December 12, 1995

To: Dr. Shirley Jackson, Chairperson
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

From: Jeannine Honicker
362 Binkley Dr.
Nashville, Tn. 37211

Re: NRC INSPECTION REPORT NOS: 50-390/95-40 & 50-391/95-40

Cover letter signed by Johns P. Jaudon, Deputy Director, TVA Construction, Division of Reactor Projects says:

"The purpose of the inspection was to determine whether activities authorized by the construction permit were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Within the scope of the inspection, violations or deviations were not identified."

The body of the report does not support this cover letter.

Page 1 of the report identifies the lead inspector as P. M. Madden, and is signed 9/12/95

The Summary says:

"Scope:

This routine, announced inspection was conducted in the areas of the operational fire protection program, postfire safe shutdown, emergency lighting, reactor coolant oil collection system, and pre-operational test program.

Results: (pages 2 & 3 of report which are attached)

Results:

The inspectors found no violations or deviations in the areas inspected and made the following conclusions:

- Fire brigade's drill performance was satisfactory (Paragraph 3.1).
- Fire Emergency Pre-plans exceeded NRC guidelines (Paragraph 3.2).
- Motorized fire apparatus was stored in the Turbine Building and subjected to a significant fire exposures (Paragraph 3.3).

  Fire brigade equipment was properly stored and ready for use (Paragraph 3.3 and 3.4).
- Fire Protection QA Program in effect and proposed future audits met the NRC guidelines (Paragraph 3.5).
- The program to control plant changes to prevent degrading installed fire protection features and plant safe shutdown features was effective (Paragraph 3.6).
- Fire dampers were not installed at all heating, ventilation and air conditioning (HVAC) fire barrier penetrations; however, TVA had performed an evaluation and found that the redundant components on both sides of the unprotected opening were adequately separated (Paragraph 4.1).
- Documentation of the fire testing for the fire barrier penetration seals did not conform to the design details for some of the installed penetration seals (Paragraph 4.2). This is an open licensing issue.
- Fire detector coverage met the design requirements except detectors were not installed in a corridor on elevation 672 of the Auxiliary Building as required (Paragraph 4.3).
- Closed automatic sprinkler system heads were installed for the protection of HVAC charcoal filter beds in lieu of open head spray nozzles as normally recommended by standard industry practice (Paragraph 4.4). This is an open licensing issue.
- Diesel fire pump installation design met NRC guidelines (Paragraph 4.5).
- Frequency of the inspections and tests proposed for the fire protection components met the commitments to the NRC (Paragraph 4.6).
- TVA's evaluation of its safe shutdown capability after fire was incomplete because of the following open NRC licensing items:
  - Accessibility to Valves 0-ISV-32-1013 and 0-ISV-32-1206 required for plant shut down was difficult (Paragraph 5.1).

- Inadequate maintenance was proposed for circuit breakers and relays (Paragraph 5.2).

- Evaluation for multiple high-impedance faults was inadequate (Paragraph 5.2).

- Information on common enclosure concerns for associated circuits was not available (Paragraph 5.2).

- A surveillance test procedure did not include the inspection and test frequency of safe shutdown equipment that was not included in the technical specifications (Paragraph 5.4).

- There were discrepancies between Procedure AOI 30.2, "Fire Safe Shutdown," and the plant practice (Paragraph 5.2).

- Equipment to meet the Appendix R cold shutdown requirements was not yet provided and stored on site (Paragraph 5.3).

- Emergency lighting upgrades required to meet Appendix R had not been completed (Paragraph 6.1).

- Radio communications were not available from the location of some safe shutdown equipment (Paragraph 6.2).

- Thermo-Lag electrical cable raceway barrier installation continued to be effective (Paragraph 7.1).

- Audible alarms from the plant's main fire alarm control panel located in the control room were adequate (Paragraph 7.2).

- Electrical raceway fire barriers were not installed from fire barrier penetration to fire barrier penetration, which could allow fire to spread to electrical cables associated with both redundant safe shutdown trains (Paragraph 7.3).

- A 1-hour fire-rated raceway fire barrier was installed on a conduit on elevation 737 of the Auxiliary Building, which required a 3-hour fire barrier (Paragraph 7.3). This is an open licensing issue.

- Radiant energy heat shields installed on cables in Containment were combustible whereas noncombustible shields were required (Paragraph 7.4). This is an open licensing issue.

- The oil collection system for reactor coolant pumps was satisfactory (Paragraph 7.5).

