

Mr. Charles M. Dugger
 Vice President Operations
 Entergy Operations, Inc.
 P. O. Box B
 Killona, LA 70066

April 20, 1998

SUBJECT: ISSUANCE OF AMENDMENT NO. 142 TO FACILITY OPERATING LICENSE
 NPF-38 - WATERFORD STEAM ELECTRIC STATION, UNIT 3 (TAC NO.
 M99080)

Dear Mr. Dugger:

The Commission has issued the enclosed Amendment No. 142 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated June 26, 1997, as supplemented by letter dated September 11, 1997.

The amendment changes the Appendix A TSs by modifying Tables 3.7-1 and 3.7-2. The revision to Table 3.7-1 changes the Main Steam Safety Valves (MSSVs) orifice size from 26 square inches to 28.27 square inches and relocates the orifice size from the TS Table to the TS Bases. The change to correct the orifice size is an editorial change to make the TS consistent with plant design. The changes to Table 3.7-2 delete the provision that allows continued plant operation with three MSSVs inoperable. The proposed amendment will also revise TS Bases 3/4.7.1.1 to remove the equation used for determining the reduced maximum allowable linear power level-high reactor trip settings of TS Table 3.7-2.

A copy of our related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,
 ORIGINAL SIGNED BY:
 Chandu P. Patel, Project Manager
 Project Directorate IV-1
 Division of Reactor Projects III/IV
 Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosures: 1. Amendment No. 142 to NPF-38
 2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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Chandu P. Patel

Chandu P. Patel, Project Manager
Project Directorate IV-1
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Docket No. 50-382

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2. Safety Evaluation

cc w/encls: See next page

Mr. Charles M. Dugger
Entergy Operations, Inc.

Waterford 3

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 142
License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Operations, Inc. (the licensee) dated June 26, 1997, as supplemented by letter dated September 11, 1997, 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-38 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 142, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Chandu P. Patel

Chandu P. Patel, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: April 20, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 142

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

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 areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE PAGES

3/4 7-2
3/4 7-3
B 3/4 7-1

INSERT PAGES

3/4 7-2
3/4 7-3
B 3/4 7-1

TABLE 3.7-1

STEAM LINE SAFETY VALVES PER LOOP

	<u>VALVE NUMBER</u>		<u>LIFT SETTING (\pm 3%)*</u>
	<u>Line No. 1</u>	<u>Line No. 2</u>	
a.	2MS-R613A (MS-106A)	2MS-R619B (MS-106B)	1070 psig
b.	2MS-R614A (MS-108A)	2MS-R620B (MS-108B)	1085 psig
c.	2MS-R615A (MS-110A)	2MS-R621B (MS-110B)	1100 psig
d.	2MS-R616A (MS-112A)	2MS-R622B (MS-112B)	1115 psig
e.	2MS-R617A (MS-113A)	2MS-R623B (MS-113B)	1125 psig
f.	2MS-R618A (MS-114A)	2MS-R624B (MS-114B)	1135 psig

*The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

TABLE 3.7-2

MAXIMUM ALLOWABLE LINEAR POWER LEVEL-HIGH TRIP SETPOINT WITH INOPERABLE
STEAM LINE SAFETY VALVES DURING OPERATION WITH BOTH STEAM GENERATORS

<u>MAXIMUM NUMBER OF INOPERABLE SAFETY VALVES ON ANY OPERATING STEAM GENERATOR</u>	<u>MAXIMUM ALLOWABLE LINEAR POWER LEVEL-HIGH TRIP SETPOINT (PERCENT OF RATED THERMAL POWER)</u>
1	86.8
2	69.4

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% (1210 psia) of its design pressure of 1100 psia 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 specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Vessel Code, 1974 Edition. The MSSVs rated capacity passes the full steam flow at 102% RATED THERMAL POWER (100% + 2% for instrument error) with valves open. A minimum of 2 OPERABLE safety valves per steam generator ensures that sufficient relieving capacity is available for removing decay heat. All the MSSVs have an orifice size of 28.27 in².

