Inst Room Purge Air Supply	≤ 4
FCV-30-20#	Inst Room Purge Air Supply	≤ 4
FCV-30-37#	Lower Compt Pressure Relief	≤ 4
FCV-30-40#	Lower Compt Pressure Relief	≤ 4
FCV-30-50#	Upper Compt Purge Air Exh	≤ 4
FCV-30-51#	Upper Compt Purge Air Exh	≤ 4
FCV-30-52#	Upper Compt Purge Air Exh	≤ 4
FCV-30-53#	Upper Compt Purge Air Exh	≤ 4
FCV-30-56#	Lower Compt Purge Air Exh	≤ 4
FCV-30-57#	Lower Compt Purge Air Exh	≤ 4
FCV-30-58#	Inst Room Purge Air Exh	≤ 4
FCV-30-59#	Inst Room Purge Air Exh	≤ 4
FCV-90-107	Cntmt Bldg LWR Compt Air Mon	≤ 5
FCV-90-108	Cntmt Bldg LWR Compt Air Mon	≤ 5
FCV-90-109	Cntmt Bldg LWR Compt Air Mon	≤ 5
FCV-90-110	Cntmt Bldg LWR Compt Air Mon	≤ 5
FCV-90-111	Cntmt Bldg LWR Compt Air Mon	≤ 5
FCV-90-113#	Cntmt Bldg Up Compt Air Mon	≤ 5
FCV-90-114#	Cntmt Bldg Up Compt Air Mon	≤ 5
FCV-90-115#	Cntmt Bldg Up Compt Air Mon	≤ 5
FCV-90-116#	Cntmt Bldg Up Compt Air Mon	≤ 5
FCV-90-117#	Cntmt Bldg Up Compt Air Mon	≤ 5

Insert

*Not subject to Type C leakage tests.

#The provisions of Specification 3.0.4 are not applicable if the requirements of items b or c of the ACTION statement are met.

##The provisions of Specification 3.0.4 are not applicable if the requirements of items b or c of the ACTION statement are met, and at least one other path of the affected system is OPERABLE.

FINAL DRAFT
FEB 15 1985

Insert for Table 3.6-2

4. Manual

FCV-43-201**	Hydrogen Analyzer	N/A
FCV-43-202**	Hydrogen Analyzer	N/A
FCV-43-207**	Hydrogen Analyzer	N/A
FCV-43-208**	Hydrogen Analyzer	N/A
FCV-43-250**	Post Accident Sampling Hot Leg 1 Train A	N/A
FCV-43-251**	Post Accident Sampling Hot Leg 1 Train A	N/A
FCV-43-287**	Post Accident Sampling Cont. Intake Train A	N/A
FCV-43-288**	Post Accident Sampling Cont. Intake Train A	N/A
FCV-43-307**	Post Accident Sampling Cont. Air Return Train A	N/A
FCV-43-309**	Post Accident Sampling Hot Leg 3 Train B	N/A
FCV-43-310**	Post Accident Sampling Hot Leg 3 Train B	N/A
FCV-43-318**	Post Accident Sampling Cont. Intake Train B	N/A
FCV-43-319**	Post Accident Sampling Cont. Intake Train B	N/A
FCV-43-325**	Post Accident Sampling Cont. Air Return Train B	N/A
FCV-43-341**	Post Accident Sampling Return to Cont. Sump Train B	N/A
FCV-43-342**	Post Accident SAmpling Return To Cont. Sump Train A	N/A

** May be opened on an intermittent basis under administrative controls..

Verifying Power Removed from Potentially Submerged Valves

NRC has requested that Watts Bar have a technical specification which will verify the automatic deenergization feature for potentially submerged valves in containment (SER section 8.3.3.1.1). This power removal feature is performed by the actuation of slave relays on a phase A isolation signal. The actuation of the slave relay opens contacts in the power supply to the solenoid controlling the air supply to the valve.

Six of the four valves identified as having the potential for becoming submerged are FCV-62-72, FCV-62-73, FCV-62-74, FCV-62-76, FCV-87-7, and FCV-87-8. Attached are TVA drawings which show the slave relay contacts in the power supply to the solenoids for these six valves. Also attached is a TVA drawing showing that these slave relays are actuated from a phase A containment isolation signal which is generated from a safety injection signal. Also attached are the Watts Bar Surveillance Instructions K607A, K612A, and K630A. These procedures verify that when the slave relays actuate, the contacts in the associated valve's cicruit go open. These surveillance instructions are performed as part of Surveillance Requirement 4.3.2.2 for testing engineered safety features response times. One of the six valves, FCV-62-76, is shown on the TVA drawing 45N600-62-2 to have a contact from the K607 slave relay; however, the attached K607A surveillance instruction does not include testing of this valve. This has been identified as an error and will be corrected in a revision to the surveillance instruction.

TVA believes that the SER concern has been adequately addressed and that a technical specification requirement to test power removal from potentially submerged valves already exists. Therefore, no additional technical specifications are necessary.

WATTS BAR NUCLEAR PLANT

SI-K607A

RESPONSE TIME TEST -
CONTAINMENT ISOLATION PHASE A
SLAVE RELAY K607-
TRAIN A

UNIT 1 OR 2

CSSC

CURRENT REVISION LEVEL: 3

Prepared By B. K. Marks

Revised By J. N. Bradley

Submitted By Joel S. Woods
Supervisor

PORC Review Date 10/25/84

Approved By
Plant Manager

Date Approved 10/25/84

1C	Doc Control Unit, 1520 CST2-C
	NRC
1C	NSRS, 250 HBB-K
1C	Plant Master File
	Plant Manager
	Supt (O&E)
	Supt (Maint)
	Plant Adm Svs Supv
	Asst Mech Maint Sup
	Bldg Svs Supv
	Chem Lab
	Chem Unit Supv
	Chief, Nuclear Safety Staff
1C	Chief, Nuclear Training Branch
	Chief, Operations QA Branch
	Compliance Unit
	DPSO-WBN
	D&VM System Supv
1C	Elect Maint Supv
	Elect Shop
	Engineering Group Supv
1C	Engineering Section Supv
	Health Physicist
	Health Physics Lab
	Instrument Engineer
1C	Instrument Maint Supv
1C	Instrument Shop
	Mech Maint Supv
	Mech Unit Supv
1C	Modification Manager
1C	Operations Supv
	Plant Program Section Supv
1U&1C	P&S Supv
	Plant Training Officer
1U	Plant Training Shift Engineer
	Power Stores Unit Supervisor
	Preop Test Supv
	Public Safety
1C	PQA Supv
	Reactor Unit Supv
	Safety Engineer
1C	Shift Engineer's Office
	Stationary Equipment Group
	Support Services Supv
	Technical Support Center
1C	Unit 1 Control Room
1C	Unit 2 Control Room
1C	Plant Manager, BLN
1C	NEB

Last page of this instruction: 16

PUNCHLIST

1. Watts Bar Nuclear Plant Technical Specifications draft 8/27/84

Joel S. Woods 10/25/84
Signature Date

1.0 STATEMENT OF APPLICABILITY

1.1 The purpose of this instruction is to comply with the following surveillance requirements.

Technical Specifications Requirement Number	Modes In Which SI Can Be Performed	Frequency
p.4.3.2.2.3-2.a.3	5 or 6	(1)
p.4.3.2.2.3-3.a.3	5 or 6	(1)
p.4.3.2.2.3-4.a.3	5 or 6	(1)
p.4.3.2.2.3-5.a.3	5 or 6	(1)
p.4.3.2.2.3-6.a.3	5 or 6	(1)

(1)NOTE 1: This test shall be performed once per 18 months on one logic train per unit with both logic trains on each unit being tested once per 36 months.

1.2 The intent of this instruction is to measure the response times of the final actuation of engineered safety feature equipment. During this test segment, an SSPS slave relay will be manually energized to cause actuation of associated ESF equipment. The response time will be defined as the time interval from slave relay actuation until the equipment is capable of performing its intended safety function.

1.3 Engineered safety features shall be operable in modes 1, 2, 3, and 4.

1.4 SI-3.20 will be used to schedule, accumulate, and organize data from this procedure and other response time tests necessary to satisfy Tech Specs.

2.0 REFERENCES

2.1 Source Documents

2.1.1 Watts Bar Technical Specifications draft 8/27/84

2.1.2 FSAR-7.2.2.1.3-10

2.1.3 Westinghouse Solid State Protection System Technical Manual

2.2 Other Documents

2.2.1 Westinghouse Drawings:

1082H70 - Sh 27 - Sub J
7246D11 - Sh 17 - Sub 3
7246D11 - Sh 18 - Sub 3
7246D11 - Sh 19 - Sub 5
7246D11 - Sh 20 - Sub 3
7246D11 - Sh 21 - Sub 4
7246D11 - Sh 22 - Sub 4
7246D11 - Sh 23 - Sub 4
7246D11 - Sh 24 - Sub 6
7246D11 - Sh 56 - Sub 4
7246D11 - Sh 57 - Sub 2

2.2.2 TVA drawings:

47W809-1 R11	45N600-61-1 R0
47W814-2 R6	45N600-62-2 R3
47W859-2 R7	45N600-65-2 R2
47W866-1 R7	45N760-70-8 R5
47W610-61-1 R1	45N1645-4 R4
47W610-62-2 R8	45N1648-3 R5
47W610-65-1 R3	45N1660-11 R5
47W610-70-3 R3	45N1660-12 R7
45N600-57-15 R0	45N1632-12 R3
	45N2632-12 R2

2.2.3 TI-25

3.0 PRECAUTIONS AND PREREQUISITES

3.1 Observe all applicable precautions in TI-25 when operating the Slave Relay Test Panel (SRTP). Read the instructions before you attempt to use the unit. Failure to follow operating instructions could result in serious injury and damage to equipment.

