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TERA
JBuchanan

Docket No. 50-250

Florida Power and Light Company
ATTN: Dr. R. E. Uhrig
Vice President
P. O. Box 529100
Miami, Florida 33152

Gentlemen:

The Commission has issued the enclosed Amendment No. 39 to Facility Operating License No. DPR-31 for the Turkey Point Nuclear Generating Unit No. 3. The amendment is in response to your application dated September 26, 1978 as supplemented October 2, 1978.

This operating license amendment permits continued operation of Turkey Point Unit No. 3 for four months in addition to the eight equivalent months of operation authorized by Amendment No. 36 dated June 2, 1978. The license (paragraphs 3E5 and 3E6) has been amended to require a gaging inspection of the steam generator in the case of a leak of 0.3 gpm or greater or for a shutdown to repair any leak due to the denting phenomenon and to require inspection of all three steam generators in case of a second leak in a twenty day period due to the denting phenomenon.

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

Sincerely,

Original Signed By

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:

- 1. Amendment No. 39 to DPR-31
- 2. Safety Evaluation
- 3. Notice of Issuance

cc: w/enclosures
See next page

*SEE PREVIOUS YELLOW FOR CONCURRENCE

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OFFICE	DOR:ORB1	DOR:ORB1	DOR:EB	OELD	DOR	DOR:ORB1
SURNAME	CSParrish:jd	MGrotenhuis	VNoonan*	SGoldberg*	VStello	ASchwencer
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Miami, Florida 33152

Gentlemen:

The Commission has issued the enclosed Amendment No. 39 to Facility Operating License No. DPR-31 for the Turkey Point Nuclear Generating Unit No. 3. The amendment is in response to your application dated September 26, 1978 as supplemented October 2, 1978.

This operating license amendment permits continued operation of Turkey Point Unit No. 3 for four months in addition to the eight equivalent full-power months of operation authorized by Amendment No. 16 dated June 2, 1978. The license (SE5 and E6) has been amended to require a gaging inspection of the steam generator in the case of a leak of 0.3 gpm or greater or for a shutdown to repair any leak due to the denting phenomenon and to require inspection of all three steam generators in case of a second leak in a twenty day period due to the denting phenomena.

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

Sincerely,

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:

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cc: w/enclosures
See next page

*OK per phone call by 10/16/78
3:15 pm
AUB
w/ LA GRANGE.
OK per comment on
mailing copy & subject
to possible license no. SE, R3, IP2*

OFFICE	DOR:ORB1	DOR:ORB1	DOR:EB	OELD	DOR	DOR:ORB1
BURNAME	CSParrish:j	MGrotenhuis	VNoonan	S. Grodenhuis	VStello	ASchwencer
DATE	1 / 78	1 / 78	10 13 / 78	10 / 16 / 78	1 / 78	1 / 78

cc: Mr. Robert Lowenstein, Esquire
Lowenstein, Newman, Reis & Axelrad
1025 Connecticut Avenue, NW
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Environmental & Urban Affairs Library
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Mr. Norman A. Coll, Esquire
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Miami, Florida 33131

Florida Power & Light Company
ATTN: Mr. Henry Yaeger
Plant Manager
Turkey Point Plant
P. O. Box 013100
Miami, Florida 33101

Honorable Dewey Knight
County Manager of Metropolitan
Dade County
Miami, Florida 33130

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Chief, Energy Systems
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U.S. Environmental Protection Agency
Region IV Office
ATTN: EIS COORDINATOR
345 Courtland Street, NW
Atlanta, Georgia 30308



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

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT NUCLEAR GENERATING STATION UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 39
License No. DPR-31

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power and Light Company (the licensee) dated September 26, 1978, as supplemented October 2, 1978, 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.

2. Accordingly, paragraph 3.E is modified to amendment paragraph E5 and add a new paragraph E6. These paragraphs read as follows:

"E Steam Generator Inspections

5. In order to perform an inspection of the steam generators, Unit No. 3 shall be brought to the cold shutdown condition within twelve equivalent months of operation from February 1, 1978, unless: (1) an inspection of the steam generators is performed within this twelve month period as a result of the requirements in 2, 3 and 4 above, or (2) an acceptable analysis of the susceptibility for stress corrosion cracking of tubing is submitted to explicitly justify continued operation of Unit No. 3 beyond the authorized twelve equivalent months of operation. Any analysis justifying continued operation must be submitted at least 45 days prior to the expiration date of the authorized twelve equivalent months of operation. For the purpose of this requirement, equivalent operation is defined as operation with a primary coolant temperature greater than 350°F.
6. The following more restrictive limits shall be in effect until the completion of the next steam generator reinspection following the effective date of this amendment.
 - a. In the event that the 0.3 gpm limit specified in E.2 is exceeded or a shutdown to repair any leak due to the denting phenomenon occurs, a gaging inspection shall be performed in the affected steam generator. Preventative plugging shall be performed in the affected generators as indicated by the gaging inspection.
 - b. In the event that two leaks occur as described in item E.3, an inspection of the three Unit 3 steam generators shall be performed. This inspection shall be similar to the one performed on Unit 4 in August 1978. Preventative plugging shall be performed as indicated by the inspection.

