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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

FACILITY OPERATING LICENSE

License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The application for licenses filed by the Tennessee Valley Authority complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;

   B. Construction of the Sequoyah Nuclear Plant, Unit 2 (the facility), has been substantially completed in conformity with Provisional Construction Permit No. CPPR-73 and the application, as amended, the provisions of the Act, and the regulations of the Commission;

   C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;

   D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations of the Commission set forth in 10 CFR Chapter I;

   E. The Tennessee Valley Authority is technically and financially qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;

   F. The Tennessee Valley Authority has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;

   G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;

H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Facility Operating License No. DPR-79, subject to the conditions for protection of the environment set forth herein, is in accordance with 10 CFR Part 50, Appendix D*, of the Commission's regulations and all applicable requirements have been satisfied; and

I. 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.

2. Pursuant to approval by the Nuclear Regulatory Commission at a meeting on June 17, 1981, Facility Operating License No. DPR-79 is hereby issued to the Tennessee Valley Authority to read as follows:

A. This license applies to the Sequoyah Nuclear Plant, Unit 2, a pressurized water nuclear reactor and associated equipment (the facility), owned by the Tennessee Valley Authority. The facility is located in Hamilton County, Tennessee, about 9.5 miles northeast of Chattanooga, and is described in TVA's Final Safety Analysis Report as supplemented and amended, and the Final Environmental Statement prepared by the Tennessee Valley Authority.

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the Tennessee Valley Authority:

(1) Pursuant to Section 104(b) of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities", to possess, use, and operate the facility at the designated location in Hamilton County, Tennessee, in accordance with the procedures and limitations set forth in this license;

(2) Pursuant to the Act and 10 CFR Part 70, 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;

(3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, 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;

*See 10 CFR § 51.5b

(4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

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 Tennessee Valley Authority is authorized to operate the facility at reactor core power levels not in excess of 5 percent (170 megawatts thermal). Fuel loading and operation of the facility is subject to compliance with construction items listed in Attachment 1.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B attached hereto are hereby incorporated in this license. The Tennessee Valley Authority shall operate the facility in accordance with the Technical Specifications.

(3) Initial Test Program

The Tennessee Valley Authority shall conduct the post-fuel-loading initial test program (set forth in Section 14 of Tennessee Valley Authority's Final Safety Analysis Report, as amended), without making any major modifications of this program unless modifications have been identified and have received prior NRC approval. Major modifications are defined as:

a. Elimination of any test identified in Section 14 of TVA's Final Safety Analysis Report as amended as being essential;

b. Modification of test objectives, methods, or acceptance criteria for any test identified in Section 14 of TVA's Final Safety Analysis Report as amended as being essential;

c. Performance of any test at a power level different from that described in the program; and

d. Failure to complete any tests included in the described program (planned or scheduled for power levels up to the authorized power level).

(4) Monitoring Settlement Markers (Section 2.6.3)

TVA shall monitor the settlement markers along the ERCW conduit for the new ERCW intake structure for a period not less than three years from the date of this license. Any settlement greater than 0.5 inches that occurs during this period will be evaluated by TVA and a report on this matter will be submitted to the NRC.

(5) Environmental Qualification (Section 7.2.2)

a. No later than June 30, 1982, TVA shall be in compliance with the requirements of NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," for safety-related equipment exposed to a harsh environment.

b. Complete and auditable records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified to document complete compliance by June 30, 1982.

c. Within 90 days of receipt of the equipment qualification safety evaluation, the licensee shall either (i) provide missing documentation identified in Sections 3 and 4 of the equipment qualification safety evaluation which will demonstrate compliance of the applicable equipment with NUREG-0588, or (ii) commit to corrective actions which will result in documentation of compliance of applicable equipment with NUREG-0588 no later than June 30, 1982.

(6) Fire Protection System (Section 9.5)

a. TVA shall maintain in effect and fully implement all provisions of the approved fire protection plan and the NRC staff's Fire Protection Review in Supplements 1, 2 and 5 to the Sequoyah Safety Evaluation Report. By July 1981, TVA shall implement the following three items which deal with the ERCW supply: (a) enclose the necessary exposed conduit with a 1-1/2-hour fire barrier; (b) reroute train B ERCW pump and transformer power cables to obtain a minimum 20-foot separation from train A; and (c) enclose the ERCW junction box with a 1-1/2-hour fire barrier.

b. After initial criticality of Unit 2 and prior to the completion of item (a) above, TVA shall provide:

1) a continuous fire watch in the area of the ERCW junction box on elevation 690.0 of the auxiliary building.

