GPU NUCLEAR CORPORATION
OYSTER CREEK NUCLEAR GENERATING STATION

Provisional Operating
License No. DPR-16

Technical Specification
Change Request No. 181
Docket No. 50-219

Applicant submits, by this Technical Specification Change Request No. 181 to the Oyster Creek Nuclear Generating Station Technical Specifications, a change to pages 2.3-2, 2.3-6, and 4.3-1.

By J J Barton for
E. E. Fitzpatrick
Vice President and Director
Oyster Creek

Sworn and Subscribe to before me this 18th day of Dec., 1989.

Diana M. DeBlasio
A Notary Public of NJ

DIANA M. DeBLASIO
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 6-5-91

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	Docket No. 50-219
GPU Nuclear Corporation	)	

CERTIFICATE OF SERVICE

This is to certify that a copy of Technical Specification Change Request No. 181 for Oyster Creek Nuclear Generating Station Technical Specifications, filed with the U.S. Nuclear Regulatory Commission on December 18, 1989 and has this day of December 18, 1989 , been served on the Mayor of Lacey Township, Ocean County, New Jersey by deposit in the United States mail, addressed as follows:

The Honorable Christopher Connors
Mayor of Lacey Township
818 West Lacey Road
Forked River, NJ 08731

By J J Barton for
E. E. Fitzpatrick
Vice President and Director
Oyster Creek

Nuclear

GPU Nuclear Corporation
One Upper Pond Road
Parsippany, New Jersey 07054
201-316-7000
TELEX 136-482
Writer's Direct Dial Number:

December 18, 1989

Mr. Kent Tosch, Director
Bureau of Nuclear Engineering
Department of Environmental Protection
CN415
Trenton, New Jersey 08625

Dear Mr. Tosch:

Subject: Oyster Creek Nuclear Generating Station
Provisional Operating License No. DPR-16
Technical Specification Change Request No. 181

Pursuant to 10CFR50.91(b)(1), please find enclosed a copy of the subject document which was filed with the United States Nuclear Regulatory Commission on December 18, 1989.

Very truly yours,

E. E. Fitzpatrick
Vice President and Director
Oyster Creek

EEF/DJ/cjg
Attachment

Nuclear

GPU Nuclear Corporation
One Upper Pond Road
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TELEX 136-482
Writer's Direct Dial Number:

December 18, 1989

The Honorable Christopher Connors
Mayor of Lacey Township
818 West Lacey Road
Forked River, New Jersey 08731

Dear Mayor Connors:

Enclosed herewith is one copy of Technical Specification Change Request No. 181 for the Oyster Creek Nuclear Generation Station Operating License.

This document was filed with the United States Nuclear Regulatory Commission on December 18, 1989

Very truly yours,

J J Barton for

E. E. Fitzpatrick
Vice President and Director
Oyster Creek

EEF/DJ/cjg
Attachment

OYSTER CREEK NUCLEAR GENERATING STATION
PROVISIONAL OPERATING LICENSE NO. DPR-16
DOCKET NO. 50-219
TECHNICAL SPECIFICATION CHANGE REQUEST NO. 181

Applicant hereby requests the Commission to change Appendix A to the above captioned license as below, and pursuant to 10CFR50.91, an analysis concerning the determination of no significant hazards consideration is also presented:

1.0 SECTIONS TO BE CHANGED

Sections 2.3 and 4.3.

2.0 EXTENT OF CHANGE

Eliminate eight main steam safety valves (safety valves) by taking credit for high flux reactor scram in the safety analysis.

Sections 2.3.F and 4.3.E are revised to delete eight safety valves with the two highest setpoints. The bases for Section 2.3 are revised to incorporate credit for reactor scram for safety valve sizing and change total number of safety valves from sixteen to eight.

3.0 CHANGES REQUESTED

The requested changes are shown on attached Technical Specification pages 2.3-2, 2.3-6 and 4.3-1.

4.0 DISCUSSION

The purpose of this Technical Specification Change Request is to propose the elimination of eight safety valves with the two highest setpoints. Appropriate safety analyses have been performed to demonstrate the acceptability of the reduction in the number of safety valves. A reduction in safety valves would result in significant cost savings in maintenance and surveillance testing. In addition, it is estimated that the deletion of eight safety valves would reduce exposure by 20 man-rem per outage.

