

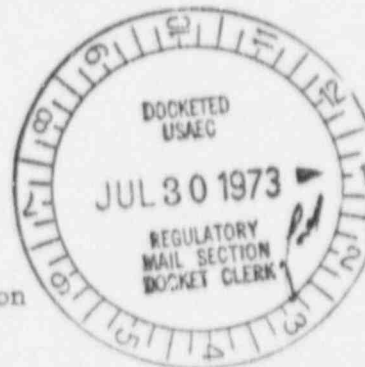
NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

July 27, 1973

Mr. J F O'Leary, Director
Directorate of Licensing
United States Atomic Energy Commission
Washington, D C 20545



Dear Mr. O'Leary:

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Regulatory

File Cy.

Supplementary Information on Instrument Line Break Analysis

A summary of an additional investigation of the instrument line break accident performed for NSP is reported herein for your information. This analysis was conducted by an independent architect/engineer and included a determination of the engineering practicability, as well as an independent evaluation of the dose consequences, of installing flow restricting orifices.

This independent analysis adds support to the previous analysis submitted in the Monticello Full Term Operating License application. Both analyses assumed a complete break of an instrument line between the drywell penetration and the isolation valve. Radiological assumptions of the two analyses were compatible and generally followed the recommendations of Safety Guides 3 and 11. Both analyses concluded that secondary containment integrity was maintained, and that doses were substantially below the guidelines of 10CFR100. Dose calculations of the two studies are summarized as follows:

	<u>Whole Body</u>		<u>Thyroid</u>	
	<u>w/orifice</u>	<u>w/o orifice</u>	<u>w/orifice</u>	<u>w/o orifice</u>
FTOL Analysis	-	7.5 mR	-	13.6 R
Ind. Analysis	0.03 mR	2 mR	0.034 R	23.8 R
Ind. Analysis*	0.09 mR	6 mR	0.102 R	71.4 R

* Using Technical Specification iodine concentration in the primary coolant.

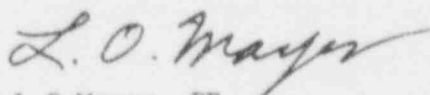
These values were calculated on the basis of 300,000 uCi/sec off-gas rate and FSAR design primary coolant iodine concentration. The independent analysis also took into consideration dose consequences using maximum (per Technical Specification) iodine concentration in the primary coolant. These results are indicated by an asterisk in the above table.

The independent analysis showed that it was technically feasible to install flow restricting orifices, however with a questionable improvement in overall safety. The present system has been tested and operated successfully. The installation of orifices would require 130 new welds in the 65 affected lines, would entail additional radiation exposure to plant personnel and some risk of spread of contamination in the plant.

An examination of the plant physical arrangement has shown that there is virtually no potential for physical damage to the exposed sections of 1-inch instrument lines outside of primary containment. The sections are screened from rotating machinery by shield walls and thus, are not subject to potential missile damage. No foreseen maintenance operations in the areas could detrimentally affect the line sections. The Type 304 stainless steel, used in the 1-inch lines, is not subject to brittle fractures and the stress levels are generally small as a consequence of the line sizes. The exposed sections of instrument lines outside of primary containment are nominally 24 inches long and extend from the containment penetration through the excess flow check valve and gate valve up to the 3/8 inch tubing leading to the instrument racks. A break in the 3/8 inch stainless steel tubing with concurrent failure to close of the excess flow check valve would result in the flow characteristics similar to that through the proposed orifices.

It is concluded on the basis of the two analyses performed that no backfit is necessary in regard to potential instrument line breaks because 1) there is minimal risk of breakage; 2) dose consequences are moderate even under conservative assumptions (substantially below the guidelines of 10CFR100); and 3) the integrity and functional performance of secondary containment can be maintained.

Yours very truly,



L O Mayer, PE
Director of Nuclear Support Services

LOM/DWJ/br

cc: B H Grier
G Charnoff
Minnesota Pollution Control Agency
Attn. K Dzugan

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Ltr furnishing addl info regarding analysis of postulated pipe failure outside containment..

ENCLOSURES:

ACKNOWLEDGED

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PLANT NAME: Monticello

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