

YANKEE ATOMIC ELECTRIC COMPANY

Telephone (617) 872-8100
TWX 710-380-7619

1671 Worcester Road, Framingham, Massachusetts 01701

2.C.2.1
FYR 85-91

August 30, 1985

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Office of Nuclear Reactor Regulation

References: (a) License No. DPR-3 (Docket No. 50-29)
(b) YAEK Letter to USNRC, dated February 21, 1984 (FYR 84-22)
and Supplement, dated May 17, 1984 (FYR 84-58)
(c) YAEK Letter to USNRC, dated August 16, 1985 (FYR 85-88)
(d) USNRC Letter to YAEK, dated May 22, 1985 (NYR 85-88)

Subject: Core XVIII Refueling - Cycle-Dependent Parameters

Dear Sir

Pursuant to Section 50.59 of the Commission's Rules and Regulations, the Yankee Atomic Electric Company hereby requests the authorization to make the following changes:

PROPOSED CHANGE

Reference is made to the Technical Specifications and the "Yankee Nuclear Power Station Core XVII Performance Analysis" [Reference (b)] of License No. DPR-3.

1. We propose to refuel the reactor for Core XVIII operation by replacing 40 fuel assemblies.
2. We propose to modify the Technical Specifications for the reasons described below. The proposed Technical Specification changes are given in Attachment A.

REASON AND BASIS FOR CHANGE

Technical Specification changes are proposed for:

1. A 50°F increase in the maximum allowable core inlet temperature to accommodate possible future increased in this parameter;
2. A Linear Heat Generation Rate (LHGR) limit based on a revised LOCA analysis that takes into account worst-case axial power shapes in order to assure compliance with Appendix K of 10CFR, Part 50;

w/check
\$150.00
#08-5996A

A001
1/40

Add: NRR/DSI/CPB
RGN2/DRSS/LPRPB
RM/DRAMI/MIB

Ltr Encl
1
1
1
1

8509050180 850830
PDR ADOCK 05000029
PDR

3. A revised basis for determining control-rod-motion-related peaking multipliers to be applied to measured LHGR for comparison to the LOCA limit, consistent with the revised basis for determining the LOCA limit mentioned above;
4. Statistically combining independent uncertainty parameters for application to the measured LHGR to provide a conservative upper bound for comparison to the LOCA limit; and
5. A setpoint change to the Safety Injection Actuation Signal (SIAS) from 1700 psig to 1650 psig in order to avoid inadvertent Safety Injection actuations on reactor trips.

The specific changes and reasons for the changes are shown in Attachment A. The Core XVIII Performance Analysis Report (YAEC-1496), which supports Core XVIII operation and provides the basis for the attached Technical Specification changes, is provided as Attachment B. This report addresses the mechanical design, thermal-hydraulic design, physics and safety analysis aspects of the refueling.

SAFETY CONSIDERATION

Yankee Atomic has evaluated the Core XVIII reload and has concluded that it does not involve a significant hazards consideration. A summary of our evaluation follows:

As discussed in Attachment B, the fresh fuel assemblies used in the Core XVIII design are being manufactured by Combustion Engineering and are not significantly different than those previously approved for use at the Yankee Nuclear Power Station. The acceptance criteria for the Technical Specifications associated with the Core XVIII design are the same as the acceptance criteria for the current Technical Specifications. The analytical methods used to demonstrate conformance of the Core XVIII design have been previously found acceptable by the NRC except for a minor modification in methods employed to analyze the Loss-of-Coolant Accident (LOCA). The minor change to LOCA methodology was described in Reference (c). Discussions with the NRC staff indicate that the minor modification to our LOCA methodology will be acceptable. The same approach has been previously applied by Exxon Nuclear Corporation on other facilities. The NRC has previously approved the approach on these other plants.

Additional changes for Core XVIII include an increase in the maximum allowable core inlet temperature from 515°F to 520°F, a setpoint change to SIAS from 1700 psig to 1650 psig, a revised LOCA analysis accounting for worst-case axial power shapes as requested in Reference (d), and a statistical method for combining independent uncertainty parameters for application to the measured LHGR. These changes have been evaluated for the Yankee Core XVIII design.

The changes associated with Core XVIII do not affect the probability of an accident previously evaluated in the Yankee FSAR. The effect of Core XVIII

operation on the consequences of accidents previously evaluated in the Yankee FSAR is presented in Sections 7 and 9 of Attachment B. As shown in Attachment B, the consequences of accidents previously evaluated have not significantly increased and continue to be well within applicable acceptance criteria.

The changes associated with Core XVIII have been evaluated, and we have concluded that they do not create the possibility of a new or different kind of accident from any previously evaluated.

The margin of safety of the Core XVIII design is evaluated in Sections 4, 5, 6, 7 and 9 of Attachment B. The physics, fuel performance, thermal-hydraulic and transient response characteristics of Core XVIII are not significantly different from previous reload cores, and thus, the Core XVIII design does not involve a significant reduction in the margin of safety.

In summary, the Yankee Core XVIII Core Performance Analysis demonstrates that the Core XVIII design does not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or
2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or
3. Involve a significant reduction in a margin of safety.

Therefore, we have concluded that the Core XVIII design does not involve a significant hazards consideration.

Based on the consideration contained herein, it is concluded that there is reasonable assurance that operation of the Yankee plant consistent with the proposed Technical Specifications will not endanger the health and safety of the public. This proposed change has been reviewed by the Nuclear Safety Audit and Review Committee.

FEE

An application fee of \$150.00 is enclosed in accordance with 10CFR170.21.

SCHEDULE OF CHANGE

These changes to the Yankee Technical Specifications will be implemented upon Commission approval. A timely review and approval of this submittal consistent with our schedule for Core XVIII startup would be appreciated. Therefore, since Core XVIII is scheduled to commence operation on November 30, 1985, we request approval of this submittal by November 11, 1985.

August 30, 1985
Page 4

Very truly yours,

J. H. Heider

LHH/gms

COMMONWEALTH OF MASSACHUSETTS)
MIDDLESEX COUNTY) ss)

Robert H. Green

Robert H. Groce	Notary Public
My Commission Expires	August 29, 1991

