



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

April 24, 1990

Docket Nos. 50-390
and 50-391

LICENSEE: Tennessee Valley Authority
FACILITY: Watts Bar Nuclear Plant, Unit 1
SUBJECT: MEETING SUMMARY OF MARCH 27, 1990 MEETING ON PRESTART TEST
PROGRAM AT WATTS BAR, UNIT 1

On March 27, 1990, a meeting was held between the NRC staff and TVA's representatives at the Watts Bar site in Spring City, Tennessee. The purpose of the meeting was to discuss the status of the Prestart Test Program (PTP) for Unit 1. Enclosure 1 is the list of individuals attending the meeting. Enclosure 2 contains the meeting agenda and the handouts provided at the meeting.

The NRC staff opened the meeting by stating that it understands that TVA intends to start the Prestart Test Program for the Group 1 Systems (Control Air, Essential Raw Cooling Water (ERCW), and Component Cooling Water (CCW)) in April 1990. Since there are a large number of work items to be completed for these systems, the staff would like to know the rationale for the start of the testing program and TVA's response to the concerns listed in the meeting agenda.

As part of the presentation, TVA addressed each of the NRC concerns, which are summarized in Enclosure 2. TVA stated that, in order to evaluate the impact of the open items on test performance, the objectives of the particular test program must be clearly defined and understood. Appendix C of the handouts provided by TVA gives a listing of general performance objectives for the PTP. TVA further stated that individual work items will be evaluated against the test performance objectives to determine if lack of completion of the item impacts testing. An item is considered to impact testing if the required level of post modification testing would be a re-performance of the prestart test.

The NRC staff commented that TVA may be performing these tests at risk in face of a large number of work items in these systems as well as any changes due to the ongoing cable replacement program. Since CCW and ERCW systems may not be ready for testing until the end of May, NRC will reassess the usefulness of the upcoming inspection starting April 10, 1990. The NRC will continue to monitor TVA's progress towards completion of these Group 1 systems.

TVA concluded the meeting by stating that:

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1. System testing will not start until systems are complete or there is a high confidence level that incomplete activities will have a minimal impact on testing.
2. Test program for systems is not considered closed until discovery is complete.
3. Any modifications resulting from discovery will be evaluated using the same criteria as used for impact to testing.

Rajender Auluck

Rajender Auluck, Project Manager
 TVA Projects Division
 Office of Nuclear Reactor Regulation

Enclosures:

1. Attendance List
2. Meeting Agenda

cc w/enclosure:
 See next page

OFC	:NRR:TVA/PM	:NRR:TVA/BC	:TVA:AD/P	:	:	:	:
NAME	<i>Rajender Auluck</i> :as	:AMarinos	:SBlack	:	:	:	:
DATE	:4/18/90	:4/19/90	:4/24/90	:	:	:	:

Meeting Summary dated: April 24, 1990

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ADSP Reading
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S. Black
R. Pierson
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R. Auluck
P. Cortland
B. Wilson, Region II
OGC
A. Marinos
ACRS (10)
GPA/CA (M. Callahan) (3)
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 9, 1990

Docket No. 50-390

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MEMORANDUM FOR: Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

FROM: Rajender Auluck, Project Manager
TVA Projects Division
Office of Nuclear Reactor Regulation

SUBJECT: FORTHCOMING MEETING ON PRESTART TEST PROGRAM AT
WATTS BAR, UNIT 1

Date & Time: Tuesday, March 27, 1990
1:30 p.m. - 5:00 p.m.

Location: Watts Bar Site
Spring City, Tennessee

Purpose: The NRC staff to discuss with TVA representatives the
Watts Bar prestart test program (agenda enclosed)

Participants*: NRC TVA
A. Marinos R. J. Stevens, et al
T. Rotella
K. Barr
M. Branch
R. Auluck

Rajender Auluck

Rajender Auluck, Project Manager
TVA Projects Division
Office of Nuclear Reactor Regulation

cc: See next page

*Meetings between NRC technical staff and applicants for licenses are open for interested members of the public, petitioners, intervenors, or other parties to attend as observers pursuant to "Open Meetings and Statement of NRC Staff Policy," 43 Federal Register 28058, 6/28/78.

