

January 26, 2001

MEMORANDUM TO: File

FROM: Jack N. Donohew, Senior Project Manager, Section 2
Project Directorate IV & Decommissioning /RA/
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: NRR INITIAL FOLLOWUP OF CALLAWAY AXIAL OFFSET ANOMALY
(AOA) DURING OPERATING CYCLE 10 (TAC NO. MA4458)

On or about June 8, 1998, the then project manager for Callaway Plant, Unit 1 (Kristine Thomas) took out TAC No. MA4458 as a non-fee bearing TAC number to charge the time that the Reactor System Branch in the Office of Nuclear Reactor Regulation (SRXB/NRR) was to spend reviewing information and data concerning the AOA in operating Cycle 10 at Callaway. TAC No. MA4458 followed TAC No. M99577 which was used by SRXB, Plant Systems Branch, and Materials Branch for their AOA reviews in the period from September 1997 to April 1998. TAC No. M99577 was closed out June 4, 1998.

For TAC No. MA4458, there was no submittal and no request for such a review from the licensee. Therefore, the TAC is non-fee recoverable and there will be no implementation by the licensee at the completion of the staff's efforts under this TAC number. For reporting the TAC in WISP, the application date will be the June 8, 1998, date given above.

AOA has been an ongoing problem at Callaway. During Cycle 9, AOA was so large that the licensee was forced to reduce power to 70 percent for approximately 4 months in order to maintain a shutdown margin. During that period and until the end of Cycle 9, the staff was very involved and an NRC team inspection of reactor core performance was held in November 1997 (Inspection Report 50-483/97-19). Because the AOA phenomenon is still not completely understood at Callaway and since it has safety significance, the staff has continued to monitor the licensee's attempt to eliminate the problem. Therefore, TAC No. MA4458 was taken out to identify the time charges by SRXB/NRR to review AOA at Callaway beginning with operating Cycle 10.

In completing its review of the axial offset problem at Callaway under TAC No. MA4458, SRXB/NRR has concluded the following:

The axial offset at the beginning of Cycle 10 was more negative than predicted and it was apparent that the phenomenon was not understood and that the analytical tools being used needed to be adjusted. Throughout Cycle 10, periodic updates were provided and the licensee kept SRXB informed as to progress including actions planned to eliminate the problem for Cycle 11 operation. For the first part of Cycle 11, the agreement between predicted and measured axial offset was quite good. However, at a burnup of about 7 GWD/MTU the axial offset anomaly was again observed. Since that time the

licensee has taken several steps to mitigate the problem including: performing weekly flux maps, developing control rod exercise guidance to minimize crud releases, updating core follow models, improving sampling techniques and controlling the chemistry tighter.

After many months, the axial offset is improving and no shutdown margin challenge is anticipated for the remainder of Cycle 11. In a conference call on November 16, 2000, the licensee described the activities that are underway to eliminate the axial offset anomaly for Cycle 12 and the actions to be taken during Cycle 12. The licensee has been aggressively working on this problem and based on the information provided and our understanding of the phenomena of axial offset anomaly, no further work is needed on this TAC.

Based on this conclusion, TAC No. MA4458 will be closed.

Docket No. 50-483

January 26, 2001

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