

DUKE POWER COMPANY

POWER BUILDING

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

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

November 13, 1981

TELEPHONE AREA 704
373-4083

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

Re: McGuire Nuclear Station Unit 1
Docket No. 50-369

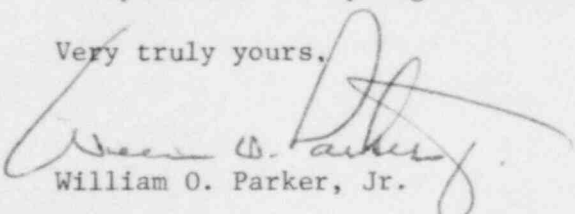


Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report R0-369/81-165. This report concerns T.S.6.9.1.12(i), "Performance of Structures, Systems, or Components That Requires Remedial Action or Corrective Measures to Prevent Operation in a Manner Less Conservative Than Assumed in the Accident Analyses . . .". This incident was considered to be of no significance with respect to the health and safety of the public.

Note that this incident has been previously discussed with you in a letter from W. H. Owen dated November 9, 1981. Due to our efforts to provide you with more complete information pertaining to this incident, this report is being submitted 2 days late. We apologize for any inconvenience this may have caused.

Very truly yours,


William O. Parker, Jr.

PBN/smh
Attachment

cc: Director
Office of Management and Program Analysis
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Records Center
Institute of Nuclear Power Operations
1820 Water Place
Atlanta, Georgia 30339

Ms. M. J. Graham
Resident Inspector-NRC
McGuire Nuclear Station

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McGUIRE NUCLEAR STATION

REPORTABLE OCCURRENCE

REPORT NO: 81-165

REPORT DATE: November 13, 1981

FACILITY: McGuire Nuclear Station, Unit #1

IDENTIFICATION OF OCCURRENCE: Missing studs and nuts purchased for use on the spent fuel cooling system strainers in the spent fuel pool.

CONDITION PRIOR TO OCCURRENCE: Not applicable

DESCRIPTION OF PROBLEM: Initially, 600 inches of SA/A 193 B-8 stud material and 102 SA/A 194 Grade 8 nuts (all 7/8" diameter) were unaccounted for and could have been installed in flanges other than those for which it was bought.

APPARENT CAUSE OF OCCURRENCE: The conditions that allowed an order of 7/8" low strength bolting material to be installed where high strength bolting was specified are:

- 1) The materials involved were a size not requiring heat code traceability. The materials should have been identified by a grade designation plus a color which designated the code classification. The materials were color coded in accordance with the construction procedure, but because personnel had begun to consider the color code equivalent to the grade designation, some of the studs cut from threaded rod were incorrectly marked. In this particular case, B-8 material was marked as B-7.
- 2) The instructions to the inspector were to verify only the color code at bolt-up; therefore, even if these materials had been marked correctly, the low strength bolting would have been accepted on the basis of color coding.
- 3) This material was a special order for a specific application, and the Construction Department did not recognize that the B-8 material was not interchangeable with B-7 material.

ANALYSIS OF OCCURRENCE: Pipe flanges containing such studs number in the hundreds and are located throughout the plant. However, B-8 stud material and Grade 8 nuts were procured only in 7/8" diameter, and arrived on site during December, 1977. In Unit #1 there are 64 safety related flanges which use 7/8" studs and nuts which were torqued after December 1, 1977. These 64 flanges are randomly located throughout the Unit.

SAFETY SIGNIFICANCE: B-8 material is not as strong as the specified B-7 material, so that the B-8 studs might not be able to carry the applied loads.

Inspections completed have accounted for 517" of the 600" of B-8 threaded rod (studs are cut from threaded rod), and 96 of the 102 Grade 8 nuts. The remainder is representative of typical construction waste. Also, a search of procurement records and Construction stock shows that no other B-8 stud material or Grade 8 nuts are unaccounted for.

As of November 13, 1981 only one flange was found to have the B-8 material, and for that particular flange, the bolts were found to be satisfactory for all load cases. Although there probably is no remaining questionable material in safety related applications, Duke Power Co. has evaluated the impact of a faulted condition. For the remainder of the uninspected flanges, the bolts are assumed to be B-8 material.

Although use of Grade B-8 material is not prohibited by the McGuire code of record, the 1980 ASME Code, Section III, Subsection NC-3658.1-3658.2 requirements were reviewed to provide a more detailed method of determining bolting requirements. Based on this review, all flanges were found to be structurally adequate if Grade B-8 material was utilized; however, to assure that the flange remains tight and does not leak, certain additional requirements must be satisfied.

Eight flanges were identified as not meeting the requirements of the 1980 ASME Code to ensure that no leakage will occur, if Grade B-8 material is used for bolting.

With the exception of two flanges, all the flanges were acceptable for normal conditions. The code equations indicated two of the flanges are not acceptable; however, the piping was hydro tested and no leakage occurred. The review results indicate the 1980 ASME Code Requirements are not satisfied for upset conditions. The non-compliance of these flanges with the code requirements does not imply that leakage would definitely occur, only that an approved margin against leakage would no longer exist.

CORRECTIVE ACTION: As corrective action taken, we have:

- 1) Revised inspection instructions to require verification of grade of material at bolt-up.
- 2) Instructed personnel involved that grade is independent of color code.
- 3) Revised the appropriate construction procedures to clarify the applications for low strength bolting.
- 4) Inspected all safety related applications of 7/8" bolting in Unit #2 and 26 of 64 potential safety related applications in Unit #1. The remaining un-inspected joints are inside the Unit #1 reactor building. Inspections completed have uncovered 517 inches of the 600 inches of questionable threaded rod and 96 of 102 nuts. The remaining unaccounted for material is representative of typical waste.

Additional corrective action to be taken is:

- 1) Review the use of color codes and eliminate any improper coding.
- 2) Complete inspection of remaining Unit #1 bolting (7/8") at next scheduled cold shutdown.
- 3) Change out or determine acceptability of all SA-193 Grade B-8 studs and SA-194 Grade 8 nuts identified in safety related joints.

This corrective action will be completed no later than February 1, 1982.

In addition, construction procedures will be reviewed at all other Duke sites to assure compliance with design drawings. This review will be completed by January 1, 1982.