- Pre-operational tests of the CO_2 systems for the Unit 1 and Unit 2 Auxiliary Instrument Rooms were satisfactory (Paragraphs 8 and 9).

Page 3, section 3.3 "The inspectors noted that the truck was parked in the Unit 1 Turbine Building railroad bay directly under the generator bus duct and adjacent to the hydrogen seal oil unit, the hydrogen addition control station, and the generator. Experience has shown that turbine-related failures or main station transformer failures usually result in fires at the generator end of the turbine. A fire at this location could affect the site fire engine and could render it inoperable. As a temporary measure, the applicant moved the fire engine to the Unit 2 side of the railroad bay.---The applicant stated that it will complete the site master plan effort by November 1995 and begin site renovation by May 1996."

A site master plan should have been completed before the construction permit was granted. How much more money is TVA planning to spend on site renovations which are scheduled to begin in May, 1996?

Page 3, Last sentence in the next to the last paragraph states:

"The fire endurance tests conducted during 1993 - 1994 demonstrated that the Thermo-Lag materials met TVA's design requirements."

According to a story released by the Associated Press on 8/11/95, 20 nuclear plants that are using Thermo-Lag are covering it with other materials. Thermo-Lag, according to the story, was "deemed inoperable by federal regulators in 1992 after tests showed it could not stand up to flames for the required one to three hours. In one test, Thermo-Lag disintegrated from fire.

The problem of lack of adequate fire protection is exasperated at Watts Bar because of the Hydrogen igniters which will purposely start a fire.

At the ACRS meeting held Nov. 1 and 2 in Rockville, Md., Dr. Ivan Catton, one of the ACRS board members questioned TVA extensively about the igniters, telling them that the Germans have removed them from all their plants, and the other countries are considering the same action.

At one point Catton said " How could a fire start?" Then he answered his own question. "Of course, the hydrogen igniters."

So, add up insulation that doesn't insulate, and hydrogen igniters, spark plugs, if you will, to purposely start a fire, and you have a plant that is an accident waiting to happen.

Why is the NRC letting TVA turn on a plant that has been under construction for 23 years, and that NRC notes, TVA will begin renovation on in May of 1996, just five months after the fuel is loaded? If TVA is already planning renovations, it proves they know it is not ready to operate in its present condition. NRC says in their license that the operation of the Watts Bar Plant will not be inimical to the health and safety of the public. That statement is made without factual evidence to back it up.

page 7 section 4.1, FIRE DAMPERS

--"Duct penetration without fire dampers were depicted on the fire barrier compartmentation drawings as unprotected openings.

The inspectors review the HVAC drawings and found that certain HVAC ducts that penetrated the required fire barriers did not have fire dampers."

TVA will either install the dampers of get NRC deviations to their requirements.

"During the walkdown inspection of the fire dampers, the inspectors noted a number of dampers were not accessible."

TVA promised to resolve the problem. Three other discrepancies had been discovered during previous inspections and TVA had issued Design Change Notices (DCN's)

DCN E-35821 A Fire Damper Fusible Link Temperature Rating and Number of Links per Connection.

DCN W-21661-B Un-analyzed Effect of Spurious Closure of Fire Dampers.

DCN W-37304-A Install Correctly Rated Fusible Link on Fire Dampers.

TVA was still working on the DCN's at the time of NRC Inspection as reported in 95-40, page 9, first sentence.

Completion of the work will resolve these concerns.

NRC Inspector Follow-up Item 50-390,39195-40-02 was issued called "Fire Damper Discrepancies."

page 11

Section 4.2 Fire Barrier Penetration Seals

"The inspectors could not determine the availability of adequate fire endurance test documents that met the acceptance criteria of ASTM #-814 and IEEE 634 and were representative of the typical mechanical and electrical fire barrier penetration seal designs used at Watts Bar. In addition, the inspectors found the following issues associated with the applicant's penetration seal program

* It was not clear that the tests met the applicant's commitments described in their FPR.

* The acceptability of the bounding conditions for the critical fire penetration seal material and design attributes (e.g., material density, location/need for damming boards, amount, and type of cables penetrating the seal test specimens) were not clear.

* The installation details and their qualification basis did not clearly establish the fire endurance rating of the seal design

* The applicant had not properly evaluated the auto-ignition temperatures (refer to IEEE 634 for guidance) of the various types of cable jacket and insulation used that pass-through fire-rated penetration

seals.

The acceptability of the applicants's fire barrier penetration program is an open licensing item.

