March 10, 1994

Docket No. 50-443
Serial No. SEA-94-007

Mr. Ted C. Feigenbaum
Senior Vice President
and Chief Nuclear Officer
North Atlantic Energy Service Corporation
Post Office Box 300
Seabrook, New Hampshire 03874

Dear Mr. Feigenbaum:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION: CORE THERMAL LIMIT PROTECTION FUNCTION SETPOINT METHODOLOGY (TAC M86959)

A preliminary review of Yankee Atomic Electric Company Topical Report YAEC-1854P, Core Thermal Limit Protection Function Setpoint Methodology, reveals that the information identified in the enclosure to this letter is required for us to continue with the review. The proposed methodology for Seabrook is based on use of the Maine Yankee setpoint methodology which has been approved by the NRC. The proposed application to Seabrook would be an extension of this approved methodology.

Because we are certain that you understand that time is of the essence, we are not requesting the information by a specific date, but you should be aware that if there is a delay in satisfying the staff's needs, we might not be able to complete the review in a timely manner, and the staff has the option of rejecting the application for incompleteness.

The requirements of this letter affect fewer than 10 respondents, and, therefore, are not subject to Office of Management and Budget review under P.L. 96-511.

Sincerely,
Original signed by:

Albert W. De Agazio, Sr. Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated
cc w/enclosure:
See next page
DISTRIBUTION:

Docket File	SNorris
NRC & Local PDRs	ADeAgazio
PDI-4 Plant	OGC
SVarga	ACRS (10)
JCalvo	JRogge, RI

110028

OFFICE:	LA:PDI-4	PM:PDI-4	D:PDI-4		
NAME:	SNorris	ADeAgazio:bo	JStolz		
DATE:	3/10/94	3/10/94	3/10/94		

OFFICIAL RECORD COPY
DOCUMENT NAME: G:\DEAGAZIO\6695RAI

March 10, 1994

Docket No. 50-443
Serial No. SEA-94-007

Mr. Ted C. Feigenbaum
Senior Vice President
and Chief Nuclear Officer
North Atlantic Energy Service Corporation
Post Office Box 300
Seabrook, New Hampshire 03874

Dear Mr. Feigenbaum:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION: CORE THERMAL LIMIT PROTECTION FUNCTION SETPOINT METHODOLOGY (TAC M86959)

A preliminary review of Yankee Atomic Electric Company Topical Report YAEC-1854P, Core Thermal Limit Protection Function Setpoint Methodology, reveals that the information identified in the enclosure to this letter is required for us to continue with the review. The proposed methodology for Seabrook is based on use of the Maine Yankee setpoint methodology which has been approved by the NRC. The proposed application to Seabrook would be an extension of this approved methodology.

Because we are certain that you understand that time is of the essence, we are not requesting the information by a specific date, but you should be aware that if there is a delay in satisfying the staff's needs, we might not be able to complete the review in a timely manner, and the staff has the option of rejecting the application for incompleteness.

The requirements of this letter affect fewer than 10 respondents, and, therefore, are not subject to Office of Management and Budget review under P.L. 96-511.

Sincerely,

Original signed by:

Albert W. De Agazio, Sr. Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated
cc w/enclosure:
See next page
DISTRIBUTION:

Docket File	SNorris
NRC & Local PDRs	ADeAgazio
PDI-4 Plant	OGC
SVarga	ACRS (10)
JCalvo	JRogge, RI

OFFICE:	LA:PDI-4	PM:PDI-4	D:PDI-4		
NAME:	SNorris	ADeAgazio:bp	JStolz for		
DATE:	3/10/94	3/10/94	3/10/94		

OFFICIAL RECORD COPY
DOCUMENT NAME: G:\DEAGAZIO\8695RAI

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

March 10, 1994

Docket No. 50-443
Serial No. SEA-94-007

Mr. Ted C. Feigenbaum
Senior Vice President
and Chief Nuclear Officer
North Atlantic Energy Service Corporation
Post Office Box 300
Seabrook, New Hampshire 03874

Dear Mr. Feigenbaum:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION: CORE THERMAL LIMIT PROTECTION FUNCTION SETPOINT METHODOLOGY (TAC M86959)

A preliminary review of Yankee Atomic Electric Company Topical Report YAEC-1854P, Core Thermal Limit Protection Function Setpoint Methodology, reveals that the information identified in the enclosure to this letter is required for us to continue with the review. The proposed methodology for Seabrook is based on use of the Maine Yankee setpoint methodology which has been approved by the NRC. The proposed application to Seabrook would be an extension of this approved methodology.

Because we are certain that you understand that time is of the essence, we are not requesting the information by a specific date, but you should be aware that if there is a delay in satisfying the staff's needs, we might not be able to complete the review in a timely manner, and the staff has the option of rejecting the application for incompleteness.

The requirements of this letter affect fewer than 10 respondents, and, therefore, are not subject to Office of Management and Budget review under P.L. 96-511.

