

April 17, 1992

cket No. 50-382

Mr. Ross P. Barkhurst  
Vice President Operations  
Entergy Operations, Inc.  
Post Office Box B  
Killona, Louisiana 70066

Dear Mr. Barkhurst:

SUBJECT: ISSUANCE OF AMENDMENT NO. 72 TO FACILITY OPERATING LICENSE  
NPF-38 - WATERFORD STEAM ELECTRIC STATION, UNIT 3 (TAC NO. M77468)

The Commission has issued the enclosed Amendment No. 72 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated May 8, 1991.

The amendment revises the Appendix A Technical Specifications by including additional provisions to protect against low-temperature overpressure of the primary system. This amendment is in response to Generic Letter 90-06, dated June 25, 1990.

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:

David L. Wigginton, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. to NPF-38
- 2. Safety Evaluation

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Docket File	NRC/Local PDR	PD4-1 Reading
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P. Noonan	ACRS(10) (MSP315)	OGC(MS15B18)
D. Hagan	G. Hill(4)	Wanda Jones(MS7103)
C. Grimes(11E22)	PD4-1 Plant File	R. Twigg
OPA(MS2G5)	OC/LFMB(MS4503)	T. Westerman, RIV

OFC	LA:PD4-1	PE:PD4-1	PM:PD4-1	OGC	SRXB	D:PD4-1
NAME	PNoonan	RTwigg	DWigginton	MICHELLE	RJones	JLarkins
DATE	3/16/92	3/18/92	3/19/92	3/23/92	3/20/92	4/8/92

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

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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,

A handwritten signature in cursive script, appearing to read "D. Wigginton".

David L. Wigginton, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 72 to NPF-38
2. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Ross P. Barkhurst  
Entergy Operations, Inc.

Waterford 3

cc:

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

ENERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 72  
License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Energy Operations, Inc. (the licensee) dated May 8, 1991, 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.

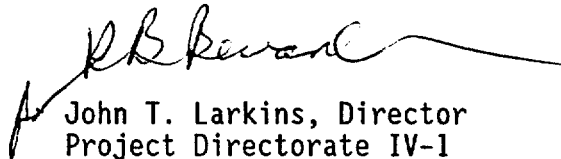
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-38 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 72 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION



John T. Larkins, Director  
Project Directorate IV-1  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: April 17, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 72

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 4-34

3/4 4-35

B 3/4 4-10

INSERT PAGES

3/4 4-34

3/4 4-35

B 3/4 4-10

## REACTOR COOLANT SYSTEM

### PRESSURIZER HEATUP/COOLDOWN

#### LIMITING CONDITION FOR OPERATION

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- 3.4.8.2 The pressurizer shall be limited to:
- A maximum heatup rate of 200°F per hour,
  - A maximum cooldown rate of 200°F per hour, and
  - A maximum spray nozzle usage factor of 0.65.

APPLICABILITY: At all times.

#### ACTION:

- With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.
- With the spray nozzle usage factor > 0.65, comply with requirements of Table 5.7-1.

#### SURVEILLANCE REQUIREMENTS

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- 4.4.8.2.1 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown.
- 4.4.8.2.2 The spray water temperature differential shall be determined to be within the limit at least once per 12 hours during auxiliary spray operation.
- 4.4.8.2.3 Each spray cycle and the corresponding  $\Delta T$  (water temperature differential) shall be recorded whenever main spray is initiated with a  $\Delta T$  (water temperature differential) of > 130°F and whenever auxiliary spray is initiated with a  $\Delta T$  (water temperature differential) of > 140°F.

## REACTOR COOLANT SYSTEM

### OVERPRESSURE PROTECTION SYSTEMS

#### LIMITING CONDITION FOR OPERATION

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3.4.8.3 Two Shutdown Cooling (SDC) System suction line relief valves (SI-406A and SI-406B) shall be OPERABLE with a lift setting of less than or equal to 430 psia.

APPLICABILITY: MODE 4 when the temperature of any RCS cold leg is less than or equal to 285°F<sup>#</sup>, MODE 5, and MODE 6 when the head is on the reactor vessel and the RCS is not vented through a 5.6 square inch or larger vent.

ACTION:

- a. With one SDC System suction line relief valve inoperable in MODE 4, restore the inoperable valve to OPERABLE status within 7 days, or depressurize and vent the RCS through at least a 5.6 square inch vent within the next 8 hours.
- b. With one SDC System suction line relief valve inoperable in MODES 5, or 6, either (1) restore the inoperable valve to OPERABLE status within 24 hours, or (2) complete depressurization and venting of the RCS through at least a 5.6 square inch vent within a total of 32 hours.
- c. With both SDC System suction line relief valves inoperable, complete depressurization and venting of the RCS through at least a 5.6 square inch vent within 8 hours.
- d. In the event either the SDC System suction line relief valve(s) or the RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the SDC System suction line relief valve(s) or RCS vent(s) on the transient, and any corrective action necessary to prevent recurrence.
- e. The provisions of Specification 3.0.4 are not applicable.

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<sup>#</sup>260°F during inservice leak and hydrostatic testing with Reactor Coolant System temperature changes restricted in accordance with Specification 3.4.8.1g.



REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

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4.4.8.3.1 Each SDC System suction line relief valve shall be demonstrated OPERABLE:

- a. by verifying in the control room at least once per 12 hours that each valve in the suction path between the RCS and the SDC relief valve is open.
- b. At least every 30 months when tested pursuant to Specification 4.0.5.

4.4.8.3.2 With the RCS vented per ACTIONS a, b, or c, the RCS vent(s) and all valves in the vent path shall be verified to be open at least once per 12 hours\*.

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\*Except when the vent pathway is provided with a valve which is locked, sealed, or otherwise secured in the open position, then verify these valves open at least once per 31 days.

## REACTOR COOLANT SYSTEM

### 3/4.4.9 STRUCTURAL INTEGRITY

#### LIMITING CONDITION FOR OPERATION

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3.4.9 The structural integrity of ASME Code Class 1, 2, and 3 components shall be maintained in accordance with Specification 4.4.9.

APPLICABILITY: All MODES.

ACTION:

- a. With the structural integrity of any ASME Code Class 1 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature more than 70°F above the minimum temperature required by NDT considerations.
- b. With the structural integrity of any ASME Code Class 2 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature above 200°F, except during hydrostatic testing of components that are nonisolable from the Reactor Coolant System, then restore the structural integrity prior to increasing the Reactor Coolant System temperature more than 30°F above the minimum temperature required by NDT considerations.
- c. With the structural integrity of any ASME Code Class 3 component(s) not conforming to the above requirements, restore the structural integrity of the affected component to within its limit or isolate the affected component from service.
- d. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.4.9 In addition to the requirements of Specification 4.0.5, each reactor coolant pump flywheel shall be inspected per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975.

TABLE B 3/4.4-1 (Continued)

Piece Number	Drawing Number	Code Number	Material	Vessel Location	Drop Weight NDTT(F)	RT <sup>(A)</sup> NDT(F)	Charpy 30 ft-lb. Fix Temp. (F) Long.	Charpy 50 ft-lb. Fix Temp. (F) Long.	35 Mils Lateral Expansion Temp. (F) Long.	Charpy Upper Shelf Energy (ft-lb.) Long.
124-102	741701 6103	M-1003-3	SA533-B CL-I	Intermediate Shell Plate	-50	-42	-22	-2	-10	138
122-102	741701 6103	M-1002-1	SA533-B CL-I	Upper Shell Plate	-40	-8	13	32	23	151
122-102	741701 6103	M-1002-2	SA533-B CL-I	Upper Shell Plate	-20	-20	-20	12	15	128
122-102	741701 6103	M-1002-3	SA533-B CL-I	Upper Shell Plate	-40	-40	-20	0	0	153
154-102	741701 6103	M-1007-1	SA533-B CL-I	Bottom Head Torus	-80	-80	-72	-62	-60	174
152-101	741701 6103	M-1008-1	SA533-B CL-I	Bottom Head Dome	-40	-40	-35	-10	-15	141
104-102	741701 6103	M-1005-1	SA533-B CL-I	Closure Head Torus	-30	-30	-25	0	-2	160
142-101	741701 6103	M-1004-1	SA533-B CL-I	Lower Shell Plate	-50	-15	10	25	20	163
142-101	741701 6103	M-1004-2	SA533-B CL-I	Lower Shell Plate	-20	22	37	62	55	144
142-101	741701 6103	M-1004-3	SA533-B CL-I	Lower Shell Plate	-50	-10	12	30	25	145
102-101	741701 6103	M-1006-1	SA533-B	Closure Head Dome	-50	-25	-5	15	10	138

<sup>(A)</sup> MTEB Position 5-2 "Fracture Toughness Requirements," Paragraph 1.1(3)(b).

## REACTOR COOLANT SYSTEM

### BASES

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#### PRESSURE/TEMPERATURE LIMITS (Continued)

The maximum  $RT_{NDT}$  for all Reactor Coolant System pressure-retaining materials, with the exception of the reactor pressure vessel, has been determined to be 90°F. The Lowest Service Temperature limit line shown on Figures 3.4-2 and 3.4-3 is based upon this  $RT_{NDT}$  since Article NB-2332 of Section III of the ASME Boiler and Pressure Vessel Code requires the Lowest Service Temperature to be  $RT_{NDT} + 100^\circ\text{F}$  for piping, pumps, and valves. Below this temperature, the system pressure must be limited to a maximum of 20% of the system's hydrostatic test pressure of 3125 psia (as corrected for elevation and instrument error).

The limitations imposed on the pressurizer heatup and cooldown rates and spray water temperature differential are provided to assure that the pressurizer is operated within the design criteria assumed for the fatigue analysis performed in accordance with the ASME Code requirements.

The OPERABILITY of the shutdown cooling system relief valve or an RCS vent opening of greater than 5.6 square inches ensures that the RCS will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the RCS cold legs are less than or equal to 285°F. Each shutdown cooling system relief valve has adequate relieving capability to protect the RCS from overpressurization when the transient is either (1) the start of an idle RCP with the secondary water temperature of the steam generator less than or equal to 100°F above the RCS cold leg temperatures or (2) inadvertent safety injection actuation with injection into a water-solid RCS. The limiting transient includes simultaneous, inadvertent operation of three HPSI pumps, three charging pumps, and all pressurizer backup heaters in operation. Since SIAS starts only two HPSI pumps, a 20% margin is realized.

The restrictions on starting a reactor coolant pump in MODE 4 and with the reactor coolant loops filled in MODE 5, with one or more RCS cold legs less than or equal to 285°F, are provided in Specification 3.4.1.3 and 3.4.1.4 to prevent RCS pressure transients caused by energy additions from the secondary system which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures. Maintaining the steam generator less than 100°F above each of the Reactor Coolant System cold leg temperatures (even with the RCS filled solid) or maintaining a large surge volume in the pressurizer ensures that this transient is less severe than the limiting transient considered above.

The automatic isolation setpoint of the shutdown cooling isolation valves is sufficiently high to preclude inadvertent isolation of the shutdown cooling relief valves during a pressure transient.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 72 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated May 8, 1991, Entergy Operations, Inc. (the licensee) submitted a request for changes to the Waterford Steam Electric Station, Unit 3 (Waterford 3), Technical Specifications (TS). The changes would include additional provisions to protect against low-temperature overpressure of the primary system. The amendment is in response to Generic Letter 90-06, "Resolution of Generic Issue 70, 'Power-Operated Relief Valve and Block Valve Reliability,' and Generic Issue 94, 'Additional Low-Temperature Overpressure Protection for Light-Water Reactors,' Pursuant to 10 CFR 50.54(f)," dated June 25, 1991.

Generic Issue (GI) 70, "Power-Operated Relief Valve and Block Valve Reliability," concerns the reliability of power-operated relief valves (PORVs) and block valves and their safety significance in pressurized water reactor plants. Since Waterford 3 does not have PORVs, this issue is not addressed here.

GI-94, "Additional Low-Temperature Overpressure Protection for Light-Water Reactors," concerns the implementation of the requirements set forth in the resolution of Unresolved Safety Issue (USI) A-26, "Reactor Vessel Pressure Transient Protection (Overpressure Protection)." The GL discussed the continuing occurrence of overpressure events and the need to further restrict the allowed outage time for a low-temperature overpressure protection (LTOP) channel in Operating Modes 4, 5, and 6. This issue concerns only Westinghouse and Combustion Engineering facilities.

2.0 EVALUATION

The actions proposed by the NRC staff to improve the availability of the LTOP system substantially increase the overall protection of the public health and safety, and a determination has been made that the attendant costs are justified in view of this increased protection. The technical findings and the regulatory analysis related to GI-94 are discussed in NUREG-1326, "Regulatory Analysis for the Resolution of Generic Issue 94, Additional Low-Temperature Overpressure Protection for Light-Water Reactors."

The changes to the Waterford 3 TS proposed in the licensee's letter of May 8, 1991, are consistent with those proposed in the staff's generic letter. For example, one of the proposed modifications to the TS concerns plant operation in Modes 4, 5, or 6 with an inoperable LTOP channel. The licensee has adopted the staff position that continued operation under such conditions not exceed 24 hours.

Two significant exceptions to GL 90-06 are included in the amendment. The first exception involves TS changes required by GL 90-06 to address a Branch Technical Position (RSB 5-2, "Overpressure Protection of Pressurized Water Reactors While Operating at Low Temperatures"). The position identified the need for additional restrictions when the design base for LTOP includes restrictions on safety injection pump operability and/or differential temperature restrictions for reactor coolant pump (RCP) restart. These changes would add restrictions to the TS on the number of operable charging and high pressure safety injection (HPSI) pumps allowed and establish conditions for the restart of a RCP. At Waterford 3, each relief valve that provides overpressure protection of the reactor coolant system (RCS) during low-temperature conditions is sized for transients due to the simultaneous, inadvertent operation of all three HPSI pumps and all three charging pumps with the pressurizer backup heaters in operation. Since the maximum number of charging and HPSI pumps is already assumed in LTOP design, restricting the number of makeup or injection pumps in the TS is unnecessary. Additionally, TS 3.4.1.3 currently provides conditions for the restart of an RCP that satisfy GL 90-06 recommendations.

Another exception is to the normal maximum temperature set by the Limiting Condition of Operation for the RCS cold leg in Mode 4. A footnote to Waterford 3 TS 3.4.8.3 specifies 260 degrees F, instead of the normal 285 degrees F, as the maximum temperature during inservice leak and hydrostatic testing. This footnote, which was contained in an amendment issued by the NRC on May 30, 1986, allows compliance with TS requirements for establishing the integrity of all ASME Code Class 1, 2, and 3 components, and is retained by this amendment.

The staff has reviewed the licensee's proposed modifications to the Waterford 3 TS. Since the proposed modifications are consistent with the staff's position in the generic letter and justified in the regulatory analysis referred to above, the staff finds the proposed modifications acceptable.

### 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 in 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 (56 FR 29274). 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: R. Twigg

Date: April 17, 1992