2) a roving fire watch in the area of conduits which exit the top of the junction box, pass through floor elevation 714.0, and terminate on floor elevation 734.0.

c. TVA shall replace the control room ceiling panels with panels acceptable to NRC by September 1, 1981.

d. By October 1, 1981, TVA shall submit a report that identifies and justifies differences between existing or proposed fire protection features and these features specified in Sections III.G, III.J, III.L, and III.O of Appendix R to 10 CFR Part 50. TVA shall implement any fire protection features found appropriate by the NRC on a schedule consistent with that required for other operating reactors.

(7) Compliance with Regulatory Guide 1.97

By June 30, 1981, TVA shall submit a proposal, including an implementation schedule, for compliance with R.G. 1.97.

(8) NUREG-0737 Conditions (Section 22.2)

Each of the following conditions shall be completed to the satisfaction of the NRC by the times indicated:

a. Shift Technical Advisor (Section 22.2, I.A.1.1)

TVA shall provide a fully-trained on-shift technical advisor to the shift supervisor.

b. Independent Safety Engineering Group (Section 22.2, I.B.1.2)

TVA shall have an onsite Independent Safety Engineering Group.

c. Procedures for Verifying Correct Performance of Operating Activities (Section 22.2, I.C.6)

Procedures shall be available to verify the adequacy of the operating activities.

d. Training During Low-Power Testing (Section 22.2, I.G.1)

Licensed operators shall complete simulator training for natural circulation conditions before initial criticality. One experienced operator trained on Unit 1 low power testing for natural circulation operation shall be assigned to each shift. Requirement remains in effect until TVA submits a report and NRC agrees with findings that an acceptable level of training and experience on Unit 2 has been attained.

e. Reactor Coolant System Vents (Section 22.2, II.B.1)

By July 1, 1982, TVA shall install reactor coolant system and reactor vessel head highpoint vents that are remotely operable from the control room.

f. Post Accident Sampling (Section 22.2, II.B.3)

By January 1, 1982, TVA shall complete corrective actions needed to provide the capability to promptly obtain and perform radioisotopic and chemical analyses of reactor coolant and containment atmosphere samples under degraded core conditions without excessive exposure.

g. Hydrogen Control Measures (Section 22.2, II.B.7)

(1) For operation of the facility beyond January 31, 1982, the Commission must confirm that an adequate hydrogen control system for the plant is installed and will perform its intended function in a manner that provides adequate safety margins.

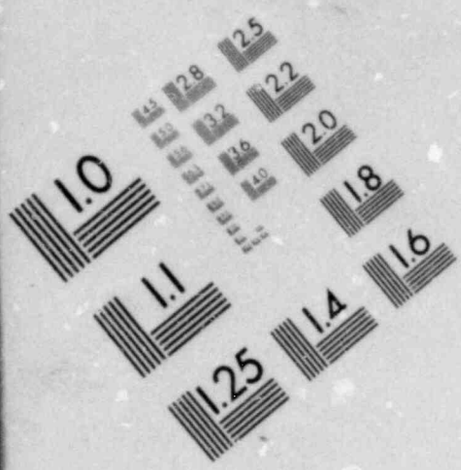
(2) During the interim period of operation, TVA shall continue a research program on hydrogen control measures and the effects of hydrogen burns on safety functions and shall submit to the NRC quarterly reports on that research program.

(a) TVA shall amend its research program on hydrogen control measures to include, but not limited to, the following items:

1) Improved calculational methods for containment temperature and ice condenser response to hydrogen combustion.

2) Research to address the potential for local detonation.

3) Confirmatory tests on selected equipment exposed to hydrogen burns.