3.2 Contact health physics for precautions prior to entering radiation or contamination areas.

3.3 Common mode criteria applies. Enter data in log book per ISL-2.8.

3.4 Ensure that at least one train of the SSPS is in operation at all times.

4.0 INSTRUCTIONS

NOTE: 4.a Refer to the attached data package when implementing and documenting the following instructions.

4.b Upon completion of each step preceded by an "@", initial the appropriate page of the data package.

4.c The following test equipment is needed to perform this test:

Test Equipment	Speed	Time Line
Visicorder	5"/sec.	1 sec

4.d The following devices are actuated when Train A slave relay K607 is energized.

Device	Engineered Safeguard Accident Position
FCV-62-72	Closed
FCV-62-73	Closed
FCV-61-191	Closed
FCV-61-193	Closed

Device	Engineered Safeguard Accident Position
FCV-70-143	Closed
PCV-65-81(1)	Open/Closed
PCV-65-86(2)	Open/Closed

NOTE:
1. It is assumed that there will be no pressure differential between the containment annulus and the auxiliary building (both should be at atmospheric pressure) during this test, thereby allowing the safeguard state of PCV-65-81 to be the closed position. The safeguard open position will be tested in SI-K612.A.

2. Does not require response time testing.

4.1 Initial Conditions

@4.1.1 Obtain the SRO's approval to perform this test.

@4.1.2 List test equipment data on page 2 of the data package.

4.1.3 Each device listed on page 2 of the data package may be actuated or repositioned prior to or during this test. Record their "AS FOUND" positions.

@4.1.4 Ensure the pressurizer water level bistables LS-68-335E/D (LB-460D/C) and LS-68-339D(LB-459-C) are deenergized.

NOTE: In order to operate FCV-62-72 and FCV-62-73 via a Phase A containment isolation signal, the following conditions must exist:

1. FCV-62-69 and FCV-62-70 must be open.

2. The pressurizer water level must be above the low set point. (This will cause the pressurizer low water level bistables to be deenergized.)

@4.1.5 Ensure that glycol expansion tank level switch, LS-61-197B/A, is deenergized.

NOTE: The glycol level must be above the low-low setpoint in order to operate FCV-61-191 and FCV-61-193.

@4.1.6 Have the unit operator place the following devices in the indicated position and initial the data package. Ensure these devices remain in the required position for the duration of the test.

Device	Description	Position for Test
FCV-62-77[1]	Letdown Line Isolation Valve	Closed
FCV-62-69[2]	RC Loop 3 Letdown Flow Isolation Valve	Open
FCV-62-70[2]	RC Loop 3 Letdown Flow Isolation Valve	Open
61-530[3]	Glycol Circ. Pump Miniflow Hand Valve	Open
61-531[3]	Glycol Circ. Pump Miniflow Hand Valve	Open

NOTES:

1. FCV-62-77 is closed to prevent any unnecessary flow during this test.

2. See note in step 4.1.3.

3. These devices are positioned to provide a circulation path for the unit 1 glycol circulation pumps during the time FCV-61-191 and FCV-61-193 are closed.

@4.1.7 Have the unit operator ensure the following switches are in the indicated positions:

Switch (location)	Position
XS-62-72 (L11A)	NORMAL
XS-62-73 (L11A)	NORMAL
XS-70-143 (later)	NORMAL
HS-61-191B (M-9)	P-AUTO
HS-61-193B (M-9)	P-AUTO

@4.1.8 Ensure the following devices are in their engineered safeguard nonaccident position and operational.

Device	Nonaccident Position	Description
FCV-62-72	Open	Regen Ht Exchanger Isol Vlv A
FCV-62-73	Open	Regen Ht Exchanger Isol Vlv B
FCV-61-191	Open	Glycol Supply Isol Vlv
FCV-61-193	Open	Glycol Return Isol Vlv
FCV-70-143	Open	Excess Ltdn Htx Cont Inlet Isol Vlv
#PCV-65-81	Open	Shield Bldg Isol Vlv

#Opening PCV-65-81 will also cause PCV-65-86 to open

4.2 Procedures

NOTES: Valve position indicating lights located in the main control room will be monitored to denote valve movement. The voltage drop across the valve position indicating lights will be sensed at the incoming terminal blocks and transmitted to the response time testing boxes JB4088* and JB4089* by temporary test leads.

A visicorder will be connected to JB4085** in the auxiliary instrument room for recording of component response time.

NOTE:

* Applicable for unit 1 testing only. If test is being performed on unit 2, use JB4088 and JB4090.

** Applicable for unit 1 testing only. If test is being performed on unit 2, use JB4086.

@4.2.1 Connect the SRTP to train A of the solid state protection system (SSPS) per TI-25.

@4.2.2 In the auxiliary instrument room, connect channel 1 of the recorder to TP-607 of the SRTP. This channel will be used to record the status of slave relay K607.

@4.2.3 In the auxiliary instrument room, make the following connections from the recorder to the junction box terminals.

Device	Strip Chart Recorder Input	Junction Box	Terminal Block	Terminal
FCV-62-72	2	4085*	TE	TE1(+), TE2(-)
FCV-62-73	3	4085*	TE	TE3(+), TE4(-)
FCV-61-191	4	4085*	TF	TF1(+), TF2(-)
FCV-61-193	5	4085*	TF	TF3(+), TF4(-)
FCV-70-143	6	4085*	TC	TC1(+), TC2(-)
PCV-65-81	7	4085*	TC	TC3(+). TC4(-)

*JB4086 if test is being performed on unit 2.

@4.2.4 In the main control room make the following connections between the indicated junction boxes and control panels.

CAUTION: The terminals in the main control room panels are energized with either 125V dc or 120V ac. Appropriate precautions should be taken when making these connections.

FROM			TO			
JB	TB	Terminal	Panel	TB	Terminal	(Wire No.)
4089*	TB	TE1	M-6	A1-35	3	(CDGP1)
4089*	TB	TE2	M-6	A1-35	2	(CDG14)
4089*	TB	TE3	M-6	A1-34	8	(CDHP1)
4089*	TB	TE4	M-6	A1-34	7	(CDH14)
4089*	TC	TF1	M-9	2-3G	1	(G1CP)
4089*	TC	TF2	M-9	2-3G	5	(G1C3)
4089*	TC	TF3	M-9	2-3H	1	(G1DP)
4089*	TC	TF4	M-9	2-3H	5	(G1D3)
4088	TC	TC1	M-27B	1-2H	7	(16DRN)
4088	TC	TC2	M-27B	1-2H	8	(16DGR)
4088	TC	TC3	M-27B	2-3A	12	(GBWP)
4088	TC	TC4	M-27B	2-3A	2	(GBW8)

*JB4090 if test is being performed on unit 2.

@4.2.5 Ensure that the following handswitches are in the indicated position and verify that the indicated valve position light for each handswitch is on.

Handswitch	Panel	Positions	Light
HS-62-72A	M-6	A-P Auto	Red
HS-62-73A	M-6	A-P Auto	Red
HS-61-191A	M-9	A-Auto	Red
HS-61-193A	M-9	A-Auto	Red
HS-70-143A	M-27B	A-Auto	Red
HS-65-81	M-27B	A-Auto	Red

@4.2.6 Verify that the "Slave Relay Reset" light on the SRTP is on.

@4.2.7 On the SRTP, rotate the following switches to the indicated position.

Switch	Position
S101	7
S102	20 (off)
S103	20 (off)

NOTE: This will allow slave relay K607 to be energized using the SRTP.

@4.2.8 Start the recorder and then depress the "Slave Relay Test" pushbutton on the SRTP. Verify that the "Slave Relay Energized" light is on.

@4.2.9 When all the devices under test have reached their safeguard state, stop the recorder and reset the slave relays by depressing the "Slave Relay Reset" pushbutton on the SRTP. Verify that the "Slave Relay Reset" light is on and then visually verify that K607 has reset. Second party verification required.

NOTE: The safeguard state will be indicated by the input voltages to the recorder dropping to zero.

@4.2.10 Record the time period required for the device to reach its the safeguard accident position.

NOTE: The time period required for a device to reach the accident position is computed from $T_f - T_o = T_r$

where T_r = time period required to reach accident position

T_o = time at which slave relay K607 was energized

T_f = time at which device reaches accident position

4.2.11 Use the recorder chart data stamp and record all necessary information.

4.3 Returning Devices to Service

@4.3.1 In the main control room, remove all connections made in step 4.2.4. Second party verification required.

@4.3.2 In the auxiliary instrument room, remove all the connections made in steps 4.2.2 and 4.2.3. Second party verification required.

