

DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

REGION II
ATLANTA, GEORGIA
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WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

January 21, 1982

TELEPHONE: AREA 704
373-4083

Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Re: McGuire Nuclear Station
Unit 2
Docket No. 50-370



Dear Mr. O'Reilly:

Pursuant to 10 CFR 50.55e, please find attached Significant Deficiency Report SD 370/81-12 (interim) concerning butt welds that may not meet ASME Code criteria for being "flush." A final report will be submitted by February 22, 1982. This is also being reported for Unit 1 via LER 369/81-192.

Very truly yours,

William O. Parker, Jr.
William O. Parker, Jr.

PBN/php
Attachment

cc: (w/attachment)
Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. P. R. Bemis
NRC Resident Inspector
McGuire Nuclear Station

Mr. Ralph Birkel
Division of Project Management
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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DUKE POWER COMPANY
McGUIRE NUCLEAR STATION

SIGNIFICANT DEFICIENCY

REPORT NO.: SD 370/81-12 (interim)

REPORT DATE: January 21, 1982

FACILITY: McGuire Nuclear Station, Unit 2

IDENTIFICATION OF DEFICIENCY:

Welds identified as "flush" may not meet the stringent requirements of the ASME Code criteria as defined in Table NB-3683.2-1, footnote (2)(a). Specifically, the requirement that the finished contour of the weld shall not exceed a 7° slope had not been satisfied at the weld I.D.

INITIAL REPORT:

The initial report was made to Mr. A. Ignatonis of Region II, USNRC, on December 22, 1981 by Mr. W. O. Henry and Mr. J. N. Underwood, both of Duke Power Company, 422 S. Church Street, Charlotte, NC 28242.

DESCRIPTION OF DEFICIENCY:

The initial deficiency was first identified by a Catawba Nuclear Station NCI which reported that certain butt welds did not meet the ASME Code criteria for being flush as defined in Table NB-3683.2-1. This NCI specifically pointed out that the I.D. of the weld did not meet the 7° contour as stipulated in footnote (2)(a) of that table. Furthermore, a review determined that the Catawba Construction procedure for flush welds may not provide adequate assurance that the weld contour on the I.D. is $\leq 7^{\circ}$. A review of the corresponding McGuire Nuclear Station procedure indicates that similar conditions could exist for McGuire flush welds.

The impact associated with the failure to satisfy the ASME Code is in the stress analysis (Class 1 only for McGuire 2) used to demonstrate code compliance for these welds. Because lower stress indices are associated with flush welds, the adequacy of the current revision of the piping stress analysis calculations is in question. There are approximately 136 welds identified as flush on McGuire Unit 2.

ANALYSIS OF SAFETY IMPLICATIONS:

The stress analysis calculations generally employ the procedures outlined in NB3600 to ensure piping system integrity for all loading conditions. If the welds in question are found not to satisfy the ASME Code requirements associated with flush welds, certain stress indices would be incorrect and of a lower value than those associated with the worst case as-welded condition. The effect of these higher stress indices would be seen only in the local fatigue calculations and not affect the overall structural response or gross structural strength. However, there may be a reduction in the ASME safety factor against fatigue failure for all cyclic-type loadings.

CORRECTIVE ACTION:

Although some uncertainty presently exists as to whether the welds in question meet the stringent flush weld requirements on the weld I.D., they are known to more closely resemble the ASME flush weld than the "as-welded" butt weld profiles permitted by the Code. Duke Power Company is performing an analysis to determine the stress indices associated with the "worst case" flush weld profile. This will be done by employing more stringent analytical procedures outlined in the Code. Once the new indices are defined, they will be compared with the existing Code indices to determine impact on existing calculations.

Preliminary results of the analysis of some conservative models indicates that the indices for the Duke flush welds are very similar to the indices for ASME flush welds. The analysis is scheduled to be completed in the near future, with a final report to be submitted by February 22, 1982.