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TNovak

DEC 18 1981

Mr. Robert H. Groce  
Senior Engineer - Licensing  
Maine Yankee Atomic Power Company  
1671 Worcester Road  
Framingham, Massachusetts 01701



Dear Mr. Groce:

We have reviewed your "60 day" response dated November 2, 1981, to our letter dated August 21, 1981, concerning Pressurized Thermal Shock (PTS). Enclosure 1 to this letter identifies additional information needed as a result of our review of your response. We request that the additional information identified in Enclosure 1 be provided with your "150-day" response to our August 21 letter.

In addition, we have been assessing what information will be provided in the "150-day" responses due in January 1982 and the information expected to be supplied from the PWR Owners' Group. Since the staff is committed to provide its recommendations for further actions regarding PTS to the Commission in the Spring of 1982, it is important that your "150-day" response to our August 21 letter provide two significant pieces of information. First, you must provide your basis for continued operation, pending completion of any longer term studies. We emphasize that continued operation of your facility, without any immediate modifications to your facility or its operation, will be dependent upon our evaluation of your response. Secondly, your response should fully address the information addressed in Enclosure 2. We have prepared Enclosure 2 to provide amplification to the "150-day" information request of the August 21, 1981 letter.

The additional information requested by this letter should be provided in accordance with 10 CFR 50.54(f) of the Commission's regulations.

The reporting and/or recordkeeping requirements of this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by:

Thomas M. Novak, Assistant Director  
for Operating Reactors  
Division of Licensing

D: DST  
SHanauer  
12/18/81

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PDR ADOCK 05000309  
PDR

\*See previous 318 for concurrence.

Enclosures:

OFFICE	1. Evaluation of the "60-day" Response to 8/21/81 Ltr.	ORB#4:DL	ORB#3:DL*	C-ORB#3:DL	AD-OR:DL
SURNAME	2. Amplification of "150-day" Requests to 8/21/81 Ltr.	GVising/cb	BRequa	RAClark	TNovak
DATE		12/ /81	12/ /81	12/ /81	12/18/81

cc w/enclosures:

OFFICIAL RECORD COPY

(3) Your assessment of the sensitivity of your analyses to uncertainties in input values, such as initial crack size, copper content, fluence, and initial reference temperature at welds.

(4) A list of assumptions relied upon in reaching your conclusions.

- a. If this list includes "credit" for operator actions, describe the basic instructions given the operators (for example, if a "sub-cooling" band is used, describe it). Submit the procedures the operator will follow, and describe the training being given to establish operator readiness to cope with PTS events.
- b. If the list includes credit for the effects of warm prestressing for some event sequences, include your justification and analyses showing that such events will follow a pressure-temperature pathway for which warm pre-stress is effective.

The reporting and/or recordkeeping requirements of this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Thomas H. Novak, Assistant Director  
for Operating Reactors  
Division of Licensing

Enclosure:

Evaluation of 60 Day  
Response to 8/21/81  
NRC ltr. on PTS &  
Request for Additional  
Information

cc w/enclosure:  
See next page

OFFICE	ORB#3:DL	ORB#4:DL	C-ORB#3:DL	DST	AD-OR:DL		
SURNAME	GRega;cf	GVising	RClark	SHanauer	TNovak		
DATE	12/17/81	12/ /81	12/ /81	12/ /81	12/18/81		

Maine Yankee Atomic Power Company

cc:

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EVALUATION OF THE MAINE YANKEE ATOMIC POWER COMPANY 60 DAY RESPONSE TO THE  
NRC LETTER DATED AUGUST 21, 1981 CONCERNING PRESSURIZED THERMAL SHOCK (PTS)  
AND REQUEST FOR ADDITIONAL INFORMATION

MAINE YANKEE ATOMIC POWER PLANT

DOCKET 50-309

1.  $RT_{NDT}$  values

Your response of November 2, 1981, provided an initial  $RT_{NDT}$  value of  $-30^{\circ}F$  for the weld metal, which we understand was for the surveillance weld and which matched the circumferential beltline weld material. For the longitudinal beltline welds, which are more critical for PTS events, your letter dated October 27, 1981, provided an initial  $RT_{NDT}$  value of  $+10^{\circ}F$  as estimated per branch technical position MTEB 5.2. This is the value we intend to use unless you can support a lower value based on tests of archival material, previously unreported data from vessel vendor's records, or a sound generic study of representative welds (in that order of preference). We cannot determine if the vessel ID fluence of  $5.4 \times 10^{18} n/cm$  as of September 30, 1981, is the fluence for the critical longitudinal welds. Please verify or provide the peak fluence at the critical longitudinal welds. When the above is provided we will then be able to verify your current  $RT_{NDT}$  values or determine another value which we will use in our independent assessments.

2. Rate of Increasing  $RT_{NDT}$

Before we can verify your end of life  $RT_{NDT}$  values we must have the increase in fluence per EFPY at the critical longitudinal welds. This is particularly necessary if you contemplate changing core configurations. Also we request the copper and nickel content of the critical longitudinal welds.

3. & 4.  $RT_{NDT}$  Limit and Basis for the Limit

Since the "60 day" response stated that you do not consider a limit on  $RT_{NDT}$  to be an appropriate basis for continued operation, the staff needs to develop a quantitative criterion for continued operation that, if implemented, would assure maintenance of an acceptable low risk of vessel failure from PTS events for the near-term, pending longer term results of more detailed analysis or research. We will be developing this criterion considering recommendations that you may provide in your "150 day" response.

## 5. Operator Actions

The extent to which the overall concern of thermal shock which is being emphasized at Maine Yankee has been the subject of discussion between staff personnel (Project Manager and Resident Inspector). From these discussions we recognize that PTS has received some emphasis in training and procedures and operators at Maine Yankee are sensitive to thermal shock considerations. However, we cannot determine from your "60 day" response to our letter of August 21, 1981 the degree of emphasis which is currently placed on the need for changes in procedures, training and management involvement.

We request that you expand your response to provide us a more detailed discussion of what steps have been taken to ensure that your operators have a firm grasp of the issue and can be expected to cope with the events which serve to initiate PTS.

ENCLOSURE (2)

AMPLIFICATION OF THE "150-DAY" REQUEST

TO THE AUGUST 21, 1981 LETTER

- (1) Identification of the PTS events that were considered in reaching your conclusions, and a justification for PTS events that you did not consider. You should include a quantitative assessment of the probability of occurrence of the various PTS events considered and not considered and an accompanying assessment of the likelihood of vessel failure vs. EFPY for the events. The manner in which you considered multiple failures of systems, components, and those resulting from operator actions should be described in detail.
- (2) A description of the steps, if any, you are taking now or plan to take in the near future to delay the rate of further embrittlement of your vessel, and your assessment of the effectiveness of those steps.
- (3) Your assessment of the sensitivity of your analyses to uncertainties in input values, such as initial crack size, copper content, fluence, and initial reference temperature at welds.
- (4) A list of assumptions relied upon in reaching your conclusions.
  - a. If this list includes "credit" for operator actions, describe the basic instructions given the operators (for example, if a "sub-cooling" band is used, describe it). Submit the procedures the operator will follow, and describe the training being given to establish operator readiness to cope with PTS events.
  - b. If the list includes credit for the effects of warm prestressing for some event sequences, include your justification and analyses showing that such events will follow a pressure-temperature pathway for which warm pre-stress is effective.