The reactor pressure vessel (RPV) and the pressure relief system were designed in accordance with Section I, 1962 edition of the American Society of Mechanical Engineers (ASME) "Boiler and Pressure Vessel Code". Under the provision of Section I, code qualified safety valves must limit the rise in the RPV pressure to less than the ASME code limit. Previous analyses performed to demonstrate compliance with the code requirements did not take credit for reactor scram, electromatic relief valves (EMRVs), turbine bypass valves and the isolation condensers. To satisfy this requirement, Oyster Creek currently employs 16 steam safety valves.

The current version of the ASME code, Section I, allows credit for independent sensing devices that stop the flow of fuel to the boiler. Since the code is for fossil boilers, the analogy for a nuclear plant is that credit for an independent or diverse shutdown system such as flux scram and recirculation pump trip (RPT), would perform the same function of fuel stoppage, i.e. boiler shutdown. Thus, credit could be taken for their functioning in the overpressure protection analysis consistent with the current interpretation of the ASME code. Further, the NRC acceptance (NRC Ltr. 10/31/88, Safety Evaluation) of the GPUN reload license methodology does allow credit for RPT in the overpressure protection analysis.

In addition, NUREG-0800, "Standard Review Plan", indicates that the safety valves should be designed with sufficient capacity to limit the pressure to less than 110% of the reactor coolant pressure boundary (RCPB) design pressure (as specified by ASME Boiler and Pressure Vessel Code, Section III) during the most severe abnormal operational transient with credit for a reactor scram. All BWR plants designed in accordance with Section III of the ASME Code currently take credit for high neutron flux scram for safety valve sizing.

The appropriate code limits are observed for the new configuration. This system has no function during normal operation, and it is anticipated that there is a low probability of safety valve actuation since overpressure is relieved by the isolation condensers, the turbine bypass valves and the EMRVs.

The safety analysis requirements for Oyster Creek have been reviewed in order to establish the analyses that are potentially affected by the reduction in the number of safety valves. In the safety analysis process, no credit is taken for the operation of the safety valves except for the ASME code overpressure protection analysis and the evaluation of anticipated transients without scram (ATWS). These events have been reanalyzed using the NRC approved methodology for Oyster Creek with the exception below, to demonstrate compliance with the appropriate event acceptance limits.

<u>License Basis Analyses</u>

The safety valves at Oyster Creek are required to protect the primary coolant pressure boundary against overpressure. Overpressure protection is provided by limiting peak pressure in the reactor vessel to 110% of design pressure and to 115% of design pressure for the recirculation piping. The RPV design pressure is 1250 psig which requires the limit to be 1375 psig (1390 psia). The recirculation piping design pressure is 1200 psig, which results in a limit of 1380 psig (1395 psia).

For Oyster Creek, a main steam isolation valve (MSIV) closure without scram or credit for operation of the EMRVs, also known as the safety valve sizing transient, is analyzed in the updated FSAR Chapter 15 to determine the adequacy of the safety valves to prevent vessel overpressurization. This event has been demonstrated as being limiting using the NRC approved Oyster Creek safety analysis methodology. In previous license basis analyses, this event analysis was used to cover both the code overpressure protection and ATWS analysis requirements. For this analysis, the MSIVs are assumed to close in 3 seconds, all scram activations fail, and all solenoid-operated relief valves (EMRVs), bypass valves and isolation condenser isolation valves are

assumed to fail. Credit is taken for the RPB. The void collapse results in a power increase followed by a pressure increase which is limited only by the safety valves and the nuclear characteristics of the core design. This transient was analyzed as part of the Cycle 12 reload and resulted in a peak pressure at the bottom of the vessel of 1305 psia which is well below the vessel pressure safety limit of 1390 psia (1375 psig).

In order to evaluate the impact of the reduction in the safety valves on the license basis analysis requirements, it is necessary to evaluate two events in place of the safety valve sizing transient. These two events are the MSIV closure with high flux scram and the MSIV closure ATWS. Previous evaluations have demonstrated that the use of the MSIV closure as the initiating event bounds the spectrum of potential initiating events for Oyster Creek. The analysis results for these two events are described in more detail below.

