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SUBJECT: Provides addl response to NRC Bulletin 88-008 addressing
thermal fatigue impact on auxiliary pressurizer spray line.

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TITLE: Bulletin Response 88-08 - Thermal Stress in Piping to RCS.

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Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
NRC BULLETIN NO. 88-08: FINAL RESPONSE ON AUXILIARY
PRESSURIZER SPRAY LINE

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Attn: T. E. Murley:

November 1, 1989

Dear Dr. Murley:

This additional response to NRC Bulletin No. 88-08 addresses the further evaluation required to determine the thermal fatigue impact on the auxiliary pressurizer spray line due to a specific operating concern for the Donald C. Cook Nuclear Plant. Our prior submittal, AEP:NRC:1069A dated August 8, 1989, identified that this line has an overall minimum potential for fatigue failure. However, further review was required to address the unusual condition of low leakage (less than or equal to 0.2 gpm) from a normally-closed auxiliary pressurizer spray valve without the presence of fully developed turbulent flow from the normal pressurizer spray line. Fully developed turbulent flow from the normal pressurizer spray valves, which would mix any existing thermal stratification, cannot be assured when these valves are partially opened. Only partial opening of the normal pressurizer spray valves is required to provide the necessary flows during the various modes of unit operation.

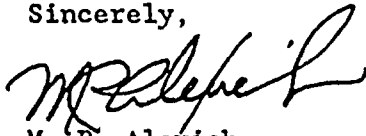
A revised fatigue crack growth analysis was performed by Westinghouse Electric Corporation to evaluate the impact on the auxiliary pressurizer spray line with a low leakage flow and no turbulent mixing. This analysis was based on the time that the normal pressurizer spray valves are required to be open. Since these valves are opened only during power changes, unit startup and cooldown, a conservative time of three months or 20% of power operation during a typical fuel cycle was used. The results of the analysis indicate that if the auxiliary pressurizer spray lines are subjected to "worst-case" thermal fatigue stresses, pipe integrity

will be maintained for at least 30 months of power operation. This is based on the time needed to propagate an initial 10% through-wall crack to 60% of the wall thickness. "Worst-case" conditions reflect the conservative stress cycle frequencies identified in the Farley 2 failure. Continuous unit operation is therefore acceptable contingent on examination of potential high stress points within this 30-month operating period.

The long-term assurance program for the auxiliary pressurizer spray line will consist of non-destructive examination (NDE) of the appropriate welds/bends on a refueling outage basis for each unit. This frequency establishes a conservative margin to further ensure the integrity of the auxiliary pressurizer spray lines at Cook Nuclear Plant.

This letter is being submitted under oath pursuant to the provisions of Section 182a, Atomic Energy Act of 1954, as amended.

Sincerely,



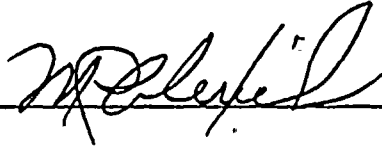
M. P. Alexich
Vice President

ldp

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NFEM Section Chief


STATE OF OHIO)
COUNTY OF FRANKLIN)

Milton P. Alexich, being duly sworn, deposes and says that he is the Vice President of licensee Indiana Michigan Power Company, that he has read the foregoing Response to NRC Bulletin No. 88-08: Final Response on Auxiliary Pressurizer Spray Line and knows the contents thereof; and that said contents are true to the best of his knowledge and belief.



Subscribed and sworn to before me this 1st

day of November, 1989.



NOTARY PUBLIC

RITA D. HILL
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