

December 19, 1988

Docket No. 50-346
Serial No. DB-88-008

Mr. Donald C. Shelton
Vice President, Nuclear
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Dear Mr. Shelton:

SUBJECT: AMENDMENT NO. 126 TO FACILITY OPERATING LICENSE NO. NPF-3:
STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM MAIN STEAM LOW PRESSURE
BLOCK PERMIT SETPOINT (TAC 66732)

The Commission has issued Amendment No.126 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 February 29, 1988 (Serial No. 1461).

This amendment revises Table 3.3-11, Section 3.3.2.2, Steam and Feedwater Rupture Control System (SFRCS) Instrumentation, to permit bypass of Functional Unit 1, Main Steam Pressure Low Instrument Channel, when steam pressure is below 700 psig vice 650 psig. The amendment also changes the Main Steam Line pressure for automatic removal of the bypass to 750 psig from 650 psig.

Copies of the Safety Evaluation and the notice of issuance related to this amendment are enclosed. The notice has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/s/

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

Enclosures:

1. Amendment No.126 to License No. NPF-3
2. Safety Evaluation
3. Notice of Issuance

DF01
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cc: See next page

Office: LA/PDI III-3
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Mr. Donald C. Shelton
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Davis-Besse Nuclear Power Station
Unit No. 1

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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. 126
License No. NPF-3

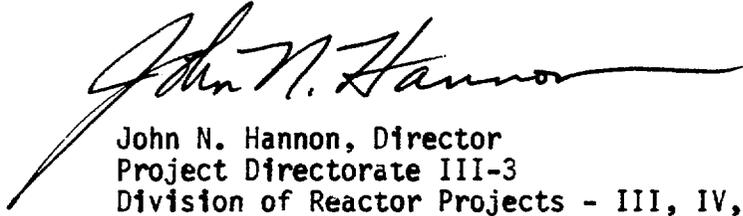
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Toledo Edison Company and The Cleveland Electric Illuminating Company (the licensees) dated February 29, 1988 complies with the standards and requirements of the Atomic Energy Act of 1954, 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 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 Appendices A and B, as revised through Amendment No. 126, are hereby incorporated in the license. The Toledo Edison Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented not later than February 2, 1989.

FOR THE NUCLEAR REGULATORY COMMISSION



John N. Hannon, 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: December 19, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 126

FACILITY OPERATING LICENSE NO. NPF-3

DOCKET NO. 50-346

Replace the following page of the Appendix "A" Technical Specifications with the attached page. The revised page is identified by amendment number and contains a vertical line indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Remove

3/4 3-27

Insert

3/4 3-27

TABLE 3.3-11 (Continued)

TABLE NOTATION

- * May be bypassed when steam pressure is below 700 psig. Bypass shall be automatically removed when the steam pressure exceeds 750 psig.
- # The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

- ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, startup and/or power operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable section of the channel is placed in the tripped condition within 1 hour.
- ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-12
STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM
INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNITS</u>	<u>TRIP SETPOINTS</u>	<u>ALLOWABLE VALUES</u>
1. Steam Lin. Pressure - Low	≥ 591.6 psig	≥ 591.6 psig* ≥ 586.6 psig**
2. Steam Generator Level - Low ⁽¹⁾	≥ 16.4 "	≥ 15.6 "* ≥ 12.9 "**
3. Steam Generator Feedwater Differential Pressure - High ⁽²⁾	≤ 197.6 psid	≤ 197.6 psid* ≤ 199.6 psid**
4. Reactor Coolant Pumps - Loss of	High ≤ 1384.6 amps Low ≥ 106.5 amps	≤ 1384.6 amps# ≥ 106.5 amps#

(1) Actual water level above the lower steam generator tubesheet.

(2) Where differential pressure is steam generator minus feedwater pressure.

*Allowable Value for CHANNEL FUNCTIONAL TEST

**Allowable Value for CHANNEL CALIBRATION

#Allowable Value for CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 126 TO FACILITY OPERATING LICENSE NO. NPF-3

TOLEDO EDISON COMPANY

AND

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

1.0 INTRODUCTION

By application dated February 29, 1988 (Serial No. 1461), the Toledo Edison Company requested that the Davis-Besse Nuclear Power Station, Unit No. 1 Operating License Appendix A Technical Specifications be revised. The proposed change would involve Technical Specification (TS) Section 3.3.2.2, Table 3.3-11, Steam and Feedwater Rupture Control System Instrumentation.

The proposed amendment would permit bypass of Functional Unit 1, Main Steam Pressure Low Instrument Channel, when steam pressure is below 700 psig vice 650 psig. The proposed amendment would also change the maximum main steam line pressure for automatic removal of the bypass to 750 psig vice 650 psig.

2.0 DISCUSSION AND EVALUATION

The function of the Steam and Feedwater Rupture Control System (SFRCS) is to detect and mitigate the effects of abnormal conditions in the main steam and main feedwater. These conditions include loss of main feedwater, steam generator overfeed, loss of reactor coolant forced circulation, and ruptures of the main steam or main feedwater lines. SFRCS detects the occurrence of any of these conditions and, depending upon the condition sensed, mitigates the consequences by positioning automatically the appropriate valves in the Main Steam System, Main Feedwater System, or Auxiliary Feedwater System. The Auxiliary Feedwater System also is actuated by the SFRCS.

SFRCS consists of four redundant sensing and logic channels with two sensing and logic channels paired to form one actuation channel and the remaining two sensing and logic channels paired to form a second actuation channel. The parameters monitored by the sensing instrumentation are:

- 1) Steam generator high and low water level;
- 2) Main Steam low pressure;

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- 3) Steam generator to main feedwater differential pressure; and
- 4) Reactor Coolant Pump low motor current.

For purposes of this Safety Evaluation, only the main steam low-pressure instrumentation is relevant.

An SFRCS actuation channel trip on low main-steam-pressure indicates a main steam line break; the trip would cause the total isolation of the steam generator main feedwater associated with the main steam header in which low pressure was sensed. Both trains of AFW would be initiated, and AFW flow would be directed to feed the intact steam generator only. The main steam and main feedwater lines associated with the intact steam generator would be isolated.

To prevent unnecessary challenges and inadvertent actuation of the SFRCS and associated systems during plant cooldown, the SFRCS includes a manual block-permissive feature. This feature allows the operator to block SFRCS low-steam pressure trip signals during cooldown. Manual action by the operator is required to block an SFRCS trip once the block-permissive is received. To comply with IEEE Standard 279-1971, the low-pressure block is removed automatically during plant heatup.

The proposed amendment would increase, by 50 psig, the maximum pressure at which the block-permissive could occur, and increase, by 100 psig, the pressure at which the block would be removed automatically (during heatup).

Section 7.4.1.3.1 of the Davis-Besse Updated Safety Analysis Report states that the SFRCS steam generator low-pressure trip will occur when the steam line pressure drops to 591.6 psig. TS Section 3.3.2.2, Table 3.3-11, also requires a trip setpoint for the low-pressure trip signal of not less than 591.6 psig. To ensure that the pressure switches used to sense main steam line pressure actuate to satisfy the 591.6 psig, Toledo Edison Company has determined that the actual field setpoint must be 612 psig to account for various inaccuracies associated with the setting. Separate pressure switches are used for the block-permissive/automatic reset feature.

Toledo Edison asserts that with the present block-permissive value of 650 psig, the nominal pressure margin to the field setpoint for low-pressure SFRCS trip is only 38 psig. This small margin combined with instrument inaccuracy, settability, and drift associated with the pressure switches creates the possibility of an inadvertent and spurious SFRCS trip during plant cooldown. Furthermore, the arrangement of the pressure switches used for SFRCS low-pressure trip and those used for the block-permissive is such that the operators must maintain approximately the same pressure in both steam generators during cooldown, otherwise the steam generator with the lower pressure could experience a low-pressure trip before the block-permissive for the other steam generator is established.

Toledo Edison Company has presented an analysis which shows that an increase of the block-permissive setpoint to 700 psig corresponds to about an 8°F increase in reactor coolant temperature range during which the SFRCS low-pressure trip could be blocked. Using the nominal cooldown rate of 15°F/hr, this corresponds to less than 1 hour additional during cooldown during which automatic protection against a MSLB would be unavailable.

The existing block-permissive setpoint and automatic block removal setpoint are the same. Therefore, there is no margin for the reset deadband provided for in the TS's. Toledo Edison Company asserts that past surveillance testing reveals that the pressure switches typically reset 20 to 30 psig above the block-permissive setpoint. By raising the automatic reset setpoint to 750 psig from 650 psig, the pressure switch deadband would not be a limitation to the block-permissive setpoint.

Toledo Edison Company's analysis shows that an increase of the automatic block reset setpoint to 750 psig will correspond to about a 15°F increase in reactor coolant temperature range during which the SFRCS low-pressure trip could be blocked. Using the nominal heatup rate, this corresponds to about 1 hour additional during which automatic protection against a MSLB would be unavailable.

The SFRCS low pressure trip provides protection against a main steam line break in Modes 1 and 2 and in Mode 3 at pressures above the block permit. This block permit is only used in Mode 3 during normal startup or shutdown. The proposed setpoint changes would result in no more than approximately 2 hours additional during which automatic protection for a MSLB would be unavailable for each startup-shutdown cycle.

Recent experience suggests that the Davis-Besse station will experience about 5 to 7 startups per year, but even if there were as many as 10 startups per year, the additional exposure without SFRCS low-pressure protection would be less than about 20 hours. For a full year of operation, the estimated probability of a MSLB while at full operating pressure and temperature is on the order of 6×10^{-5} per reactor year. Therefore, the estimated incremental increase in probability (resulting from the proposed changes) of a MSLB while the SFRCS is blocked would be less than 1.3×10^{-5} per year. This is a conservative estimate since the mainstream piping would be at less than operating temperature and pressure when the SFRCS could be blocked.

The staff concludes that the additional risk of a MSLB due to the increased time the SFRCS low-pressure trip could be bypassed during cooldown or heatup is small. Further, the increase in the setpoints as proposed in the application is not sufficient to allow a block-permissive when the plant is operating in Modes 1 or 2 due to the large pressure difference between the setpoints discussed herein and the nominal operating steam line pressure of 870 psig.

Based on the above considerations, the staff concludes the proposed TS changes are acceptable.

3.0 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 December 8, 1988 (53 FR 49620). 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.

4.0 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: Albert W. De Agazio

Dated: December 19, 1988

U. S. NUCLEAR REGULATORY COMMISSIONTOLEDO EDISON COMPANY, ET AL.DOCKET NO. 50-346NOTICE OF ISSUANCE OF AMENDMENT TOFACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 126 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 Technical Specification Table 3.3-11 to permit bypass of Functional Unit 1, Main Steam Pressure Low Instrument Channels, when steam pressure is below 700 psig vice 650 psig. It also changed the main steam line pressure for automatic removal of the bypass to 750 psig from 650 psig.

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 May 12, 1988 (53 FR 16920). No request for 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 February 29, 1988, (2) Amendment No.126 to License No. NPF-3, (3) the Commission's related Safety Evaluation dated December 19, 1988. and (4) the Environmental Assessment dated December 8, 1988 (53 FR 49620). All of these items are available for public inspection at the Commission's Public Document Room, 2120 L 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 19th day of December 1988.

FOR THE NUCLEAR REGULATORY COMMISSION



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