In a letter dated Nov 8, 1995 to The Honorable Shirley Ann Jackson signed by T. S. Kress the Advisory Committee on Reactor Safeguards said on page 2, paragraph 3,

" The NRC staff stated, in Supplement 18 to the Watts Bar Safety Evaluation Report, that all licensing issues have been resolved with the exception of those related to fire barrier penetration seals and emergency lighting inside the reactor building."

4.3 Automatic Sprinkler Systems and Fire Detection System.

page 12, second paragraph --"The location and spacing of the smoke detectors appeared to meet the construction documents, except no detectors were installed in the corridor between column lines A8-A11 north of Rooms 692-A17 and A-18. --This item was another example of Unresolved Item 390/94-62-02,"Smoke Detectors Do Not Meet TVA Design Description for Fire Detection Systems."

Although numerous modifications and upgrades had been made to the automatic sprinkler systems in the Auxiliary Building to give appropriate protection, the inspectors could not evaluate thee effectiveness of the automatic sprinkler coverage for elevations 676, 692, 713, and 737 since scaffolding and other temporary construction materials obstructed access.

4.4 Fire Suppression Systems for Charcoal Filter Units,

page 12, last paragraph:.

"The inspectors noted that the fire suppression systems installed to protect the charcoal filter beds in a number of ventilation systems at WBN -- consisted of closed automatic sprinkler heads, which required activation of a temperature element or fusible link before the system was capable of discharging water onto the charcoal filter bed. However, a fire in the filter bed may not sufficiently increase the temperature near the sprinkler spray nozzle to activate the closed sprinkler spray nozzle.

The applicant issued a DCN request to change the existing automatic closed head water suppression system for each charcoal filter unit to a manual open head water spray system.

The acceptability of the fixed fire suppression systems used in the filtration units that use charcoal beds is an open licensing issue."

4.5 Outside Fire Protection - Diesel Fire Pump installation

--the diesel-driven fire pump to be installed to supplement the fire protection water supply from the four electric-motor driven fire pumps at the Intake pumping Station. --

This fire pump installation will be completed before fuel load.

Was it?

page 13--
4.6 Surveillance Test of Fire Protection Systems

The applicant had issued approximately 93 procedures to perform the required surveillance tests and inspections of the fire protection systems. An additional 36 test procedures, including 14 procedures for the new diesel-driven fire pump yet to be installed, had not yet

been issued or the existing procedures needed to be revised.

Pages 14-19 detain systems required to achieve and maintain safe shutdown capability. The inspectors selected a sample of required safe shutdown equipment for detailed evaluation.

Page 19:
RCS Makeup, Seal Cooling, and Boron Dilution

"RCS (Reactor Cooling System) makeup would not be available for certain fire scenarios for 75 minutes after a reactor trip. - - VCT (Volume Control Tank) must be isolated within 30 minutes to prevent nitrogen cover gas from entering the suction piping of the charging system, which would caus the pumps to cavitate. This action is achievable before 30 minutes have passed.

Operator Accessibility

Other valves would be inaccessible, and TVA has devised an acceptable substitute procedure, which requires a change in the rules. Last sentence in paragraph 2, page 20 states

"The applicant will revise the FPR to remove this ambiguity with AOI-30-2

Other valves that isolate and vent containment air control were difficult to access. "Although operations requested a DCN to alleviate this difficulty, its disposition was not verified during this inspection. These plant conditions are examples where the existing plant configuration hinders the access for the operator to manually operate post-fire safe shutdown equipment, therefore, these conditions are an open licensing item.

Page 22, third paragraph.

The cable routing information from the WBN computerized cable routing system (CCRS) revealed a number of plant areas where cables of redundant paths interacted.

Shades of Brown's Ferry. Where has TVA been these past twenty years. Where has NRC been. Is this the first time

an inspector has found this problem? Who have the other inspectors been? Who are these inspectors? Why were they not at the ACRS meeting? Only Johns Jaudon, who assured the ACRS members that everything was just fine, was there at the Nov 1 & 2, 1995 meeting. See attached letter.

page 12, next to last sentence

At the time of the inspection, the applicant was implementing plant modifications necessary to resolve the cable interactions. Required modifications include re-routing cables out of the fire affected area and installing one-hour fire-rated barriers to correct these interactions. This is an open licensing item. (DCN M-35918A and M-11727D)

Have the same inspectors who found this problem verified that it has been fixed?

