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TELEPHONE: AREA 704
373-4083

November 26, 1980

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

Re: McGuire Nuclear Station
Units 1 and 2
Docket Nos. 50-369 and 50-370

Dear Mr. O'Reilly:

Pursuant to 10CFR 50.55e, please find attached Significant Deficiency Report SD 369/80-20, 370-80-15.

Very truly yours,

William O. Parker, Jr.

William O. Parker, Jr. By TBS

GAC:vr
Attachment

cc: Director
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

T. J. Donat
NRC Resident Inspector
McGuire Nuclear Station

MCGUIRE NUCLEAR STATION

UNITS 1 & 2

REPORT NO: SD-369/80-20, 370/80-15

REPORT DATE: November 26, 1980

INITIAL NOTIFICATION DATE: October 28, 1980

FACILITY: McGuire Nuclear Station, Units 1 & 2

IDENTIFICATION OF DEFICIENCY: Improper Loads Used for Support/Restraint Design (LOCA, Valve Discharge, Mismatch)

DESCRIPTION OF DEFICIENCY:

This report describes a deficiency in use of design loadings for design of pipe support/restraints. Three separate problems contribute to the total deficiency as follows:

1) LOCA (Loss of Coolant Accident) piping analysis methods were not sufficiently defined to permit accurate definition of support/restraint loads at the time of initial design. After loadings became available, a review of the adequacy of affected support/restraints was performed and any inadequacies discovered in that review were corrected. Original support/restraint design and this later review/resolution procedure were carried out by EDS Nuclear, Inc under contract to Duke Power prior to turnover of design responsibility to Duke in mid 1979. Recent revision activity on this scope of support/restraints by Duke engineers at the site led to question the adequacy of the support/restraints for LOCA loads. A subsequent detailed review of the procedure used by EDS Nuclear, Inc to review for LOCA adequacy revealed that the review procedure was not sufficiently comprehensive to ensure adequacy of all parts of a support/restraint. Hence the review was not complete, and some of the affected support/restraints may not be adequate for LOCA loads as required for consideration in design.

2) The above described problem concerning LOCA loads led to a review of methods used to include special dynamic and static loads in support/restraint design. Results of this review showed that an inadequacy existed in use of EDS Nuclear-supplied design loadings for support/restraints on the Pressurizer Safety/Relief piping due to valve discharge. Due to miscommunication, valve discharge loads given for Faulted Condition were factored downward for the Upset Condition, as is acceptable for earthquake loadings for McGuire due to the 8/15 ratio that exists for OBE/SSE earthquakes. Since valve discharge loads do not factor and are the same for Upset and for Faulted Conditions, Upset allowable loadings and stresses

for support/restraints may be exceeded when 100-percent of valve discharge loads are considered. Generally this deficiency is limited to those support/restraints which have components which are load or stress rated for the Upset Condition.

3) During initial stages of review to correct LOCA and valve discharge load deficiencies, reference to current piping analysis results on file revealed that support/restraint loads shown on design drawings (sketches) did not match the on-file results, regardless of LOCA or valve discharge consideration. Investigation through EDS Nuclear, Inc (who produced both the sketches and the piping analysis under contract to Duke Power) showed that increases in support/restraint design loads required by recent revised piping analyses were not placed on design sketches unless the sketch required revision to show a structural change to the design. It was required that all such increases in load be considered in support/restraint design calculations and that adequacy of the support/restraints be proven for load increases. The problem occurred after future update responsibility for these sketches was transferred from EDS Nuclear to Duke Power in mid 1979. Duke engineers at the site have performed revisions to designs or made engineering judgements on installations based on sketch loads. Since sketch loads may not represent current (higher) requirements, revised and/or installed configurations in this scope may not be adequate. This scope is limited to support/restraint designs initially developed and maintained by EDS Nuclear and for which piping analyses have not been revised since sketch responsibility turnover in mid 1979.

The total number of support/restraints requiring analytical review and possible revision is 1591. The estimated number that may require some hardware change is 450. A majority of this scope of support/restraints is located in the Reactor Building.

ANALYSIS OF SAFETY IMPLICATIONS:

Worst case safety consequence is that certain pipe support/restraints may not be capable of withstanding loads as large as predicted by as-built piping analysis. Although failure of these support/restraints is considered to be a remote possibility, absence of failure cannot be confirmed without further review. In the event of excessive deformations or failure of these support/restraints, loadings on adjacent support/restraints would change such that adequate support of the piping system and loadings on components to which it connects can not be confirmed as adequate. This, in turn, means that ability of the piping system to perform design functions cannot be assured.

CORRECTIVE ACTION:

A comprehensive program has been initiated to complete the following:

(1) Identify all support/restraints affected in a nonconservative manner by each of the three cited problems.

(2) Perform engineering review of designs identified in (1) and, if necessary, revise the designs to show required structural changes.

(3) Revise all affected design sketches to show any higher loads required by current piping analyses.

(4) Make hardware changes to affected support/restraints as required by revised designs.

(5) Review piping analysis and support/restraint interface methods and procedures and take actions necessary to prevent future problems in this area.

Schedules for completion of the above corrective action items for Units 1 and 2 are as follows:

Corrective Action Item	Completion Date	
	Unit 1	Unit 2
(1) Identification	Complete	6/1/81
(2) Engr. Review	12/19/80	Per Unit 2 Construction Schedule
(3) Sketch Revision	12/19/80	Per Unit 2 Construction Schedule
(4) Hardware Changes	1/28/81	Per Unit 2 Construction Schedule
(5) Procedure Confirmation	-	3/1/81

All of the above items are well underway for Unit 1 and results to date confirm the expected minimum number and type of structural changes.