@4.3.3 Disconnect the SRTP per TI-25. Second party verification required.

@4.3.4 Each device listed in the data package was operated or repositioned prior to or during this test. Have the unit operator return them to their "AS FOUND" positions as recorded in step 4.1.3. If it is undesireable to return any of the devices to their "AS FOUND" positions, have the unit operator list the position left in and explain in the "REMARKS" section. Second party verification required.

4.3.5 Notify the SRO and operator that this test is complete.

4.3.6 Enter the information needed to complete the data table on page 8 of the data package.

NOTE: If the total response time for the device is greater than the desired maximum response time, inform the SIMF.

4.3.7 Attach the strip chart recording to the data package and give the completed data package to the SIMF.

DATA PACKAGE COVER SHEET SI-K607A

TITLE: RESPONSE TIME TEST - CONTAINMENT ISOLATION PHASE A - SLAVE RELAY K607 - TRAIN A UNIT _____

Performed By _____ Date _____
Instrument Mechanic

This data package contains _____ pages. If any pages were removed from the data package as supplied by Planning & Scheduling, indicate by checkmark. ☐ (If checked, explain in remarks).

Were technical specification criteria satisfied? ____ Yes ____ No

If criteria were not satisfied notify the SRO who completes the following:

Was a limiting condition for operation violated?

____ Yes (explain in remarks) ____ No (explain in remarks)

Verified by SRO _____ Date _____
SRO

Reason for test:

_____ Required by schedule

_____ Maintenance complete on _____

_____ Another system (_____) inoperable

_____ Plant condition (explain) _____

_____ Other (explain) _____

- -

Reviewed:

SIMF _____ Date _____

Rescheduled

P&S Staff _____ Date _____

Remarks _____

_____

_____

PQA Staff Review _____ Date _____

RESPONSE TIME TEST - CONTAINMENT ISOLATION PHASE A
SLAVE RELAY K607 - TRAIN A

Date _____

Unit _____

		Initials
4.1.1	SRO's approval	_____ SRO

4.1.2

Test Equipment	I.D. Number	Calibration Due Date	Speed	Time Line
Visicorder	_____	_____	_____	_____

4.1.3 The following devices may be operated or repositioned during this test:

Device	Description	"As Found" Position
FCV-62-77	Ltdn Line Isol Vlv Flo Control Vlv	_____
FCV-62-69	RC Loop 3 Ltdn Flo Isol	_____
FCV-62-70	RC Loop 3 Ltdn Flo Isol	_____
FCV-62-72	Regen Ht Exchanger Isol Vlv A	_____
FCV-62-73	Regen Ht Exchanger Isol Vlv B	_____
FCV-61-191	Glycol Supply Isol Vlv	_____
FCV-61-193	Glycol Return Isol Vlv	_____
61-530	Glycol Circ Pump Miniflo Hand Vlv	_____
61-531	Glycol Circ Pump Miniflo Hand Vlv	_____
FCV-70-143	Excess Ltdn Htr Cont Inlet Isol Vlv	_____
PCV-65-81	Shield Bldg Isol Vlv	_____
PCV-65-86	EGTS Cont Annulus Isol Vlv	_____
LS-68-335E/D	Press Water Lvl Bistable	_____
LS-68-339D	Press Water Lvl Bistable	_____
LS-61-197B/A	Glycol Expan Tnk Lvl Sw	_____

Initials

4.1.4 LS-68-335E/D is deenergized _____

LS-68-339D is deenergized _____

4.1.5 LS-61-197B/A is deenergized _____

4.1.6 Devices in following position

Devices	Position	HO#	
FCV-62-77	Closed	_____	_____
FCV-62-69	Open	_____	_____
FCV-62-70	Open	_____	_____
61-530	Open	_____	_____
61-531	Open	_____	_____

4.1.7 Switches in the following position

Switch	Position	
XS-62-72	Normal	_____
XS-62-73	Normal	_____
XS-70-143	Normal	_____
HS-61-191B	P-Auto	_____
HS-61-193B	P-Auto	_____

4.1.8 Devices in nonaccident position

Device	Position	
FCV-62-72	Open	_____
FCV-62-73	Open	_____
FCV-61-191	Open	_____
FCV-61-193	Open	_____
FCV-70-143	Open	_____
PCV-65-81	Open	_____

4.2.1 SRTP connected _____

4.2.2 Channel 1 of recorder connected to TP-607 of SRTP _____

Initials

4.2.3 Recorder connected to junction box 4085 (JB4086) if test is being performed on unit 2)

Device	Recorder Input	Terminal Block	Terminals	
FCV-62-72	2	TE	TE1(+), TE2(-)	_____
FCV-62-73	3	TE	TE3(+), TE4(-)	_____
FCV-61-191	4	TF	TF1(+), TF2(-)	_____
FCV-61-193	5	TF	TF3(+), TF4(-)	_____
FCV-70-143	6	TC	TC1(+), TC2(-)	_____
PCV-65-81	7	TC	TC3(+), TC2(-)	_____

4.2.4 Connections in main control room completed

From			To			
JB	TB	Terminal	Panel	TB	Terminal	
4089*	TB	TE1	M-6	A1-35	3	_____
4089*	TB	TE2	M-6	A1-35	2	_____
4089*	TB	TE3	M-6	A1-34	8	_____
4089*	TB	TE4	M-6	A1-34	7	_____
4089*	TC	TF1	M-6	2-3G	1	_____
4089*	TC	TF2	M-6	2-3G	5	_____
4089*	TC	TF3	M-6	2-3H	1	_____
4089*	TC	TF4	M-6	2-3H	5	_____
4088	TC	TC1	M-6	1-2H	7	_____
4088	TC	TC2	M-6	1-2H	8	_____
4088	TC	TC3	M-6	2-3A	12	_____
4088	TC	TC4	M-6	2-3A	2	_____

*JB4090 if test is being performed on unit 2

4.2.5 Handwsitches in indicated position and lights on

Handswitch	Position	Light	
HS-62-72A	A-P Auto	Red	_____
HS-62-73A	A-P Auto	Red	_____
HS-61-191A	A-Auto	Red	_____
HS-61-193A	A-Auto	Red	_____
HS-70-143A	A-Auto	Red	_____
HS-65-81	A-Auto	Red	_____

4.2.6 SRTP "Slave Relay Reset" light on _____

4.2.7 SRTP switches in following position

Switch	Position	
S101	7	_____
S102	20 (off)	_____
S103	20 (off)	_____

4.2.8 Recorder started, SRTP "Slave Relay Test" pushbutton depressed, and "Slave Relay Energized" light on _____

4.2.9 Devices in safeguard accident position, strip chart recorder turned off, "Slave Relay Reset" pushbutton depressed, "Slave Relay Reset" light on, and a visual check that slave relay is deenergized _____ _____

4.2.10 Time period of each device

Input	Device	T_f	-	T_o	=	T_r (sec)	Initials
2	FCV-62-72	____		____		____	_____
3	FCV-62-73	____		____		____	_____
4	FCV-61-191	____		____		____	_____
5	FCV-61-193	____		____		____	_____
6	FCV-70-143	____		____		____	_____
7	PCV-65-81	____		____		____	_____

4.3.1 All connections made in step 4.2.4 have been removed. (main control room)

Panel	Terminal Block	Terminal	JB	Terminal Block	Terminal		
M-6	A1-35	3	4089*	TB	TE1	_____	_____
M-6	A1-35	2	4089*	TB	TE2	_____	_____

Initials

4.3.1 (Continued)

M-6	A1-34	8	4089*	TB	TE3	_____	_____
M-6	A1-34	7	4089*	TB	TE4	_____	_____
M-6	2-3G	1	4089*	TC	TF1	_____	_____
M-6	2-3G	5	4089*	TC	TF2	_____	_____
M-6	2-3H	1	4089*	TC	TF3	_____	_____
M-6	2-3H	5	4089*	TC	TF4	_____	_____
M-6	1-2H	7	4088	TC	TC1	_____	_____
M-6	1-2H	8	4088	TC	TC2	_____	_____
M-6	2-3A	1	4088	TC	TC3	_____	_____
M-6	2-3A	2	4088	TC	TC4	_____	_____

*JB4090 if test is being performed on unit 2.

4.3.2 All connections made in steps 4.2.2 and 4.2.3 have been removed. (auxiliary instrument room)

Recorder disconnected from SRTP and JB 4085 (JB4086 if test is being performed on unit 2). _____ _____

4.3.3 SRTP disconnected _____ _____

4.3.4 The following devices were returned to their "AS FOUND" positions.

Device		
FCV-62-77	_____	_____
FCV-62-69	_____	_____
FCV-62-70	_____	_____
FCV-62-72	_____	_____
FCV-62-73	_____	_____
FCV-61-191	_____	_____
FCV-61-193	_____	_____
61-530	_____	_____
61-531	_____	_____

Device		
FCV-70-143	_____	_____
PCV-65-81	_____	_____
PCV-65-86	_____	_____
LS-68-335E/D	_____	_____
LS-68-339D	_____	_____
LS-61-197B/A	_____	_____

REMARKS: _____

@4.3.5 SRO and operator notified that test is complete.

_____
SRO

_____
RO

DATA TABLE

Unit _____ Slave Relay Being Tested K607 Initials _____ Date _____

Slave Relay Function _____

4.3.6

ESF Devices	(A) Response Time (T_r) Measured in Step	(B) Fixed Response Time Factor	Total Response Time (A + B)	Desired Maximum Response Times (Sec.)
FCV-62-72				10
FCV-62-73				10
FCV-61-191				30
FCV-61-193				30
FCV-70-143				60

NOTES: The fixed time response factor is the time factor which results from having to test a device in a condition other than normal operation; i.e., the difference in the response time of a pump reaching rated pressure on miniflow and normal system flow lineup. These factors will be obtained from preop test data.

WATTS BAR NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

SI-K612A

RESPONSE TIME TEST -
CONTAINMENT ISOLATION PHASE A
SLAVE RELAY K612
TRAIN A

CURRENT REVISION LEVEL 2

Prepared By B. K. Marks

Revised By N/A

Submitted By _____
Supervisor

PORC Review Date 1-11-83

Approved By _____
Superintendent

Date Approved 1-11-83

Last page of this instruction: 14

1C	Document Control Unit, 1520 CST2-C
1U	NRC
1C	Nuclear Safety Review Staff
1C	Plant Master File
	Plant Superintendent
	Asst. Plant Supt. (Operations)
	Asst. Plant Supt. (Maintenance)
	Adm. Svs. Supervisor
	Asst. Mechanical Maint. Sup.
	Chemical Laboratory
	Chemical Unit Supervisor
1C	Chief, Nuclear Training Branch
	Compliance Unit
	DPSO-WBN
	Document Control Supervisor
1C	Electrical Maint. Supervisor
	Electrical Shop
1C	Engineering Supervisor
1C	Field Services Supervisor
	Health Physicist
	Health Physics Laboratory
1C	Instrument Engineer
1C	Instrument Maint. Supervisor
1C	Instrument Shop
	Janitor & Labor Supervisor
	Management Svs. Supervisor
	Mechanical Maint. Supervisor
	Mechanical Unit Supervisor
1C	Operations Supervisor
	OPQA - Plant Coordinator
1U&1C	Plant Services Supervisor
	Plant Training Officer
1U	Plant Training Shift Engineer
	Power Stores Unit Supervisor
	Preop Test Supervisor
	Public Safety
	QA Manager, QA and Audit Staff
1C	Quality Assurance Supervisor
	Reactor Unit Supervisor
	Safety Engineer
1C	Shift Engineer's Office
	Stationary Equipment Group
	Technical Support Center
1C	Unit 1 Control Room
1C	Unit 2 Control Room
1U	Supt, Bellefonte

PUNCH LIST

1. Watts Bar Nuclear Plant draft 2 Technical Specifications, Jan. 23, 80.
2. Approved design of Slave Relay Test Panel (SRTP)
3. SI-4.3.2.1.3 to schedule and accumulate data.

Signature

1/10/83
Date

1.0 STATEMENT OF APPLICABILITY

1.1 The purpose of this instruction is to comply with the following surveillance requirements.

Technical Specifications Requirement Number	Modes In Which SI Can Be Performed	Frequency
p.4.3.2.1.3-2d -3d -4d -5d -6d	6	(1)

(1) NOTE 1: This test shall be performed once per 18 months on one logic train per unit with both logic trains on each unit being tested once per 36 months.

1.2 The intent of this instruction is to measure the response times of the final actuation of engineered safety feature equipment. During this test segment, a SSPS slave relay will be manually energized to cause actuation of associated ESF equipment. The response time will be defined as the time interval from slave relay actuation until the equipment is capable of performing its intended safety function.

1.3 Engineered safety features shall be operable in modes 1, 2, 3, & 4.

1.4 Response times will be assimilated and acceptance criteria given in SI-4.3.2.1.3.

2.0 REFERENCES

2.1 Westinghouse drawings:

1082H70 - Sh 27 - Sub J	7246D11 - Sh 22 - Sub 4
7246D11 - Sh 17 - Sub 3	7246D11 - Sh 23 - Sub 4
7246D11 - Sh 18 - Sub 3	7246D11 - Sh 24 - Sub 6
7246D11 - Sh 19 - Sub 5	7246D11 - Sh 56 - Sub 4
7246D11 - Sh 20 - Sub 3	7246D11 - Sh 57 - Sub 2
7246D11 - Sh 21 - Sub 4	

2.2 Vendor manuals:

Westinghouse Solid-State Protection System Technical Manual

2.3 TVA Drawings:

45N600-62-2 R3	47W809-1 R11	45N1632-12 R1
45N600-65-1 R2	47W850-9 R2	45N2632-12 R1
45N600-65-2 R2	47W866-1 R7	
47W610-26-7 R0	45W760-65-2 R3	
47W610-62-2 R8	45N1645-4 R4	
47W610-65-1 R3	45N1660-12 R7	

2.0 REFERENCES (continued)

2.4 WBNP Tech. Spec. Draft 2, Jan. 23, 80.

2.5 FSAR section 7.2.2.1.3-10.

3.0 PRECAUTIONS

3.1 Observe all applicable precautions in TI-25 when operating the slave relay test panel (SRTP). Read the instructions before you attempt to use the unit. Failure to follow operating instructions could result in serious injury and damage to equipment.

4.0 INSTRUCTIONS

NOTES:

4.a Refer to the attached data package when implementing and documenting the following instructions.

4.b Upon completion of each step preceded by an "@", initial the appropriate page of the data package.

4.c The test equipment used for this test must be recorded on page 2 of the attached data package. The following test equipment is needed to perform this test.

Test Equip	Speed	Time Line
Visicorder	.5"/sec.	1 sec.

4.d The following devices are actuated when Train A slave relay K612 is energized.

Device	Engineered Safeguard Accident Position
~~FCO-65-52~~[1]	Closed
FCO-65-5[2]	Closed
FCO-65-10[1]	Open
FCO-65-46[2]	Open
PCV-65-81	Open
PCV-65-86[3]	Open
FCV-62-74	Closed
FCV-26-245[3]	Closed
FCO-65-77[3]	Closed
Contmt. Annulus Vac. Fan A[3]	Stop and Lock/Out

NOTES:

1. FCO-65-52 and FCO-65-10 are associated with unit 1 only.
2. FCO-65-5 and FCO-65-46 are associated with unit 2 only.
3. Does not require response time testing.

4.0 INSTRUCTIONS

4.1 Initial Conditions

@4.1.1 Obtain the shift engineer's approval to perform this test.

4.1.2 List test equipment data on page 2 of the data package.

4.1.3 Each device listed on page 2 of the data package may be actuated or repositioned prior to or during this test. Record their "AS FOUND" positions.

@4.1.4 Have the unit operator place the following devices in the indicated position and initial the data package. Ensure these devices remain in that position for the duration of the test.

Device	Position	Description
Emergency Gas Treatment Exhaust Fan A-A	Off	
FCV-26-245[1]	Open	Annulus Sprinkler Isol. Vlv.
FCV-62-77[2]	Closed	Letdown Line Isol. Vlv.
FCV-62-70[3]	Open	RC Loop 3 Letdown Flow
FCV-62-69[3]	Open	RC Loop 3 Letdown Flow
Containment Annulus Vacuum Fan B	Off	

NOTES:
1. This valve will automatically close on actuation of slave relay K612 unless appropriate action is taken to prevent closure.
2. This valve is closed to prevent unnecessary flow when FCV-62-74 is opened.
3. FCV-62-69 and FCV-62-70 must be open to operate FCV-62-74 with a phase A cntmt. isol. signal.

@4.1.5 Ensure that pressurizer water level bistables LS-68-335E/D and LS-68-339D are deenergized.

NOTE: Under normal refueling mode conditions, the pressurizer water level is greater than the low setpoint, causing these bistables to be deenergized.

@4.1.6 Have unit operator ensure that XS-62-74 (L-11A) is in NORMAL.

4.0 INSTRUCTIONS

@4.1.7 Ensure that the following devices are in their engineered safeguard non-accident position and operational.

Device	Non-Accident Position	Description
FCO-65-5[1]	Open	Cntmt. Annulus Vac Fans Isol. Damper, Unit 2
FCO-65-10[2]	Closed	Emerg. Gas Treatment Train A Suction, Unit 1
FCO-65-46[1]	Closed	Emerg. Gas Treatment Train A Suction, Unit 2
FCO-65-52[2]	Open	Cntmt. Annulus Vac. Fans Isol. Damper, Unit 1
PCV-65-81	Closed	Shield Bldg. Vent Isol. Valve
FCV-62-74	Open	Regen. Heat Exch. Letdown Isol. Valve C

NOTE: 1. These valves are associated with unit 2 only. Enter "N/A" appropriately in the data package if this test is being performed on unit 1.

2. These valves are associated with unit 1 only. Enter "N/A" appropriately in the data package if this test is being performed on unit 2.

4.2 Procedures

NOTES: Valve position indicating lights located in the main control room will be monitored to denote valve movement. The voltage drop across the valve position indicating lights will be sensed at the incoming terminal blocks and transmitted to the response time testing box JB4088 and Jb4089# by temporary test leads.

A visicorder will be connected to JB4085## in the auxiliary instrument room for recording of component response time.

#Applicable for unit 1 testing only. If this test is being performed on unit 2, use JB4090.

##Applicable for unit 1 testing only. If this test is being performed on unit 2, use JB4086.

@4.2.1 Connect the SRTP to train A of solid state protection system (SSPS) per TI-25.

4.0 INSTRUCTIONS

@4.2.2 In the auxiliary instrument room, connect channel 1 of the recorder to TP-612 of the SRTP. This channel will be used to record the status of slave relay K612.

@4.2.3 In the auxiliary instrument room, make the following connections from the recorder to the junction box terminals.

Device	Recorder Input	Junction Box	Terminal Block	Terminals
FCO-65-52[1]	2	4085#	TC	TC1(+),TC2(-)
FCO-65-10[1]	3	4085#	TC	TC3(+),TC4(-)
PCV-65-81	4	4085#	TC	TC5(+),TC6(-)
FCV-62-74	5	4085#	TE	TE1(+),TE2(-)
FCO-65-5[2]	6	4085#	TC	TC7(+),TC8(-)
FCO-65-46[2]	7	4085#	TC	TC9(+),TC10(-)

#JB4086 if test is being performed on Unit 2.

NOTES:
1. Applicable only if test is being performed on unit 1. Enter "N/A" in data package if testing is being performed on unit 2.
2. Applicable only if test is being performed on unit 2. Enter "N/A" in data package if testing is being performed on unit 1.

@4.2.4 In the main control room, make the following connections between the indicated response time testing junction boxes and main control panels.

CAUTION: The terminals in the main control panels are energized with 125-volt d.c. Appropriate precautions should be taken when making these connections.

From			To			
JB	TB	Terminal	Panel	TB	Terminal	(Wire No.)
[1]4088	TC	TC1	0-M-27B	2-1B	1	(GBRP)
[1]4088	TC	TC2	0-M-27B	2-1A	12	(GBR4)
[1]4088	TC	TC3	0-M-27B	2-1E	10	(GBEP)
[1]4088	TC	TC4	0-M-27B	2-1E	8	(GBE2)
4088	TC	TC5	0-M-27B	2-3A	12	(GBWP)
4088	TC	TC6	0-M-27B	2-3A	1	(GBW7)
#4089	TE	TE1	M-6	A1-32	6	(CDJP1)
#4089	TE	TE2	M-6	A1-32	5	(CDJ14)
[2]4088	TC	TC7	0-M-27B	2-1A	2	(GBP4)
[2]4088	TC	TC8	0-M-27B	2-1A	3	(GBPP)
[2]4088	TC	TC9	0-M-27B	2-2J	1	(GBM2)
[2]4088	TC	TC10	0-M-27B	2-2J	8	(GBMN)

#JB4090 if test is being performed on unit 2.

4.0 INSTRUCTIONS

@4.2.4 (Continued)

[1]Applicable for unit 1 testing only.

[2]Applicable for unit 2 testing only.

@4.2.5 Ensure that the following handswitches are in the indicated position and that the indicated valve position light for each handswitch is on.

Handswitch	Panel	Pretest Positions	Light
HS-65-52[1]	0-M-27B	A-Auto	Red
HS-65-10[1]	0-M-27B	A-Auto	Green
HS-65-81	0-M-27B	A-Auto	Green
HS-62-74A	M-6	A-P Auto	Red
HS-65-5[2]	0-M-27B	A-Auto	Red
HS-65-46[2]	0-M-27B	A-Auto	Green

[1]Applicable for unit 1 testing only.

[2]Applicable for unit 2 testing only.

@4.2.6 Verify that the "Slave Relay Reset" light on the SRTP is on.

@4.2.7 On the SRTP, rotate the following switches to the indicated position.

Switch	Position
S101	12
S102	20 (off)
S103	20 (off)

NOTE: This will allow slave relay K612 to be energized using the SRTP.

@4.2.8 Start the recorder and then depress the "Slave Relay Test" pushbutton on the SRTP. Verify that the "Slave Relay Energized" light is on.

@4.2.9 When all the devices under test have reached their safeguard state, stop the recorder and reset the slave relays by depressing the "Slave Relay Reset" pushbutton on the SRTP. Verify that the "Slave Relay Reset" light is on and then visually verify that K612 has reset.

4.0 INSTRUCTIONS

@4.2.9 (Continued)

NOTE: The safeguard state will be indicated by the input voltages to the recorder dropping to zero.

@4.2.10 Record the time period required for each device to reach the safeguard accident position.

NOTE: 1. The time period required for a device to reach the accident position is computed from $T_f - T_o - T_r$.

Where T_r = time period required to reach accident position

T_o = time at which slave relay K612 was energized

T_f = time at which the device reaches accident position

2. If this SI is being performed on unit 1, enter "N/A" in the spaces provided for FCO-65-5 and FCO-65-46. If this SI is being performed on unit 2, enter "N/A" in the spaces provided for FCO-65-10 and FCO-65-52.

4.2.11 Use the recorder chart data stamp and record all necessary information.

4.3 Returning Devices to Service

@4.3.1 In the main control room, remove all connections made in step 4.2.4.

@4.3.2 In the auxiliary instrument room, remove all the connections made in steps 4.2.2 and 4.2.3.

@4.3.3 Disconnect SRTP per TI-25.

@4.3.4 Each device listed in the data package was operated or repositioned prior to or during this test. Have the unit operator return these devices to the "AS FOUND" positions recorded in step 4.1.3. If it is not desireable to return any of the devices to their original position, have the operator record the position left in and explain in the "REMARKS" section.

4.3.5 Inform the shift engineer that this portion of the response time test is complete.

4.3.6 Enter the information needed to complete the data table on page 6 of the data package. (See Note 2 of step 4.2.10.)

4.3.7 Attach the chart recording to the data package and give the completed data package to the SIMF.

DATA PACKAGE COVER SHEET SI-K612A
RESPONSE TIME TEST - CONTAINMENT ISOLATION PHASE A
SLAVE RELAY K612 - TRAIN A

UNIT _____

Performed By _____ Date _____
Instrument Mechanic

Was the acceptance criteria satisfied? N/A Yes N/A No

If criteria were not satisfied notify the shift engineer who completes the following:

Was a limiting condition for operation violated?

N/A Yes (explain in remarks) N/A No (explain in remarks)

Verified By N/A Date N/A
Shift Engineer

Reason for test:

_____ Required by schedule

_____ Maintenance complete on _____

_____ Another system (_____) inoperable

_____ Plant condition (explain) _____

_____ Other (explain) _____

- -

Review of Test Results

SIMF _____ Date _____

Review and Approval of Test Results

Cognizant Engineer _____ Date _____

Rescheduled

PS Staff _____ Date _____

Remarks _____

_____

_____

QA Staff Review _____ Date _____

RESPONSE TIME TEST - CONTAINMENT ISOLATION PHASE A
SLAVE RELAY K612 - TRAIN A

Date _____

Unit _____

		Initials
4.1.1	Shift engineer's approval	_____

4.1.2

Test Equipment	I.D. Number	Calibration Due Date	Speed	Time Line
Visicorder	_____	_____	_____	_____

4.1.3

Device	Description	"As Found" Position
FCO-65-52[1]	Cont. Annulus Vac. Fans Isol. Damper, Unit 1	_____
FCO-65-5[2]	Cont. Annulus Vac. Fans Isol. Damper, Unit 2	_____
FCO-65-10[1]	Emerg. Gas Treatment Train A Suction Damper	_____
FCO-65-46[2]	Shield Bldg. Exhaust B, Unit 2	_____
PCV-65-81	Shield Bldg. Vent. Isol. Vlv.	_____
PCV-65-86	Shield Bldg. Vent. Isol. Vlv.	_____
FCV-62-74	Regen. Heat Exchanger Letdown Isol. Valve C	_____
FCV-26-245	Annulus Sprinkler Isol. Valve	_____
FCV-62-70	RC Loop 3 Letdown Flow	_____
FCV-62-69	RC Loop 3 Letdown Flow	_____
FCO-65-77	Upstr. Vac. Fan A Isol. Dmpr.	_____
FCV-62-77	Letdown Line Isol. Valve	_____
LS-68-335E/D	Pressurizer Level B stable	_____
LS-68-339D	Pressurizer Level B stable	_____
Cntmt. Annulus Vac. Fan A and B		_____
Emerg. Gas Treatment Exhaust Fan A-A		_____

[1]Applicable only to unit 1 testing

[2]Applicable only to unit 2 testing

Initials

4.1.4 Devices in following position

Device	Position	
Emerg. Gas Trtmt. Exh. Fan A-A	Off	_____
FCV-26-245	Open	_____
FCV-62-77	Closed	_____
FCV-62-70	Open	_____
FCV-62-69	Open	_____
Cntmt. Annulus Vac. Fan B	Off	_____

4.1.5 LS-68-335E/D and LS-68-339D are deenergized _____

4.1.6 XS-62-74 is in NORMAL _____

4.1.7 Devices in nonaccident position

Devices	Position	
FCO-65-5	Open	_____
FCO-65-10	Closed	_____
FCO-65-46	Closed	_____
FCO-65-52	Open	_____
PCV-65-81	Closed	_____
FCV-62-74	Open	_____

4.2.1 SRTP connected _____

4.2.2 Channel 1 recorder connected to TP-612 of SRTP _____

4.2.3 Recorder connected to junction box 4085 (JB4086 if test is being performed on unit 2)

Device	Recorder Input	Terminal Block	Terminals	
[1]FCO-65-52	2	TC	TC1(+),TC2(-)	_____
[1]FCO-65-10	3	TC	TC3(+),TC4(-)	_____
PCV-65-81	4	TC	TC5(+),TC6(-)	_____
FCV-62-74	5	TE	TE1(+),TE2(-)	_____
[2]FCO-65-5	6	TC	TC7(+),TC8(-)	_____
[2]FCO-65-46	7	TC	TC9(+),TC10(-)	_____

[1] Unit 1 testing only.
[2] Unit 2 testing only.

Initials

4.2.4 Connections in main control room completed

From			To			
JB	Terminal Block	Terminal	Panel	Terminal Block	Terminal	
[1]4088	TC	TC1	0-M-27B	2-1B	1	_____
14088	TC	TC2	0-M-27B	2-1A	12	_____
[1]4088	TC	TC3	0-M-27B	2-1E	10	_____
[1]4088	TC	TC4	0-M-27B	2-1E	8	_____
4088	TC	TC5	0-M-27B	2-3A	12	_____
4088	TC	TC6	0-M-27B	2-3A	1	_____
[3]4089	TE	TE1	M-6	A1-32	6	_____
[3]4089	TE	TE2	M-6	A1-32	5	_____
[2]4088	TC	TC7	0-M-27B	2-1A	2	_____
24088	TC	TC8	0-M-27B	2-1A	3	_____
[2]4088	TC	TC9	0-M-27B	2-2J	1	_____
[2]4088	TC	TC10	0-M-27B	2-2J	8	_____

[1] Unit 1 testing only
[2] Unit 2 testing only
[3] JB4090 if test is being performed on Unit 2.

4.2.5 Handswitches in indicated position and lights on

Handswitch	Position	Light	
HS-65-52	A-Auto	Red	_____
HS-65-10	A-Auto	Green	_____
HS-65-81	A-Auto	Green	_____
HS-62-74A	A-P Auto	Red	_____
HS-65-5	A-Auto	Red	_____
HS-65-46	A-Auto	Green	_____

4.2.6 SRTP "Slave Relay Reset" light on _____

4.2.7 SRTP switches in following position

Switch	Position	
S101	12	
S102	20 (off)	_____
S103	20 (off)	_____

4.2.8 Recorder started, SRTP "Slave Relay Test" pushbutton depressed, and "Slave Relay Energized" light on _____

Initials

4.2.9 Devices in safeguard accident position, recorder turned off, "Slave Relay Reset" pushbutton depressed, "Slave Relay Reset" light on, and a visual check that slave relay is deenergized. _____

4.2.10 Time period of each device (T_o equals energizing on input 1)
(T_f equals deenergizing on referenced input)

Input	Device	T_f	-	T_o	=	T_r (sec)
2	FCO-65-52	_____		_____		_____
3	FCO-65-10	_____		_____		_____
4	PCV-65-81	_____		_____		_____
5	FCV-62-74	_____		_____		_____
6	FCO-65-5	_____		_____		_____
7	FCO-65-46	_____		_____		_____

4.3.1 All connections made in step 4.2.4 have been removed (main control room)

From			To			
Panel	Terminal Block	Terminal	JB	Terminal Block	Terminal	
[1]0-M-27B	2-1B	1	4088	TC	TC1	_____
[1]0-M-27B	2-1A	12	4088	TC	TC2	_____
[1]0-M-27B	2-1E	10	4088	TC	TC3	_____
[1]0-M-27B	2-1E	8	4088	TC	TC4	_____
0-M-27B	2-3A	12	4088	TC	TC5	_____
0-M-27B	2-3A	1	4088	TC	TC6	_____
M-6	A1-32	6	4089[3]	TE	TE1	_____
M-6	A1-32	5	4089[3]	TE	TE2	_____
[2]0-M-27B	2-1A	2	4088	TC	TC7	_____
[2]0-M-27B	2-1A	3	4088	TC	TC8	_____
[2]0-M-27B	2-2J	1	4088	TC	TC9	_____
[2]0-M-27B	2-2J	8	4088	TC	TC10	_____

[1] Unit 1 testing only
[2] Unit 2 testing only
[3] JB4090 if test is being performed on Unit 2.

4.3.2 All connections made in steps 4.2.2 and 4.2.3 have been removed.

Recorder disconnected from SRTP and JB4085 (JB4086 if test is being performed on unit 2) _____

Initials

4.3.3 SRTP disconnected ____

4.3.4 The following devices were returned to their "AS FOUND" positions. ____

Device	
FCO-65-52[1]	____
FCO-65-5[2]	____
FCO-65-10[1]	____
FCO-65-46[2]	____
PCV-65-81	____
PCV-65-86	____
FCV-62-74	____
FCV-26-245	____
FCV-62-70	____
FCV-62-69	____
FCO-65-74	____
FCO-65-77	____
FCV-62-77	____
LS-68-335E/D	____
LS-68-339D	____
Cntmt. Ann. Vac. Fans A and B	____
EGTS Exhaust Fan A-A	____

[1]Applicable only to unit 1 testing

[2]Applicable only to unit 2 testing

REMARKS _____

_____

_____

_____

_____

4.3.5 Shift engineer notified test is complete ____

DATA TABLE

Unit _____ Slave Relay Being Tested K612 Initials _____ Date _____

Slave Relay Function Containment Isolation Phase A

4.3.5 ESF Devices	(A) Response Time (T_r) Measured in Step 4.2.10	(B) Fixed Response Time Factor	Total Response Time (A + B)	Desired Maximum Response Times
FCO-65-52		N/A		19 seconds
FCO-65-10		N/A		19 seconds
PCV-65-81		N/A		19 seconds
FCV-62-74		N/A		10 seconds
FCO-65-5		N/A		19 seconds
FCO-65-46		N/A		19 seconds

NOTES: The fixed time response factor is the time factor which results from having to test a device in a condition other than normal operation; i.e., the difference in the response time of a pump reaching rated pressure on miniflow and normal system flow lineup. These factors will be obtained from preop test data.

WATTS BAR NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

SI-K630A

RESPONSE TIME TEST -
CONTAINMENT ISOLATION PHASE A
SLAVE RELAY K630
TRAIN A

CSSC

CURRENT REVISION LEVEL: 4

Prepared By B. K. Marks

Revised By J. N. Bradley/R. S. Henderson

Submitted By Joel S. Woods
Supervisor

PORC Review Date 1/25/85

Approved By P. S. Wu
Plant Manager

Date Approved 1/25/85

1C	Doc Control Unit, 1520 CST2-C
	NRC
1C	NSRS, 249 A HBB-K
1C	Plant Master File
	Plant Manager
	Supt (O&E)
	Supt (Maint)
	Plant Adm Svs Supv
	ASE Duty Station
	Building Services Supv
	Chem Lab
	Chem Unit Supv
	Chief, Nuclear Safety Staff
1C	Chief, Nuclear Training Branch
	Chief, Oerations QA Branch, 401 UBB-C
	Compliance Unit
	Component Engg & Svs Group
	DPSO-WBN
	Dwg & Vendor Manual Supv
1C	Elect Maint Supv
	Engg Group Supv
1C	Engg Section Supv
	Health Physicist
	Health Physics Lab
1C	Instr Maint Supv
1C	Instr Shop
	Materials Unit Supv
	Mech Maint Supv
	Mech Unit Supv
1C	Modifications Manager
	Operating Instruction Coordinator
1C	Operations Supv
	Operator Training Classroom
2C&1U	P&S Supv
1C	Plant QA Supv
	Plant Training Officer
1U	Plant Training Shift Engr
	Power Stores Unit Supv
	Preop Test Supv
	Public Safety
	Reactor Unit Supv
	Safety Engr
1C	Shift Engr's Office
	Support Svs Supv
	Tech Support Center
1C	Unit 1 Control Rm
1C	Unit 2 Control Rm
1C	John Raulston, NEB, W10A63 C-K
	Site Director
	Site Svs Manager
	Design Svs Manager
	Plant Manager, BLN

Last page of this instruction: 14

HISTORY OF REVISION/REVIEW

REV. NO.	DATE	REVISED PAGES	REASON FOR CURRENT REVISION (INCLUDE ALL TEMPORARY CHANGE NUMBERS)
1	81/02/24	All	General Revision
2	82/12/14	All	SI No. changed (formerly SI-4.3.2.1.3-K630.A)
3		All	General Revision
4	1-25-85	2, 4, 5, 6, 9, 10, 11, 12, 13, 14	Incorporate TC-84-389, TC-84-393, TC-84-395, TC-84-399

PUNCHLIST

1. Watts Bar Nuclear Plant Technical Specifications draft 8/27/84

2. Desired response times will be added after initial performance.

L E Ottinger 11/1/84
Signature Date

1.0 STATEMENT OF APPLICABILITY

1.1 The purpose of this instruction is to comply with the following surveillance requirements.

Technical Specifications Requirement Number	Modes In Which SI Can Be Performed	Frequency
p.4.3.2.2-2.a.3	5, 6	(1)
p.4.3.2.2-3.a.3	5, 6	(1)
p.4.3.2.2-4.a.3	5, 6	(1)
p.4.3.2.2-5.a.3	5, 6	(1)
p.4.3.2.2-6.a.3	5, 6	(1)

(1)NOTE 1: This test shall be performed once per 18 months on one logic train per unit with both logic trains on each unit being tested once per 36 months.

