Docket Nos: 50-329
and 50-330

JUL 20 1977

Consumers Power Company
ATTN: Mr. S. H. Howell
Vice President
212 West Michigan Avenue
Jackson, Michigan 49201

THIS DOCUMENT CONTAINS POOR QUALITY PAGES

Gentlemen:

SUBJECT: ANALYSIS OF POSTULATED MAIN STEAMLINE BREAK ACCIDENT - (Midland Plant, Units 1 & 2)

Our recent evaluations of a postulated mainsteam line break accident inside containment for PWR plants indicate potential concern in two areas:

(1) The treatment of nonsafety grade equipment in the evaluation of postulated steamline break accidents inside containment.

(2) The environmental qualification of safety-related equipment located inside containment that must function during or as a result of a main steamline break.

In order that we may conclude our review of these matters for your facility we will need your response to the enclosed request for additional information included with your FSAR submittal.

Sincerely,

Original signed by:

Steven A. Varga, Chief
Light Water Reactors Branch 4
Division of Project Management

Enclosure:
Request for Additional Information

cc: See Page 2

OFFICE	DPM/LWR #4	DPM/LWR #4	DSS/AD/PS	DPM/LWR #4		
SURNAME	MService;pv	RPowell	RTedesco	SAVarga		
DATE	07/ /77	07/12/77	07/ /77	07/20/77		

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Request for Additional Information
Main Steam Line Break Accident Inside Containment
Containment Systems Branch

022.X (6.2.1) Describe and justify the analytical model used to conservatively determine the maximum containment temperature and pressure for a spectrum of postulated main steam line breaks for various reactor power levels. Interim staff positions regarding postulated main steam line breaks are discussed in NUREG-0138, Issue No. 1 and NUREG-0153, Issue No. 25. Include the following in the discussion:

a. Provide single active failure analyses which specifically identify those safety grade systems and components relied upon to limit the mass and energy release and containment pressure/temperature response. The single failure analysis should include, but not necessarily be limited to: main steam and connected systems isolation; feedwater, auxiliary feedwater, and connected systems isolation; feedwater, condensate, and auxiliary feedwater pump trip, and auxiliary feedwater run-out control system; the loss of or availability of offsite power; diesel failure when loss of offsite power is evaluated; and partial loss of containment cooling systems.

b. Discuss and justify the assumptions made regarding the time at which active containment heat removal systems become effective.

c. Discuss and justify the heat transfer correlation(s) (e.g., Tagami, Uchida) used to calculate the heat transfer from the containment atmosphere to the passive heat sinks, and provide a plot of the heat transfer coefficient versus time for the most severe steam line break accident analyzed.

d. Specify and justify the temperature used in the calculation of condensing heat transfer to the passive heat sinks; i.e., specify whether the saturation temperature corresponding to the partial pressure of the vapor, or the atmosphere temperature which may be superheated was used.

e. Discuss and justify the analytical model including the thermodynamic equations used to account for the removal of the condensed mass from the containment atmosphere due to condensing heat transfer to the passive heat sinks;

f. Provide a table of the peak values of containment atmosphere temperature and pressure for the spectrum of break areas and power levels analyzed;

g. For the case which results in the maximum containment atmosphere temperature, graphically show the containment atmosphere temperature, the containment liner temperature, and the containment concrete temperature as a function of time. Compare the calculated containment atmosphere temperature response to the temperature profile used in the environmental qualification program for those safety related instruments and mechanical components needed to mitigate the consequences of the assumed main steam line break and effect safety reactor shutdown;

h. For the case which results in maximum containment atmosphere pressure, graphically show the containment pressure as a function of time; and

i. For the cases which result in the maximum containment atmosphere pressure and temperature, provide the mass and energy release data in tabular form.

j. For the instrumentation and equipment located inside the containment and required to (1) detect the steam line break; (2) initiate safety systems and (3) monitor the course of the accident, provide the following:

1) A description of the tests which were/or will be performed to show that this instrumentation and equipment are/or will be qualified to perform their function before, during and after the accident. Include the spectrum of environmental conditions for which tests were/will be performed and state the acceptance criteria. The instrumentation and equipment to be considered includes, but is not limited to the following: (a) pressurizer pressure and level sensors and transmitters; (b) steam generator pressure and level sensors and transmitters; (c) main steam line pressure, differential pressure and flow sensors and transmitters; (d) primary system hot leg and cold leg temperature sensors and transmitters; (e) primary system pressure sensors and transmitters; (g) feed water flow sensors and transmitters; (h) containment pressure sensors and transmitters; (i) valve operators and position switches; (j) electrical cables, motors and penetrations; (k) containment coolers. Also identify any additional instruments and equipment required.

2) A description of the separation and independence between redundant sensors, cables and other equipment associated with each steam generator and steam line.

3) A description of the independence and separation between each steam generator and between each steam line.

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