

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

August 1, 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 )

Enclosure 1, for your review, contains comments on your May 20, 1985 version of the draft operating license (OL) and Appendix B, Environmental Protection Plan (EPP) for the Watts Bar Nuclear Plant unit 1.

Enclosure 2 contains an update status of the OIE items identified in attachment 1 of the draft OL.

If there are any questions on the comments provided by enclosure 1, please get in touch with K. P. Parr at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*R. H. Shell*

R. H. Shell  
Nuclear Engineer

Sworn to and subscribed before me  
this 1st day of August 1985

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

Enclosures

cc: U.S. Nuclear Regulatory Commission (Enclosures)  
Region II  
Attention: Dr. J. Nelson Grace, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30323

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Enclosure 1

TVA Comments on the May 20, 1985 Draft  
Operating License for Watts Bar Unit 1

1. 1.I and 2.B, 10 CFR Part 74 Reference, pages 2 and 3 - The draft OL contains references to 10 CFR Part 70 in regard to requirements for receipt, possession, and use of SNM. These references should be expanded as shown in attachment 1 to include 10 CFR Part 74. Since it became effective on March 27, 1985, Part 74 has contained the general reporting requirements for SNM previously contained in Part 70. Eventually all domestic material control and accounting requirements for SNM will be moved from Part 70 to Part 74. Therefore, this modification to the draft OL is needed.
2. 2.C.(8), Loose Parts Monitoring System, page 5 - We believe that license condition 2.C.(8) could be deleted. TVA will submit the results of the loose parts monitoring system preoperational test 90 days after completion of the startup test program. However, this particular commitment seems out of place as a license condition. It is no more or less important than any other commitment and it should not be singled out for a license condition given the relative importance of the loose parts monitoring system.
3. 2.C.(9).b.(ii), Implementation Letter Report for RVLIS, page 5 - License condition 2.C.(9).b.(ii) requires the submittal of an implementation letter report for the reactor vessel level indication system (RVLIS). This license condition should be deleted. TVA has already installed RVLIS and agreed to conduct preoperational testing during initial startup. This is documented in TVA's response (letter from J. W. Hufham to E. Adensam dated February 25, 1985) to item II.F.2 of NUREG-0737 for Watts Bar.
4. 2.C.(13).e., Cold Leg Temperature Indication, page 6. - License condition 2.C.(13).e requires that TVA either install reactor coolant cold leg temperature indicators in the backup control room or submit for staff review and approval an analysis justifying the use of steam generator pressure to infer cold leg temperature prior to exceeding five percent power. TVA will comply with the second option. The license condition should be deleted or revised to simply require the analysis. If TVA had chosen to install cold leg temperature indicators, any modifications would not be scheduled for implementation prior to five percent power.
5. 2.C.(14).b, Regulatory Guide 1.97 Compliance, page 7 - License condition 2.C.(14).b is in conflict with item 2 of attachment 2 to the draft OL. The license condition requires compliance with Regulatory Guide 1.97, Revision 2 for the radiation monitors prior to exceeding five percent power. Item 2 of attachment 2 requires compliance with Regulatory Guide 1.97, Revision 2, prior to startup after the first refueling outage. The license condition should be revised to be consistent with item 2 of attachment 2.

6. 2.C.(19), Steam Generator Tube Rupture, page 8 - The wording of license condition 2.C.19 concerning SGTR should be revised to reflect the wording of the previous SGTR draft OL condition provided by your March 4 and April 3, 1985 versions of the draft OL. This particular wording implies that TVA will submit an analysis that demonstrates that the current FSAR analysis is the most severe case with respect to the release of fission products and calculated doses. We understand that the steam generator tube rupture working group, in which TVA is participating, will establish the most severe case and recommend corrective actions. License condition 2.C.(19) should be revised to require that TVA submit the results of the study and implement any required corrective actions.
7. 2.D, Criticality Monitor Exemption, page 8 - The draft OL should be modified as shown in attachment 2. This modification will allow the exemption to the requirements of 10 CFR 70.24 to apply to all special nuclear material (SNM) licensed under the OL wherever it may be handled, used, or stored at WBN.

Regulatory Position 1 in USNRC Regulatory Guide 8.12 discusses certain situations where an exemption is appropriate. It also states that the licensee should evaluate all areas where SNM will be handled, used, or stored to determine if there exists a potential for criticality in those areas. If no potential exists, then an exemption is appropriate for those areas.