Page 23, ASSOCIATED CIRCUITS

"Associated circuits of concern consist of one of the following configurations;

- Circuits associated by common power supply (i.e., nonessential circuits which share a common switchgear, motor control center, or distribution panel with circuits of equipment relied on to achieve post-fire safe shutdown);
- Circuits associated by common enclosures (i.e., nonessential circuits which share a common cable tray, conduit, junction box etc., with required circuits); or
- Circuits whose spurious operation may adversely affect the achievement of a safe shutdown performance goal.

The inspectors found acceptable coordination and selective tripping capability for power supplies relied on to achieve and maintain safe shutdown.

An established program of surveillance testing and periodic maintenance is necessary to ensure that circuit breakers of required power supplies will perform their intended design function over the life of the plant.

After the Aug.28, 1995 exit meeting, the applicant gave the inspectors a package of maintenance procedures for the inspection and maintenance of circuit breakers.
--However, the applicant's package did not include surveillance test procedures to verify the trip point settings for either circuit breakers or relays. Therefore, the adequacy of the applicant's circuit breaker and relay maintenance practices remains an open licensing issue.

Generic Letter 86-10 states that a safe shutdown capability evaluation that meets the separation requirements of Appendix R, must include consideration of multiple high-impedance faults (MHIFs) The applicant considers the occurrence of MHIFs to be highly unlikely and therefore did not analyze this concern for WBN-1. --Open licensing issue.

Pages 27-30

5.3 Post-Fire Safe Shutdown Implementation

Two inspectors accompanied the main control room operators, while another inspector went with each of the auxiliary unit operators (AUOs) to observe the shutdown functions performed by each of them.

22 procedural problems were found.

"Until the above are corrected and is verified by inspection, the adequacy of post-fire safe shutdown procedures remain open.--this is Inspection follow-up item 50-390,391/95-40-02, "Fire Shutdown Procedure AOI 30.2 Discrepancies."

Page 30, Safe Shutdown Repairs

"The supplies and equipment stated in DCN 37030-A as required to perform the repairs to place the plant in cold shutdown following an Appendix R fire had not been provided and the applicant had not determined the storage or staging area for this equipment. In a later inspection, NRC will review the adequacy of the cold shutdown repair staging locations and verification that the appropriate equipment and tools are available. This is Inspector Follow-up Item 50-390/95-40-03, "Equipment and Supplies for Appendix R Cold Shutdown Repairs Were Not Available."

Page 31 Operational Shift Staffing

This details the duties of the shift operations supervisor (SOS, licensed Senior Reactor Operator, SRO), assistant shift operations supervisor (ASOS, licensed SRO), Reactor operator, (RO, licensed RO), balance of plant operator (BOP, licensed RO), seven auxiliary unit Operators (AUOs) (Not licensed), and a shift technical advisor (STA) in response to a fire.

The applicant plans on locating the Appendix R shift staffing requirements in the Fire Protection Report; however, the inspectors believe that those requirements

The inspectors accepted the WBN-1 method of protection for preventing an uncontrolled loss of reactor coolant inventory through high/low pressure interface valves.

Circuits Associated by Common Enclosure

Fire-induced damage to nonessential circuits that are associated by common enclosure with circuits required to achieve and maintain safe shutdown may create circuit faults in electrically unprotected cables. Such faults could be of sufficient magnitude to create secondary fires. A secondary fire in an enclosure containing cables required for safe shutdown could hinder the successful achievement of safe shutdown.

To evaluate this concern at WBN-1, the inspectors selected a sample of cable enclosures known to contain cables of equipment required for safe shutdown. The inspection sample included the following cable trays:

Cable Tray	Location
1-2067	Elevation 713 feet, 0 inches, Auxiliary Building
3A2102	Elevation 713 feet, 0 inches, Auxiliary Building
3B2314	Elevation 757 feet, 0 inches, Auxiliary Building

The inspectors requested the applicant to submit information describing the size, type, and construction of nonessential cables and the electrical protection (e.g., fuse/breaker size/type) for nonessential cables routed within each cable tray. After the inspection, the applicant submitted the additional information. The inspectors reviewed the applicant's information and did not find any circuits of concern for each of the above common enclosures; therefore, the electrical protection (e.g., fuse/breakers) for circuits not for safe shutdown that were routed within the enclosure is acceptable.