Sincerely,

Albert W. De Agazio

Albert W. De Agazio, Sr. Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

cc:

Thomas Dignan, Esq.
John A. Ritsher, Esq.
Ropes and Gray
One International Place
Boston, Massachusetts 02110-2624

Mr. Peter Brann
Assistant Attorney General
State House, Station #6
Augusta, Maine 04333

Resident Inspector
U.S. Nuclear Regulatory Commission
Seabrook Nuclear Power Station
Post Office Box 1149
Seabrook, New Hampshire 03874

Jane Spector
Federal Energy Regulatory Commission
825 North Capital Street, N.E.
Room 8105
Washington, DC 20426

Mr. T. L. Harpster
North Atlantic Energy Service
Corporation
Post Office Box 300
Seabrook, New Hampshire 03874

Town of Exeter
10 Front Street
Exeter, New Hampshire 03823

Gerald Garfield, Esq.
Day, Berry and Howard
City Place
Hartford, Connecticut 06103-3499

Mr. R. M. Kacich
Northeast Utilities Service Company
Post Office Box 270
Hartford, Connecticut 06141-0270

Mr. George L. Iverson, Director
New Hampshire Office of Emergency
Management
State Office Park South
107 Pleasant Street
Concord, New Hampshire 03301

Regional Administrator, Region I
U.S. Nuclear Regulatory Commmission
475 Allendale Road
King of Prussia, Pennsylvania 19406

Office of the Attorney General
One Ashburton Place
20th Floor
Boston, Massachusetts 02108

Board of Selectmen
Town of Amesbury
Town Hall
Amesbury, Massachusetts 01913

Mr. Jack Dolan
Federal Emergency Management Agency
Region I
J.W. McCormack Post Office &
Courthouse Building, Room 442
Boston, Massachusetts 02109

Mr. David Rodham, Director
Massachusetts Civil Defense Agency
400 Worcester Road
Post Office Box 1496
Framingham, Massachusetts 01701-0317
ATTN: James Muckerheide

Jeffrey Howard, Attorney General
G. Dana Bisbee, Deputy Attorney
General
Attorney General's Office
25 Capitol Street
Concord, New Hampshire 03301

Mr. Robert Sweeney
Bethesda Licensing Office
Suite 610
3 Metro Center
Bethesda, Maryland 20814

Request for Additional Information
Review of YAEC-1854P

1. Provide a flow chart depicting steps (including computer codes used) taken to determine OPDT and OTDT trip setpoints. Indicate on the chart which variables are transferred onto the next block. In addition, indicate on the diagram those steps which are cycle-dependant (redone with each cycle).

2. Statistical allowance for uncertainties is discussed only with respect to generation of the MSSV Limit Lines. In all other formulations, there was no mention of any uncertainties. This stands in contrast to the approved methodology (which is proposed to simply be extended to Seabrook by this submittal) in which uncertainties were incorporated at each step. Discuss how uncertainties (and their sizes) are accounted for with each step in this proposed methodology.

3. Since the statistical DNB methodology documented in YAEC-1869P is to be used in generation of TLLs, discuss thoroughly and quantitatively differences in the overall setpoints introduced by the use of the RTDP, in DNB analysis from the current setpoints being used.

4. Explain how crediting the effects of fuel and moderator temperature reactivity feedback at overpower conditions is equivalent to crediting the action of the VOPT.

5. Explain, using illustrations, how the proposed methodology addresses overpower events from reduced power at Seabrook by expanding the last full paragraph on p.23 for P_L and the full paragraph on p.35 for P_D.

6. The formulation of the "tent" as shown on Figure 3-1 is based upon 23 data points. Justify that this constitutes a complete set of cases to be considered for this purpose.

7. Explain the method of determining the base Overpower Trip equation line on Figure 3-3. Explain thoroughly how K_4 was "fitted".

8. Discuss and justify the process used to determine a set of thermal-hydraulic conditions used for the determination of P_D.

9. Ref. Figure 3-5. The overpower DT line on the top figure of Figure 3-5 appears to be a straight line. Demonstrate that this line is equivalent to the line corresponding to the OPDT line on the bottom figure. In addition, discuss the difference between the OPDT lines on Figure 3-3 and 3-5.

10. Discuss criteria by which a "judicious" choice of the reference power distribution is made.

11. Discuss and justify the process by which an "artificial power distribution" is chosen for cycle independence. Provide a table listing all parameters (in the methodology) which are cycle-independent and justify the cycle-independence of each.

12. Discuss how three constant coefficients were fitted for the OTDT trip setpoint equation.

13. Provide a detailed discussion of how the coefficients are reduced to account for the power overshoot.

14. Explain thoroughly how the uncertainties in delta-I measurements are accounted for in the development of the delta-I LCO band (p.64).

15. Provide a detailed discussion of the first paragraph regarding the selection of initial power distributions on p.72.

16. Indicate on Figure 3-11 the selected limiting drops, and similarly draw a curve on Figure 3-12 indicating the conservative lower bounding curve to envelope the tilt versus dropped worth data.

17. Discuss the method and the codes used to simulate the multi-dimensional core physics due to rod position when determining the LCO band.

18. Provide details of (1) the RETRAN auxiliary DNBR calculation as used by YAEC and (2) modeling of the dropped rod reactivity insertion.

19. Explain and justify the YAEC hot channel search algorithm used in the Seabrook methodology and the method of ranking the candidate hot subchannel locations by their closed channel MDNBR values.