

**REGULATORY DOCKET FILE COPY**

JULY 28 1980

Docket No. 50-280

Mr. J. H. Ferguson  
Executive Vice President - Power  
Virginia Electric and Power Company  
Post Office Box 26666  
Richmond, Virginia 23261

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Dear Mr. Ferguson:

The Commission has issued the enclosed Amendment No. 59 to Facility Operating License No. DPR-32 for the Surry Power Station, Unit No. 1. This amendment is in response to your application transmitted by letter dated May 16, 1980, and your letter dated April 15, 1980.

This amendment permits Surry Unit 1 to be operated for six months of equivalent (reactor coolant above 350°F) operation from May 11, 1980. Before additional operation beyond that approved by this amendment is permissible, steam generator tube inspection and further Commission approval are required.

Copies of the related Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,  
Original signed by:  
S. A. Varga

Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

- Enclosures:
1. Amendment No. 59 to DPR-32
  2. Safety Evaluation
  3. Notice of Issuance

cc: w/enclosures  
See next page

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\*\*\*SEE PREVIOUS YELLOW FOR CONCURRENCE\*\*\*

OFFICE	DL:ORB1	DL:ORB1	DL:AD:OR	DL:ORB1	OELD
SURNAME	*JNeighbors	*DParrish	*TMNovak	*SAVarga	*MCutchin
DATE	7/7/80	7/3/80	7/10/80	7/7/80	7/21/80

Docket No. 50-280

Mr. J. H. Ferguson  
Executive Vice President - Power  
Virginia Electric and Power Company  
Post Office Box 26666  
Richmond, Virginia 23261

Dear Mr. Ferguson:

The Commission has issued the enclosed Amendment No. to Facility Operating License No. DPR-32 for the Surry Power Station, Unit No. 1. This amendment is in response to your application transmitted by letter dated May 16, 1980 and your letter dated April 15, 1980.

This amendment specifies license conditions related to steam generator tube inspections for Surry Unit 1. The only change to the operating limits previously imposed for steam generator tube inspections is the date for the next inspection.

Copies of the related Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Enclosures:

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cc: w/enclosures  
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*Complete TAC 13203*

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	SURNAME	JDNeighbors	bcSParrish	TNovak	SAVarga	MCutchin
	DATE	07/11/80	07/3/80	07/10/80	07/14/80	07/21/80



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

July 28, 1980

Docket No. 50-280

Mr. J. H. Ferguson  
Executive Vice President - Power  
Virginia Electric and Power Company  
Post Office Box 26666  
Richmond, Virginia 23261

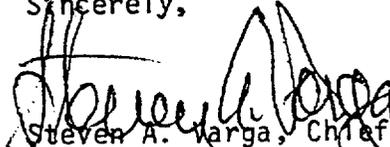
Dear Mr. Ferguson:

The Commission has issued the enclosed Amendment No. 59 to Facility Operating License No. DPR-32 for the Surry Power Station, Unit No. 1. This amendment is in response to your application transmitted by letter dated May 16, 1980, and your letter dated April 15, 1980.

This amendment permits Surry Unit 1 to be operated for six months of equivalent (reactor coolant above 350°F) operation from May 11, 1980. Before additional operation beyond that approved by this amendment is permissible, steam generator tube inspection and further Commission approval are required.

Copies of the related Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

  
Steven A. Wurga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Enclosures:

1. Amendment No. 59 to DPR-32
2. Safety Evaluation
3. Notice of Issuance

cc: w/enclosures  
See next page

Mr. J. H. Ferguson  
Virginia Electric and Power Company - 2 -

July 28, 1980

cc: Mr. Michael W. Maupin  
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Williamsburg, Virginia 23185

Donald J. Burke, Resident Inspector  
Surry Power Station  
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Williamsburg, Virginia 23185

Mr. Sherlock Holmes, Chairman  
Board of Supervisors of Surry County  
Surry County Courthouse, Virginia 23683

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Council on the Environment  
903 Ninth Street Office Building  
Richmond, Virginia 23219

Attorney General  
1101 East Broad Street  
Richmond, Virginia 23219

Mr. James R. Wittine  
Commonwealth of Virginia  
State Corporation Commission  
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Richmond, Virginia 23209

Director, Technical Assessment Division  
Office of Radiation Programs (AW-459)  
U. S. Environmental Protection Agency  
Crystal Mall #2  
Arlington, Virginia 20460

U. S. Environmental Protection Agency  
Region III Office  
ATTN: EIS COORDINATOR  
Curtis Building - 6th Floor  
6th and Walnut Streets  
Philadelphia, Pennsylvania 19106



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.59  
License No. DPR-32

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated May 16, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;  
and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Revise paragraph 3.E as follows:

E. Steam Generator Inspection

- (1) Unit No. 1 shall be brought to the cold shutdown condition in order to perform an inspection of the steam generators within six months of equivalent operation from May 11, 1980.