5.3 Post-Fire Safe Shutdown Implementation

The inspectors reviewed Procedure AOI 30.2, "Fire Safe Shutdown," and the documents referenced therein. This procedure governs Appendix R compliance for safe shutdown. The inspectors also did a walkthrough of Appendix C to this procedure, which contains procedures for safe shutdown with fires in each of the fire zones in the plant and alternate procedures to shut down the plant from outside the control room. In observing the walkthrough of the procedure for alternate shutdown, two inspectors accompanied the main control room operators, while another inspector went with each of the auxiliary unit operators (AUOs) to observe the shutdown functions performed by each of them. The applicant critiqued the exercize after the drill. The items below reflect the procedure review and observations of the walkthrough.

- The procedure did not contain actions needed to address possible hydrogen leakage from the main generator in areas where a loss of offsite power might occur.

- Procedures C.16, 17, 19, 20, 23, 28, 35, 36, 38, and 58 did not contain a caution to the operator that a fire in these areas could result in the concomitant loss of offsite power.

- Procedure C.54 did not contain a caution to apprise personnel of a possible hazard associated with hydrazine and ammonia lines transversing fire zone A7 on elevation 692 of the Auxiliary Building.

- Procedures C.61 and 65 lacked a step to go to if pressurizer heaters are not available.

- Step 27 in Procedure C.67 stated the wrong breaker location for the Positive Displacement Charging Pump.

- AOI 30.2 Step 35.b required the operator to maintain subcooling greater than 85 °F. At this point in the procedure, the plant is in natural circulation with one CRDM fan running. In EOP ES-0.2 with less than three CRDM fans running Step 7.a RNO required 165 °F subcooling. There is no technical justification for this difference in the subcooling requirements between these situations with identical RCS conditions.

- Operator actions in AOI 30.1 and AOI 13.01 depended on obtaining information from the plant's main fire alarm control panel located in the control room ("Blue Goose") on fire location. The procedure included no contingency actions to do if the Blue Goose (main fire alarm control console in the main control room) were inoperable.

- If the PA system were to develop a short in the ACR, the resulting noise could jeopardize communications with AUOs in the plant as well as within the ACR itself. The PA system cannot be disabled from the ACR.

- In Procedure C.67, AUO 7 was tasked with controlling the steam generator PORVs. Since control was now performed remotely, the operator did not have a diagram (i.e., a curve) that relates nitrogen pressure to percent valve opening.

- Appendix E of Procedure AOI 30.2 included no consideration of verifying or re-establishing spent fuel pool cooling.

- The immediate action steps taken in Procedure AOI 30.2 following a reactor trip were not the same as those required by the Westinghouse Owners Group for other abnormal events that result in a reactor trip. At Watts Bar, in keeping with the Westinghouse Owners Group Guidelines, operators are trained to perform the immediate actions of EOP-0 following a reactor trip. They perform these steps without referring to procedures, then open the procedure and verify they have taken the appropriate steps. There was no technical justification for this difference in the reactor trip response or the undocumented change in the accident mitigation strategy, nor was it clear that an operator would not follow his normal training and complete the first four steps of Procedure E-0.

- Procedure AOI 30.2 Appendix C, Section C.67, Step 26 required the operator to establish RCP seal flow of 8 GPM to each seal. Only the total charging flow indication is available. This flow is the total flow to the seals. The charging flow gage could not be read to the precision required and there is no way to ensure that the flows are evenly split between the four sets of RCP seals.

- Procedure AOI 30.2 Appendix C, Section C.67, the Note before Step 26, referenced SOI 62.01 for guidance on local operation of charging and seal flow. The SOI contained many instructions and prerequisites not appropriate for the operation of this equipment in the potential configurations of this procedure. Additionally, the correct steps were contained in AOI 30.2. In this case, the reference to SOI 62.01 was both unnecessary and incorrect.

- Procedure AOI 30.2 Appendix C, Section C.67, Step 43 directed AUO 2 to use pressurizer heaters, as necessary to ensure uniform pressurizer temperature as level increases. The information that the operator needs to ensure and monitor uniform pressurizer temperature was not available either locally or at the ACR when the MCR is abandoned.

- Procedure AOI 30.2, Appendix C, "ACR Checklist AUX Control Room PNLS L11 A and B," for panel 1-L-11B, the transfer switches 1-XS-1-184, SG 4 Blowdown CIV in CNTMT and 1-XS-3-171A, AFW to SG 4 were transferred out of sequence on the panel. The transfer switches were also in different sequence than similar transfer switches listed on AOI 30.2, Appendix C, "ACR Checklist AUX Control Room PNLS L11 A and B" for panel 1-L-11A.

