Docket No. 50-346
Serial No. DB-88-033

July 22, 1988

Mr. Donald C. Shelton
Vice President, Nuclear
Toledo Edison Company
Edison Plaza - Stop 712
300 Madison Avenue
Toledo, Ohio 43652

Dear Mr. Shelton:

SUBJECT: AMENDMENT NO. 113 TO FACILITY OPERATING LICENSE NO. NPF-3: STEAM GENERATOR SURVEILLANCE REQUIREMENTS (TAC NO. 66736)

The Commission has issued the enclosed Amendment No. 113 to Facility Operating License No. NPF-3 for the Davis-Besse Nuclear Power Station, Unit No. 1. This amendment consists of changes to the Appendix A Technical Specifications (TS's) in response to your application dated January 11, 1988 (No. 1458), as supplemented by letter dated April 14, 1988 (No. 1506).

This amendment revises the TS Section 4.4.5.2 relating to steam generator sample selection and inspection. Specifically, the amendment adds a third, special interest group comprised of tubes near the centers of both steam generators. This third group of special interest tubes shall not be applied beyond the end of the fifth refueling outage; however, the Commission will consider an application to permit the use of this group beyond that outage subject to the certain clarifications identified in the enclosed Safety Evaluation.

A copy of the notice of issuance is enclosed. The notice has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Albert W. De Agazio, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects - III, IV, V & Special Projects

Enclosures:
1. Amendment No. 113 to License No. NPF-3
2. Safety Evaluation
3. Notice of Issuance

See discussion with JG

cc w/enclosures:
See next page

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

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cc w/enclosures:
See next page

Mr. Donald C. Shelton
Toledo Edison Company

Davis-Besse Nuclear Power Station
Unit No. 1

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Port Clinton, Ohio 43452

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Public Utilities Commission
180 East Broad Street
Columbus, Ohio 43266-0573

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

TOLEDO EDISON COMPANY

AND

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DOCKET NO. 50-346

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 113
License No. NPF-3

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

   A. The application for amendment to the Toledo Edison Company and The Cleveland Electric Illuminating Company (the facility) dated January 11, 1988 as supplemented April 14, 1988, 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 license 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, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-3 is hereby amended to read as follows:

   (a) Technical Specifications

   The Technical Specifications contained in Appendix A and B, as revised through Amendment No.113, are hereby incorporated in the license. The Toledo Edison Company shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented not later than September 6, 1988

FOR THE NUCLEAR REGULATORY COMMISSION

Albert W. DeAgazio for

Kenneth E. Perkins, Director
Project Directorate III-3
Division of Reactor Projects - III, IV, V, & Special Projects
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: July 22, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 113

FACILITY OPERATING LICENSE NO. NPF-3

DOCKET NO. 50-346

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE PAGES	INSERT PAGES
3/4 4-7	3/4 4-7

Notes:

(1) In all inspections, previously degraded tubes must exhibit significant (> 10%) further wall penetrations to be included in the above percentage calculations.

(2) Where special inspections are performed pursuant to 4.4.5.2.b, defective or degraded tubes found as a result of the inspection shall be included in determining the Inspection Results Category for that special inspection but need not be included in determining the Inspection Results Category for the general steam generator inspection.

4.4.5.3 Inspection Frequencies - The above required inservice inspections of steam generator tubes shall be performed at the following frequencies:

a. The baseline inspection shall be performed to coincide with the first scheduled refueling outage but no later than April 30, 1980. Subsequent inservice inspections shall be performed at intervals of not less than 12 nor more than 24 calendar months after the previous inspection. If the results of two consecutive inspections for a given group* of tubes following service under all volatile treatment (AVT) conditions fall into the C-1 category or if two consecutive inspections demonstrate that previously observed degradation has not continued and no additional degradation has occurred, the inspection interval for that group may be extended to a maximum of 40 months.

b. If the results of the inservice inspection of a steam generator performed in accordance with Table 4.4-2 at 40 month intervals for a given group* of tubes fall in Category C-3, subsequent inservice inspections shall be performed at intervals of not less than 10 nor more than 20 calendar months after the previous inspection. The increase in inspection frequency shall apply until a subsequent inspection meets the conditions specified in 4.4.5.3a and the interval can be extended to 40 months.

c. Additional, unscheduled inservice inspections shall be performed on each steam generator in accordance with the first sample inspection specified in Table 4.4-2 during the shutdown subsequent to any of the following conditions:

1. Primary-to-secondary tube leaks (not including leaks originating from tube-to tube sheet welds) in excess of the limits of Specification 3.4.6.2.