Nuclear Regulatory Commission (NRC) approval shall be obtained before resuming power operation following this inspection.

Equivalent operation is defined as operation with the reactor coolant at or above 350°F.

- (2) Reactor coolant leakage from the reactor coolant system (RCS) to the secondary system (SS) through the steam generator tubes shall be limited to 0.3 gpm per steam generator, as described in the NRC Safety Evaluation of May 6, 1977. With any steam generator tube leakage greater than this limit the reactor shall be brought to the cold shutdown condition within 24 hours. NRC approval shall be obtained before resuming reactor operation.
- (3) Reactor operation shall be terminated if RCS to SS leakage which is attributable to two or more steam generator tubes occurs during a 20 day period. NRC approval shall be obtained before resuming reactor operation.
- (4) The concentration of radioiodine in the reactor coolant shall be limited to 1  $\mu$ Ci/gram during normal operation and to 10  $\mu$ Ci/gram during transients as defined in Appendix A-1 to the Technical Specifications of the license. Appendix A-1 was issued with the May 6, 1977 Order and shall remain in effect for six equivalent months from May 11, 1980.

FOR THE NUCLEAR REGULATORY COMMISSION



Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Date of Issuance: July 28, 1980



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 59 TO LICENSE NO. DPR-32

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION UNIT NO. 1

DOCKET NO. 50-280

Introduction

By letters dated April 15 and May 16, 1980, Virginia Electric and Power Company (the licensee) submitted results of a steam generator inspection performed in April 1980 (during the February 19, 1980 outage) and requested a license amendment to allow six (6) months of equivalent\* operation from the date of startup after the February 19, 1980 outage.

Amendment No. 55, dated February 5, 1980, authorized six (6) months of equivalent operation from October 25, 1979. Approximately 100 days of the authorized operating interval had been completed at the time the unit was shutdown on February 19, 1980 for turbine inspection and pipe stress analysis for a potential overstress condition. Startup from the February 19 outage was on May 11, 1980 and the six months equivalent operation began at that time.

Discussion

Inspection Program

The steam generator tube inspection included programs to assess the conditions associated with both the denting and wastage phenomena. For denting, tube gauging was performed using .540", .610" and .650" diameter eddy current probes in all three steam generators to assess the extent and pattern of tube denting. The gauging problem included all tubes in the tubelane region within a boundary encompassing areas of previously observed activity. In previous inspections, finite element analysis had been used to predict the extent of denting in the tubelane region for purposes of defining the gauging boundary. However, the predicted 17.5% tube hoop strain contour, which was the basis for the implemented gauging boundary in the previous inspection, is now predicted to include much of the tube bundle. Thus, the licensee elected to adjust the tubelane gauging boundary to reflect prior experience. The implemented inspection boundary, however, encompasses most of the predicted 17.5% tube hoop strain contour.

\*Equivalent operation means operation of the facility with primary coolant temperature exceeding 350°F.

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Gauging within the tubelane region was supplemented by additional gauging in the wedge and patch plate regions where significant activity could be expected based on plant experience at this and similarly degraded units.

Additionally, when a restricted tube was found close to the inspection boundary, the inspection was expanded in that area. Gauging was also performed on cold leg tubes in all three steam generators in conjunction with the U-bend inspection program conducted from the cold leg side.

The tubes that exhibited a 20% indication or greater from the previous Regulatory Guide inspection in the central bundle regions of all steam generators were eddy current inspected to monitor for O. D. wastage.

#### Inspection Results

Results of the tube gauging inspection did not indicate any increase in rate of tube restriction activity since the previous inspection in April 1979. No tubes in any of the steam generators restricted passage of the .540" eddy current probe. All tubes restricting passage of the .610" probes were adjacent to areas where denting activity was observed in previous inspections. Tubes inspected on the cold leg side in all steam generators met the gauging criteria with a .610" probe and U-bend inspections revealed no defects. One tube was identified to have leaks during hydrotesting. This tube was located at Row 24, Column 7 in the hot leg of steam generator C, and showed a slow drip under 200 to 250 psig differential. This tube was subsequently eddy current tested as well as the surrounding tubes. No tube leak had been identified in steam generator C prior to shutdown on February 19, 1980.

