

OYSTER CREEK NUCLEAR GENERATING STATION

PROVISIONAL OPERATING LICENSE DPR-16

(DOCKET NO. 50-219)

Applicant hereby requests the Commission to change Appendix A to the above captioned license as follows:

1. Sections to be changed:

Section 3.3

2. Extent of Changes:

To incorporate the results of a fracture toughness evaluation which:

(i) includes curves for

- (a) inservice hydrostatic testing
- (b) non-critical reactor operation,
- (c) critical reactor operation,
based upon ten effective full power
years of reactor operation;

(ii) accounts for effects of fast neutron fluence calculated for the 1/4T (one quarter of wall thickness) location of the reactor vessel wall.

3. Changes requested:

A. Delete old Figure 3.3.1 and replace with new Figures 3.3.1

B. Delete Specification 3.3.A and replace with the following:

A. Pressure Temperature Relationships

- (i) Hydrostatic Leakage Tests - the minimum reactor vessel temperature for hydrostatic leakage tests at a given pressure shall be in excess of that indicated by curve A of Figure 3.3.1.
- (ii) Heatup and Cooldown Operations: Reactor non-critical--the minimum reactor vessel temperature for heatup and cooldown operations at a given pressure when the reactor is not critical shall be in excess of that indicated by Curve B of Figure 3.3.1

1112 290

7910090

222

(iii) Power operations--The minimum reactor vessel temperature for power operations at a given pressure shall be in excess of that indicated by curve C of Figure 3.3.1.

(iv) Appropriate new pressure temperature limits must be approved as part of this Technical Specification when the reactor system has reached ten effective full power years of reactor operation.

C. Delete Specification 3.3. B and replace with the following:

(B) Reactor Vessel Closure Head Bolt-down

The reactor vessel closure head studs may be elongated by .020" (1/3 design preload) with no restrictions on reactor vessel temperature as long as the reactor vessel is at atmospheric pressure. Full tensioning of the studs is not permitted unless the temperature of the reactor vessel flange and closure head flange is in excess of 100°F.

D. Delete the second through sixth paragraphs of the bases and replace with the following:

The Oyster Creek reactor vessel was designed and manufactured in accordance with General Electric Specification 21A1105 and ASME Section I as discussed in Reference 13. The original operating limitations were based upon the requirement that the minimum temperature for pressurization be at least 60°F greater than the nil ductility transformation temperature. The minimum temperature for pressurization at any time in life had to account for the toughness properties in the most limiting regions of the reactor vessel, as well as the effects of fast neutron embrittlement.

Figure 3.3.1 is derived from an evaluation of the fracture toughness properties performed for Oyster Creek (Reference 12) in an effort to establish new operating limits. The results of neutron flux dosimeter analyses in Reference 12 indicate that the total fast neutron fluence (>1 Mev) expected for Oyster Creek at the end of ten effective fuel power years of operation is 1.22×10^{18} nvt on the inside surface of the reactor vessel core region shell. A conservative fast neutron fluence of 75% of this value is assumed at the 1/4 T (one quarter of wall thickness) location for the preparation of the pressure/temperature curves in Figure 3.3.1.

Stud tensioning is considered significant from the standpoint of brittle fracture only when the preload exceed approximately 1/3 of the final design value. No vessel or closure stud minimum temperature requirements are considered necessary for preload values below 1/3 of the design preload with the vessel depressurized since preloads below 1/3 of the design preload result in vessel closure and average bolt stresses which are less than 20% of the yield strengths of the vessel and bolting materials. Extensive service experience with these materials has confirmed that the probability of brittle fracture is extremely remote at these low stress levels, irrespective of the metal temperature.