*A group of tubes means:
(a) All tubes inspected pursuant to 4.4.5.2.b, or
(b) All tubes in a steam generator less those inspected pursuant to 4.4.5.2.b.

3. A tube inspection (pursuant to Specification 4.4.5.4.a.8) shall be performed on each selected tube. If any selected tube does not permit the passage of the eddy current probe for a tube inspection, this shall be recorded and an adjacent tube shall be selected and subjected to a tube inspection.

b. Tubes in the following groups may be excluded from the first random sample if all tubes in a group in both steam generators are inspected. No credit will be taken for these tubes in meeting minimum sample size requirements.

1. Group A-1: Tubes within one, two or three rows of the open inspection lane.

2. Group A-2: Tubes having a drilled opening in the 15th support plate.

3. Group A-3: Tubes included in the rectangle bounded by rows 62 and 90 and by tubes 58 and 76, excluding tubes included in Group A-1.*

c. The tubes selected as the second and third samples (if required by Table 4.4-2) during each inservice inspection may be subjected to less than a full tube inspection provided:

1. The tubes selected for these samples include the tubes from those areas of the tube sheet array where tubes with imperfections were previously found.

2. The inspections include those portions of the tubes where imperfections were previously found.

The results of each sample inspection shall be classified into one of the following three categories:

Category	Inspection Results
C-1	Less than 5% of the total tubes inspected are degraded tubes and none of the inspected tubes are defective.
C-2	One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes.
C-3	More than 10% of the total tubes inspected are degraded tubes or more than 1% of the inspected tubes are defective.

* Tubes in Group A-3 shall not be excluded after completion of the fifth refueling outage.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO.113TO FACILITY OPERATING LICENSE NO. NPF-3

TOLEDO EDISON COMPANY

DAVIS-BESSE UNIT 1

DOCKET NO. 50-346

INTRODUCTION

By letter dated January 11, 1988, Toledo Edison Company proposed a revision to the steam generator tube surveillance requirements in the Technical Specifications (TS's). The proposed change would define a third, special interest group of tubes (i.e., group A-3) in TS paragraph 4.4.5.2.b. The proposed change would give Toledo Edison Company the option of inspecting all tubes in this region and not having to apply the results of these inspections in determining whether the inspection results for the overall steam generator fall into Categories C-1, C-2, or C-3 as defined in TS paragraph 4.4.5.2.

The Toledo Edison Company provided additional information by letter dated April 14, 1988 to support the requested change. This included the results of the most recent inspection of the Davis Besse steam generators (in 1986) and an assessment of the degradation mechanism which the proposed TS change is intended to address.

DISCUSSION

Steam generator inspections performed in 1986 revealed 57 tubes in Steam Generator A with eddy current indications $\geq$ 20% of the tube wall thickness. Thirteen of these tubes exhibited indications exceeding the 40% plugging limit. With one exception which will be discussed later, the affected tubes were tightly clustered around the untubed center region. Inspections in Steam Generator B revealed only one tube with a > 20% indication. This indication was also located at the center region of the bundle. The indications found were typically located between the third and sixth support plates, some were located at higher elevations ranging to the upper tube sheet. Many of the affected tubes contained multiple indications which tended to be localized over relatively short lengths. Toledo Edison Company has characterized the indications as being of relatively small amplitude, similar to what would be expected for pitting.

Although the specific degradation mechanism has not been established firmly, Toledo Edison Company believes the likely mechanism is pitting. This is based on their review of the history of Davis-Besse steam generator chemistry

conditions. Toledo Edison Company believes that the presence of oxygen initiated the pitting. This condition may have resulted from a one-time service water injection into the steam generators during the June 9, 1985 loss-of-feedwater event at Davis-Besse. Toledo Edison Company states, however, that secondary water chemistry control has been excellent which should mitigate further pitting activity.

The proposed TS change is based on the premise that the subject degradation mechanism is confined to a localized region of the steam generator. The proposed change would permit Toledo Edison Company to inspect all tubes within a special interest group intended to encompass the region where the subject degradation mechanism is occurring. The area outside the special interest group would continue to be inspected in accordance with existing TS requirements, and results from the special interest group would have no bearing on the level of sampling to be performed outside the special interest group.

EVALUATION:

Technical Specification requirements concerning the need for supplemental inspection samples are dictated by the number of degraded tubes (i.e., tubes with indications $\geq$ 20%) and defective tubes (i.e., tubes with indications $\geq$ 40%) found during initial sample inspections. A special interest group methodology to address a specific degradation mechanism such as that suspected by Toledo Edison Company is justified provided there is reasonable assurance that the special interest group boundary encompasses all tubes which potentially are degraded or defective due to the subject degradation mechanism.

With one exception, the staff review has confirmed that degraded and defective tubes found to date at Davis-Besse which involve the subject degradation mechanism are bounded by the proposed special interest group. The one exception involves tube R73-C52 in steam generator A which exhibited a 51% indication about 1.4 inches below the sixth tube-support plate. The staff is not aware of any evidence to suggest that this indication is not due to the subject degradation mechanism. Apart from tube R73-C52, there are a small number of other tubes located outside the proposed special interest group which contain $\geq$ 20% indications and which may also involve the subject degradation mechanism. This suggests the possibility that unless Toledo Edison Company is successful in arresting the subject degradation mechanism, this degradation may eventually lead to degraded and defective tubes in the general population of tubes outside the proposed special interest group.

The staff has concluded that the proposed change to the Technical Specifications to incorporate the subject special interest group is acceptable subject to certain clarifications. Per discussions with the licensee, it was agreed that the third special interest group would not be applied beyond the fifth refueling outage. The staff will consider a permanent change to the Technical

Specification upon submittal of an application to amend the license which adequately addresses the following clarifications:

1. The boundary of the special interest group shall be expanded as necessary to bound all degraded and defective tubes associated with the subject degradation mechanism identified during previous inspections or the current inspection. As a minimum, defective tubes should be bounded by at least five tubes in the row-wise and column-wise directions. Degraded tubes should be bounded by at least two tubes in the row-wise and column-wise directions.

2. Outer diameter (OD) indications should be considered to involve the subject degradation mechanism unless it can be reasonably established that they involve a different mechanism such as, for example, fatigue cracks, damage from loose parts, fretting/wear at support plate, etc.

Regarding item 2, it is the staff position that an OD indication cannot be assumed not to involve the subject degradation mechanism simply on the basis that it is located far from the area where the bulk of the indications are located.

The staff notes that it is not clear that even if the third special-interest group were applied beyond the fifth refueling outage that significantly reduced levels of inspection sampling would result over the long term. This observation is based on the premise that degraded and defective tubes due to OD corrosion may eventually occur in locations throughout the bundle rather than being restricted to the center of the bundle and along the open tube lane as is presently the case. It will be very difficult to justify a criterion for treating OD corrosion indications in the general tube population differently from OD corrosion indications of the type seen to date.

4.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact has been prepared and published in the Federal Register on (53 FR 27579). Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

5.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) 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.

Principal Contributor: Emmett Murphy

Dated: July 22, 1988

7590-01

U. S. NUCLEAR REGULATORY COMMISSION

TOLEDO EDISON COMPANY, ET AL.

DOCKET NO. 50-346

NOTICE OF ISSUANCE OF AMENDMENT TO

FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 113 to Facility Operating License No. NPF-3 , issued to The Toledo Edison Company and The Cleveland Electric Illuminating Company (the licensee), which revised the Technical Specifications for operation of the Davis-Besse Nuclear Power Station, Unit No. 1 (the facility) located in Ottawa County, Ohio. The amendment was effective as of the date of its issuance.

The amendment revised the TS Section 4.4.5.2 relating to steam generator sample selection and inspection. Specifically, the amendment added a third special interest group comprised of tubes near the centers of both steam generators.

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.

Notice of Consideration of Issuance of Amendment and Opportunity for Hearing in connection with this action was published in the FEDERAL REGISTER

on March 25, 1988 (53 FR 9835). No request for a hearing or petition for leave to intervene was filed following this notice.

For further details with respect to this action see (1) the application for amendment dated January 11, 1988 as supplemented April 14, 1988, (2) Amendment No. 113 to License No. NPF-3, (3) the Commission's related Safety Evaluation dated July 22, 1988 and (4) the Environmental Assessment dated July 14, 1988 (53 FR 27579). 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 University of Toledo Library, Documents Department, 2801 Bancroft Avenue, Toledo, Ohio 43606.

A copy of items (2), (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Reactor Projects - III, IV, V and Special Projects.

Dated at Rockville, Maryland this 22nd day of July 1988.

FOR THE NUCLEAR REGULATORY COMMISSION

Albert W. DeAgazio

Albert W. DeAgazio, Project Manager
Project Directorate - III-3
Division of Reactor Projects - III, IV,
V and Special Projects