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AGENDA

Watts Bar Prestart Test Meeting

1. Explain the basis for the screening criteria and levels of management review for approval and any changes to the criteria.
2. Explain how the criteria will be applied to items such as known physical work, discovery (not yet started or incomplete), and CAQRs not yet evaluated.
3. Provide controls for removing an item from the required list of work to be completed.
4. Provide schedule and status of review for Group 1 systems.
5. Provide schedule of submission of supplemental information on FSAR Chapter 14.
6. Explain the logic ties on your 120 day schedule (e.g. discovery complete, engineering complete, and return to service).

BASIS FOR SCREENING CRITERIA AND LEVEL OF APPROVAL

Basis for Criteria

- Define test objectives
- Define impact to test (RTS Y OR N)*
- Overall assessment of incomplete items

Review and Approval of Criteria

- Same as Administrative Instruction
 - IQR
 - PORC
 - Plant Manager
 - Program Manager
- Vice President, New Projects, concurred with criteria

*** RTS: Return to Service - System activities have been completed to the extent necessary to support system alignment and the prestart test.**

APPLICATION OF RTS CRITERIA

Review and approval of system completion

- **Prestart engineer evaluates items for system completion**
- **Joint Test Group reviews system completion and recommends approval**
- **Startup and Test Manager review and approval**

Prestart engineer evaluates items for test impact

- **Physical work - items evaluated for test impact**
- **CAQRs/Discovery items - corrective actions defined and a HIGH confidence level that work impacting testing is known**

PROJECTS RECEIVING REVIEWS FOR IMPACT TO TESTING

<u>Project Code</u>	<u>Project Description</u>	<u>Justification</u>
AF	Hyperfiltration Backout	Technical
BD	Us-As-Is CAQ	Low Prob
BV	Quality Assurance Records	Low Prob
CA	Civil Calcs	Technical
CG	Conduit Supports	Technical
DE	MIC	Technical
DJ	Mechanical Equipment Qualification	Low Prob
EB	Moderate Energy Line Break	Low Prob
FD	Fire Protection Deficiencies	Technical
GP	Plant Grooming	Technical
LG	Nuclear Issues - SGTR and MSLB	Low Prob
PP	Piece Parts	Low Prob
WE	HVAC Duct and Duct Supports	Technical (except damper replacement)
WF	Cable Tray and Supports	Technical

Technical - No technical relation to testing objectives

Low Prob - Low probability of work to impact testing

INCOMPLETE DISCOVERY ITEMS AT SYSTEM COMPLETION

Test program for system not closed until discovery complete

Any modifications resulting from discovery will be evaluated using the same criteria for test impact

- **Evaluate item for test impact**
- **For impact items, ensure integrity of testing is maintained**

CONTROLS FOR A WORK ITEM

Items are not removed from the list of work until documentation is complete

Changing item status controlled by AI-6.15

- Prestart engineer evaluates item and assigns correct status
- JTG reviews status and recommends approval
- Startup and Test Manager approves

PROJECTED SCHEDULE FOR GROUP 1 SYSTEMS

<u>System</u>	<u>System Completion</u>	<u>Start of Test</u>
32 - Control Air	4/03/90	4/17/90
67 - Essential Raw Cooling Water		
70 - Component Cooling Water	5/08/90	5/22/90

PRESTART SUPPLEMENTAL INFORMATION TO NRC
(Comparison with FSAR Chapter 14)

Group 1 Systems **4/2/90**

Group 2 - 6 Systems **7/30/90**

TIES ON 120 DAY SCHEDULE

Discovery complete

- To the point where physical work is identified

Engineering complete

- Modifications (DCNs) issued that impact testing

Return to service

- Items identified that impact testing are complete in accordance with AI-6.15

Other improvements in specifying ties

- Project plans
- SMPL

CONCLUSIONS

- * System testing will not start until systems are complete or there is a HIGH confidence level that incomplete activities will have a minimal impact to testing.

- * Test program for systems not closed until discovery complete.

- * Any modifications resulting from discovery will be evaluated using the same criteria for impact to testing.

Source Key/ SMPL Key	Sys	KE	U	RC	Resp/ -Restr	Description	CForecast/ MForecast	XRef/ Comments	St/ Sourc	Matl	Restraints
A649594 4656	032	01.	1	I	MS	WALK DOWN FLOW ELEMENT TANG PLATES RTS: N				2S	
								CRAFT COMPLETE - NO SYS 032 IMPACT		MR	
SCRWBNEEB8668RO 11776	032	06.	1	P	WPESI EIC	AUXILARY AIR COMPRESSORS WERE SEISMICALLY QUALIFIED BY WYLE LABS. THE TEST DID NOT PROVIDE SUFFICIENT DATA TO DETERMINE CHANGES IN SETPOINT OF PRESSURE SWITCHES & TEMPERATURE SWITCHES DUE TO SEISMIC EVENT.	C 04/03/90 M 03/09/90	BN NE COMPLETE/P-01154-D ISSUED 03/12/90. NC'S IMPLEMENTING DOC IS 1-032-K-P01154.		OO TROI	
A629487 6216	032	05.	0	X	MM	FOUND HIGH MOISTURE IN CONTROL AIR. PERFORM 1 YEAR FREQUENCY OF PM 32-5. CONTROL AIR DRYERS. TB EL. 708. RTS: Y	C 03/12/90	MC COMPLETED 03/11/90		1A MR	
A644487 5360	032	05.	1	P	IM -CONST	CAL 1-FCV-32-110 REACTOR BLDG UNIT 1 NON-ESSEN ISOL FOR PCU RTS: Y	C 04/23/90 M 03/22/90	MC WP 5688-1 & 5764-1.		2H MR	
A617393 6623	032	05.	0	X	MM	INLET COOLING WATER LINE CONNECTING TO THE HIGH PRESSURE CYLINDER HEAD (3/4 " COPPER) IS BENT. REPAIR OR REPLACE THIS LINE DURING TH NEXT 5000 HR. PM. NOTE: THE LINE NOT LEAKING AT THIS TIME. RTS: Y	C 03/29/90	MC ON HOLD UNTIL COMP "A" IS RUNNING		1H MR	
0-062-K-P01121A-1 1081	032 MUL	05.	0	R	MEB	INSTALL NEW PRESSURE TRANSMITTER, 0-PT-62-270 PER DCN. HOLD FOR MAT'L.	C 05/18/90 M 03/30/90	BP THIS WP ADDS THE FEATURE ISOLATION VALVE TO THE SYSTEM.		AW OWIL	MATERIAL REC'D 03/16/90 HAD A BAD ITEM. CORRECT MATERIAL WAS REC'D ON 03/21/90.
1-067-K-P07278A-1 428	032 MUL	05.	1	R	EEB	CABLE DAMAGE ISSUE-CORRECT HIGH RISK CONDITION DUE TO PULL-BY IN CONDUIT 2PLC2753B IN AUX. BLDG.	C 05/23/90 M 03/30/90	EA WP INVOLVES CABLES TO 1-FCV-32-102A-B		AW OWIL	
A628641 1722	032	05.	0	I	MS	FSV IS DAMAGED AND LOOSE WITH WIRES DISCONNECTED. REPAIR/REPLACE FSV AS REQD. TROUBLE TAG IS HUNG, NO. 43816. RTS: Y	M 03/30/90	2-FSV-32-81A-B. UNIT 2 RX BLDG TRAIN A ISOLATION.		OO MR	
1-032-K-P06978A-1 1185	032 MUL	05.	1	X	EEB	REPLACE FEEDER CABLES FOR AUXILIARY CONTROL AIR COMPRESSORS A-A AND B-B DUE TO AMPACITY CALCULATIONS FAILURES.	C 04/10/90	EA		AW OWIL	
A629217 3925	032	05.	0	P	MM	NEED TO PERFORM STEPS 5 & 6 ON 1 YEAR PM 32-73. NEED COMPLETED BY 03-31-89. RETURN COPY OF COMPLETED MR TO E. CALBAUGH. CRAFTSMAN TO SIGN PM FOLDER AFTER COMPLETED. AB BLDG. ELEV. 757. RTS: Y	C 04/16/90	MC NEEDS PMT. TIED TO COMPLETION OF 1-032-K-P01154A, SMPL 1096, 1097, 1098.		2P MR	

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RETURN TO SERVICE EVALUATION CRITERIA

In order to properly evaluate the impact of open work items on test performance, the objectives of the test program must be clearly understood. The following information defines the general performance objectives for the Prestart Testing Program.

1. Demonstrate pump performance exceeds safety analysis requirements with sufficient margin for plant operation. Reestablish pump performance baseline in accordance with ASME Section XI requirements.
2. System hydraulic performance meets or exceeds requirements. Flow rates exceed minimum flow requirements.
3. Heat exchanger thermal performance is demonstrated through a combination of collected data and design calculations.
4. Piping vibration is verified to be in compliance with the requirements of WB-DC-40-31.16.
5. Power and control circuit functional requirements are demonstrated to perform correctly. Requirements to be demonstrated include: (1) automatic accident actuation and process control functions; (2) functionality of interlocks; (3) normal and alternate control functions; and (4) interaction with interfacing control circuits.
6. Valve stroke time requirements are met.
7. Leakage rates are within prescribed limits for containment isolation and ECCS check valves.
8. Annunciators and status indicators correctly actuate and provide correct operator indication.
9. Ventilation filter performance meets efficiency requirements for charcoal and HEPA filters.
10. Ventilation systems can achieve required pressures within allowable times. Maximum leakage from the pressure boundary is within design limits.
11. Ventilation system flows and leakage are within prescribed limits, and vibration is not excessive.
12. Response of instrument control and indication functions are demonstrated.
13. Response time requirements are verified to be within Technical Specification limits.

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14. Integrated system response characteristics are demonstrated for:
 - Diesel Loading Logic
 - Engineered Safeguard Features Actuation System
 - Containment Integrated Leak Test
 - Hot Functional Testing
 - Thermal Expansion
15. Plant vital AC/DC electrical distribution and lighting systems meets or exceeds requirements.
16. Heat tracing maintains fluid temperatures above the required minimum temperature limits for the boric acid system.

System functional testing is designed to demonstrate, to the extent test conditions allow, correct performance of design functions of the entire system. Functional testing will also demonstrate design objectives for principal components within the system. Incomplete work items must be evaluated for impact on the test objectives. Functional testing is not designed to confirm construction adequacy nor can it confirm certain design parameters which cannot be imposed during test. Examples of these design parameters are as follows:

1. Seismic structural and piping loads.

Component and system integrity in a seismic event are not demonstrated through a functional test program. Incomplete work items relating to this area may be deferred until after test.

2. Thermal loads on piping, supports, and heat exchangers or coolers.

Except for certain testing performed during hot functional tests, most testing must be done at thermal loads that are significantly less than design conditions. Incomplete work items that provide qualification to rated temperatures may be deferred until after testing. This would also include insulation, except for areas where heat trace performance must be tested.

3. Electrical distribution system.

Worse case conditions or degraded voltage cannot be imposed during testing. However, modification to the distribution system can impact voltage and frequency profiles during diesel generator load testing.

4. Architectural (doors, penetrations, walls)

Changes to these features generally do not impact testing objectives, except when the feature is a part of a tested ventilation boundary.

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Individual work items are evaluated against the test performance objectives to determine if lack of completion of the item impacts testing. An item is considered to impact testing if the required level of post modification testing would be a reperformance of portions of the prestart test. This method is used in determining the return to service designation for individual items.

In determining whether punchlist items are significant for system testing, not only should the item be evaluated against the test criteria, but an assessment should be made regarding the collective impact of all punchlist items. A single punchlist item may be tested separately after the test, but a number of items may render the completed test results questionable. In addition, testing of punchlist items may be deferred to a later integrated system test. These decisions involving the overall assessment of test impact items should be reviewed and documented by the Joint Test Group. The Joint Test Group will make a recommendation to the Startup and Test Manager regarding acceptability of system completion.