

Docket

Docket Nos. 50-327
and 50-328

July 25, 1990

Mr. Oliver D. Kingsley, Jr.
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

SUBJECT: ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT FOR
INCREASED FUEL ENRICHMENT (TAC NOS. 76774/76775) - SEQUOYAH NUCLEAR
PLANT, UNITS 1 AND 2

Enclosed is a copy of an "Environmental Assessment and Finding of No
Significant Impact" related to your May 4, 1990 request for an increase in the
enrichment of fuel assemblies from 4.0 weight-percent to 5.0 weight-percent
Uranium-235 for the Sequoyah Nuclear Plant, Units 1 and 2. The Assessment has
been forwarded to the Office of the Federal Register for publication.

Sincerely,
Original Signed By
Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page
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Docket File J. Brady
NRC PDR M. Krebs
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S. Varga OGC
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B. Wilson SQN Reading File

~~L. Watson~~ W. Little
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E. Jordan

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*w/changes to
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NAME	: MKrebs <i>MK</i>	: JDonohew:as	: <i>M. Young</i>	: FHebdon	:	:
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Mr. Oliver D. Kingsley, Jr.

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cc:

Mr. Marvin Runyon, Chairman
Tennessee Valley Authority
ET 12A 7A
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Director
Tennessee Valley Authority
ET 12A 11A
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Mr. John B. Waters, Director
Tennessee Valley Authority
ET 12A 9A
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Mr. W. F. Willis
Chief Operating Officer
ET 12B 16B
400 West Summit Hill Drive
Knoxville, Tennessee 37902

General Counsel
Tennessee Valley Authority
400 West Summit Hill Drive
ET 11B 33H
Knoxville, Tennessee 37902

Mr. Dwight Nunn
Vice President, Nuclear Engineering
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dr. Mark O. Medford
Vice President and Nuclear
Technical Director
Tennessee Valley Authority
6N 38A Lookout Place
Chattanooga, Tennessee 37402-2801

Mr. Edward G. Wallace
Manager, Nuclear Licensing
and Regulatory Affairs
Tennessee Valley Authority
5N 157B Lookout Place
Chattanooga, Tennessee 37402-2801

Mr. Joseph Bynum, Acting Site Director
Sequoyah Nuclear Plant
Tennessee Valley Authority
P. O. Box 2000
Soddy Daisy, Tennessee 37379

Mr. Mark J. Burzynski
Site Licensing Manager
Sequoyah Nuclear Plant
P. O. Box 2000
Soddy Daisy, Tennessee 37379

County Judge
Hamilton County Courthouse
Chattanooga, Tennessee 37402

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Atlanta, Georgia 30323

Mr. Paul E. Harmon
Senior Resident Inspector
Sequoyah Nuclear Plant
U.S. Nuclear Regulatory Commission
2600 Igou Ferry Road
Soddy Daisy, Tennessee 37379

Mr. Michael H. Mobley, Director
Division of Radiological Health
T.E.R.R.A. Building, 6th Floor
150 9th Avenue North
Nashville, Tennessee 37219-5404

Tennessee Valley Authority
Rockville Office
11921 Rockville Pike
Suite 402
Rockville, Maryland 20852

UNITED STATES NUCLEAR REGULATORY COMMISSIONTENNESSEE VALLEY AUTHORITYDOCKET NOS. 50-327 AND 50-328ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of amendments to Facility Operating License Nos. DPR-77 and DPR-79 to the Tennessee Valley Authority (the licensee) for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. The units are located at the licensee's site in Hamilton County, Tennessee. The amendments were requested by the licensee in its letter dated May 4, 1990. The amendments would change the Units 1 and 2 Technical Specifications (TSs) to increase the maximum allowed fuel enrichment in fuel assemblies used onsite from 4.0 to 5.0 weight-percent Uranium(U)-235. In addition, a surveillance requirement would be added to the TSs.

This assessment shall also apply to any changes proposed in the reactor core U-235 enrichment limit, up to and including 5.0 weight-percent, and to any increases in the average level of irradiation of fuel discharged from the reactors up to a batch average discharge burnup limit of 60,000 MWD/MT. There are no restrictions on fuel burnup in the TSs.

THE NEED FOR ENVIRONMENTAL IMPACT STATEMENT: The Commission has found that the proposed amendments constitute no additional significant environmental impact and has, therefore, determined not to prepare an environmental impact statement.

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ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action: Currently, the maximum permitted enrichment limit for the Sequoyah Nuclear Plant for (1) new and spent fuel stored onsite and (2) fuel in the reactor core is 4.0 weight-percent U-235. The licensee is in the process of changing its core design to incorporate higher enrichment fuel assemblies, up to 5.0 weight-percent U-235.

In addition, the licensee has proposed to add a surveillance requirement on the boron concentration in the spent fuel pool. This is to assure the boron concentration in the spent fuel pool is consistent with the criticality analysis for 5.0 weight-percent fuel assemblies in the pool.

