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ACCESSION NBR: 8708210588 DOC. DATE: 87/08/14 NOTARIZED: NO DOCKET #  
 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315  
 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana & 05000316  
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 MURLEY, T. E. Document Control Branch (Document Control Desk)

SUBJECT: Submits addl info re TMI Action Item II.D.1 on relief & safety valve testing, per J Dolan 870306 request.

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# INDIANA & MICHIGAN ELECTRIC COMPANY

P.O. BOX 16631  
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August 14, 1987

AEP:NRC:0585J

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2  
Docket Nos. 50-315 and 50-316  
License Nos. DPR-58 and DPR-74  
ADDITIONAL INFORMATION REGARDING TMI ACTION  
ITEM II.D.1 ON RELIEF AND SAFETY VALVE TESTING

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

Attn: T. E. Murley

Dear Dr. Murley:

The purpose of this letter and its attachment is to provide the additional information requested by your staff regarding TMI Action Item II.D.1 on relief and safety valve testing. The request was made in a letter from D. L. Wigginton to John Dolan, dated March 6, 1987, and involved additional information concerning verification of the REPIPE code and stresses on pipe supports in a faulted condition.

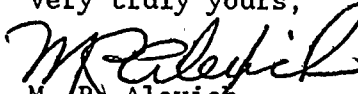
In response to the question on verification of the REPIPE code, a verification report was requested from Control Data Corporation (CDC). The verification report is on file in our offices and will be transmitted to you by CDC.

In response to the question on pipe support stresses, we reviewed 46 pipe supports in Units 1 and 2. All 46 supports were found to meet the allowable stress limits for the faulted condition. A more detailed response to these questions is contained in the attachment to this letter. This information is supported by ANSI/MSS Report SP-58, "Pipe Hangers and Supports--Materials, Design and Manufacture."

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

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PDR ADOCK 05000315  
P PDR

Very truly yours,

  
M. P. Alexion  
Vice President

cm

Attachment

cc: John E. Dolan  
W. G. Smith, Jr. - Bridgman  
R. C. Callen  
G. Bruchmann  
G. Charnoff  
NRC Resident Inspector - Bridgman  
A. B. Davis - Region III  
L. Goodwin - CDC

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Attachment to AEP:NRC:0585J

Response to Additional Questions Concerning  
Relief and Safety Valve Testing



In a letter from D. L. Wigginton to John Dolan, dated March 6, 1987, the NRC requested additional information regarding relief and safety valve testing. The NRC questions contained in the March 6 letter and our response to those questions are as follows:

Question 1:

"The licensee was previously requested to provide verification that the REPIPE program produces accurate fluid forces when used in conjunction with RELAP for discharge transients of the type occurring in a PWR overpressure protection system. The licensee responded by stating that verification of REPIPE's capacity to generate force histories is provided by the Control Data Corporation. This statement does not in itself provide evidence of verification for the program. Therefore, provide a verification of this program by comparing calculated forces with measured forces from the EPRI test data or other similar verification."

Response:

Verification that the REPIPE program produces accurate fluid forces when used in conjunction with RELAP 5 MOD 1 for the D. C. Cook Plant Units 1 and 2 pressurizer overpressure protection system discharge transients is provided in the REPIPE Version 3.10 Verification Report Rev. 1, dated June 1987, submitted by Control Data Corporation. The proprietary report is on file at the American Electric Power Service Corporation offices in Columbus, Ohio, and is available for your review. We also understand that CDC will soon mail you a copy of this report. Ms. Linda Goodwin, Quality Assurance Manager for CDC, has advised us that the report will be mailed soon.

Question 2:

"The licensee has provided load combinations that were used to evaluate adequacy of the piping and pipe supports for normal, upset, and emergency conditions. The load combinations used for these three service conditions are in accordance with FSAR requirements and recommendations of the EPRI PWR Safety and Relief Valve Test Program Guide for Application of Valve Test Program Results to Plant-Specific Evaluations, July 1982. The license submittals do not, however, provide a load combination for a faulted condition whereby loads for a worst case blowdown are combined with loads for a worst case seismic event. Such a load combination is specified in the FSAR (Chapter 4, Section 4.3.1) and in the EPRI Guide. Based on the stress values presented in the Teledyne reports included in the licensee submittals, a load combination of Deadweight + Design + Design Basis Earthquake + Safety Valve Discharge  $\leq 2.4$  Sh can be performed for pipe stresses and the resulting stresses for this faulted condition are acceptable.

"The information supplied by the licensee, though, does not permit performing a similar load combination for a faulted condition on the pipe supports. Therefore, determine an allowable stress for pipe support components for a faulted condition and perform a load combination such as Normal + Design Basis Earthquake + Safety Valve Discharge in which the resulting stresses are compared to the established allowables."

Response:

We have performed a load combination for a faulted condition on the pressurizer SV/PORV discharge pipe supports by combining loads for a worst-case blowdown with loads for a worst-case seismic event and evaluated the resulting component stresses against established allowables. Twenty Unit 1 and twenty-six Unit 2 pipe supports (excluding spring supports) were evaluated using the following faulted load combination and allowable stress limits:

Faulted Load Combination:

$$\left( \begin{array}{c} \text{SV Transient} \\ \text{Weight Load} \end{array} \right) + \left( \begin{array}{c} \text{SV Transient} \\ \text{Thermal Load} \end{array} \right) \pm \sqrt{\left( \begin{array}{c} \text{SV Transient} \\ \text{Shock Load} \end{array} \right)^2 + \left( \begin{array}{c} \text{DBE} \\ \text{Load} \end{array} \right)^2} \quad *$$

Allowable Stress Limits:

The load summation shall not produce support component stresses greater than 133% of that permitted by (a) and (b) noted below, or 0.9Sy, or 0.7Su, whichever is governing.

- (a) "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings (Effective November 1, 1978)," Manual of Steel Construction, Eighth Edition. American Institute for Steel Construction (AISC).
- (b) Manufacturers Standardization Society (MSS)-SP-58, "Pipe Hangers and Supports--Materials, Design and Manufacture."

Results:

All forty-six supports were found to meet the allowable stress limits for the faulted condition.

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\*The minus term is used for selecting the worst-case loading if the sum of the first two terms is negative.