NRC PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NOV 2 1978

Docket Nos: STN 50-488 STN 50-491
STN 50-489 STN 50-492
STN 50-490 STN 50-493

50-491

Mr. L. C. Dail, Vice President
Design Engineering Department
Duke Power Company
P. O. Box 33189
Charlotte, North Carolina 28242

Dear Mr. Dail:

SUBJECT: CRITERIA FOR PIPING MODELLING TECHNIQUE - STRUCTURAL OVERLAPPING (PROJECT 81 - PERKINS NUCLEAR STATION, UNITS 1, 2 AND 3, AND CHEROKEE NUCLEAR STATION, UNITS 1, 2 AND 3)

By our letter of October 3, 1978, from Robert Baer, Chief, Light Water Reactors Branch No. 2, Division of Project Management to William O. Parker, Jr., Vice President, Steam Production, Duke Power Company, we concluded that a method for modelling piping systems for static and dynamic analysis was acceptable for the criteria used in the analysis for the McGuire Nuclear Station, Units 1 and 2. We also stated that for all other Duke Power plants undergoing licensing review we shall require a commitment that whenever this technique is employed in the future the requirements listed in the letter be adopted and documented in the appropriate safety analysis report. A copy of the letter is enclosed.

Please advise whether this technique (structural overlapping) will be used in modelling and analyzing pipe systems for Project 81 (Perkins and Cherokee facilities). If it will, advise whether requirements 1 and 2 in the October 3, 1978 letter will be adopted and documented in the Final Safety Analysis Report(s).

Sincerely,

Steven A. Varga, Chief
Light Water Reactors Branch No. 4
Division of Project Management

Enclosure:
As stated

cc: See next page

A 7811130377 · suppl: 01 02 03

Duke Power Company

NOV 2 1978

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Richard S. Salzman, Esq.
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LWR #2 File
D. Vassallo
F. Williams
R. Baer
~~R.~~ Birkell
J. Lee
OELD
IE (3)
M. Hartzman
F. Cherny
R. Kiessel
H. Brammer
V. Brounlee, Region II
G. Reinmuth, IE
E. Ketchen,(OELD)
E. Sullivan

NOV 2 1978

Docket Nos. 50-369
and 50-370

OCT 3 1978

BCC: JBuchanan
TAbernathy
ACRS (16)

Mr. William O. Parker, Jr.
Vice President, Steam Production
Duke Power Company
P. O. Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Parker:

SUBJECT: CRITERIA FOR PIPING MODELLING TECHNIQUE - STRUCTURAL OVERLAPPING (MC GUIRE NUCLEAR STATION, UNITS 1 & 2)

We have completed our review of the methods which you use in modelling piping systems for static and dynamic system analysis for the Mc Guire Nuclear Station. We have concluded that this technique (structural overlapping) may be used in an acceptable fashion provided that the following considerations are satisfied:

1. Since the validity of the method is improved as the overlap region takes on the characteristics of a rigid section*, a section of a piping system shall be defined as an overlap region if the following requirements are satisified:

   a. The section contains a minimum of four (4) restraints in each of three perpendicular directions.

   b. The restraints in the section are so spaced that the pipe span between any two restraints, taken as simply supported beams, have a fundamental natural frequency (bending and torsion) not less than 33 Hz.

   c. In lieu of the criterion in 1b, a dynamic analysis of the overlap region should be made with pinned boundaries extended beyond the overlap region either to the next actual support or to a span length equal to the largest span length within the region. The fundamental frequency determined from this analysis should be greater than 33 Hz.

DUPE : 7810110003 Supp 01 02 03

*A section may be considered rigid when subjected to seismic excitation if its natural frequencies are greater than 33 Hz.

OFFICE ▶						
SURNAME ▶						
DATE ▶						

2. If a subsystem natural frequency falls in close proximity to a response spectrum peak, this peak value should be applied in the stress evaluation.

Although the criteria used for Mc Guire is acceptable and may be continued to be applied on this plant; for all other Duke Power plants undergoing licensing review we shall require a commitment that whenever this technique is employed in the future the requirements listed above be adopted and documented in the appropriate safety analysis report.

Sincerely,

Robert Baer, Chief
Light Water Reactors Branch No. 2
Division of Project Management

cc: See next page

OFFICE ▶	LWR #2:LPM	LWR #2:BC				
SURNAME ▶	RBirkell/LLM	RBaer RB				
DATE ▶	10/ 5 /78	10/ 3 /78				

NOV 2 1978

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Vice President, Steam Production
Duke Power Company
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Charlotte, North Carolina 28242

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Mr. William O. Parker, Jr.

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U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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Atomic Safety and Licensing Board
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