1.2 The intent of this instruction is to measure the response times of the final actuation of engineered safety feature equipment. During this test segment, an SSPS slave relay will be manually energized to cause actuation of associated ESF equipment. The response time will be defined as the time interval from slave relay actuation until the equipment is capable of performing its intended safety function.

1.3 Engineered Safety features shall be operable in modes 1, 2, 3 and 4.

1.4 SI-3.2.20 will be used to schedule, accumulate and organize data from this test and other response time tests necessary to satisfy the requirements specified in the WBNP Technical Specifications.

2.0 REFERENCES

2.1 Source Documents

2.1.1 Watts Bar Technical Specifications draft 8/27/84

2.1.2 FSAR section 7.2.2.1.3-10

2.1.3 Westinghouse Solid-State Protection System Technical Manual

2.2 Other Documents

2.2.1 Westinghouse drawings:

1082H70 - Sh 27 - Sub J
7246D11 - Sh 17 - Sub 3
7246D11 - Sh 18 - Sub 3
7246D11 - Sh 19 - Sub 5
7246D11 - Sh 20 - Sub 3
7246D11 - Sh 21 - Sub 4
7246D11 - Sh 22 - Sub 4
7246D11 - Sh 23 - Sub 4
7246D11 - Sh 24 - Sub 6
7246D11 - Sh 56 - Sub 4
7246D11 - Sh 57 - Sub 2

2.2.2 TVA Drawings:

47W610-61-3	45N600-87-2	45N1632-12
47W610-87-1	45N600-61-1	45N2632-12
* 47W811-2	45N1645-5	45W760-70-8
47W814-2	45N1648-8	
47W850-9		

2.2.3 TI-25

3.0 PRECAUTIONS AND PREREQUISITES

3.1 Observe all applicable precautions in TI-25 when operating the Slave Relay Test Panel (SRTP). Read the instructions before you attempt to use the unit. Failure to follow operating instructions could result in serious injury and damage to equipment.

3.2 Contact Health Physics for precautions priro to entering radiation or contamination area.

3.3 Common mode criterion applies. Enter date in log book per ISL-2.8.

3.4 Ensure that at least one train of the SSPS is in operation at all times.

4.0 INSTRUCTIONS

NOTE: 4.a Refer to the attached data package when implementing and documenting the following instructions.

4.b Upon completion of each step preceded by an "@", initial the appropriate page of the data package.

4.c The test equipment used for this test must be recorded on page 2 of the attached data package.

The following test equipment is needed to perform this test:

Test Equipment	SPEED	TIME LINE
Visicorder	5"/Sec.	1 Sec.

4.d The following devices are actuated when Train A slave relay K630 is energized.

Device	Engineered Safeguard Accident Position
* FCV-70-143	Closed
FCV-87-7	Closed
FCV-87-8	Closed
FCV-61-96	Closed
FCV-61-110	Closed
#FCV-26-240	Closed
#FCV-26-242	Closed
#FCV-26-243	Closed

NOTE: #Does not require response time testing.

4 1 Initial Conditions

@4.1.1 Obtain the SRO's approval to perform this test.

4.1.2 List test equipment data on page 2 of the data package.

4.1.3 Each device listed on Page 2 of the data package may be actuated or repositioned prior to or during this test. Record their "AS FOUND" positions.

@4.1.4 Have the unit operator place the following devices in the indicated position and initial the data package. Ensure these devices remain in the required position for the duration of the test.

Device	Description	Position for Test
Glycol Cooled Floor Pump 1A(1)		Off
Glycol Cooled Floor Pump 1B(1)		Off
FCV-26-240(2)	Containment Standpipe Isolation Valve	Open
FCV-26-242(2)	Annulus Standpipe Isolation Valve	Open
FCV-26-243(2)	RCP Spray Isolation Valve	Open
FCV-87-9(3)	Test Line Isolation Valve	Closed
FCV-87-21(3)	Isolation Flow Containment Valve	Closed
FCV-87-23(3)	Isolation Flow Containment Valve	Closed

NOTES:

1. The pumps are secured because K630 will isolate floor cooling glycol flow.

2. These fire protection valves will automatically close, unless appropriate action is taken to keep them open.

3. Isolates CVCS from upper head injection system.

@4.1.5 Ensure the following devices are in their engineered safeguard nonaccident position and operational.

Device	Nonaccident Position	Description
FCV-87-7	Open	Test Line Isolation Valve
FCV-87-8	Open	Test Line Isolation Valve
FCV-61-96	Open	Floor Cooling Glycol Inlet Isol Vlv
FCV-61-110	Open	Floor Cooling Glycol Outlet Isol Vlv
* * FCV-70-143	Open	Excess Ltdn Htx Cont Inlet Isol Vlv

4.2 Procedures

NOTES: Valve position indicating lights located in the main control room will be monitored to denote valve movement. The voltage drop across the valve position indicating lights will be sensed at the incoming terminal blocks and transmitted to response time testing box JB4089# by temporary test leads.

A visicorder will be connected to JB4085## in the auxiliary instrument room for recording of component response time.

#Applicable for Unit 1 testing only. If test is being performed on Unit 2, use JB4090.

##Applicable for Unit 1 testing only. If test is being performed on Unit 2, use JB4086.

@4.2.1 Connect the SRTP to train A of the solid state protection system (SSPS) per TI-25.

4.2 Procedures

@4.2.2 In the auxiliary instrument room, connect channel 1 of the recorder to TP-630 of the SRTP. This channel will be used to record the status of slave relay K630.

@4.2.3 In the auxiliary instrument room, make the following connections from the recorder to the junction box terminals.

	Device	Recorder Input	Junction Box	Terminal Block	Terminal
	FCV-87-7	2	4085#	TE	TE1(+), TE2(-)
	FCV-87-8	3	4085#	TE	TE3(+), TE4(-)
	FCV-61-96	4	4085#	TF	TF1(+), TF2(-)
	FCV-61-110	5	4085#	TF	TF3(+), TF4(-)
*	FCV-70-143	6	4085#	TC	TC1(±), TC2(-)

#JB4086 if test is being performed on Unit 2.

@4.2.4 In the main control room make the following connections between the indicated response time testing box and the indicated main control panels.

CAUTION: The terminals in panels M-6 and M-9 energized with 125-V dc. Appropriate precautions should be taken when making these connections.

	FROM			TO			
	JB	TB	Terminal	Panel	TB	Terminal	(Wire No.)
	4089#	TB	TE1	M-6	A2-10	3	(TLAP)
	4089#	TB	TE2	M-6	A2-10	2	(TLAR)
	4089#	TB	TE3	M-6	A2-9	3	(TLBP)
	4089#	TB	TE4	M-6	A2-9	2	(TLBR)
	4089#	TC	TF1	M-9	2-1N	1	(G1HP)
	4089#	TC	TF2	M-9	2-1N	5	(G1H3)
	4089#	TC	TF3	M-9	2-2N	1	(G1KP)
	4089#	TC	TF4	M-9	2-2N	5	(G1K3)
*	4088#	TC	TC1	M-27B	1-1G	10	(16DRN)
*	4088#	TC	TC2	M-27B	1-1G	11	(16DGR)

#JB4090 if test is being performed on Unit 2.

4.2 Procedures

@4.2.5 Ensure that the following handswitches are in the indicated position and verify that the indicated valve position light for each handswitch is on.

Handswitch	Panel	Positions	Light
HS-87-7	M-6	A-Auto	Red
HS-87-8	M-6	A-Auto	Red
HS-61-96	M-9	A-Auto	Red
HS-61-110	M-9	A-Auto	Red
* HS-70-143	M-27B	A-Auto	Red

@4.2.6 Verify that the "Slave Relay Reset" light on the SRTP is on.

@4.2.7 On the SRTP, rotate the following switches to the indicated position.

Switch	Position
S101	19
S102	12
S103	20 (off)

NOTE: This will allow slave relay K630 to be energized using the SRTP.

@4.2.8 Start the recorder and then depress the "Slave Relay Test" pushbutton on the SRTP. Verify that the "Slave Relay Energized" light is on.

@4.2.9 When all the devices under test have reached their safeguard state, stop the recorder and reset the slave relays by depressing the "Slave Relay Reset" pushbutton on the SRTP. Verify that the "Slave Relay Reset" light is on and then visually verify that K630 has reset. Second party verification required.

NOTE: The safeguard state will be indicated by the input voltages to the recorder dropping to zero.

@4.2.10 Record the time period required for the devices to reach the safeguard accident position.

NOTE: The time period required for a device to reach the accident position is computed from $T_f - T_o = T_r$

where T_r = time period required to reach accident position

T_o = time at which slave relay K630 was energized

T_f = time at which device reaches accident position

4.2.11 Use the chart recording data stamp and record all necessary information.

4.3 Returning Devices to Service

@4.3.1 In the main control room, remove all connections made in step 4.2.4. Second party verification required.