MSIV Closure with High Flux Scram (8 Safety Valves)

The licensed cycle 12 reload model was used for this analysis with the NRC approved RETRAN-02 Mod4 code. A single change to the model was made to assure conservative results for peak pressure. This involved increasing the rainout velocity in the upper downcomer volume from 3 feet per second to 1000 feet per second. It was observed for this transient that when the level in the upper downcomer dropped below the separator drains, liquid was entrained in the steam region of the upper downcomer and subsequently, some of this liquid was carried over by RETRAN into the upper plenum volume. The use of a large rainout velocity in the upper downcomer volume prevented carry over of liquid and resulted in higher peak pressures.

For the reload transients, the level does not drop below the separators' drains and the 3 feet per second rainout velocity is conservative.

The same assumptions as previously listed were used with the exception of allowing a high flux scram. For this analysis, a scram would normally occur on MSIV closure of 10%. This anticipates the pressure and neutron flux transients which occur during normal or inadvertent valve closure. However, no credit is taken for this scram signal in the analyses. The reactor is assumed to be scrammed by the high flux scram signal at a conservative setpoint of 120% as compared to the actual setpoint of 115.7%.

For this analysis, the eight safety valves (Banks 1 and 2) are assumed to open on a high steam line pressure of 1240 psia (Bank 1-4 valves) and 1249 psia (Bank 2-4 valves), and close on a low steam line pressure of 1190 psia (Bank 1-4 valves) and 1199 psia (Bank 2-4 valves). It was determined that eight safety valves (as opposed to 16 for the license basis analysis) would limit the peak pressure at the bottom of the vessel to 1370 psia, below the code limit of 1390 psia. The pressure in the recirculation piping is 1377 psia which is within the 1395 psia code requirement for the piping.

MSIV Closure ATWS (8 Safety Valves)

A MSIV closure ATWS was evaluated to demonstrate that the results for the postulated ATWS event were acceptable considering the reduction of safety

valves. This transient is analyzed with the same conditions as described above, using eight safety valves, but credit is taken for the EMRVs and for recirculation pump trip. The peak pressure in the reactor vessel was determined to be 1297 psia. Based on these results, the ATWS analysis is less limiting than the above flux scram case and does not have to be reanalyzed for future reloads. This analysis only addresses the overpressurization limits associated with an ATWS since the effects of other limits remain the same with eight or 16 safety valves.

5.0 DETERMINATION

The proposed Technical Specification Change Request does not involve a significant hazards consideration for the reasons as stated below:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated:

   The removal of eight safety valves will not increase the probability of occurrence of an accident previously evaluated in the SAR since the remaining safety valves remain unchanged. The only event initiator that involves a safety valve is a spurious valve opening. The proposed reduction in valves will slightly reduce the probability of a spurious valve opening. Thus, the probability of a valve opening is not increased.

   In the safety analysis process, credit for the operation of the safety valves is only taken in the code overpressure protection and ATWS events. These events have been reanalyzed using the approved Oyster Creek license analysis methodology. With the reduced number of safety valves and no credit for the high flux scram, the peak calculated pressure due to these events previously reported in the Safety Analysis report would be increased. However, with the proposed change to the design basis to take credit for the high flux scram, the appropriate event acceptance limits are satisfied.

   The activity will not significantly increase the probability of occurrence or consequence of a malfunction of equipment important to safety previously evaluated in the SAR based on a reliability analysis of RPT, EMRVs and remaining safety valves (8) which shows that the likelihood of reactor vessel overpressure due to an ATWS remains very small. Also, since there will be eight fewer safety valves, the likelihood of an initiating event involving spurious opening of a safety valve is reduced.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   The proposed activity does not create a possibility for an accident or malfunction of a different type than any previously identified in the SAR since existing safety valves remain unchanged, and no systems are affected by this modification. Analyses demonstrate that all of the appropriate event acceptance limits have been satisfied for the proposed new configuration.

The eight safety valves removed will be replaced with blind flanges to maintain the reactor coolant pressure boundary (RCPB). After installation, initial service leak test will be performed, thus assuring the integrity of the RCPB.

3. Involve a significant reduction in a margin of safety.

The margin of safety as presently defined in the basis for the Technical Specifications does not take credit for high flux scram. This Technical Specification Change Request proposes to take credit for high flux scram and then require only eight safety valves to mitigate the consequences of a MSIV closure transient.

For the purposes of this evaluation, the margin of safety is defined as the margin between the safety limit and fission product barrier failure. Because the event does not exceed the event limit (1375 psig), the margin of safety is not reduced.

6.0 IMPLEMENTATION

It is requested that the amendment authorizing this change become effective for operating Cycle 13.