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 Power Level-High channels. The reactor trip setpoint reductions are derived on the following bases: An analysis of a loss of condenser vacuum event initiated at the reduced power levels listed in Table 3.7-2 that shows peak steam generator pressures are maintained below 1210 psia.

PLANT SYSTEMS

BASES

3/4.7.1.2 EMERGENCY FEEDWATER SYSTEM

The OPERABILITY of the emergency feedwater system ensures that the Reactor Coolant System can be cooled down to less than 350°F from normal operating conditions in the event of a total loss-of-offsite power.

Each electric-driven emergency feedwater pump is capable of delivering a total feedwater flow of 350 gpm at a pressure of 1163 psig to the entrance of the steam generators. The steam-driven emergency feedwater pump is capable of delivering a total feedwater flow of 700 gpm at a pressure of 1163 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 350°F when the shutdown cooling system may be placed into operation.

The surveillance requirement to verify the minimum pump discharge pressure on recirculation flow ensures that the pump performance curve has not degraded below that used to show that the pumps meet the above flow requirements and is consistent with the requirements of ASME Section XI.

3/4.7.1.3 CONDENSATE STORAGE POOL

The OPERABILITY of the condensate storage pool (CSP) with the minimum water volume ensures that sufficient water is available (173,500 gallons) to cool the Reactor Coolant System to shutdown cooling entry conditions following any design basis accident. Additional makeup water is stored in the wet cooling tower (WCT) basins providing the capability to maintain HOT STANDBY conditions for at least an additional 2 hours prior to initiating shutdown cooling. The total makeup capacity also provides sufficient cooling for 24 hours until shutdown cooling is initiated in the event the ultimate heat sink sustains tornado damage concurrent with the tornado event. The CSP contained water volume limit (91% indicated in MODES 1, 2, and 3) includes an allowance for water not usable because of vortexing and instrumentation uncertainties. This provides an assurance that a minimum of 170,000 gallons of water is available in the CSP for the emergency feedwater system and that 3,500 gallons of water is available in the CSP for use by the component cooling water makeup system. The CSP contained water volume limit (11% indicated in MODE 4) includes an allowance for water not usable because of vortexing and instrumentation uncertainties. This provides an assurance that a minimum of 3,500 gallons of water is available in the CSP for the component cooling water makeup system. If natural circulation is required, the combined capacity (WCT and CSP) is sufficient to maintain the plant at HOT STANDBY for 4 hours, followed by a cooldown to shutdown cooling entry conditions assuming the availability of only onsite power or only offsite power, and the worst single failure (loss of a diesel generator or atmospheric dump valve). This requires approximately 275,000 gallons and complies with BTP RSB 5-1.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 142 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated June 26, 1997, as supplemented by letter dated September 11, 1997, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Waterford Steam Electric Station (SES), Unit 3 (Waterford 3), Technical Specifications (TSs). The requested changes would change TS Table 3.7-1 to revise the main steam safety valve (MSSV) orifice size from 26 in² to 28.27 in² and relocate the orifice size from the TS Table to the TS Bases. The licensee is also revising Table 3.7-2 by deleting the provision that allows continued plant operation with three MSSVs inoperable. The proposed change to TS Bases 3/4.7.1.1 removes the equation used for determining the reduced maximum, allowable linear power level-high reactor trip settings of TS Table 3.7-2. The September 11, 1997, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination or expand the scope of the original Federal Register notice.

2.0 EVALUATION

2.1 Main Steam Safety Valve Orifice Size

Waterford 3 was initially designed with Lonergan safety valves with an orifice size of 26 in². Later during construction, the Crosby safety valve with an orifice size of 28.27 in² was substituted for the Lonergan safety valve. The orifice size of 28.27 in² was used in the safety analyses but the change was never made to the TS. Along with this editorial change the licensee is also requesting to relocate this column of information from the TS LCO to the TS Bases. The relocation of design details from the TS to the Bases is consistent with NUREG-1432, "Combustion Engineering Standard Technical Specification."

Specifically, the licensee is proposing to change TS Table 3.7-1 and TS Bases 3/4.7.2 to indicate the correct MSSVs orifice size and to place this information in the TS Bases.