E. References - Pages 3.3-6

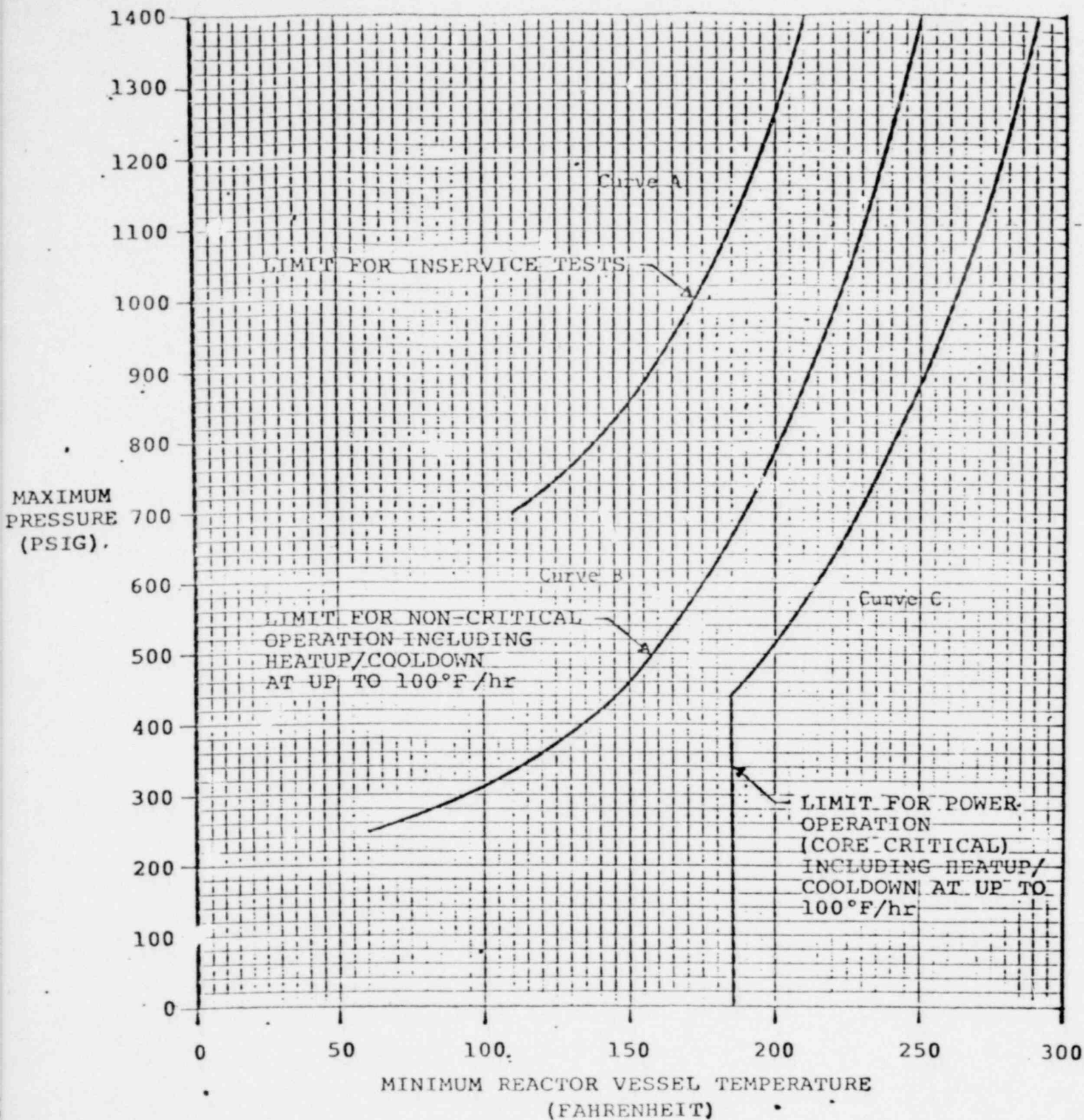
Delete references 2,3, and 5 and add References 12 and 13 as follows:

(12) Licensing Application Amendment 68, Supplement No. 6, Addendum No. 3

(13) Licensing Application Amendment 16, Page 1.

4. Discussion:

The existing Oyster Creek temperature/pressure limits for reactor operation do not meet reactor coolant system fracture toughness requirements specified by 10 CFR 50. These proposed changes, if approved, will eliminate these deficiencies.



POOR ORIGINAL

OYSTER CREEK NUCLEAR GENERATING STATION REACTOR VESSEL
PRESSURE/TEMPERATURE LIMITS
FOR UP TO TEN EFFECTIVE FULL POWER YEARS OF CORE OPERATION

Figure 3.3.1

1112 293