- Procedure while transferring control of power from the MCR to the ACR, the TDAFW controls were not transferred. While this equipment was eventually isolated locally, there was no apparent reason for not protecting this circuitry from spurious signals by using the transfer switches on panels 1-L-11A and B.

- Procedure while transferring control of power from the MCR to the ACR, the plant was aligned to let down to the primary demineralizer at a rate of 120 gallons each minute. The operators were not aware of this, and the letdown took place for about 20 minutes before it was isolated. The effects on the loss of VCT water volume and the temperature effects on the primary demineralizer were unknown and were not simulated during the drill. The inspectors and the applicant found that this had been aligned in accordance with TI-57.002, Revision 3. There was no explanation for this alignment.

- Soft interfaces are those fire areas with no physical barrier between the areas. AOI 30.2, Note before Step 4, stated "For rooms with soft interfaces, the actions of either room are sufficient." This note should only apply to fires that cross the soft interface between the adjacent fire areas. The note was interpreted by a few operators to include fires that were not across the soft interface.

- Procedure AOI 30.2, Appendix A, "Operator Actions/Responsibilities," Step 2 listed one of the incident commander responsibilities as assessing the potential for spreading of a fire- and smoke-generated particles to adjacent areas. If the applicant follows the fire mitigation strategy of the Appendix R fire as delineated in AOI 30.2, the incident commander would be at the ACR and not at the fire scene. The fire brigade commander appeared to be the most appropriate person to make this decision since he was at the fire scene. Step 3 of AOI-30.2 Appendix A had similar inconsistencies.

- Procedure AOI 30.1, Steps 6, 7, and 8 did not conform to the Writer's Guide in that steps 7 and 8 applied only if Step 6 is answered in the affirmative. Steps 7 and 8 should be sub-steps of step 6. This comment also applies to AOI 30.2 Steps 9, 10, and 11.

- Procedure SOI 13.01, Step 6.1, Note 2, referred to AOI 30, "Plant Fires." There was no procedure with this number or title. Reference to either AOI 30.1 or AOI 30.2 would have been more appropriate.

- Procedure AOI 30.2, Caution before Step 51, refers to a reactor coolant system pressure band of 325 to 370 psig required for RHR initiation. There was no obvious reason for the lower end of this pressure band, nor were there any instructions on what step to take if the reactor coolant system was below this pressure.

Until the above are corrected and is verified by inspection, the adequacy of post-fire safe shutdown procedures remains open. This is Inspector Follow-up Item 50-390, 391/95-40-02, "Fire Shutdown Procedure AOI 30.2 Discrepancies."

+/AS this Dec done

Safe Shutdown Repairs

No repairs or modifications are necessary to achieve hot shutdown conditions. The inspectors reviewed repair activities necessary to achieve cold shutdown in the event of a fire requiring control room evacuation. The inspectors reviewed the procedure (MI-0.047, Rev 0) governing the repairs and did a walkdown inspection of the instructions given. The procedure was sufficiently comprehensive and complete. However, the supplies and equipment stated in DCN 37030-A as required to perform the repairs to place the plant in cold shutdown following an Appendix R fire had not been provided and the applicant had not determined the storage or staging areas for this equipment. In a later inspection, NRC will review the adequacy of the cold shutdown repair staging locations and verification that the appropriate equipment and tools are available. This is Inspector Follow-up Item 50-390, 391/95-40-03, "Equipment and Supplies For Appendix R Cold Shutdown Repairs Were Not Available."

Operator Training

Shift training on the plant simulator was observed as part of the inspection. The session observed involved simulation of a fire in Fire Zone A1A on elevation 737 of the Auxiliary Building. Although this did not involve

should be in the TS (technical specifications). NRC is evaluating this item and pending resolution, this item is Inspector Follow-up Item 50-390,391/95-40-4, "Minimum Manning By Operators for Appendix R Fires."

Page 31. Surveillance and Test Program for Post-Fire Safe Shutdown Equipment

The inspectors determined that the applicant proposed to incorporate into the fire protection report certain inspection and testing frequencies for the safe shutdown equipment not in the TS. The adequacy of the applicant's proposal is an open licensing issue and will be reviewed further by NRC.

Page 32,

6.0 EMERGENCY LIGHTING AND EMERGENCY COMMUNICATIONS (64100)

6.1 Emergency Lighting

"The inspectors found that emergency lighting was inadequate or missing in several areas where it was needed to perform manual safe shutdown operations after a fire."

An accompanying table showed that emergency lighting was inadequate in the Auxiliary Building in three locations, Elevations 737, Room A-1, Elevation 713, Room A-1, and Elevation 693, Terry turbine room.