Section 182a of the Atomic Energy Act (Act) requires that applicants for nuclear power plant operating licenses state TSs and that the TSs be included as a part of the license. The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. That regulation requires that the TS include items in five specific categories, including (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for

operation; (3) surveillance requirements; (4) design features; and (5) administrative controls. However, the regulation does not specify the particular requirements to be included in a plant's TS.

The rule specifies that limiting conditions for operation (and associated surveillances) are to be included in a plant's TS if the item meets one or more of the following criteria: (1) an installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary, (2) a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier, (3) a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier, or (4) a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The orifice size is not related to detection or indication of reactor coolant pressure boundary degradation; is not a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis; is not part of a primary success path to mitigate a design-basis accident or transient; and has not been shown by operating experience or probabilistic risk assessment to be significant to public health and safety. Therefore, this does not meet the 10 CFR 50.36(c)(2)(ii) criteria and is not required to be in TS.

The staff finds the proposed relocation of the MSSV orifice size to the TS bases acceptable.

2.2 Minimum MSSVs Required for Continued Plant Operation

Waterford 3 has six MSSVs located on each main steam line upstream of the main steam isolation valve. The purpose of the MSSVs is to protect both the primary and secondary sides of the plant by removing steam from the main steam line directly to the atmosphere. The valves are sized to remove 100% of the main steam flow at rated conditions.

The limiting event for the Waterford 3 MSSVs is the Loss of Condenser Vacuum which results in a turbine trip on a complete loss of the condenser heat sink. With the condenser unavailable, the MSSVs are required to fully relieve secondary steam to the atmosphere and maintain adequate core cooling.

On January 17, 1997, ABB Combustion Engineering (ABB/CE) issued a 10 CFR Part 21 report regarding the omission of the main steam safety valve piping pressure loss in the safety analyses. This omission could result in a non-conservative analysis because the pressure drop in the system decreases the steam flow rate through the valve, affecting the overpressure protection capability of the MSSVs.

The issuance of the 10 CFR Part 21 report resulted in Waterford 3 reanalyzing the limiting accidents to determine the effect caused by the pressure drop in the main steam safety valve piping. In the reanalysis the licensee modeled the valves with reduced flow to account for the pressure drop between the steam generator and the MSSV inlet. Although the setpoint at the valve inlet did not change, the pressure drop resulted in an increased pressure in the steam

generator. The reanalysis for loss of condenser vacuum accident was performed using NRC approved code CESEC as referenced in TS 6.9.1.11.1, Item 6 for Waterford SES 3.

The resulting peak steam generator pressure and pressurizer pressure for the limiting transient, loss of condenser vacuum, was within their respective acceptance criteria for all MSSVs operable, and for one and two MSSVs inoperable. However, with 3 MSSVs inoperable, the analysis yielded a peak steam generator pressure 1209 psia - too close to the acceptance criteria of <1210 psia.

The licensee has therefore, proposed to allow a maximum of two inoperable MSSVs per steam generator at any time. The associated Linear Power Level-High setpoint is reduced according to the values listed in TS Table 3.7-2 and verified by the loss of condenser vacuum analysis.

TS 3.7.1.1.a currently allows power operation with up to three MSSVs inoperable provided the Linear Power Level-High trip setpoint is reduced within four hours. The licensee is proposing to change this TS to correct the effects of the omission of MSSV piping pressure loss in the safety analyses as disclosed in the 10 CFR Part 21 issued by Westinghouse. The licensee opted to follow recommendation #2 of Information Notice (IN) 94-60, to reanalyze the limiting event for secondary pressure (i.e. Loss of Condenser Vacuum for Waterford 3). The licensee determined that in order to maintain the acceptance criteria loss of condenser vacuum, Waterford could operate with only up to two MSSVs inoperable.

The staff has reviewed the licensee's proposal. The licensee, upon following the recommendation of the staff issued in IN 94-60, imposed greater restrictions on plant operation. These restrictions are based on reanalysis by staff approved methodology of the loss of condenser vacuum transient, therefore, the staff finds it acceptable that Waterford operate with only up to two inoperable MSSVs.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Louisiana State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding 62 FR 38135. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Sarita Brewer

Date: April 20, 1998