SNM at WBN can be found in two forms: (1) in detectors and other instrumentation which will contain a small quantity of SNM (usually in the milligram range) which is sealed within the detectors, and (2) in fuel assemblies. Even though the SNM contained in detectors is usually highly enriched uranium, those areas where detectors are handled, used, or stored are precluded from the possibility of accidental criticality because of the quantity of SNM involved and its packaging. Therefore, an exemption is appropriate for these areas.

Fuel assemblies will be either new (unirradiated) or irradiated. New assemblies are stored in either shipping containers, the new fuel storage racks, or the spent fuel storage racks. Irradiated assemblies will be stored in either the spent fuel storage racks or shipping containers. During fueling or refueling operations, fuel assemblies may also be temporarily stored within the rod cluster control changing fixture. All of these storage locations have been analyzed for the possibility of accidental criticality; and this possibility is precluded by their geometric spacing or other features of their design, such as the use of poison material. It has been determined that it takes at least two fuel assemblies under proper conditions to produce criticality. TVA has

established controls which assure that two fuel assemblies cannot be brought together within these conditions. This is done by limits on the number of fuel assemblies which are allowed out of analyzed storage locations. These limits are similar to those which the NRC approved when it granted the present exemption to the requirements of 10 CFR 70.24 for the WBN unit 1 SNM license. The NRC approved the exemption to 10 CFR Part 70.24 in a letter from E. Adensam to H. G. Parris dated April 15, 1985.

TVA requested (letter from R. H. Shell to E. Adensam dated 2/16/85) an exemption to the requirements of 10 CFR Part 70.24 to support changes to the draft technical specifications that deleted the requirements for a criticality monitor. This exemption request was submitted because NRC informed TVA that the current exemption to 10 CFR Part 70.24 contained in the SNM license would expire upon issuance of the operating license. TVA resubmitted (letter from R. H. Shell to E. Adensam dated April 9, 1985) the technical specification changes that deleted the requirements for a criticality monitor and referenced the exemption request as justification. NRC has refused to change the technical specifications without further analytical justification. We believe it is necessary to restate the basis for the technical specification changes and provide additional arguments to support the extension of the exemption to 10 CFR Part 70.24 for the life of the plant.

Radiation monitors RE-90-102 and RE-90-103 are designed to perform two functions: detection and isolation initiation for a fuel handling accident in the auxiliary building and criticality monitor. The first protection function is required whenever irradiated fuel is in the spent fuel pit. This protection function is not required when only new fuel is stored in the spent fuel pit because there is no potential for radioactive release.

The second protection function is required by 10 CFR Part 70.24. The limiting point in time for criticality concerns exists when only new fuel is stored in the spent fuel pit. This limiting case has been analyzed and found to present no criticality problems. As stated in FSAR section 9.1.2.3, the design of the spent fuel racks are "sufficient to ensure a  $K_{eff}$  0.95 even if unborated water is used to fill the spent fuel storage pool." The details of the calculations are described in FSAR section 4.3.2.7. The FSAR states, "in the analysis for the storage facilities, the fuel assemblies are assumed to be in their most reactive condition, namely fresh or undepleted and with no control rods or removable neutron absorbers present." The important aspects of the analytical assumptions are incorporated into the technical specifications to preserve the validity of the calculations. The maximum enrichment and fuel design specifications are listed in technical specification 5.3.1. The design specifications for the spent fuel racks are listed in technical specifications 5.6.1.1 and 5.6.3

NRC approved an exemption to 10 CFR 70.24 for the period of time up to the storage of spent fuel in the spent fuel pit. Only new fuel will be stored in the spent fuel pit during this period. The FSAR documents that the storage of new fuel is the most limiting condition for criticality concerns. In effect, the NRC has approved the exemption to 10 CFR Part 70.24 for the most limiting case already. An extension to the exemption for the life of the plant should require no further analysis or justification.

It should be noted that any change to the design of the fuel, enrichment of the fuel, or design of the storage racks would require an evaluation under the requirements of 10 CFR Part 50.59. Any change to these features that alters the validity of the current FSAR analysis would require a technical specification change.

The technical specifications should be revised to delete any requirements for a criticality monitor based on the limiting case FSAR analysis and the exemption to 10 CFR Part 70.24. RE-90-102 and RE-90-103 should only be required to be operable when irradiated fuel is stored in the spent fuel pit.