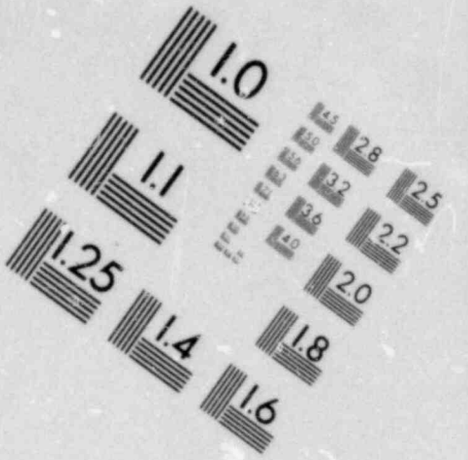
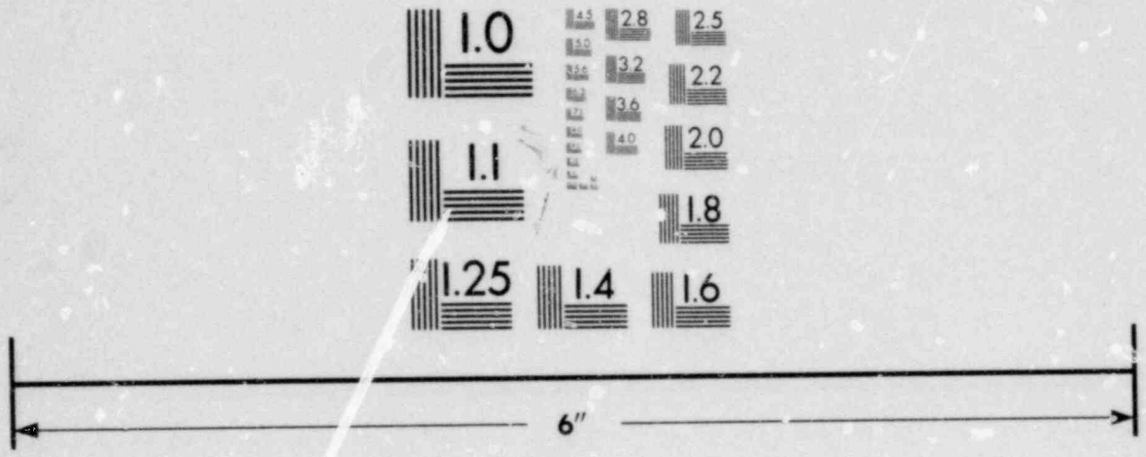
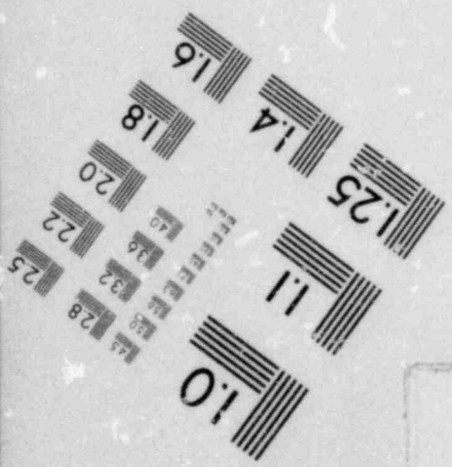


IMAGE E.'ALUATION
TEST TARGET (MT-3)





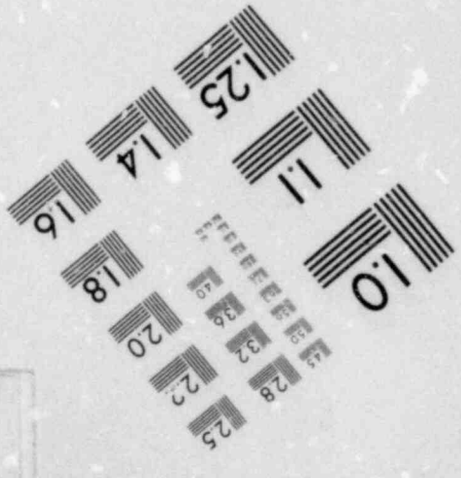


IMAGE EVALUATION
TEST TARGET (MT-3)

6"

4) New calculations to predict differences between expected equipment temperature environments and containment temperatures.

5) Evaluate and resolve any anomalous results occurring during the course of its ongoing test program.

(b) A schedule for confirmatory tests shall be provided by TVA consistent with the requirement to meet the January 31, 1982 deadline, Section (8)g.(1) of the license.

h. Relief and Safety Valve Test Requirements (Section 22.2, II.D.1)

TVA shall conform to the results of the EPRI test program. Documentation for qualifying the reactor coolant system relief and safety valves under expected operating conditions for design basis transient accidents is to be completed by October 1981. Documentation on piping and supports is required by January 1982. Block valves are to be qualified by July 1982.

i. Containment Isolation Dependability (Section 22.2, II.E.4.2)

TVA shall limit the purge valve openings to less than or equal to 50 degrees.

j. Additional Accident Monitoring Instrumentation (Section 22.2, II.F.1)

By January 1, 1982, TVA shall install continuous indication in the control room of the following parameters:

(1) Containment radiation monitors.

(2) Noble gas effluent from each potential release point.

k. Instruments for Inadequate Core Cooling (Section 22.2, II.F.2)

(1) TVA shall provide a reactor vessel water level instrumentation system by January 1, 1982.

(2) TVA shall submit a proposal for upgrading the incore thermocouple system in June 1981. TVA shall upgrade the incore thermocouple system by January 1, 1982.

l. Voiding in Reactor Coolant System (Section 22.2, II.K.2.17)

TVA is participating in the Westinghouse owners group effort on this item and shall conform to the results of this effort. The analysis will be submitted by January 1, 1982.

m. Sequential Auxiliary Feedwater Flow Analysis (Section 22.2, II.K.2.19)

TVA is participating in the Westinghouse owners group effort on this item and shall conform to the results of this effort. The analysis will be submitted by July 1, 1982.

n. Calculations for Small-Break LOCAs (Section 22.2, II.K.3.30 and II.K.3.31)

TVA is participating in the Westinghouse owners group effort for this item and shall conform to the results of this effort. The analysis for model justification will be submitted by January 1, 1982.

o. Upgrade Emergency Preparedness (Section 22.2, III.A.1.1)

TVA is required to have a prompt notification system installed and operational by July 1, 1981.

p. Upgrade Emergency Support Facilities (Section 22.2, III.A.1.2)

(1) TVA shall have in operation the upgraded emergency support facilities by October 1, 1982 consistent with the guidance of NUREG-0696 and in accordance with the provisions of NRC letter to TVA dated March 19, 1981.

(2) TVA shall maintain interim emergency support facilities (Technical Support Center, Operations Support Center and the Emergency Operations Facility) until the final facilities are complete.

q. Long-Term Emergency Preparedness (Section 22.2, III.A.2)

Functional description of upgraded capabilities shall be provided by January 1, 1982. Installation of hardware and software shall be completed by July 1, 1982. Full operational capability is required by October 1, 1982.

D. Exemptions from certain requirements of Appendices G and J to 10 CFR Part 50 are described in the Office of Nuclear Reactor Regulation's Safety Evaluation Report, Supplements No. 1 and No. 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. Therefore, these exemptions are hereby granted. The facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission.

A temporary exemption from General Design Criterion 57 found in Appendix A to 10 CFR Part 50 is described in the Office of Nuclear Reactor Regulation's Safety Evaluation Report, Supplement No. 5, Section 6.2.4. This exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. The exemption, therefore, is hereby granted. The granting of the exemption is authorized with the issuance of the Facility Operating License. The facility will operate, to the extent authorized herein, in conformity with the application as amended, the provisions of the Act, and the regulations of the Commission.

E. The licensee shall maintain in effect and fully implement all provisions of the Commission-approved physical security plan, guard training and qualification plan, and safeguards contingency plan, including amendments made pursuant to the authority of 10 CFR §50.54(p). The approved plans consist of 10 CFR §2.790(d) information collectively entitled: "Physical Security Plan for the Sequoyah Nuclear Plant", dated August 25, 1978, as revised on April 2, 1979, June 29, 1979, September 19, 1979, and December 16, 1980; "Sequoyah Nuclear Plant Security Personnel Training and Qualifications Plan" dated August 17, 1979, as revised January 24, 1980, May 21, 1980, October 1, 1980, March 9, 1981, and as amended by subsequent approved revisions; and the "Sequoyah Nuclear Plant Safeguards Contingency Plan", dated March 1, 1979, as revised September 1, 1979, April 15, 1980, December 21, 1980, March 30, 1981, and as amended by subsequent approved revisions.

In addition to all other commitments contained in the physical security plan, the licensee shall ensure that whenever an employee leaves the employment of TVA, all locks, keys, combinations, card keys, or related equipment used to control access to the Sequoyah Nuclear Plant protected area or vital areas to which that employee had access shall be changed.

