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DUKE POWER

July 29, 1992

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: McGuire Nuclear Station, Unit 1
Docket Nos. 50-369
Gamma Plug Seal Weld Failure
Main Feedwater (CF)

Dear Sir;

On June 16, 1992, during the final reactor building inspections prior to unit 1 startup, leakage from the inspection port for the pipe to elbow welds (CF1F712) was discovered. This inspection port (or gamma plug) is located on the feedwater supply to the 1B Steam Generator down stream of check valve 1CF29. The unit was in mode 3 (hot standby) with the CF system pressure and temperature approximately 1169 PSIG and 557° F respectively. The leakage was characterized as minor due to the size of the steam plume (less than a 1 foot) and the slight amount of water spraying from the leakage location.

A 1-1/8 inch, seven thread per inch, non tapered solid plug is inserted into the inspection port (see attached drawing, MDS-EG-4). The plug is then seal welded to provide a leak tight joint. Since the strength of the threaded joint is not a function of the seal weld, the seal weld is categorized as a non-structural weld. The seal weld provides a sealing surface and keeps the non-tapered threaded plug from backing out.

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On non-tapered threads, a seal weld or a seating surface must be provided (ref. NC-3671.3). However, the rules of ASME section III, subsection NC, cover "the strength and pressure integrity of items the failure of which would violate the pressure retaining boundary", (ref. NC-1100). Failure of a seal weld can result in a small amount of leakage, but such failure does not result in a significant violation of the pressure boundary. Failure of a seal weld does not compromise the structural integrity of the joint.

Since the seal welds are non-structural (ref. ASME Section XI IWA-9000), Duke believes that temporary repairs such as peening are acceptable. Permanent repairs shall be made at the next available refueling outage, in accordance with the ASME Code.

Engineering guidelines for the evaluation of temporary repairs and welds have been developed. This guideline provides appropriate instructions on the use of temporary repairs for seal welds, including specifying that at the next available refueling outage the seal weld be repaired in accordance with ASME code requirements. This guideline assures correct and consistent action in the resolution of similar problems that may arise in the future.

On June 17, 1992, members of my staff discussed the CF gamma plug seal weld failures with members of the NRC staff. We discussed our intentions to stop the leak by peening the seal weld area that had the crack. In addition, the monitoring of potential leakage from this plug until the next refueling outage was also discussed. Any leakage from this location will be collected by the Containment Building Floor and Equipment Sump, which is monitored from the control room by an annunciator alarm. When unusually frequent annunciator alarm rates occur, a chemical sample of the sump contents will be obtained to determine if the leakage is from the feedwater system (indicated by a unusually high levels of hydrazine). Further, this plug will be visually inspected for leakage during any unscheduled unit shutdown or reactor trip.

Final repair of this plug will be performed at the next refueling outage. At that time the plug will be removed and the piping and plug will be inspected for damage. The repair per this inspection will be performed in accordance with the ASME code.

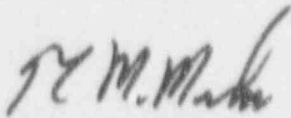
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For your information, on June 17, 1992 the seal weld was repaired and the leak was stopped. A pipe rupture interaction analysis with respect to the postulated catastrophic failure of the inspection port plug was performed. Based on a field survey of the area around the inspection port, no unacceptable targets were identified. In addition, a review of an existing analysis regarding terminal end break interactions was performed and the same conclusion was reached within the analysis, that no unacceptable interactions exist.

Finally, based on our observations of the leak and of the plug area, the overall integrity of the threads have not been compromised.

If you have any questions regarding this matter, please contact Paul Guill at (704) 875-4002.

Very truly yours,



Ted C. McMeekin

xc: S. D. Ebnetter
Regional Administrator, Region II

P. K. Van Doorn
Senior Resident Inspector, McGuire

T. A. Reed, Project Manager
ONRR

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bcc: with attachment

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File: 801.01

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ACCESS HOLE PLUGS

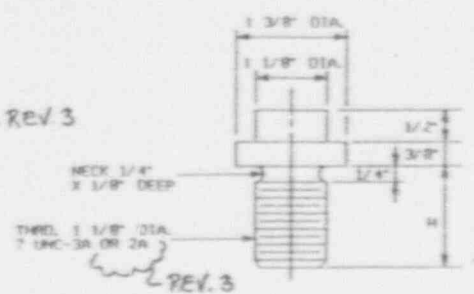


FIGURE 3
FOR USE WITH FIGURE 1
ACCESS AIDS

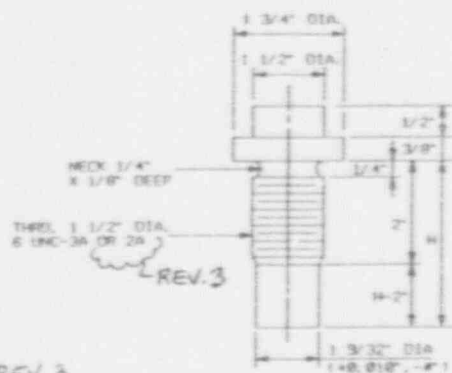


FIGURE 4
FOR USE WITH FIGURE 2
ACCESS MONTHS

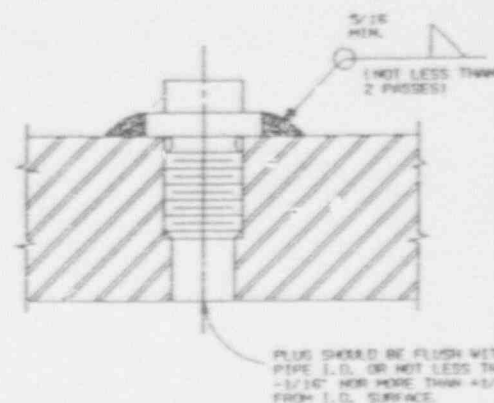


FIGURE 5
CLOSURE ASSEMBLY OF PLUG TO
ACCESS HOLES

1. THIS PROCEDURE IS SUITABLE FOR USE IN PIPING COMING WITHIN THE SCOPE OF ASME SECTION I & SECTION III, ALL CLASSES, & AWS B3.1, IN ALL SIZES.
2. MATERIAL IN PLUG MUST BE SIMILAR TO, OR COMPATIBLE WITH, BASE PIPE MATERIAL INTO WHICH IT WILL BE ASSEMBLED.
3. WHERE RT OF MAIN WELD IS MADE AFTER POST-HEAT TREATMENT OF IT, IT IS RECOMMENDED THAT THE SEAL WELD AT THE PLUG BE MADE USING A 25-20 (OR SIMILAR) ELECTRODE TO AVOID THE NECESSITY OF ADDITIONAL POST HEATING.
4. DIMENSION "H" = "I". PLUGS SHOULD BE MADE SUCH THAT "I" AT ITS WARDEN WILL BE THE "H" LENGTH. EACH PLUG SHOULD THEN BE FITTED TO ITS SPECIFIC HOLE AND TRIMMED AS NECESSARY, PRIOR TO WELDING IN POSITION.
5. APPROPRIATE PROJECT DRAWINGS WILL BE REQUIRED COVERING INSTALLATION OF ACCESS HOLES.

										DUKE POWER COMPANY MOS ENGINEERING GUIDE				
										DETAILS OF ACCESS HOLES AND PLUGS				
3	REV. PER MO-79-2718	DRN	DATE	CHKD	DATE	APPR	DATE	COVL	PLUG	RECN	DESIGNED	DATE	CHKD	DATE
2	REV. FIGURE 5	DRN	DATE	CHKD	DATE	APPR	DATE	COVL	PLUG	RECN	DESIGNED	DATE	CHKD	DATE
1	REV. TITLE BLOCK AND / RECD NOTE 5	DRN	DATE	CHKD	DATE	APPR	DATE	COVL	PLUG	RECN	DESIGNED	DATE	CHKD	DATE
DWG. NO. FOR CONST.		DRN	DATE	CHKD	DATE	APPR	DATE	COVL	PLUG	RECN	CHECKED	DATE	APPR	DATE
NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	COVL	PLUG	RECN	DWG. NO. MOS-EG-4		REV. 3	

SPECIFICATION NO. MCS-1286.00-02-0002
APPENDIX D
MAY 15, 1974
REV. 128. 5/21/98