The net effect in the operation of WBN, with the exemption of 10 CFR Part 70.24 for the life of the plant and the corresponding technical specification changes, would be eliminate the requirements for RE-90-102 and RE-90-103 for the first cycle of operation for unit 1. RE-90-103 would be required to be operable once the spent fuel is transferred to the spent fuel pit during the first refueling outage. The benefits to TVA include the manpower and cost savings associated with not requiring maintenance and surveillance on these monitors during the first cycle of operation. There is a corresponding savings in paperwork costs because any work associated with these monitors is controlled with specific recordkeeping requirements. In addition, receipt of unit 1 cycle 2 fuel and the fuel loading operations associated with unit 2 could proceed without application of the monitoring requirements and associated action statements imposed by the technical specifications. An inoperable monitor would not disrupt or delay these activities.

8. Attachment 1, C.1.(a), I.G.1.3, page 2 - TVA has previously provided commitments for training during low power testing in our NUREG-0737 response from L. M. Mills to E. Adensam dated September 14, 1981 and we believe the commitment does not warrant a particular license condition.
9. Attachment 1, C.1.(b), II.E.1.1.2, page 2 - TVA believes the draft OL condition should be deleted. No long term auxiliary feedwater system modifications were identified in TVA's response (letter from L. M. Mills to E. Adensam dated September 14, 1981) to item II.E.1.1.2 of NUREG-0737 for Watts Bar.

10. Attachment 1, D., IE Bulletin 79-02, page 2 - To more accurately reflect the required work, the license condition should be reworded as follows:

"The licensee shall complete the reanalysis of safety factors for engineered pipe supports on safety-related systems and associated regeneration of missing calculations. This reanalysis should be done in accordance with IE Bulletin 79-02."

11. Appendix B to draft OL, Environmental Protection Plan, page 3-3 - Although the present wording is adequate, the following wording which would replace the first paragraph on the page, would provide language more consistent with existing regulatory requirements.

"The license shall notify the NRC of applications to revise the effective NPDES permit if the proposed revision is not a "minor modification" as defined in 40 CFR 122. This shall be done by providing NRC with a copy of the application to revise the permit at the same time it is submitted to the permitting agency. The licensee shall also provide the NRC a copy of the application for renewal of the NPDES permit at the time the application is submitted to the permitting agency."

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License No. NPF-20, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied;

- ✓ 1. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40, ~~and 70,~~ and 74.
2. Based on the foregoing findings, Facility Operating License No. NPF-20 is hereby issued to the Tennessee Valley Authority (the licensee) to read as follows:
  - A. This license applies to the Watts Bar Nuclear Plant, Unit 1, a pressurized water reactor and associated equipment (the facility) owned by the Tennessee Valley Authority (licensee). The facility is located on the licensee's site in Rhea County, Tennessee, on the west shore of Chickamauga Reservoir approximately 8 miles southeast of Spring City, Tennessee, and is described in Tennessee Valley Authority's "Final Safety Analysis Report," as supplemented and amended through Revision No. 55, and in its Environmental Information, as amended.
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses Tennessee Valley Authority:
    - (1) Pursuant to Section 103 of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location in Rhea County, Tennessee, in accordance with the procedures and limitations set forth in this license;
    - ✓ (2) Pursuant to the Act and 10 CFR Parts 70, <sup>and 74,</sup> to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended through Revision No. 55;
    - (3) Pursuant to the Act and 10 CFR Parts 30, 40, ~~and 70,~~ <sup>and 74,</sup> to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
    - (4) Pursuant to the Act and 10 CFR Parts 30, 40, ~~and 70,~~ <sup>and 74,</sup> to receive, possess and use in amounts as required any byproduct, source and special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

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- (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, <sup>and 74</sup> to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility authorized herein.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at reactor core power levels not in excess of 3411 megawatts thermal (100% power) in accordance with the conditions specified herein and in Attachment 1 to this license. Attachment 1 is hereby incorporated into this license. Pending Commission approval, this license is restricted to power levels not to exceed 5 percent of full power (170 megawatts thermal).

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Inservice Testing of Pumps and Valves (SER, SSER #5 Section 3.9.6)\*

Pursuant to 10 CFR Part 50.55a and for reasons set forth in Section 3.9.6 of the SER, the relief identified in the submittals dated October 30, 1981, and March 27, 1985, that the licensee has requested from the pump and valve testing requirements of 10 CFR Part 50, Section 50.55a(g)(2) and (g)(4)(i) is granted for that portion of the initial 120-month period during which the staff completes its review.

(4) Seismic Equipment Qualification (SSER #5, Section 3.10)

Prior to exceeding 5% power, the results of in-situ testing of the main control panel, confirming that the original qualification testing is valid when compared to the as-built support condition, shall be provided for staff review.

