Florida Power
CORPORATION
Crystal River Unit 3
Docket No. 50-302

August 7, 1996
3F0896-06

U. S. Nuclear Regulator mission
Attn: Document Control
Washington, D. C. 20555-0001

Subject: Request for Additional Information
Operability Concern Resolution Report No. MS-96-MSH-13B/27B

Reference: NRC to FPC letter (3N0696-15), dated June 24, 1996

Dear Sir:

Florida Power Corporation (FPC) is submitting the attached material as the responses to the request in the reference letter for additional information concerning FPC's evaluation of the operability of two main steam hangers (MSH-13B and MSH-27B) which were found to be bent. FPC's internal evaluation of the operability was performed and documented in Operability Concern Resolution (OCR) Report No. MS-96-MSH-13B/27B. To assure completeness of this submittal, a copy of this OCR Report is included in the attachment.

FPC's responses are numbered to agree with the information request and the locations within the attachment are also provided.

1. *Main Steam System piping stress analysis calculation of record involving the two hangers including the piping model for the stress analysis.*

   Two piping analyses are attached. Analysis CR-5 contains hanger MSH-27B. Analysis CR-6 contains hanger MSH-13B. The piping models, Drawing 305-752 (for CR-5) and Drawing 305-753 (for CR-6) are also attached. The computer outputs for each of these analyses are voluminous and have not been included with this submittal. These outputs, however, are available at CR-3 for review, if required.

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Tab "A" Analysis CR-5 (Filed under Analysis/Calculation M75-0012, Revision 0)

Tab "B" Analysis CR-6 (Filed under Analysis/Calculation M75-0013, Revision 0)

Tab "C" Drawing 305-752, Revision 2

Tab "D" Drawing 305-753, Revision 1

2. *Pipe support qualification calculations of record for the two rod hangers.*

CR-3's architect/engineer, Parsons Power Group, Inc. (formerly Gilbert/Commonwealth, Inc.) has provided all the hanger calculations they could find on these two hangers. Since Parsons Power was not able to find the full detailed original calculations, FPC has prepared detailed calculations on these two supports to supplement the information provided by Parsons.

Tab "E" CR-3 Analysis/Calculation S96-0130, Revision 0, showing support qualification calculations for Rod Hangers MSH-13B and MSH-27B. The information provided by Parsons Power Group, Inc. is included as Attachment 5 to Calculation S96-0130.

3. *Piping stress analysis specification including design basis loading conditions for the main steam system, analysis criteria and methodology. Detailed discussion of qualification criteria and methodology for using rod hangers on a piping system which may be subjected to dynamic loads such as earthquakes, steam hammer, safety valve discharge.*

In responding to this question, a position paper was prepared by Parsons Power Group, Inc. on piping analysis. FPC concurs with these positions.

Tab "F" Position paper prepared by Parsons Power Group, Inc. on piping analysis. Included with this document are several other related documents referenced in the text of the position paper. These documents include:

Tab "G" "Movements of Main Steam Safety Valves Relative to Discharge Piping"

Tab "H" "Main Steam Pipe - Steam Hammer Analysis"

Tab "I" "Main Steam Safety and Relief Valve Systems Stress Analysis Report"

Tab "J" "Main Steam and Feedwater - Steam Hammer Observations and Instrumentation"

Tab "K" "Topical Report - Dynamic Analyses of Vital Piping Systems Subjected to Seismic Motion"

4. *Any revised pipe support calculations that demonstrate conformance to the plant licensing basis with the rod hangers in the bent condition.*

FPC believes no new hanger calculations are required. The OCR Report states that rod hanger components were fully operable in the bent condition and justification for this determination is provided in the OCR Report. The OCR and Problem Report is included for reference.

Tab "L" OCR Report No. MS-96-MSH-13B/27B, Revision 1, and Problem Report 96-0180

5. *Any revised main steam pipe stress calculation that demonstrate conformance to the main steam system piping licensing bases, with the two rod hangers bent.*

To address this concern, FPC modeled only one of the two piping systems. FPC feels one model is representative of the issue. This analysis is included in CR-3 Analysis/Calculation S96-0129, Revision 0 which is included here. There are several differences between the older analysis of record and the new analyses included in S96-0129. These differences can be attributed to several things and are explained in more detail in the body of the calculation. In summary, the bent rod does not cause the piping to be overstressed.

Tab "M" CR-3 Calculation S96-0129, Revision 0

6. *List of other piping systems (including non-safety related piping if they are part of safety related piping model) which are subjected to dynamic loadings and where rod hangers are used.*

A list of CR-3 piping systems which contain some rod hanger type supports is provided in the attachment to this letter. All piping systems designed to Seismic Class I criteria are subject to dynamic loading and have the potential to impose uplift forces on rod hanger type supports. These loadings and forces have been considered in CR-3 piping and found acceptable.

Tab "N" CR-3 Piping Systems Which Contain Some Rod Hanger Type Supports

Sincerely,

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

PMB/JWT

Attachment

xc: Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager

ATTACHMENT TO FPC LETTER 3F0896-06

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