- c. FPL shall submit a report describing the results of the gaging program in "a" above within 14 days after returning to power.
 - d. FPL shall submit a report describing the results of the inspection in "b" above and shall obtain NRC permission prior to returning to power following that inspection.
3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 39 TO LICENSE NO. DPR-31
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-250

Introduction/Background

By letter (L-78-312) dated September 26, 1978, as supplemented by letter (L-78-323) dated October 2, 1978, Florida Power & Light Company (FPL) submitted information to justify continued operation of Turkey Point Unit No. 3 for an additional four (4) equivalent months beyond the eight (8) months, beginning February 1, 1978, currently authorized by License Amendments Nos. 32 and 36, dated January 31, 1978, and June 2, 1978, respectively.

License Amendment No. 32 authorized six equivalent months of operation. The basis for establishing a six month period of operation was the preventive tube plugging performed by FPL under accepted plugging criteria implemented following the last inspection of the steam generators completed in December 1977, along with an analysis of the information developed as a result of the steam generator tube inspections conducted in Turkey Point Unit No. 3, in November and December 1977. The criteria for preventive tube plugging were determined from the predicted growth of regions in the tube support plate in which the severity of tube denting would make tubes in these regions susceptible to stress corrosion cracking. Specifically, the rate of growth of these regions was one-third distance between tube rows per month of equivalent power operation for tubes in columns 14 thru 80 and two-thirds distance between tube rows per month in columns 1 thru 13 and 81 thru 94.

License Amendment No. 36 authorized two additional equivalent months of operation. The basis for allowing two more months of operation was that the consequences of the maximum primary to secondary leakage rate, estimated by the staff, that would be expected during a postulated main steam line break (MSLB) were acceptable. In order to bound the number of tubes that could possibly develop thru-wall cracks, we conservatively assumed that all tubes predicted to be within the 17.5% hoop strain contour are in a state of incipient cracking and would crack through when subjected to the expected pressure differentials during a postulated MSLB accident. This assumption is conservative in that successive inspection results indicated that not all tubes within the predicted boundary (17.5% strain) actually restrict the 0.540 inch probe.

Discussion

The licensee has used steam generator inspection results from Turkey Point 4 to predict the conditions that will exist in the Turkey Point 3 steam generators. The progression of flow slot closure in the worst steam generator of Turkey Point 3, generator B, is approximately six months behind that observed in the worst steam generator of Turkey Point 4, also generator B. The two inspections of Turkey Point 4 steam generators at points beyond full closure of flow slots were examined and, based on these data, FPL estimates that at 12 EFPM beyond closure the maximum predicted number of restricted unplugged tubes within the 17.5% tube hoop strain contour for Turkey Point 3 is 184. Restricted tubes are defined as those which restrict either the 0.650, 0.610, or 0.540 inch probes. Turkey Point 3 will be at approximately 12 EFPM beyond full flow slot closure at the end of an additional 4 months of operation. Assuming all 184 restricted tubes developed thru-wall cracks during a postulated MSLB, the licensee has estimated a maximum primary to secondary leakage rate of approximately 9.90 gpm.

FPL has evaluated the effects of the calculated leakage rate. Analyses have shown that such low leakage rates during a MSLB would have a negligible effect on primary system thermal hydraulic parameters, the DNBR, the percent of coolant volume lost by leakage, or the time to terminate the core transient. Also, the effect of secondary to primary leakage during a LOCA would be negligible relative to primary system thermal hydraulic parameters when compared to the effects of the LOCA on these parameters.

Based on the information discussed above, FPL concludes that Turkey Point 3 can be safely operated for an additional four (4) equivalent months beyond the currently authorized eight (8).

The licensee assumes in their leakage rate calculations that only one crack per tube could develop during a postulated MSLB. To justify this assumption, they reference Figure 1-3 in their June 9, 1977, (L-77-173), Turkey Point 4 submittal. This figure indicates that one tube/support plate intersection leads the others in the magnitude of denting to the extent that leakage would occur at this intersection during normal operation prior to any other dented intersection along a tube degrading to such a point that it would develop a leak during a postulated MSLB accident.

In conjunction with their request for an extension of four (4) months, the licensee has proposed additional operating restrictions to the Turkey Point 3 operating license. They include requiring a gauging inspection of a steam generator if the 0.3 gpm primary to secondary leakage rate limit is exceeded or a shutdown to repair any leak due to the denting phenomenon occurs, and requiring an inspection of all three steam generators if leakage attributable to the denting phenomenon occurs in two or more tubes in any 20 day period.

