

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

August 12, 1982

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

Dear Ms. Adensam:

In the Matter of) Docket No. 50-327
Tennessee Valley Authority)

In accordance with 10 CFR Part 50.90, enclosed are 40 copies of proposed revisions to the Sequoyah Nuclear Plant Operating License DPR-77 (Enclosure 1). The proposed license amendment requests changes in the operating license conditions as a result of our review of the Sequoyah Nuclear Plant unit 1 work activities. Notification of our intent to submit a request for a license amendment was made by our August 6, 1982 letter from me to Harold R. Denton. Enclosure 2 provides the justification for the proposed amendment.

In accordance with the provisions of 10 CFR Part 170, we have determined the changes to be Class IV for operating license DPR-77. This classification is based on the fact that the amendment approval may require evaluation of several complex issues and may involve review by the ACRS. The remittance fee of \$12,300 is being wired to the Nuclear Regulatory Commission, Attention: Licensing Fee Management Branch.

If you have any questions concerning this matter, please get in touch with J. E. Wills at FTS 858-2683.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills
L. M. Mills, Manager
Nuclear Licensing

A001

Sworn to and subscribed before me
this 12th day of August, 1982
Paulette H. White
Notary Public
My Commission Expires 9-5-84

Enclosure (40)
cc: See page 2

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Director of Nuclear Reactor Regulation

August 12, 1982

cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

ENCLOSURE 1

PROPOSED LICENSE CONDITIONS
SEQUOYAH NUCLEAR PLANT UNIT 1
OPERATING LICENSE DPR-77

License Condition 2.C.20 - Low Temperature Overpressure Protection

Existing condition:

Before startup after the first refueling outage, TVA shall install an overpressure mitigation system which meets NRC requirements.

Proposed condition:

Before startup after the second refueling outage, TVA shall install an overpressure mitigation system which meets NRC requirements.

License Condition 2.C.23.D - Additional Accident Monitoring Instrumentation

Existing condition:

1. TVA shall install interim noble gas monitors at the first outage of sufficient duration.
2. At the first outage of sufficient duration, but no later than startup following the first refueling outage, TVA shall install the following qualified monitoring instrumentation.
 - a. Integrated monitoring assembly which will accomplish particulate, iodine, and noble gas monitoring.
 - b. Containment high range radiation monitor.
 - c. Containment pressure monitor.
 - d. Containment water level monitor.
 - e. Containment hydrogen monitor.

Proposed condition:

1. TVA shall install interim noble gas monitors at the first outage of sufficient duration.
2. At the first outage of sufficient duration, but no later than startup following the first refueling outage, TVA shall install the following qualified monitoring instrumentation:
 - a. Containment high-range radiation monitoring
 - b. Containment water level monitor
 - c. Containment hydrogen monitor.

3. At the first outage of sufficient duration, but no later than startup following the second refueling outage, TVA shall install the following qualified monitoring instrumentation:
 - a. Integrated monitoring assembly which will accomplish particulate, iodine, and noble gas monitoring.
 - b. Containment pressure monitor.

License Condition 2.C.23.E - Reactor Coolant System Vents

Existing conditions:

At the first outage of sufficient duration, but no later than startup following the first refueling outage, TVA shall install reactor coolant system and reactor vessel head high point vents that are remotely operable from the control room.

Proposed condition:

At first outage of sufficient duration, but no later than startup following the first refueling outage, TVA shall install reactor vessel head vents that are remotely operable from the control room. Before startup from the second refueling outage, TVA shall install reactor coolant system high point vents that are remotely operable from the control room.

License Condition 2.C.23.F - Post Accident Sampling

Existing condition:

At the first outage of sufficient duration, but no later than startup following first refueling outage, 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 with excessive exposure.

Proposed condition:

At the first outage of sufficient duration, but no later than startup following the second refueling outage, 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 with excessive exposure.

License Condition 2.C.23.H - Instruments For Inadequate Core Cooling

Existing Condition:

1. By January 1, 1982, TVA shall install a backup indication for incore thermocouples. This display shall be in the control room and cover the temperature range of 200°F to 2000°F.
2. At the first outage of sufficient duration, but no later than startup following the first refueling outage, TVA shall install reactor vessel water level instrumentation; the system will meet seismic and environmental requirements.

Proposed condition:

1. By January 1, 1982, TVA shall install a backup indication for incore thermocouples. This display shall be in the control room and cover the temperature range of 200°F to 2000°F.
2. Before startup following the second refueling outage, TVA shall install reactor vessel water level instrumentation which meets seismic and environmental requirements.

License Condition 2.C.23.I - Upgrade Emergency Support Facilities

Existing conditions:

1. The installation of the TSC shall be completed prior to startup after the first refueling. However, if an outage scheduled to last more than five weeks occurs after May 1, 1982, installation of the necessary modifications to the control room and plant instrumentation will be completed at that time, and the TSC hardware installation will be completed within eleven weeks of the start of this scheduled outage.
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.

Proposed condition:

1. The installation of the TSC shall be completed before startup following the second refueling outage.
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.

ENCLOSURE 2

JUSTIFICATION FOR PROPOSED LICENSE AMENDMENT SEQUOYAH NUCLEAR PLANT UNIT 1 OPERATING LICENSE DPR-77

Late in 1981 we met with representatives of NRC to discuss the integrated schedule concept for Browns Ferry Nuclear Plant. The reason for the development of this schedule was that the number of modifications and magnitude of the required modification work to comply with NRC requirements and NRC commitments was beyond the capabilities of the plant to reasonably manage. Sequoyah unit 1 is scheduled to begin its first refueling outage in September of this year and is having similar scheduling problems as those encountered at Browns Ferry. The effects of proceeding with the present Sequoyah schedule include the following:

1. Extended periods of overtime worked by employees resulting in a deterioration in employee alertness and subsequently more personnel errors.
2. Plant staff's participation in modification-related activities places an additional burden on personnel to the detriment of the operation of the plant.
3. The high level of work activity imparts a near impossible procedural, testing, and maintenance change preparation load as well as additional training.
4. Large numbers of employees result in increased security, health physics, and QA deviations as well as LERs.

Our proposed integrated schedule of work activities and deferral of outstanding NRC modification commitments was submitted to the NRC on August 6, 1982 by letter from L. M. Mills to Harold R. Denton. This schedule was the result of a multi-step review of all required unit 1 work activities over this timeframe. This review included: (1) prioritization of the work activity according to safety significance (NRC commitments were considered high priority), (2) review of each activity to determine the status of required design information, availability of materials, required manpower, etc., (3) establishment of management limitations on the extent of work activities and manpower levels, and (4) development of a final integrated schedule based on steps 1 through 3. Attachment 1 provides additional justification for some proposed license condition changes for which scheduling factors exist over and above those factors described above.

Many NRC modification requirements for Sequoyah, due to license requirements and compliance with NUREG-0737, are very extensive and require extremely high manpower levels. Many of these commitments were made by TVA at a time when the requirements were poorly defined and therefore final design and procurement time estimates were extremely rough at best. The result of these uncertainties and procurement problems is that many major modifications will need to be delayed and will now have to be worked concurrently with those requiring a plant outage to satisfy existing licensing conditions and commitments. The outage has been extended from 45 days required to refuel to 104 days to accommodate NRC commitment modification work. As demonstrated by the schedule, several license condition modifications will require deferral beyond the existing requirement date.

In our August 6, 1982 letter to Harold R. Denton, we provided the manpower levels before and after deferral of commitments and a schedule for major commitment items over the next 18 months. We will make every possible effort to meet the schedules provided in our August 6, 1982 letter. However, equipment procurement problems, changing design scopes, and unit outages could positively or negatively impact our previously proposed schedule.

ATTACHMENT 1 TO ENCLOSURE 2

ADDITIONAL JUSTIFICATIONS FOR PROPOSED LICENSE CONDITIONS
SEQUOYAH NUCLEAR PLANT UNIT 1
OPERATING LICENSE DPR-77

License Condition 2.C(20) - Low Temperature Overpressure Protection

Deferral of implementation of the low temperature overpressure mitigation system (OMS) on unit 1 is required due to problems encountered with obtaining adequate operating times for the pressurizer PORVs at low pressures and on TVA's decision to use the pressurizer PORVs as a pressurizer vent system. TVA modified the air supply to the PORVs at Sequoyah unit 2 in an attempt to reduce the operating times to meet the <2 seconds operating time required by the Westinghouse analysis. The modification reduced the operating time to 2.8 seconds and resulted in TVA requesting a reanalysis of the setpoint. Based on the unit 2 modification, we cannot be certain that modification of the present valves will enable them to meet the times specified in the Westinghouse setpoint study. TVA has decided to replace the air-operated PORVs presently installed at Sequoyah unit 1 with electric solenoid-operated PORVs to be used as a 'qualified' pressurizer vent system. These new PORVs have operating times of 1.0 second in both the opening and closing directions which is well within the setpoint limitations.

The time required for delivery by the manufacturer is expected to be six months to one year plus the time required for TVA to prepare the specifications to be sent to the manufacturer.

In the interim, operators have been trained in the concerns involved with low temperature overpressurization, an alarm has been installed to alert the operator when pressure has exceeded the normal range (380 psig) during solid system operation, and a nitrogen cover gas is used in the pressurizer to avoid solid system operation to the extent possible. In addition, we believe that neutron damage suffered during the first and second fuel cycles will be minimal so that an overpressurization event that could damage the vessel during this time-frame is not credible.

License Condition 2.C(23).D.2.a - Iodine Radiation Monitors

TVA has not been able to procure an integrated monitoring assembly which will monitor particulate, iodine, and noble gases, and meet our design criteria. Through discussions with NRC staff, several monitors were identified which NRC has found acceptable for satisfying NUREG-0737 requirements. TVA will be selecting one of these designs, and procurement is expected within the next nine to twelve months.

In the interim, Sequoyah will have installed high range noble gas effluent monitors as follows:

- A. Monitors will be placed on the shield building vent and the condenser vacuum pump exhaust.
- B. Each monitor will consist of two General Atomic Company monitors as follows:
 - 1. Model RD-1 with a range of 10^{-1} to 10^{-4} MR/hr
 - 2. Model RD-23 with a range of 10^3 to 10^7 MR/hr

The model RD-1 and RD-23 monitors each utilize an ionization chamber for the detector.

- C. The instrument readouts with continuous display and recording will be located in the main control room.
- D. The source of power for monitors will be preferred power (vital instrument bus).

License Condition 2.C(23).D.2.c - Wide Range Containment Pressure Monitor

The design for a wide range (minus 5 to plus 60 psig) containment pressure monitoring system qualified to the appropriate sections for Regulatory Guide 1.97 as listed in Appendix B of NUREG-0737 has been completed for Sequoyah Nuclear Plant. The equipment consisting of transmitters, power supplies, recorders, and indicators qualified to IEEE 323-1974 was put out on bid invitation; the first bid invitation was opened January 8, 1981. Three bids were received, but none were responsive since they could offer only IEEE 323-1971 qualification. The second bid invitation was opened on May 5, 1981. Only one bid was received and it was for IEEE 323-1971 equipment. The third bid invitation was opened on July 16, 1981 with only one bid and the same results.

Westinghouse is presently testing equipment to meet IEEE 323-1974 requirements. The equipment failed the first test, and it is estimated that the retest will be finished 'sometime' in September 1982. Even if the retest is successful, TVA will receive the equipment too late for installation during the first refueling outage.

In the interim, TVA has installed redundant wide range containment pressure indication utilizing IEEE 323-1971 equipment. Pressure is indicated in the main control room. Other than in areas of qualifications and the inability to record, the system meets the NRC requirements.

License Condition 2.C(23).E - Reactor Coolant System High Point Vent

In response to NUREG-0737, TVA committed to installing reactor vessel head vents by the first refueling outage of sufficient duration. In subsequent letters to NRC, TVA indicated that the pressurizer PORVs would be utilized as high point vents. This system meets the NUREG-0737 requirements with the exception of environmental qualification. As indicated in item 5 of this enclosure, the TVA plans to replace the existing PORVs with electric solenoid-operated valves which will be environmentally qualified. We anticipate having these valves available by 1983 and installation complete before startup after the second refueling outage. TVA will have a qualified head vent system installed before startup after the upcoming refueling.

License Condition 2.C(23).F - Post-Accident Sampling

The post-accident sampling facility is expected to require a total of 30,000 man-hours of non-outage work and 10,000 man-hours of outage work (mostly inside containment). In addition, uncertainties exist as to the availability of some of the required materials in the timeframe required for installation at the first refueling outage. Based on our established manpower limits, it will not be possible to complete this work during the first refueling outage. All reasonable attempts will be made to complete the inside containment work to allow completion of the facility before the second refueling outage. However, this may not be possible.

In the interim, as indicated in our response to NUREG-0578 and -0737, procedures have been established to evaluate the primary coolant system activity depending on the accessibility of the sampling stations for particular degraded conditions. TVA's response to NUREG-0578 contained a copy of Technical Instruction 66, Post-Accident Sampling and Analysis Methods.

License Condition 2.C(23).H.2 - Reactor Vessel Level Indicating System

The reactor vessel level system has been scheduled for installation during the second refueling outage due to its severe impact on work activities, and because it is our understanding that the system cannot be turned on until emergency procedures utilizing the level system are developed, approved by NRC, and subsequent operator training completed. The Sequoyah procedure guidelines are being developed as a generic effort through the Westinghouse Owners' Group. Based on the present Owners' Group schedule, we estimate the procedures cannot be in place and operator training completed until fall of 1983. The level system, therefore, if installed during this outage, could not be used until very late into cycle 2 assuming an optimistic schedule. Delays in procedure development or NRC approval could easily prevent use of the level system until cycle 3. Westinghouse has indicated that additional analysis will be necessary for plants utilizing ice condensers and/or upper head injection. Sequoyah incorporates both in its design. The magnitude of this work and the schedule for completion has yet to be determined.

License Condition 2.C(23).I.1 - Technical Support Center

In the response to NUREG-0694, TVA committed to installing the permanent technical support center by June 30, 1983. Subsequent license conditions were put in the unit 2 operating license and later included in the unit 1 operating license to require installation by the first refueling outage or the first scheduled five-week outage after May 1, 1982. Since these license conditions were established, equipment deliveries and design work have not kept pace with the expected schedule and will not be available to allow completion during the first refueling.

In addition, the TSC modification will require approximately 25,000 manhours of work to complete and has a significant impact on manpower levels (average of 45 additional craft personnel). To maintain our established manpower limits, we will not be able to complete the outage required work at the first refueling outage should the required design work and material be available.

The relay room, which is adjacent to the main control room, is being used as the temporary Sequoyah Technical Support Center (TSC). The TSC meets the same habitability requirements as the main control room and is large enough to accommodate up to 25 people. The TSC communications include PAX telephones and Bell telephones. The Bell telephones are administratively controlled, and system services can be reallocated during an emergency. Reference materials, including the REP, implementing procedures, plant drawings, FSARs, and selected plant procedures are present. Respiratory protective devices are available, if needed.