#### Plugging Program

The plugging criteria for dented tubes implemented by the licensee are the same as those discussed in the SER attached to the Order of December 3, 1977. These criteria include the plugging of (1) leaking tubes, (2) .540" and .610" restricted tubes, (3) .650" restricted tubes in the periphery of the hot leg wedge region, and (4) preventive plugging criteria to preclude tube leaks resulting from the progression of denting. Additionally, those tubes inspected for wastage in the kidney regions that exhibited

either significant wastage (not necessarily in excess of the 40% plugging limit) or some wastage in proximity to a dent of sufficient size to mask the defect were plugged.

The plugging totals for this inspection are as follows:

	<u>Plugged this Outage</u>		<u>Total Plugged to Date</u>
	<u>Denting Related</u>	<u>Wastage Related</u>	
SG A	8	3	885
SG B	18	0	662
SG C	23	2	1011

A total of 2558 or 25.1% of the steam generator tubes have been plugged to date. A plugging limit of 28% was approved by Amendment No. 49 dated May 9, 1979.

#### Evaluation

The April 1980 gauging and plugging program performed at Surry 1 is similar to previously implemented programs at this unit, Surry Unit 2, and Turkey Point Units 3 and 4. These gauging programs have been developed over the course of time in consultation with the NRC staff and have been determined adequate to support operation of these facilities for six effective full power months.

Whereas the predicted location of the 17.5% tube hoop strain contour provided the basis for the gauging boundary used in the April 1979 inspection, the predicted location of the 17.5% contour at the time of the April 1980 inspection encompassed much of the tube bundle. However, significant tube restriction activity remains confined to areas immediately adjacent to previous activity. Based upon our review of the gauging results, we conclude that the implemented inspection boundaries adequately bound the regions of significant tube restriction activity.

Tube restriction activity (denting) continues to occur in areas of previously observed activity at a rate consistent with that observed previously. The preventive plugging criteria implemented in April 1980 and in previous inspections has proven successful in removing from service severely restricted tubes which are the most likely candidates to develop inservice leaks. Through wall cracks which have occurred at dented locations have been small and stable (no rapid failures). The Technical Specification 0.3 gpm leakage rate limit provides adequate assurance that even if through wall cracks and leaks occur, they will be detected and appropriate corrective action will be taken before any individual crack becomes sufficiently large as to be unstable under normal operating, transient, or accident conditions. It is our evaluation that the inspection results, implemented plugging, and existing leak rate limits adequately support six equivalent months of operation from the time of the most recent inspection.

With regards to the wastage phenomenon in the central bundle region, the small number of tubes (three tubes in steam generator A and two tubes in steam generator C) plugged as a result of the inspection indicates that wastage degradation is not developing at a significant or unexpected rate. We consider that the wastage inspection in April 1980 was adequate in establishing the current extent and magnitude of wastage in the Surry Unit 1 steam generators and that with the implemented plugging criteria provides reasonable assurance that unacceptable wastage degradation will not occur during the next operating interval.

On the basis of the above evaluation, we conclude that Surry Unit 1 may operate for a maximum interval of six (6) equivalent months from the April 1980 inspection without impairment to the health and safety of the public.

#### Environmental Consideration

We have determined that this amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR 51.5(d)(4) that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

#### Conclusion

We have concluded based on the considerations discussed above, that (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: July 28, 1980

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-280VIRGINIA ELECTRIC AND POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 59 to Facility Operating License No. DPR-32, issued to Virginia Electric and Power Company (the licensee), which revised license conditions related to operation of the Surry Power Station, Unit No. 1 (the facility) located in Surry County, Virginia. This amendment is effective as of the date of issuance.

This amendment permits Surry Unit 1 to be operated for six months of equivalent (reactor coolant above 350°F) operation from May 11, 1980. Before additional operation beyond that approved by this amendment is permissible, steam generator tube inspection and further Commission approval is required.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant

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to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated May 16, 1980 and the licensee's submittal dated April 15, 1980, (2) Amendment No. 59 to License No. DPR-32 and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C. and at the Swem Library, College of William and Mary, Williamsburg, Virginia. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 28th day of July, 1980.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing