February 8, 1991

Docket No. 50-346

Mr. Donald C. Shelton Vice President, Nuclear Toledo Edison Company Edison Plaza - Stop 712 300 Madison Avenue Toledo, Ohio 43652 DISTRIBUTION Docket File NRC & Local PDRs PD33 Gray File JZwolinski PKreutzer MDLynch OGC-WF1 DHagan EJordan

JHannon GHill(4) Wanda Jones JCalvo ACRS(10) GPA/PA Edison ARM/LFMB PD33 r/f AHsia

Dear Mr. Shelton:

SUBJECT: AMENDMENT NO. 153 TO FACILITY OPERATING LICENSE NO. NPF-3 (TAC NO. 68250)

The Commission has issued Amendment No. 153 to Facility Operating License No. NPF-3 for the Davis-Besse Nuclear Power Station, Unit No. 1. The amendment revises the Technical Specifications in response to your application dated March 4, 1988 as supplemented by letters dated May 4 and December 6, 1988.

The portion of the license amendment request related to the main steam safety valve setpoints and ASME Code requirements was issued as Amendment Number 117 on August 24, 1988 (TAC Number 67394). The remaining portion related to the main steam safety valve relief capacity, the high flux trip setpoint, and elimination of Technical Specification Tables 3.7-1 and 4.7-1, is the subject of this amendment under TAC Number 68250.

A copy of the Safety Evaluation and of the notice of issuance are also enclosed. The notice of issuance has been forwarded to the Office of the Federal Register for publication.

The issuance of this amendment completes our work effort under TAC Number 68250.

Sincerely,

Dominic C. Dilanni, Sr. Project Manager Project Directorate III-3 Division of Reactor Projects III/IV/V Office of Nuclear Reactor Regulation

9102180079 910208 PDR ADDCK 05000346 PDR PDR

Enclosures:

- 1. Amendment No. 153 to License No. NPF-3
- 2. Safety Evaluation
- 3. Notice of issuance
- cc w/enclosures: See next page





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Mr. Donald C. Shelton Toledo Edison Company

cc: David E. Burke, Esq. The Cleveland Electric Illuminating Company P. O. Box 5000 Cleveland, Ohio 44101

Mr. Robert W. Schrauder Manager, Nuclear Licensing Toledo Edison Company Edison Plaza 300 Madison Avenue Toledo, Ohio 43652

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Mr. James W. Harris, Director (Addressee Only) Division of Power Generation Ohio Department of Industrial Relations 2323 West 5th Avenue P. O. Box 825 Columbus, Ohio 43216

Ohio Environmental Protection Agency DERR--Compliance Unit PO Box 1049 1800 Watermark Drive ATTN: Zack A. Clayton Columbus, Ohio 43266-0149

President, Board of County Commissioners of Ottawa County Port Clinton, Ohio 43452

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



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

TOLEDO EDISON COMPANY

CENTERIOR SERVICE 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. 153 License No. NPF-3

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Toledo Edison Company, Centerior Service Company and The Cleveland Electric Illuminating Company (the licensees) dated March 4, 1988 as supplemented by letters dated May 4 and December 6, 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:

9102180103 910208 PDR ADOCK 05000346 P PDR (a) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 153, 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 45 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

John N. Hannon, Director Project Directorate III-3 Division of Reactor Projects III/IV/V Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of issuance: February 8, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 153

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	Insert
3/4 7-1	3/4 7-1
3/4 7-2	3/4 7-2
3/4 7-3	3/4 7-3
B 3/4 7-1a	B 3/4 7-1a
-	B 3/4 7-1b

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3/4.7 PLANT SYSTEMS	
3/4.7.1 TURBINE CYCLE	
SAFETY VALVES	
LIMITING CONDITION FOR OPERATION	
3.7.1.1 All main steam line code safety valves s	nall be OPERABLE.
APPLICABILITY: MODES 1, 2 and 3.	
ACTION:	
 With one or more main steam line code safety valve	es inoperable.
a. operation in MODES 1, 2 and 3 may proceed 4 hours, either	provided that, within
 the inoperable value is restored to 0 	PERABLE status, or
 a) the High Flux Trip Setpoint is re 3.7-1 below, and 	duced per Equation
b) there are a minimum of two OPERAB steam generator, at least one wit greater than 1050 psig (<u>+</u> 1%)*, a	LE safety valves per h a setpoint not nd
<pre>c) no OPERABLE safety valve has a se 1100 psig (<u>+</u> 1%)*;</pre>	tpoint greater than
otherwise	
b. be in at least HOT STANDBY within the nex SHUTDOWN within the following 12 hours.	t 6 hours and in HOT
c. The provisions of Specification 3.0.4 are	not applicable.
Equation 3.7-1: SP = $\frac{Y}{Z}$ x W	
where,	
<pre>SP = Reduced High Flux Trip Setpoint (Not W = High Flux Trip Setpoint for four pum in Table 2.2-1 Y = Total OPERABLE relieving capacity per on a summation of individual OPERABL</pre>	to exceed W) p operation as specified r steam generator based E safety valve relief
capacities per steam generator in 1b Z = Required relieving capacity per steam 6,585,600 lbs/hr	s/hr m generator of
SURVEILLANCE REQUIREMENTS	s
4.7.1.1 No additional Surveillance Requirements of Specification 4.0.5, are applicable for the main st	ther than those required by ceam line code safety valves.
*The lift setting pressure shall correspond to ambi at nominal operating temperature and pressure	ent conditions of the valve

DAVIS-BESSE, UNIT 1

Amendment No. 117,132,153

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DAVIS-BESSE, UNIT 1

Amendment No. 48,153

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PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2. Two independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

- a. With one Auxiliary Feedwater System inoperable, restore the inoperable system to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.
- b. With any Auxiliary Feed Pump Turbine Inlet Steam Pressure Interlocks inoperable, restore the inoperable interlocks to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

- 4.7.1.2.1 Each Auxiliary Feedwater System shall be demonstrated OPERABLE:
 - a. At least once per 31 days on a STAGGERED TEST BASIS by:
 - 1. Verifying that each steam turbine driven pump develops a differential pressure of \geq 1070 psid on recirculation flow when the secondary steam supply pressure is greater than 800 psia, as measured on PI SP 12B for pump 1-1 and PI SP 12A for pump 1-2. The provisions of Specification 4.0.4 are not applicable for entry into Mode 3.
 - 2. Verifying that each valve (power operated or automatic) in the flow path is in its correct position.
 - 3. Verifying that all manual valves in the auxiliary feedwater pump suction and discharge lines that affect the system's capacity to deliver water to the steam generator are locked in their proper position.
 - 4. Verifying that valves CW 196, CW 197, FW 32, FW 91 and FW 106 are closed.
 - b. At least once per 18 months by:
 - 1. Verifying that each automatic valve in the flow path actuates to its correct position on an auxiliary feedwater actuation test signal.
 - Verifying that each pump starts automatically upon receipt of an auxiliary feedwater actuation test signal. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

DAVIS-BESSE, UNIT 1

3/4.7 PLANT SYSTEMS

BASES

3/4.7.1 TURBINE CYCLE

3/4.7.1.1 SAFETY VALVES

The OPERABILITY of the main steam line code safety valves ensures that the secondary system pressure will be limited to within 110% of its design pressure of 1050 psig during the most severe anticipated system operational transient. The maximum relieving capacity is associated with a turbine trip from 100% RATED THERMAL POWER coincident with an assumed loss of condenser heat sink (i.e., no steam bypass to the condenser).

The safety valve set pressures and relieving capacities are in accordance with Section III of ASME Boiler and Pressure Vessel Code, 1971 Edition. The Code requires the following:

- 1. At least two pressure-relief valves are required to provide relieving capacity for steam systems.
- 2. The capacity of the smallest pressure-relief valve shall not be less than 50 percent of that of the largest pressure-relief device.
- 3. The set pressure of one of the pressure-relief devices shall not be greater than the maximum allowable working pressure of the system at design temperature.
- 4. Total rated relieving capacity of the pressure-relief devices shall prevent a rise of more than 10 percent above system design pressure at design temperature under any pressure transients anticipated to arise.

These requirements are, respectively, met as follows:

- 1. Nine safety valves are installed per steam generator.
- 2. The relief capacity of two of the nine safety valves per steam generator is 583,574 lbs/hr each, and the capacity of the remaining seven is 845,759 lbs/hr each.
- 3. A minimum of two OPERABLE safety values per steam generator, with a combined total relief capacity of at least 1,167,148 lbs/hr, one with a setpoint not greater than 1050 psig (+/-1%), and one with a setpoint not greater than 1100 psig (+/-1%).

4. The total relieving capacity of all safety values on both main steam lines is 14,175,000 lbs/hr which is 120 percent of the total secondary system flow of 11,760,000 lbs/hr at 100 percent of RATED THERMAL POWER. A maximum safety value setpoint pressure of 1100 psig (+/-1%) assures main steam system pressure remains below 110 percent, or 1155 psig.

B 3/4 7-1

3/4.7 PLANT SYSTEMS

BASES

3/4.7.1.1 SAFETY VALVES (Continued)

STARTUP and/or POWER OPERATION is allowable with safety valves inoperable within the limitations of the ACTION requirements on the basis of the reduction in secondary system steam flow and THERMAL POWER required by the reduced reactor trip settings of the High Flux channels. The reactor trip setpoint reductions are derived on the following bases:

$$SP = \frac{Y}{Z} \times W$$

where:

SP = Reduced High Flux Trip Setpoint (Not to exceed W)

- W = High Flux Trip Setpoint for four pump operation as specified in Table 2.2-1
- Y = Total OPERABLE relieving capacity per steam generator based on a summation of individual safety valve relief capacities per steam generator in lbs/hr
- Z = Required relieving capacity per steam generator of 6,585,600
 lbs/hr

This equation is graphically represented below. Operation is restricted to the area below and to the right of line A.



DAVIS-BESSE, UNIT 1

B 3/4 7-1a Amendment No. 117,122,131,153 Next page is B 3/4 7-1b

3/4.7 PLANT SYSTEMS

BASES

3/4.7.1.2 AUXILIARY FEEDWATER SYSTEMS

The OPERABILITY of the Auxiliary Feedwater Systems ensures that the Reactor Coolant System can be cooled down to less than 280°F from normal operating conditions in the event of a total loss of offsite power. The OPERABILITY of the Auxiliary Feed Pump Turbine Inlet Steam Pressure Interlocks is required only for high energy line break concerns and does not affect Auxiliary Feedwater System OPERABILITY.

Each steam driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 600 gpm at a pressure of 1050 psig to the entrance of the steam generators. This capacity is sufficient to ensure that adequate feedwater flow is available to remove decay heat and reduce the Reactor Coolant System temperature to less than 280°F where the Decay Heat Removal System may be placed in operation.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 153 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 March 4, 1988 as supplemented by letters dated May 4 and December 6, 1988, the Toledo Edison Company and the Cleveland Electric Illuminating Company requested that the Technical Specifications for the Davis-Besse Nuclear Power Station, Unit 1 be revised. The portion of the amendment request related to the main steam safety valve setpoints and ASME Code requirements was issued as Amendment No. 117 on August 24, 1988 (TAC Number 67394). The remaining portion related to the main steam safety valve relief capacity, the high flux trip setpoint, and elimination of Technical Specification (TS) Tables 3.7-1 and 4.7-1 is the subject of the current review under TAC Number 68250.

2.0 DISCUSSION

The proposed changes would: (1) delete TS Table 4.7-1, "Main Steam Line Safety Valve Lift Settings"; (2) remove the reference to Table 4.7-1 from the TS Surveillance Requirement 4.7.1.1; (3) revise TS 3.7.1.1 to specify that the High Flux Trip Setpoint is reduced per Equation 3.7-1; (4) delete TS Table 3.7-1, "Maximum Allowable High Flux Trip Setpoint with Inoperable Steam Line Safety Valves"; (5) revise the Basis to TS 3/4.7.1.1 to incorporate Equation 3.7-1 and its graphic representation for the Reduced High Flux Trip Setpoint.

Table 4.7-1 specifies the number of main steam safety values (MSSVs) with corresponding lift settings. These value settings are not allowed to deviate more than $\pm 1\%$ from the values in Table 4.7-1 for the overpressure protection of the steam generators. These settings are actually in excess of the requirements of the ASME Boiler and Pressure Vessel Code. The steam generator overpressure protection can also be achieved by incorporating

9102180108 910208 PDR ADOCK 05000346 PDR into Action Items of LCO 3.7.1.1, the specification of MSSV valve settings which satisfy the ASME Boiler and Pressure Vessel Code. This was accomplished by Amendment No. 117 on August 24, 1988.

Table 3.7-1 provides a maximum allowable High Flux Trip Setpoint versus the maximum number of inoperable main steam safety valves (MSSV) on any steam generator. The reactor trip setpoint reductions in Table 3.7-1 are calculated based on maximum number of inoperable MSSVs and the maximum relief capability of any safety valve. Therefore, Table 3.7-1 imposes a greater reduction in reactor power than is required for MS system overpressure protection with one or both lower relief capacity MSSVs inoperable. Further, potential future replacement of the existing MSSVs with new safety valves to enhance system operability and reliability is limited to an individual valve relief capacity which does not exceed the 845,759 lb/hr assumed for Table 3.7-1. The proposed TS revisions include deletion of Table 3.7-1 and addition of Equation 3.7-1 which utilizes the total operable MSSV relief capability per steam generator in its calculations.

3.0 EVALUATION

The licensee proposes to eliminate Table 4.7-1, "Main Steam Line Safety Valve Lift Settings," and also to remove the reference to Table 4.7-1 from TS Surveillance Requirement 4.7.1.1. The licensee states that this proposed change will provide greater flexibility in valve set pressure and replacement while maintaining required overpressure protection for the steam generators. It would allow the licensee to change the setpoints of some of the MSSVs without requiring a change to the associated TS.

The TS bases for the MSSVs are to ensure secondary system pressure be limited to within 110% of its design pressure of 1050 psig and the specified valve lift settings are in accordance with requirements of Section III of the ASME Boiler and Pressure Vessel (B&PV) Code. The staff has determined that Table 4.7-1 may not necessarily be the only means to assure proper MSSV setpoints. The requirements of Section III of the ASME B&PV Code, 1971 Edition, are met since: (1) the existing MSSV relief capacity is adequate and unchanged by this revision, and (2) provisions of operability are incorporated into the proposed revisions to LCO 3.7.1.1 requiring a minimum of two operable MSSVs per steam generator (SG), at least one with a setpoint not greater than MS system design pressure, and the other MSSVs with a maximum setpoint of 1100 psig (\pm 1%). Consequently, SG overpressure protection is assured for all anticipated transients. Other administrative controls will also require that two MSSVs per SG shall be set at 1050 psig (\pm 1%). The ASME Code requirements for MS system design pressure protection is, therefore, satisfied even with one MSSV set at 1050 psig per SG inoperable.

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Therefore, the staff finds that the deletion of Table 4.7-1 and its reference in Surveillance Requirement 4.7-1.1 are acceptable.

The licensee also proposes to delete TS Table 3.7-1 and incorporate Equation 3.7-1 into the Limiting Condition for Operation (LCO) to redefine the relationship between the total operable MSSV relieving capacity and the reduced high flux trip setpoint.

Each of the two steam generators in Davis-Besse Unit 1 has nine MSSVs, two with relief capacity of 583,574 lbs/hr each, and the remaining seven with relief capacity of 845,759 lbs/hr each. The operability of these MSSVs is to ensure that the secondary system pressure will be limited to 110 percent of the design pressure of 1050 psig during anticipated operational transients. The maximum relieving capacity is associated with turbine trip from 100 percent rated thermal power coincident with an assumed loss of condenser heat sink and, therefore, no steam bypass to the condenser. If there are inoperable MSSVs, the maximum allowable reactor power would be reduced by using a reduced high flux trip setpoint in the reactor protection system to ensure that the relieving capacity of the remaining operable MSSVs can maintain the secondary system pressure within 110 percent design limit during transients.

The maximum allowable high flux trip setpoint versus the maximum number of inoperable valves on any steam generator is currently specified in TS Table 3.7.1. The reduced setpoints in Table 3.7-1 were derived based on the ratio of the total relief capacity of operable MSSVs to the required total relieving capacity. In the calculation, the total relieving capacity of the operable MSSVs is calculated by subtracting from the total relieving capacity of the nine MSSVs, the total relieving capacity of the inoperable MSSVs which were assumed to be of the higher relieving capacity (845,759 lbs/hr). This is an unnecessary conservatism in the current trip setpoint if the inoperable MSSVs are of the lower capacity. The proposed change of using Equation 3.7.1, in lieu of Table 3.7-1, uses the same relationship that the reduced flux trip setpoint is proportional to the ratio of the total relief capacity of the operable MSSVs to the required total relief capacity, except that the operable MSSV relief capacity is the simple summation of the individual operable MSSV rated capacities. Therefore, the only difference between the current reduced high flux trip setpoint in Table 3.7-1 and the proposed value of Equation 3.7-1 is the removal of the conservatism of assuming the inoperable MSSVs to be of the larger capacity. This revised formula removes the unnecessary conservatism and does not impact any analyzed events of Chapter 15, and is therefore acceptable.

The staff finds that the use of Equation 3.7-1 in lieu of Table 3.7-1 in LCO 3.7.1.1 to redefine the relationship of the reduced high flux trip setpoint and the inoperable MSSVs is acceptable.

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 <u>Federal Register</u> on September 26, 1990 (55 FR 39329). 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: Y. Hsii

Dated: February 8, 1991

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. 153 to Facility Operating License No. NPF-3, issued to The Toledo Edison Company, Centerior Service 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 allowed the main steam safety valve (MSSV) setpoints and the required minimum number of valves to be more consistent with the requirements of ASME Boiler and Pressure Vessel Code. It also redefined the relationship between the total operable MSSV relieving capacity per steam generator and the reduced Reactor Protection System High Flux Trip setpoint.

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

7590-01

on May 24, 1988 (53 FR 18631). 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 March 4, 1988, as supplemented May 4 and December 6, 1988, (2) Amendment No. 153 to License No. NPF-3, (3) the Commission's related Safety Evaluation dated February 8, 1991 and (4) the Environmental Assessment dated September 26, 1990 (55 FR 39329). 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.

Dated at Rockville, Maryland, this 8th day of February 1991.

FOR THE NUCLEAR REGULATORY COMMISSION

Dominic C. Dilanni, Sr. Project Manager Project Directorate III-3 Division of Reactor Projects - III/IV/V Office of Nuclear Reactor Regulation