@4.3.2 In the auxiliary instrument room, remove all the connections made in steps 4.2.2 and 4.2.3. Second party verification required.

@4.3.3 Disconnect the SRTP per TI-25. Second party verification required.

@4.3.4 Each device listed in the data package was actuated or repositioned prior to or during this test. Have the Unit Operator return them to the "AS FOUND" positions recorded in step 4.1.3. If it is not desirable to return any of the devices to their "AS FOUND" positions, have the Unit Operator record the position left in and explain in the "REMARKS" section. Second party verification required.

@4.3.5 Notify the SRO and operator that this portion of the response time test is complete.

@4.3.6 Enter the information needed to complete the data table on Page 7 of the data package.

NOTE: If the total response time for the device is greater than the desired maximum response time, inform the SIMF.

@4.3.7 Attach the chart recording to the data package and give the completed data package to the SIMF.

DATA PACKAGE COVER SHEET SI-K630A

TITLE: RESPONSE TIME TEST-CONTAINMENT ISOLATION
PHASE A - SLAVE RELAY K630-TRAIN A

Performed By _____ Date _____
Instrument Mechanic

This package conains _____ pages. If any pages were removed from the data package as supplied by Planning & Scheduling, indicate by checkmark. ☐ (If checked, explain in remarks.)

Were technical specification criteria satisfied? N/A Yes N/A No

If criteria were not satisfied notify the shift engineer who completes the following:

Was a limiting condition for operation violated?

N/A Yes (explain in remarks) N/A No (explain in remarks)

Verified by SRO N/A Date N/A

Reason for test:

_____ Required by schedule

_____ Maintenance complete on _____

_____ Another system (_____) inoperable

_____ Plant condition (explain) _____

_____ Other (explain) _____

- -

Reviewed:

SIMF _____ Date _____

Rescheduled

P&S Staff _____ Date _____

Remarks _____

_____

_____

PQA Staff Review _____ Date _____

Date _____

Unit _____

		Initials
4.1.1	SRO's approval	_____ SRO

4.1.2

Test Equipment	I.D. Number	Calibration Due Date	Speed	Time Line
Visicorder	_____	_____	_____	_____

4.1.3 The following devices will be operated or repositioned during this test:

Device	Description	"AS FOUND" POSITIONS
FCV-87-7	Test Line Isolation Valve	_____
FCV-87-8	Test Line Isolation Valve	_____
FCV-87-9	Test Line Isolation Valve	_____
FCV-61-96	Floor Cooling Glycol Inlet Isolation Valve	_____
FCV-61-110	Floor Cooling Glycol Outlet Isolation Valve	_____
FCV-26-240	Containment Standpipe Isolation Valve	_____
FCV-26-242	Annulus Standpipe Isolation Valve	_____
FCV-26-243	RCP Spray Isolation Valve	_____
Glycol Cooled Floor Pump 1A		_____
Glycol Cooled Floor Pump 1 B		_____
FCV-87-21 Isol. Flow Cont. Valve		_____
FCV-87-23 Isol. Flow Cont. Valve		_____
* FCV-70-143 Excess Ltdn Htx Control Inlet Isol Vlv		_____

Initials

4.1.4 Devices in following position

Devices	Position	
Glycol Cooled Floor Pump 1A	Off	_____
Glycol Cooled Floor Pump 1B	Off	_____
FCV-26-240	Open	_____
FCV-26-242	Open	_____
FCV-26-243	Open	_____
FCV-87-9	Closed	_____
FCV-87-21	Closed	_____
FCV-87-23	Closed	_____

4.1.5 Devices in nonaccident position

	Device	Position	
	FCV-87-7	Open	_____
	FCV-87-8	Open	_____
*	FCV-61-96	Open	_____
	FCV-61-110	Open	_____
*	FCV-70-143	Open	_____

4.2.1 SRTP connected _____

4.2.2 Channel 1 of recorder connected to TP-630 of SRTP _____

4.2.3 Recorder connected to junction box 4085
(JB4086 if test is being performed on Unit 2)

	Device	Recorder Input	Terminal Block	Terminals	
	FCV-87-7	2	TE	TE1(+), TE2(-)	_____
	FCV-87-8	3	TE	TE3(+), TE4(-)	_____
	FCV-61-96	4	TF	TF1(+), TF2(-)	_____
	FCV-61-110	5	TF	TF3(+), TF4(-)	_____
*	FCV-70-143	6	TC	TC1(±), TC2(-)	_____

4.2.4 Connections in main control room completed

	From			To			
	JB	TB	Terminal	Panel	TB	Terminal	
	4089#	TB	TE-1	M-6	A2-10	3	_____
	4089#	TB	TE-2	M-6	A2-10	2	_____
	4089#	TB	TE-3	M-6	A2-9	3	_____
	4089#	TB	TE-4	M-6	A2-9	2	_____
	4089#	TC	TF-1	M-9	2-1N	1	_____
	4089#	TC	TF-2	M-9	2-1N	5	_____
	4089#	TC	TF-3	M-9	2-2N	1	_____
	4089#	TC	TF-4	M-9	2-2N	5	_____
*	4088#	TC	TC-1	M-27B	1-1G	10	_____
*	4088#	TC	TC-2	M-27B	1-1G	11	_____

#JB4090 if test is being performed on Unit 2

4.2.5 Handwsitches in indicated position and lights on

	Handswitch	Position	Light	
	HS-87-7	A-Auto	Red	_____
	HS-87-8	A-Auto	Red	_____
	HS-61-96	A-Auto	Red	_____
	HS-61-110	A-Auto	Red	_____
*	HS-70-143	A-Auto	Red	_____

4.2.6 SRTP "Slave Relay Reset" light on _____

4.2.7 SRTP switches in following position

Switch	Position	
S101	19	_____
S102	12	_____
S103	20 (off)	_____

4.2.8 Recorder started, SRTP "Slave Relay Test" pushbutton depressed, and "Slave Relay Energized" light on _____

Initials

4.2.9 Devices in safeguard accident position, recorder turned off, "Slave Relay Reset" pushbutton depressed, "Slave Relay Reset" light on, and a visual check that slave relay is deenergized _____ _____

4.2.10 Time period of each device

	Input	Device	T_f	-	T_o	=	T_r (sec)		
	2	FCV-87-7	___		___		___	_____	
	3	FCV-87-8	___		___		___	_____	
	4	FCV-61-96	___		___		___	_____	
	5	FCV-61-110	___		___		___	_____	
*	6	FCV-70-143	___		___		___	_____	

4.3.1 All connections made in step 4.2.4 have been removed. (main control room)

	Panel	Terminal Block	Terminal	JB	Terminal Block	Terminal		
	M-6	A2-10	3	4089#	TB	TE1	_____	_____
	M-6	A2-10	2	4089#	TB	TE2	_____	_____
	M-6	A2-9	3	4089#	TB	TE3	_____	_____
	M-6	A2-9	2	4089#	TB	TE4	_____	_____
*	M-9	2-1N	1	4089#	TC	TF1	_____	_____
*	M-9	2-1N	5	4089#	TC	TF2	_____	_____
	M-9	2-2N	1	4089#	TC	TF3	_____	_____
	M-9	2-2N	5	4089#	TC	TF4	_____	_____
*	M-27B	1-1G	10	4088#	TC	TC1	_____	_____
*	M-27B	1-1G	11	4088#	TC	TC2	_____	_____

#JB4090 if test is being performed on Unit 2

4.3.2 All connections made in steps 4.2.2 and 4.2.3 have been removed. (auxiliary instrument room)

Recorder disconnected from SRTP and JB 4085 (JB4086 if test is being performed on Unit 2) _____ _____

			Initials
4.3.3	SRTP disconnected		
4.3.4	The following devices were returned to their "AS FOUND" positions:		
	Device		
	FCV-87-7		
	FCV-87-8		
	FCV-87-9		
*	FCV-61-96		
	FCV-61-110		
	FCV-26-240		
	FCV-26-242		
	FCV-26-243		
	Glycol Cooled Floor Pump 1A		
	Glycol Cooled Floor Pump 1B		
	FCV-87-21		
	FCV-87-23		
*	FCV-70-143		

REMARKS: _____

4.3.5 SRO and operator notified test is complete _____ SRO

_____ RO

* 4.3.7 Chart attached to data package and given to SIMF _____

DATA TABLE

Unit _____ Slave Relay Being Tested K630 _____ Initials _____ Date _____

Slave Relay Function Containment Isolation Phase A

*4.3.6 ESF Devices	(A) Response Time (T_r) Measured in Step	(B) Fixed Response Time Factor	Total Response Time (A + B)	Desired Maximum Response Times
FCV-87-7		N/A		(Later)
FCV-87-8		N/A		(Later)
FCV-61-96		N/A		(Later)
14 FCV-61-110		N/A		(Later)
* FCV-70-143		N/A		(Later)

NOTES: The fixed time response factor is the time factor which results from having to test a device in a condition other than normal operation; i.e., the difference in the response time of a pump reaching rated pressure on miniflow and normal system flow lineup. These factors will be obtained from preop test data.