

79-184-000 (R)

December 17, 1979

Mr. Victor Stello
Director, Office of Inspection
and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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Dear Mr. Stello:

In compliance with the requirements of the Code of Federal Regulations, Title 10-Part 21, Quadrex Corporation hereby informs you that a defect has been detected in the computer program, NUPIPE. The defect would only occur for those power plants where safety-related piping was designed to the ANSI B31.1.0 - 1967 Code and where an ELBOW-ELASTOJT* connection exists. Quadrex is presently examining our records; however, as of this date, there are no known specific cases where the particular combinations have occurred and, therefore, no known power plants are affected.

NUPIPE is a proprietary computer program which is used to calculate stresses in piping systems to determine the location and type of pipe hanger necessary to support and restrain piping. The conditions for which NUPIPE is used include ASME service level A, B, C and D loadings, including the design base seismic event. Although all piping moments, forces, deflecting and pipe restraint reaction loads calculated by NUPIPE are correct, the stress calculation of an ELBOW to ELASTOJT boundary element is incorrect. The NUPIPE program can calculate an incorrect stress only when all the following conditions exist:

- o An ANSI B31.1.0 - 1967 Code version analysis is being conducted, and
- o an ELBOW-ELASTOJT connection exists, and
- o an absolute sum (MODFLEX combination) of two load cases is being formed, and
- o the elbow torsional moment axis does not align with the ELASTOJT local x-axis.

The only incorrect values in the NUPIPE output, due to this defect are the stresses at the ELBOW-ELASTOJT connecting node. Depending on the exact case, the correct stress may be lower or

* An ELASTOJT element is an infrequently used element in the NUPIPE Code used to connect two piping node points with user supplied stiffness values.

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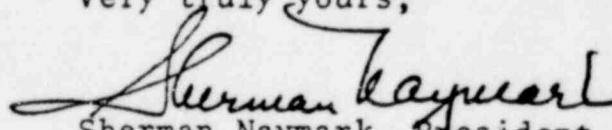
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Corrective action has been initiated. All known users of NUPIPE are being immediately informed of the defect and the possible impact that the defect may have on their work. Further, the NUPIPE program is being modified to eliminate the defect and will be re-issued as Version 1.4 in mid-January 1980. The corrective actions are being undertaken under the direct cognizance of Mr. T. J. Pashos, Senior Vice-President, Corporate Engineering, and with the assistance of the Quality Assurance and Engineering organizations.

The defect was discovered at approximately 8:00 PM on December 13, 1979, in the performance of work being performed for a client of Quadrex. The discussions and the decision to report this finding were in accordance with the Quadrex Quality Assurance Program and the initiation of this report was begun at approximately 9:00 AM on December 14, 1979. Mr. Norman Mosley, Director, Division of Reactor Operations and Inspection was verbally notified of this occurrence at approximately 8:30 AM, December 17, 1979, with the issuance of this report by close-of-business, December 17, 1979.

Quadrex will continue to communicate to the Nuclear Regulatory Commission, any events which have a direct bearing on the defect in NUPIPE or the ramifications of that defect.

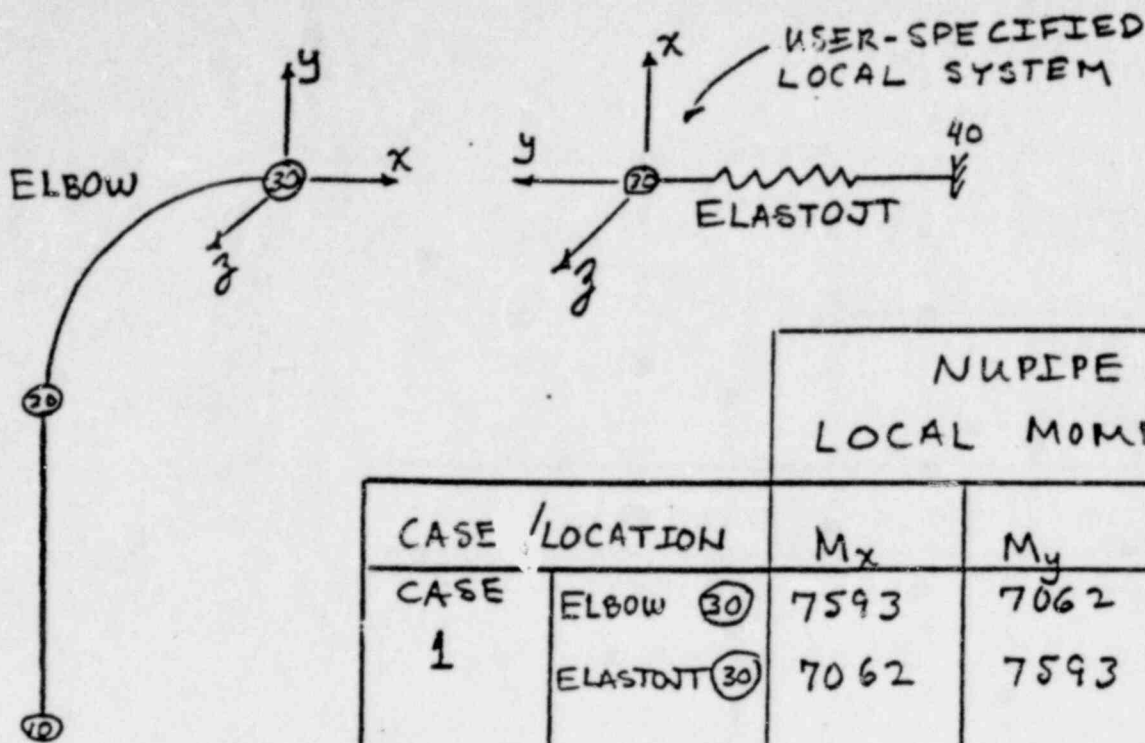
Very truly yours,

A handwritten signature in cursive script that reads 'Sherman Naymark'.

Sherman Naymark, President
Quadrex Corporation

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For Information Purposes Only



		NUPIPE LOCAL MOMENTS		
CASE / LOCATION		M _x	M _y	M _z
CASE 1	ELBOW 30	7593	7062	6174
	ELASTOJT 30	7062	7593	6174
CASE 2	ELBOW 30	7593	7062	4857
	ELASTOJT 30	7062	7593	4857
CASE 3* = 1 + 2	ELBOW 30	14124	15186	11031
	ELASTOJT 30	14124	15186	11031
HAND SUM FOR ELBOW		15186	14124	11031

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B31.1 Sec 119.6.4 (b) STRESS

$$\text{NUPIPE: } S_E = \sqrt{[i(15186^2 + 11031^2)^{1/2}]^2 + (14124)^2} / Z$$

$$\text{CORRECT: } S_E = \sqrt{[i(14124^2 + 11031^2)^{1/2}]^2 + (15186)^2} / Z$$

FOR 12" Sched 80 ELBOW (SIF=1.85) $S_{E(\text{NUPIPE})} / S_{E(\text{CORRECT})} = 1.028$

* ELBOW local moments taken from ELASTOJT output