UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

TIC

DEC 28 1979

Docket No. 50-329
Docket No. 50-330

Consumers Power Company
ATTN: Mr. Stephen H. Howell
Vice President
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

The enclosed IE Information Notice No. 79-36 provides information on a computer code defect which can result in incorrect stress values for piping elbows.

Sincerely,

James G. Keppler
James G. Keppler
Director

Enclosure: IE Information
Notice No. 79-36

cc w/encl:
Central Files
Director, NRR/DPM
Director, NRR/DOR
PDR
Local PDR
NSIC
TIC
Ronald Callen, Michigan Public
Service Commission
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

SSINS No.: 6870
Accession No:
7910250519

DUPLICATE

December 31, 1979

IE Information Notice No. 79-36

COMPUTER CODE DEFECT IN STRESS ANALYSIS OF PIPING ELBOW

Description of Circumstances:

The NRC was informed on December 17, 1979 that a computer code, NUPIPE, used in the stress analysis of piping systems contained a defect which could result in incorrect stress values at one end of piping elbows. This defect was identified from discussions with a user of NUPIPE and the NUPIPE code developers. The stress calculation error can occur when a flexible joint is modeled at the end of an elbow (ELBOW-ELASTOJT connection in NUPIPE terminology). This defect in the NUPIPE code is in the transformation of the loads in the ELASTOJT coordinate axis to the piping ELBOW coordinate axis. The incorrect coordinate axis transformation may incorrectly interchange the torsion and bending moment loads on the piping elbow. This can result in the incorrect assignment of the stress intensification factor for the individual moments. The correct stress may be higher or lower than calculated by NUPIPE, depending on the loading condition.

Four conditions must exist for the possibility of the calculation of an incorrect stress in the NUPIPE code:

1. an USAS B31.1.0 - 1967 Code analysis is being done, and

2. an ELBOW-ELASTOJT connection exists, and

3. an absolute sum of two load cases is being calculated, and

4. the ELBOW torsional moment axis does not align with the ELASTOJT local x-axis.

Possible users of the NUPIPE code include the code developer, Stone and Webster, EG&G (Idaho Falls), and those using the Cybernet system. The NRC is currently reviewing the extent of usage of the NUPIPE code and the generic implications for other facilities. There is a potential for a similar defect to occur in other piping analysis computer codes.

This Information Notice is provided as early notification of a possible significant matter. It is expected that recipients will review the information for possible applicability to their facilities. No specific action is requested in response to this Information Notice. If NRC evaluations so indicate, further licensee actions may be requested or required. If you have any questions regarding this matter, please contact the Director of the appropriate NRC Regional Office.

No written response to this IE Information Notice is required.

Enclosure: List of Recently
Issued Information Notices

1754 331

Enclosure

RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date Issued	Issued To
79-35	Control of Maintenance and Essential Equipment	12/31/79	All power reactor facilities with an OL or CP
79-34	Inadequate Design of Safety-Related Heat Exchangers	12/27/79	All holders of power reactor OLs and CPs
79-33	Improper Closure of Primary Containment Access Hatches	12/21/79	All power reactor facilities holding OLs and CPs
79-32	Separation of Electrical Cables for HPCI and ADS	12/21/79	All power reactor facilities holding OLs and CPs
79-31	Use of Incorrect Amplified Response Spectra (ARS)	12/13/79	All holders of power reactor OLs and CPs
79-30	Reporting of Defects and Noncompliance, 10 CFR Part 21.	12/6/79	All power reactor facilities holding OLs and CPs and vendors inspected by LCVIP
79-29	Loss of NonSafety-Related Reactor Coolant System Instrumentation During Operation	11/16/79	All power reactor facilities holding OLs or CPs
79-28	Overloading of Structural Elements Due to Pipe Support Loads	11/16/79	All power reactor facilities with an OL or CP
79-27	Steam Generator Tube Ruptures At Two PWR Facilities	11/16/79	All power reactor facilities holding OLs and CPs
79-12A	Attempted Damage To New Fuel Assemblies	11/9/79	All Fuel Facilities, research reactors, and power reactors with an OL or CP
79-26	Breach of Containment Integrity	11/5/79	All power reactor facilities holding OLs and CPs