\*The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

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- (18) Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events" (SSER #3, Section 15.3.6)

The licensee shall implement the requirements of Generic Letter 83-28 on a schedule which is consistent with that given in its November 7, 1983, June 4, September 17, and October 24, 1984, and February 19 and April 18, 1985 letters.

- (19) Steam Generator Tube Rupture (SGTR) (SSER #3, Section 15.4.3)

Prior to startup following the first refueling outage, the licensee shall submit for NRC staff review and approval an analysis which demonstrates that the steam generator single-tube rupture analysis presented in the FSAR is the most severe case with respect to the release of fission products and calculated doses. Consistent with the analytical assumptions, the licensee shall propose any necessary changes to Appendix A to this license.

- D. The facility requires exemptions from certain requirements of Appendix J of 10 CFR Part 50 and paragraph 70.24 of 10 CFR Part 70. These include (a) partial exemption from the requirements of paragraph III.D.2(b)(ii) of Appendix J, the testing of containment airlocks at times when the containment integrity is not required (see Section 6.2.6 of SSER #4), and (b) exemption from the requirements of paragraph 70.24 of 10 CFR Part 70, ~~to have a criticality monitor installed in the fuel storage area until irradiated fuel is placed into that area.~~ (see Section 9.1 of SSER #5).

These exemptions are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. These exemptions are, therefore, hereby granted pursuant to 10 CFR 50.12. With the granting of these exemptions, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

- E. The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans, including amendments made pursuant to the authority of 10 CFR 50.54(p). These plans, which include amendments submitted through the dates specified below and contain information protected under 10 CFR 73.21, are entitled: "Watts Bar Nuclear Plant Physical Security Plan" dated March 1, 1985, as supplemented March 1, 1985, and March 20, 1985, and "Watts Bar Nuclear Plant Guard Training and Qualification Plan" dated February 21, 1985. The Watts Bar Nuclear Plant Safeguards Contingency Plan was integrated into the physical security plan transmitted on November 4, 1983.

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT - UNIT 1  
 REVISED DRAFT LICENSE  
 Letter To H. G. Parris From T. M. Novak Dated May 20, 1985  
 License No. NPF-20

Licensing Conditions (2.C.)

<u>No.</u>	<u>Description of Condition</u>	<u>Milestone</u>	<u>RO</u>	<u>Status</u>
(1)	Complete the following in accordance to Attachment 1:			
	A.1) Corrective actions for Violation 85-18-02	IC	NRC	Waiting NRC Closure
	2) Corrective actions and necessary information for Unresolved Items:			
	a) 84-46-02	IC	NRC	Waiting NRC Closure
	b) 85-18-03	IC	NRC	Waiting NRC Closure
	3) Corrective actions for CDRs:			
	a) 83-70 (NCR WBNWBP8335)	IC	NUC PR	Revise AOI
	b) 84-29 (NCR WBNNEB8403)	IC	NRC	Phys work comp Final report due 8/15/85
	c) 85-11 (NCR WBNMEB8503)	IC	NRC	Waiting NRC Closure
	d) 85-14 (NCR WBNMEB8510)	IC	NA	Closed by IR 390/85-36
	e) 85-15 (NCR WBNMEB8513)	IC	NUC PR	Revise AOI 30
	4) Inspector Followup Items:			
	a) 84-14-07	IC	NRC	Waiting NRC Closure
	b) 84-14-08	IC	NRC	Waiting NRC Closure
	c) 84-21-01	IC	NRC	Waiting NRC Closure
	d) 84-21-06	IC	NRC	Waiting NRC Closure
	e) 84-37-06	IC	NA	Closed by IR 390/85-36
	5) Corrective action for Appendix R deficiencies:			
	a) Fire barrier seals, cable wrapping, and fire door mods	IC	NUC PR	
	b) Revise shutdown procedures and OIs to address spurious circuits	IC	NUC PR	
B.	Complete the following Inspector Followup Items:			
	1) 84-09-02	Model	NRC	Waiting NRC Closure
	2) 84-22-27	Model	NRC	Waiting NRC Closure
	3) 85-16-01	Model	NRC	Waiting NRC Closure

Licensing Conditions (2.C.)

<u>No.</u>	<u>Description of Condition</u>	<u>Milestone</u>	<u>RO</u>	<u>Status</u>
C.1)	Complete the following TMI Action Plan Requirements:			
	a) I.G.1.3	100%	NUC PR	
	b) II.E.1.1.2	100%	NUC PR	
2)	Complete corrective actions for CDR 84-14 (NCR GENQEB8401)	100%	NRC	Waiting NRC Closure
D.	Complete missing pipe support calculations	1st RFO	OE	