Areas missing emergency lighting include the Control Building, Elevation 755, in the Mechanical equipment room,, Additional Equipment Bldg, Elevation 729;, and Auxiliary Bldg, Room A-24, Elevation 757.

"The inspectors had planned to perform blackout test - - However, the inspectors deferred these blackout tests until the temporary structures are removed, aiming of the light heads is completed, and possibly the design changes outlined in DCN 37342-A are implemented. --This is inspector Follow-up item 50-390/391/40-05, "Emergency Lighting Discrepancies."

page 12 95-40

Notice the ACRS letter, page 2, next to last paragraph.

"The NRC staff, stated, in Supplement 16 to the Watts Bar Safety Evaluation Report, that all licensing issues have been resolved with the exception of those related to fire barrier penetration seals and emergency lighting inside the reactor building. As a result of our review, we have not identified any new safety concerns."

page 33, 6.2. Emergency Communications.

During a July 27, 1995 safe shutdown drill, it was observed that "radio transmissions could not penetrate a spot near the ERCW valves on elevation 713." - -In a future inspection, NRC will review this deficiency in the portable radio communication system. This is Inspector follow-up Item 50-390,391/95-40-04, Radio Communication Discrepancies for Appendix R Operator Action Areas."

page 34

7.0 Appendix R Fire Protection Features (64100)

"WBN utilizes both 1 hour fire rated Thermo-Lag 330-1 and 3 hour fire rated Thermo-Lag 770-1 fire barrier systems to protect one redundant train of safe shutdown function within the same area where the redundant trains interact."

See enclosed copy of AP story about Thermo-Lag.

Why after the Browns Ferry Nuclear Plant fire are there still "redundant trains interacting."

Where has NRC been all these years to let TVA build a plant at a combined cost of approximately $11 Billion for both reactors at Watts Bar?. What have other inspectors told TVA?. This calls for a complete investigation. Remember, it was only a candle that caused the fire at Brown's Ferry. You have hydrogen igniters to purposely start a fire at Watts Bar. This makes it an infinite factor worse.

Is Thermo-Lag itself flammable?

Page 36, Thermo-Lag Fire Barrier Deviations and Unique Configurations.

"The applicant found 346 cases where the application of Thermo-Lag fire barrier materials used to protect electrical raceway and their structural steel supports deviated from the tested configurations.

--The applicant was performing engineering evaluations for the following deviating fire barrier conditions: minor ERFBS configuration variations, minor ERFBS deviations, unique ERFBS configurations, ERFBS intervening item protection variations, and RRFBS support protection variations. The inspectors audited 30 deviating ERFBS configurations to determine if they were engineered, designed, and constructed using the same basic application techniques and construction attributes qualified in the applicant's Thermo-Lag fire endurance test program.

That's 30 out of 346, less than 10%. What about the other 316 deviations?

7.2 Appendix R Fire Protection Features

On elevations 692 and 737 of the Auxiliary Building, protective fire-barrier cable wrap material was only installed to a point where 20 feet of horizontal separation was achieved, and not from wall to wall. Since the fire wrap material used by the applicant was combustible, the inspectors were concerned that fire may spread along the outer layer of the protective fire barrier material to a point where it may damage the unprotected portion of the cable.

I attended the ACRS meeting on Nov. 1 & 2, 1995, in Rockville Md.

The question was asked where the inspectors were. They were not brought to the meeting. Johns Jaudon was the person who assured the ACRS members that everything was fine.

Page 43

"Train-B cables were primarily located on the east side of the elevation (AV-38). In the event of a fire in AV-36, procedures directed operators to rely on Train-B equipment, and where required, Train-B cable trays were protected by a one hour rated fire barrier. This protection, however, was not installed from wall to wall.

- Operators may not be able to find the specific location of the fire, (e.g., determine which side of the buffer zones so that the proper shutdown procedure would be implemented. Fire detection capability consisted of a zonal system that may not be sufficiently precise to find the specific location of the fire.

- A fire could involve intervening combustibles in the area, presenting an exposure fire hazard to redundant trains of cables. Unlike elevation 692 this area had a large number of intervening combustible cables in cable trays.

etc.