F. Reactor Safety Methodology Applications Programs (Section 24.0)

TVA will provide a report prepared by the Kaman Sciences Corporation (KSC) on a full scale nuclear safety and availability analysis within six months from the date of the KSC report.

G. This license is subject to the following additional condition for the protection of the environment:

Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, Tennessee Valley Authority will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in the Final Environmental Statement

prepared by the Tennessee Valley Authority and the Environmental Impact Appraisal prepared by the Commission in May 1979, the Tennessee Valley Authority shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

H. TVA shall report any violations of the requirements contained in Sections 2.C(3) through 2.C.(8), 2.E, 2.F, and 2.G of this license within 24 hours by telephone and confirmed by telegram, mailgram, or facsimile transmission to the Director of the Regional Office, or his designee, no later than the first working day following the violation with a written followup report within 14 days.

I. TVA shall immediately notify the Commission of any accident at this facility which could result in an unplanned release of quantities of fission products in excess of allowable limits for normal operation established by the Commission.

J. TVA shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.

K. This license is effective as of the date of issuance and shall expire one year from date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Harold R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Attachment:
1. Attachment 1
2. Appendices A and B Technical Specifications

Date of Issuance:

JUN 26 1981

ATTACHMENT 1

CONSTRUCTION RELATED ITEMS TO BE COMPLETED

This attachment identifies certain items which must be completed to the satisfaction of the NRC Office of Inspection and Enforcement in accordance with the schedule listed below. Tennessee Valley Authority shall not proceed beyond the authorized events without prior written authorization from the Office of Inspection and Enforcement.

Prior to Initial Criticality

1. Resolve construction deficiency EEB 8054, Failure of Generator to Supply Adequate Voltage to Safety-Related Boards. (LII, 81-02-37).

2. Resolve construction deficiency NEB 8013, Limit Switch Actuator for Masoneilan Air-Operated Valves. (LII, 81-20-05).

3. Resolve construction deficiency NEB 8122, Power Operated Relief Valve Operating Time. (LII, 81-20-19).

4. Resolve construction deficiency NCR 28P, Inadequate Cladding Thickness on the 28-B Centrifugal Charging Pump Casing. (LII, 81-02-21).

5. Complete applicable preoperational testing and resolve significant test deficiencies.

6. Resolve IE Bulletin 79-14, Need for Seismic Reanalysis of As-built Safety-related Piping Systems.

7. Determine the repeatability of test W-6.2, UHI Preoperational Test, and conduct testing as necessary. (UNR, 80-23-08).

8. Verify adequacy of retest for adjusted Upper Head Injection flow control valves and perform further testing as necessary. (UNR, 80-23-09, 80-23-10).

9. Determine adequacy of specifications to ensure off-line sampling is effective for flushing. (UNR, 80-23-12).

10. Resolve construction deficiency CEB 79-15, Containment Piping Support Design Basis. (LII, 79-16-04).

11. Resolve construction deficiency MEB 79-4, High Flow Alarm in Essential Raw Cooling Water Piping. (LII, 79-07-10).

12. Resolve construction deficiency NCR 27P, SI Pump Breaker Lockout. (LII, 81-01-03).

13. Resolve construction deficiency SWP 8023, Seismic Analysis for As-Built Safety-Related Piping Systems. (LII, 81-02-25).

14. Resolve construction deficiency CEB 8039, Non-conservative Loads on Pipe Support Design Modifications. (LII, 81-02-33).

15. Resolve construction deficiency NEB 8115, Possible Error in Safety Injection System Preoperational Test. (LII, 81-20-12).

16. Resolve construction deficiency EEB 8111, relating to service rating for 460 Volt Motors. (LII, 81-20-21).

17. Resolve construction deficiency EEB 8115, 8034, Degraded Voltage Requirements for 460 Volt Motors. (LII, 81-20-22, 81-02-17).

18. Resolve IE Bulletin 79-27, Loss of Non-class IE Instrumentation and Control Power System Bus.

19. Resolve IE Bulletin 80-06, Engineered Safety Features Reset Controls.

20. Resolve construction deficiency NEB 8017, CVCS Centrifugal Charging Pumps. (LII, 81-02-06).