Entergy Operations

Entergy Operations, Inc.
P.O. Box B
Killona, LA 70066
Tel 504-739-6661

R. P. Barkhurst
Vice President
Operations
Waterford 3

W3P90-1549
A4.05
QA

January 24, 1991

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Technical Specification Change Request NPF-38-113

Gentlemen:

The attached safety analysis justifies a revision to the surveillance requirements of Waterford 3 Technical Specification 4.4.8.3.1. This change is necessary to ensure that the surveillance requirements accurately reflect the design characteristics of the installed Shutdown Cooling System suction line isolation valves.

Should you have any questions or comments on this matter, please feel free to contact T.W. Gates at (504) 739-6697.

Very truly yours,

RPB/TWG/ssf
Attachments: NPF-38-113
Affidavit
cc: Messrs. R.D. Martin, NRC Region IV
D.L. Wigginton, NRC-NRR
E.L. Blake
R.B. McGehee
NRC Resident Inspectors Office
Administrator Nuclear Energy Division (State of Louisiana)
American Nuclear Insurers

A001
1/1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of	)	
	)	
Entergy Operations, Incorporated	)	Docket No. 50-382
Waterford 3 Steam Electric Station	)	

AFFIDAVIT

R.P. Barkhurst, being duly sworn, hereby deposes and says that he is Vice President Operations - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached Technical Specification Change Request NPF-38-113; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

R.P. Barkhurst
Vice President Operations - Waterford 3

STATE OF LOUISIANA)
) ss
PARISH OF ST. CHARLES)

Subscribed and sworn to before me, a Notary Public in and for the Parish and State above named this 24TH day of JANUARY, 1991.

Steve E. Fa[illegible]
Notary Public

My Commission expires WITH LIFE.

DESCRIPTION AND SAFETY ANALYSIS
OF PROPOSED CHANGE NPF-38-113

Technical Specification Surveillance Requirement 4.4.8.3.1.a verifies the operability of the Shutdown Cooling System suction line relief valves by imposing a periodic check to ensure that the suction line isolation valves are lined up properly (that is, open). The requested Technical Specification amendment merely recognizes design characteristics of the suction line isolation valves and does not impact the effectiveness or the intent of the surveillance requirement as it is currently written.

Existing Specification:

See Attachment A

Proposed Specification:

See Attachment B

Description:

The requested Technical Specification change is a minor revision to the surveillance requirement which verifies the operability of the low temperature overpressure relief valves. The current text reads (in part):

> Each Shutdown Cooling System suction line relief valve shall be demonstrated OPERABLE by verifying that each valve in the suction path between the Reactor Coolant System and the shutdown cooling relief valve is key-locked open in the control room at least once per 12 hours.

In the requested change, the text of the surveillance is altered such that the isolation valves are required to be checked open vice checked key-locked open:

> Each Shutdown Cooling System suction line relief valve shall be demonstrated OPERABLE by verifying that each valve in the suction path between the Reactor Coolant System and the shutdown cooling relief valve is open in the control room at least once per 12 hours.

The Shutdown Cooling (or Residual Heat Removal) System installed at Waterford 3 is a subsystem of the Safety Injection System.

During shutdown cooling operation, a portion of the reactor coolant is diverted to the Shutdown Cooling System (SDCS) headers via the shutdown cooling nozzles located in the Reactor Coolant System (RCS) hot legs. Two Low Pressure Safety Injection (LPSI) pumps deliver the coolant to two shutdown cooling heat exchangers and return it to the RCS through four low pressure safety injection headers connected to the cold legs.

The two system trains are redundant and are designed such that a single active failure will not result in a loss of core cooling capability or prevent the initiation of shutdown cooling nor will it cause overpressurization of the SDCS. Redundant components are powered from separate emergency power supplies.

Because the design temperature and pressure of the SDCS are significantly less than the RCS design limits, each of the SDCS suction lines is equipped with three isolation valves installed in series; two valves are installed inside and one outside of containment. A relief valve is installed in each suction line between the second and third isolation valves.

When placed in service, these relief valves provide low temperature overpressure protection for the RCS system during heatup, cooldown, and during extended cold shutdown periods when the reactor vessel is more susceptible to brittle fracture phenomena. Again, the two reliefs are redundant; no single failure will prevent the remaining valve from protecting the reactor vessel given any event initiating an overpressure transient as a result of an operator error or equipment malfunction.

Because of the critical safety function served by these two relief valves, procedures are in place to ensure a high degree of confidence in their proper operation. The periodic valve lineup check imposed by Technical Specification Surveillance Requirement 4.4.8.3.1.a ensures that neither of the reliefs is inadvertently isolated.

The driving factor behind the Technical Specification amendment request is that the valves in question, while they are key-operated, may only be locked closed. They may not be locked open. This is the conservative design condition; given the fact that SDCS design pressure is much less than normal operating pressure, the ability to lock these valves closed reduces the potential for an Interfacing System Loss of Coolant Accident (ISLOCA) because it provides absolute assurance that the SDCS can not inadvertently be placed in service. Other interlocks and precautions provide further protection against an ISLOCA; an open-permissive interlock prevents the isolation valves from opening when pressurizer pressure is 392 psia or greater. In addition, the power supply circuit breakers for the two motor operated isolation valves are locked open during normal operation.

Conversely, the ability to lock open the four suction line isolation valves would be an undesirable system characteristic. Having these valves locked open would needlessly restrict system flexibility as well as the operators' ability to quickly isolate potential leaks. This is especially critical for casualties when the RCS is at reduced inventory condition and prompt operator response is necessary to minimize coolant loss and ensure the continuity of shutdown cooling flow.

The proposed Technical Specification Surveillance simply deletes the meaningless word "key-locked" because, as currently installed, the valves can not be locked in the open position. What remains then is a requirement that the isolation valves in the suction line be checked open every 12 hours. The end result is a Technical Specification surveillance requirement that accurately reflects the status of the installed equipment and provides the same high degree of confidence in the operability of the low temperature overpressure protection relief valves.

Safety Analysis:

The proposed changes described above shall be deemed to involve a significant hazard consideration if there is a positive finding in any one of the following areas:

1. Will operation of the facility in accordance with these proposed changes involve a significant increase in the probability or consequence of any accident previously evaluated?

   Response: No

   No credit is taken for key-locked open Shutdown Cooling System Isolation valves in any accident previously evaluated. All assumptions and results for previously evaluated accidents remain unchanged by the proposed amendment. As a result, the modification to Technical Specification 4.4.8.3.1 to enable the isolation valves to be checked "open" vice "key-locked open" will not cause an increase in the probability or consequence of any previously evaluated accident.

2. Will the operation of the facility in accordance with the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   The amended surveillance requirement still prompts a valve lineup check once per 12 hours. This check provides the necessary high degree of confidence in the ability of the SDCS suction relief valves to protect the reactor vessel from low temperature overpressure transients.

   Moreover, an amendment to the specification is clearly more desireable than the alternative- that is, an equipment change to satisfy the requirement as it is currently written. Modifying control room equipment in order to provide the capability to key-lock open the suction line isolation valves would provide no measurable safety benefit. On the contrary, it would restrict SDCS flexibility and impede timely operator response to a potential casualty.

   Consequently, operation in accordance with the amended Technical Specification surveillance requirement will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Will the operation of this facility in accordance with the proposed change involve a significant reduction in the margin of safety?

Response: No

No credit is taken in any accident evaluation for the ability to lock open the SDCS suction line isolation valves. From a safety standpoint, the proposed amendment is clearly more desireable than the specification as it is currently written. Operation with the valves "open" vice "key-locked open" provides an increased margin of safety by providing the operational flexibility needed for timely response to SDCS casualties and avoidance of potential loss of shutdown cooling scenarios.

The protection provided by the amended specification is equivalent to that in the current specification. Since this change does not affect any of the assumptions or results of the safety analyses, does not diminish the protection provided by any limiting condition for operation in the Technical Specifications, and does not affect any bases, it does not involve a reduction in the margin of safety.

Safety and Significant Hazards Determination:

Based on the safety analysis described above, it is concluded that: (1) the proposed change does not constitute a significant hazards consideration as defined by 10CFR50.92, (2) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change, and (3) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.