7.4. Radiant Energy Shields Inside Containment

"The applicant used 3M M20A and C fire barrier material as radiant energy heat shields. The applicant subjected this material to combustibility testing, which revealed that this material was combustible. The applicant planned to submit a deviation to the NRC requesting approval for the use of this material as a radiant energy heat shield on the basis of its limited combustibility characteristics. Therefore, this remains an open licensing issue.

page 15 95--40

What happened. did NRC grant the deviation? This is in direct opposition to the statement by Jaudon on the cover letter," No deviations were identified."

page 44
7.5 Reactor Coolant Pump Oil Collection System

"The inspectors evaluated the WOW RCP oil collection system to determine if it was seismically designed --appropriately sloped.

page 45, last sentence in paragraph 2

"--The drain header was not sloped."

I hereby request under the freedom of information act, and in the public interest, copies of documents that are the follow up documents to this report. I further request that all fees be waived.

Respectfully submitted Dec. 12, 1995

Jeannine Honicker

Jeannine Honicker

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

November 8, 1995

The Honorable Shirley Ann Jackson
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Jackson:

SUBJECT: APPLICATION FOR OPERATING LICENSE FOR WATTS BAR NUCLEAR PLANT UNIT 1

During the 426th meeting of the Advisory Committee on Reactor Safeguards, November 2-4, 1995, we reviewed the application of the Tennessee Valley Authority (TVA) for a license to operate the Watts Bar Nuclear Plant Unit 1. The Watts Bar Subcommittee also discussed this matter at a meeting on November 1, 1995. During the meetings, we had the benefit of discussions with representatives of the NRC staff and the TVA staff, and several members of the public. We also had the benefit of the documents referenced. Several ACRS members visited the site on October 3, 1995. The Committee previously reported on the TVA application on August 16, 1982.

Watts Bar Nuclear Plant Unit 1 is located in eastern Tennessee. The unit employs a Westinghouse nuclear steam supply system with a rated core power level of 3411 MWt and has an ice-condenser containment. The design is similar to that of the Sequoyah Nuclear Plant Units 1 and 2, which received their operating licenses in September 1980 and September 1981, respectively.

In its August 16, 1982 report, the Committee concluded that the Watts Bar units could be operated without undue risk to the health and safety of the public subject to the satisfactory completion of construction, staffing, and preoperational testing, as well as to the resolution of the following concerns: a serious quality assurance breakdown, flow-induced vibration in the steam generators, the integrity of the cement lining of the essential raw cooling water system piping, and the acceptability of the hydrogen control system.

There has been a long history of construction quality problems leading to a number of work stoppages at Watts Bar. With the restart of construction in December 1991, TVA's corrective actions have resulted in improvements in its quality assurance program. The staff has concluded that current performance indicates that TVA

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has overcome significant weaknesses identified in the past and that TVA's recent performance is satisfactory. Plant construction is now essentially complete and TVA has conducted a successful hot functional test.

We discussed the status of the concerns noted above during our 415th meeting of November 3-4, 1994, and our 426th meeting of November 2-4, 1995. We believe that TVA and the staff have adequately addressed these concerns. During our discussions, the Watts Bar management expressed its commitment to operational excellence and to establishing an effective safety culture. It is our view that TVA's commitment is genuine, but that achieving and maintaining an effective safety culture will require continued senior management involvement.

The NRC staff stated, in Supplement 18 to the Watts Bar Safety Evaluation Report, that all licensing issues have been resolved with the exception of those related to fire barrier penetration seals and emergency lighting inside the reactor building. As a result of its review, we have not identified any new safety concerns.

Believe that, with the resolution of open issues to the satisfaction of the staff, there is reasonable assurance that Watts Bar Nuclear Plant Unit 1 can be operated at core power levels up to 3411 MWt without undue risk to the health and safety of the public.

Sincerely,

Kress

Kress
Chairman

References:

1. U. S. Nuclear Regulatory Commission, NUREG-0847, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2," through Supplement 18, issued October 1995
2. U. S. Nuclear Regulatory Commission, NUREG-1528, "Reconstitution of the Manual Chapter 2512 Construction Inspection Program for Watts Bar Unit 1," issued September 1995
3. Letter dated August 16, 1982, from Paul Shewmon, ACRS Chairman, to Nunzio J. Palladino, NRC Chairman, Subject: ACRS Report on Watts Bar Nuclear Plant, Units 1 and 2
4. Letter dated October 26, 1995, from Paul Gunter, Nuclear Information and Resource Service, to Noel Dudley, ACRS, Subject: Public Concerns With Fire Protection Issues At Watts Bar Nuclear Power Station

5. Additional documents submitted to the Committee by members of the public at ACRS meetings November 1-2, 1995

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Dec 13, 1995
Total number of apges including this sheet -- 25.