The Need For The Proposed Action: The proposed exemption is required to permit the licensee to operate with higher enriched fuel than currently allowed.

Environmental Impacts of the Proposed Action: The Commission has completed its evaluation of the proposed amendments to the TSs. The staff has concluded that such changes would not adversely affect plant safety. The proposed changes have no significant adverse effects upon the probability of any analyzed accident. The increased burnup may alter slightly the mix of fission products that could be released in the event of a serious accident but such small changes would not significantly affect the consequences of serious accidents. The effect of increasing the fuel enrichment to 5.0 percent and burnups to 60,000 MWD/MTU would be to only increase the calculated thyroid dose for the postulated fuel handling accident by about 20% and would not exceed acceptable values. There would be no effect on the estimated consequences of other postulated design basis accidents. This is documented by the staff in the Environmental Assessment and Findings of No Significant Impact for Extended

Burnup Fuel Use in Commercial Light Water Reactors (LWRs) (Federal Register, 53 FR 6040, February 29, 1988). In addition, no changes would result in the types or amounts of any radiological effluents that may be released offsite. The proposed changes to the TSs do not change any of the restrictions on radioactive effluents from Sequoyah in Section 11, Radioactive Effluents, and Section 12, Radioactive Environmental Monitoring, of the TSs. Finally, these changes would not contribute to any significant increase in individual or cumulative occupational radiation exposure.

Regarding the potential non-radiological impact of reactor operation with higher enrichment fuel and possible increased levels of irradiation of the fuel, the proposed changes involve systems located within the restricted area, as defined in 10 CFR Part 20. They do not affect non-radiological plant effluents and have no other non-radiological environmental impact.

In addition, as indicated in the above Federal Register notice, the uranium fuel cycle environmental impact data in Table S-3 of 10 CFR 50.51 are conservative and bound the impacts for fuel enrichments up to 5.0 weight-percent U-235 and burnups of 60,000 MWD/MTU. The Sequoyah plant was licensed in part on the environmental impact data in Table S-3. These findings are applicable to the amendments for the Sequoyah Nuclear Plant, Units 1 and 2.

The potential environmental impact resulting from the transportation of higher fuel enrichment and burnup levels is discussed in the staff assessment entitled (1) "Extended Burnup Fuel Use in Commercial LWRs: Environmental Assessment and Finding of No Significant Impact" which was published in the Federal Register on February 29, 1988 (53 FR 6040) and (2) "NRC Assessment of the Environmental Effects of Extended Fuel Enrichment and Irradiation," which was published in the Federal Register on August 11, 1988 (53 FR 30355) in

connection with the Shearon Harris Nuclear Power Plant, Unit 1, Environmental Assessment and Finding of No Significant Impact. As indicated in the notices, the environmental cost contribution of the transportation of fuel and waste due to the increases in the fuel enrichment up to 5.0 weight percent of U-235 and irradiation limits up to 60,000 MWD/MT, are either unchanged or may, in fact, be reduced from those summarized in Table S-4 as set forth in 10 CFR 51.52(c). These findings are applicable to these amendments for the Sequoyah Nuclear Plant, Units 1 and 2.

Therefore, the Commission concludes that the proposed amendments to the TSs pose no significant radiological or non-radiological environmental impact. Alternatives to the Proposed Action: Since the Commission concluded that there are no significant environmental effects that would result from the proposed changes, any alternatives with equal or greater environmental impacts need not be evaluated.

The principal alternative would be to deny the requested fuel enrichment increase. This would not reduce the environmental impact of plant operation and would result in reduced plant operational flexibility.

Alternative Use of Resources: This action does not involve the use of resources not previously considered in connection with the "Final Environmental Statement Related to the Operation of the Sequoyah Nuclear Plant, Units 1 and 2," dated February 21, 1974.

Agencies and Persons Consulted: The NRC staff has reviewed the licensee's request and did not consult other agencies or persons.

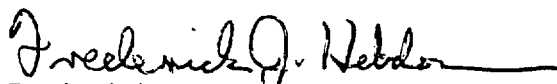
FINDING OF NO SIGNIFICANT IMPACT

Based upon the foregoing environmental assessment, we conclude that the proposed action will not have a significant effect on the quality of the human environment.

For details with respect to this action, see the licensee's request dated May 4, 1990 for amendments to the Sequoyah Units 1 and 2 Technical Specifications which is available for public inspection at the Commission's Public Document Room, Gelman Building, 2120 L Street, N.W., Washington, D.C., and at the Chattanooga-Hamilton County Bicentennial Library, 1001 Broad Street, Chattanooga, Tennessee 37402.

Dated at Rockville, Maryland, this 25th day of July, 1990.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in dark ink, appearing to read "Frederick J. Hebbon", with a long horizontal flourish extending to the right.

Frederick J. Hebbon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation