



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

October 2, 2007
NOC-AE-07002211
File No.: G25
10 CFR 50.55a

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Units 1 and 2
Docket No. STN 50-498, STN 50-499
Relief Request (RR-ENG-2-50) for the Second 10 Year ISI Interval
for Units 1 and 2 from 10 CFR 50.55a for the Purpose of Invoking Code Case N-698,
"Design Stress Intensities And Yield Strength Values for UNS N06690
With a Minimum Specified Yield Strength of 35 KSI (240 MPa), Class 1 Components,"
for Construction of Replacement Reactor Vessel Heads in Units 1 and 2

In accordance with the provisions of 10 CFR 50.55a(a)(3)(i), STP Nuclear Operating Company (STPNOC) requests NRC approval of ASME Code Case N-698, "Design Stress Intensities and Yield Strength Values for UNS NO6690 With a Minimum Specified Yield Strength of 35 ksi (240 MPa), Class 1 Components," as an alternative to the requirements of Section III of the 1989 Edition of the ASME Code for the fabrication of a replacement reactor vessel head for South Texas Project (STP) Units 1 and 2. Use of ASME Code Case N-698 as an alternative to certain requirements of NB-3112.4 for the new construction of the replacement reactor vessel head for each STP unit will provide an acceptable level of quality and safety. The details of the request are attached.

Similar alternatives have been approved for the Farley Nuclear Plant and the Comanche Peak Nuclear Plant.

STP requests approval of this relief request by September 1, 2008. This date was selected to support the replacement of the first reactor vessel head in Unit 1 planned for the Fall of 2009. The replacement of the Unit 2 reactor vessel head is planned for the Spring of 2010.

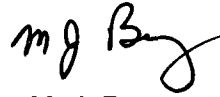
There are no commitments in the attached request.

STI: 32206405

A047

MRK

If there are any questions, please contact either Mr. K. J. Taplett at (361) 972-8416 or me at (361) 972-7030.



M. J. Berg
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KJT

Attachment: South Texas Project – Proposed Use of Code Case N-698
(RR-ENG-2-50)

cc:
(paper copy)

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**SOUTH TEXAS PROJECT
PROPOSED USE OF CODE CASE N-698
(RELIEF REQUEST RR-ENG-2-50)**

1.0 ASME Code System/Component(s) Affected

Relief is requested for Reactor Pressure Vessel (RPV) closure heads manufactured to the requirements of Section III of 1989 Edition of the ASME Boiler and Pressure Vessel Code.

2.0 Applicable Code Edition and Addenda

The replacement reactor vessel head manufactured to the requirements of Section III of the 1989 Edition of the ASME Code, Section NB-3112.4 requires the use of design stress intensity values for materials listed in the tables of Section II, Part D, Subpart 1.

Table 2B of Section II, Part D contains the design stress intensity values for Type Designation UNS N06690 for the SB-167 specification for Class 1 components.

3.0 Proposed Subsequent Code Edition and Addenda and Code Case

Pursuant to 10 CFR 50.55a(a)(3)(i), STP Nuclear Operating Company (STPNOC) is requesting approval to use Code Case N-698 as an alternative to the requirements of Section III of the ASME Code, 1989 Edition, Section NB-3112.4 in fabricating the replacement RPV closure heads for South Texas Project (STP) Units 1 and 2.

4.0 Reason for Request

Section II, Part B, Table 3 of the SB-167 specification provides an UNS N06690 yield strength that is dependent on manufactured condition. For seamless pipe and tube that are less than or equal to 5.0 inch outside diameter, Table 3 specifies a minimum yield strength of 30 kilopounds per square inch (ksi) for hot-worked or hot-worked annealed and 35 ksi for cold-worked annealed.

The UNS N06690 penetration tubes in the replacement reactor vessel closure head are manufactured using a hot-working process. Evaluation of the hot-worked UNS N06690 tubing has shown that a minimum yield strength of 35 ksi is inherent to the material. Because of the large margin in the minimum yield strength in SB-167 Section II, Part B, Table 3, an ASME Code Case was needed to permit the use of higher design stress intensity values (23.3 ksi in lieu of 20 ksi) when the minimum yield strength is specified as 35 ksi for hot-worked UNS NO6690 Class 1 components.

5.0 Proposed Alternative

ASME developed Code Case N-698, "Design Stress Intensities and Yield Strength Values for UNS N06690 with a Minimum Specified Yield Strength of 35 ksi (MPa), Class 1 Components Section III, Division 1," permitting the use of higher stress intensities

associated with 35 ksi minimum yield strength, hot-worked UNS N06690 SB-167. STPNOC is requesting that Code Case N-698 be approved as an alternative to the requirements of Section III of the ASME Code, 1989 Edition, Section NB-3112.4 in fabricating the replacement RPV closure heads for South Texas Project (STP) Units 1 and 2, pursuant to 10 CFR 50.55a(a)(3)(i).

6.0 Basis for Using the Code Case

Pursuant to 10 CFR 50.55a(a)(3)(i), approval to apply the Code Case is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

7.0 Duration of Proposed Alternative

This proposed alternative is for application during the service life of the affected Unit 1 and Unit 2 components.

8.0 Implementation

The replacement reactor vessel head is planned for installation during the South Texas Project Unit 1 Fall 2009 and Unit 2 Spring 2010 refueling outages. NRC approval is requested by September 1, 2008, to support scheduling for completion of activities during the outage.

9.0 Precedent

9.1 Farley Nuclear Plant (Reference SER dated May 26, 2004, TAC Nos. MC1598 and MC1599)

9.2 Comanche Peak Plant (Reference SER dated April 4, 2005, TAC Nos. MC4909)

10.0 Reference

Code Case N-698 (enclosed on following page)

CASE
N-698

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: November 18, 2003.

See Numeric Index for expiration
and any reaffirmation dates.

Case N-698
Design Stress Intensities and Yield Strength
Values for UNS N06690 With a Minimum
Specified Yield Strength of 35 ksi (240 MPa),
Class 1 Components
Section III, Division 1

Inquiry: Is it permissible in the construction of Class 1 components conforming to the requirements of Section III, Division 1, to use a nickel-chromium-iron UNS N06690 hot-worked and annealed condition with minimum yield strength of 35 ksi (240 MPa) otherwise conforming to material Specification SB-167?

Reply: It is the opinion of the Committee that the material specified in the Inquiry may be used in the construction of Class 1 components under the rules of Section III, Division 1, provided the following additional requirements are met.

(a) The design stress intensity and yield strength values shall be as shown in Table 1.

(b) The outer diameter is equal to or less than NPS 5 (DN 125).

TABLE 1
DESIGN STRESS INTENSITY AND YIELD STRENGTH
VALUES

Temperature °F	Design Stress Intensity Values, S_m , ksi (MPa)	Yield Strength, ksi (MPa)
100	23.3 (161.5)	35.0 (240.0)
200	23.3 (161.5)	31.6 (216.2)
300	23.3 (161.5)	29.8 (204.0)
400	23.3 (161.5)	28.7 (198.5)
500	23.3 (161.5)	27.8 (193.0)
600	23.3 (161.5)	27.6 (191.0)
700	23.3 (161.5)	27.6 (191.0)
800	23.3 (161.5)	27.6 (191.0)

(c) For external pressure the required thickness shall be determined in accordance with NB-3133 using Fig. NFN-4 in Section II, Part D, Subpart 3.

(d) Welding procedures and performance qualification shall be in accordance with Section IX and this Code Case. The material shall be considered to be P-No. 43.

(e) This Case number shall be shown on the Data Report for the component and the marking and certification of the material.