Evaluation

The licensee submitted leakage rate calculations for conditions that would be expected during a postulated MSLB accident. These calculations are based on the assumption that only tubes predicted to be restricted within the projected 17.5% tube hoop strain contour could develop a crack and leak during a postulated MSLB. In our previous safety evaluation reports on this subject, e.g., as in our safety evaluation report attached to Amendment No. 36 to Facility Operating License No. DPR-31 for Turkey Point 3 dated June 2, 1978, we assumed that all tubes predicted to be within the 17.5% strain contour could crack under postulated MSLB conditions. However, this is the first time a licensee has estimated the total number of tubes expected to restrict all three probe sizes. Since 1) preventive plugging in the tubelane regions is based on the number and location of tubes found to restrict either the 0.540 or 0.610 inch probes, 2) inspection results indicate that not all tubes within the 17.5% hoop strain boundary restrict even the 0.650 inch probe, and 3) it is not likely that any tubes besides those dented to such a point that they do not allow passage of a 0.540 inch probe will develop cracks and leak, we believe that the licensee's assumptions are conservative for estimating the maximum expected leakage during a postulated MSLB accident. Therefore, the conclusions reached by the licensee are valid and the NRC staff has concluded the following:

1. The primary degradation mechanism in Turkey Point 3 steam generators is associated with the denting phenomenon and the tube cracking is expected to occur at tube/support plate intersections (since all row 1 tubes have been previously plugged). The type of cracks associated with tube denting are constrained by the support plate, and will not burst open during a MSLB accident.
2. The leak rate associated with these cracks is very small. The estimated leakage rate of 0.05 gpm per tube under accident loads is reasonably conservative. This leakage rate has been determined experimentally by Westinghouse.
3. The data discussed above, i.e., Figure 1-3 of the June 9, 1977, Turkey Point 4 submittal, will most likely also be valid for the Turkey Point 3 steam generators and, therefore, only one crack per tube need be postulated for the leakage rate calculations.
4. It is a reasonably conservative assumption that only restricted tubes within the 17.5% strain contour could crack and leak during a postulated MSLB accident and the actual leakage rate should be bounded by the calculated rate.
5. Therefore, the total leakage rate in the affected steam generator would most likely not exceed 10 gpm.
6. A primary to secondary leak rate of 10 gpm will have a negligible effect on primary system thermal hydraulic parameters, the DNB ratio, the percentage of reactor coolant volume lost by leakage, and the time to terminate the core transient during a postulated MSLB accident.

7. The effect of secondary to primary leakage during a LOCA would be negligible relative to primary system thermal hydraulic parameters when compared to the effects of the LOCA itself on these parameters.
8. Although tubes that, according to the current plugging criteria should be plugged, are remaining in service, the currently imposed operating restrictions adequately address the possibility of cracks and subsequent leakage developing during normal operation.
9. The additionally imposed operating restrictions will assure that unexpected acceleration of tube denting is recognized and dealt with in a timely, orderly fashion.
10. An additional four (4) equivalent* months of operation of Turkey Point 3 is therefore acceptable.

For the foregoing reasons we conclude that an additional four months of operation, under the constraints imposed by the existing facility operating license and new constraints agreed to by the licensee, will not significantly change the basic conclusions stated in the previous safety evaluation report attached to License Amendment No. 32, dated January 31, 1978.

Environmental Consideration

We have determined that the 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 amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

*For purposes of this SER, equivalent operation is defined as operation with a primary coolant temperature greater than 350°F.

References

1. Letter from R. E. Uhrig to NRC dated March 1, 1978.
2. Letter from C. M. Stalling VEPCO to B. C. Rusche NRC dated March 25, 1977 (Docket No. 50-280).
3. Letter to FPL granting Amendment No. 32 to DPR-31 dated January 31, 1978.

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-250FLORIDA POWER AND LIGHT COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 39 to Facility Operating License No. DPR-31, issued to Florida Power and Light Company, for operation of the Turkey Point Nuclear Generating Unit No. 3 located in Dade County, Florida. The amendment is effective as of the date of issuance.

The amendment to the operating license will extend the allowed continued operation of Turkey Point Unit No. 3 from eight equivalent months of operation (EFPM) beyond February 1, 1978, as authorized by Amendment No. 36 to Facility Operating License No. DPR-31 issued on June 2, 1978, to twelve equivalent months of operation, at which time the steam generators shall be inspected.

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 to 10 CFR §51.5(d)(4) an environmental impact statement, negative declaration or 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 September 26, 1978 supplemented October 2, 1978, (2) Amendment No. 39 to License No. DPR-31, 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 Environmental and Urban Affairs Library, Florida International University, Miami, Florida 33199. 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 Operating Reactors.

Dated at Bethesda, Maryland this 16th day of October, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors