

NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

April 26, 1974

Mr. J F O'Leary
Directorate of Licensing
Office of Regulation
U S Atomic Energy Commission
Washington, DC 20545



Dear Mr. O'Leary:

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

Supplement No. 3 to January 23, 1974 Report Entitled,
"Permanent Plant Changes to Accommodate Equilibrium
Core Scram Reactivity Insertion Characteristics"

In a March 14, 1974 letter from Mr. D J Skovhol, we were requested to furnish calculations supporting assumption E.2.c (Page 7 of the above referenced report. Specifically, this requires (1) justification for uncoupling the relief valve discharge line stress analysis from the main steam line and (2) analysis of simultaneous opening of two relief valves on the same main steam line.

The dynamic analysis considers the relief valve inlet, the relief valve, and the relief valve discharge line to be anchored between the main steam line and the torus vent tube penetration. The vent tube is locally reinforced and is truly an anchor. Justification for assuming the main steam line as an anchor is threefold. The mass ratio of the main steam line to the relief valve discharge line (1:0.216 per linear unit length) and the short duration of the applied transient at the discharge piping (less than 500 milliseconds), indicate that the displacement of the main steam line is insignificant with respect to other loads applied to the main steam line as shown below and can therefore, be ignored. The maximum calculated forces and moments at the main steam line connection are orders of magnitude smaller than other forces and moments from other loading conditions seen at this location. The relief valve inlet is smaller in size than either the main steam line or the relief valve discharge line and therefore requires careful analyses. Assuming the main steam line as an anchor will maximize the forces and moments on the inlet, making the calculation conservative; if the main steam line were allowed to rotate or translate under the transient forces, the stresses would be reduced.

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The effects of simultaneous discharge of the two relief valves on the most limiting line were analyzed statically by applying simultaneously, at the main steam line connections, the maximum loads determined from the two relief valve blowdown analysis. The maximum calculated forces and moments on the main steam line anchor are insignificant as shown below. For comparison, the plant operating conditions which include the thermal, weight, and seismic loads are included. These figures demonstrate compliance to the ANSI B31.1b 1973 Code Requirements.

Location	Loading	Fx	Fy	Fz	Mx	My	Mz
Reactor	Relief Valve						
	Blowdown	36	874	-199	898	-1,094	2,848
Nozzle	Plant Operating Load	999	11,122	3,353	61,105	9,335	47,539
Drywell	Relief Valve						
	Blowdown	-226	-1,408	390	28,342	2,974	-1,839
Flued Head	Plant Operating Load	5,146	20,572	4,446	288,444	77,775	21,805

F = lbs.

M = ft. - lbs.

Yours very truly,

L. O. Mayer

L O Mayer, PE
Director of Nuclear Support Services

LOM/lh

cc: J G Keppler
G Charnoff
Minnesota Pollution Control Agency
Attn. E A Pryzina

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DESCRIPTION:

Ltr furn supplement #3 to 1-23-74 report,
"Permanent Plant Changes to Accommodate Equi-
librium Core Scram Reactivity Insertion Char-
acteristics".

PLANT NAME: MONTICELLO

ENCLOSURES:

ACKNOWLEDGED
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