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SUBJECT: Advises that schedule for implementation of plant mods per NUREG-0661 does not permit final analysis of complete structural sys prior to design of mods. Interpretations of NUREG-0661 to be incorporated in analysis provided.

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Iowa Electric Light and Power Company

May 8, 1981
LDR-81-171

LARRY D. ROOT
ASSISTANT VICE PRESIDENT
OF NUCLEAR DIVISION

Mr. Darrell C. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Duane Arnold Energy Center
Unit I
Supplemental Information Relative
to Mark I Containment Modifications
and Analysis

NRC Docket No. 50-331

File: T-23j

Dear Mr. Eisenhut

The NRC issued orders on January 13, 1981, for modification of the licenses for a number of nuclear power plants with Mark I containment. The order requires prompt reassessment of the containment design for the Duane Arnold Energy Center suppression pool hydrodynamic loading conditions and that necessary plant modifications needed to conform to the acceptance criteria in Appendix A, NUREG-0661, be installed no later than June 30, 1982. Accordingly, Iowa Electric Light and Power Company is continuing with a vigorous effort to meet the specified completion dates and to complete a plant unique analysis which meets the intent of NUREG-0661.

We are finding it necessary, however, to implement plant modifications on a schedule which does not permit final analysis of the complete structural system prior to the design of modification.

Further we wish to inform you of certain interpretations of NUREG-0661 which will be incorporated in our analysis. We will fully document and support these interpretations in our plant unique analysis submittal. A brief description of the areas of interpretation is provided below:

Alternate SRV Analysis Approach

NUREG-0661 allows the use of an alternate approach for the evaluation of the effects of safety relief valve discharge. Iowa Electric is using such an approach for the evaluation of the effects of SRV discharges on the torus shell, the torus support system and attaching piping. Also, where appropriate, improved analytical approaches and/or

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hardware modifications are being utilized to mitigate the effects of some of the postulated SRV loading events.

C. O. and Chugging Harmonic Phasing

Iowa Electric plans to utilize a realistic and technically sound phasing technique for combining the effects of the 50 individual load harmonics currently defined for these loadings. This approach will be used for the evaluation of the appropriate components.

Submerged Structures

For the evaluation of the effect of loads on submerged structures, new data and methodology is now available to allow more realistic evaluations. In addition to the effects discussed above for SRV discharge and condensation oscillation, these refined approaches will be utilized.

Froth Impingement Loads

As allowed by NUREG-0661, we are utilizing the 1/4 scale pool swell test movies to determine the Region I froth impingement loads for structures above the pool. Detailed analysis of the movies is being conducted to determine froth velocity, direction, timing, and location.

Torus Lateral Loads

The Load Definition Report specifies a net lateral load on the torus which must be combined with the effects of lateral earthquake loads. The basis of these loading definitions is being closely examined as is the basis of establishing the net lateral reaction due to earthquakes.

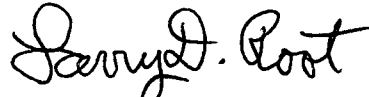
Interpretations such as those identified above were a significant factor in the establishment of schedules for completion of modifications. At present, Iowa Electric is proceeding with all engineering and related activities targeted for our ordered completion date. As we proceed, however, we are learning more about the scope of the modifications and analysis required. This new information may result in schedule changes at a later date. At such a time that the extent of these developments can be determined, they will be communicated to the NRC.

We look forward to attending the meeting you have scheduled with the Mark I Owners Group on May 22, 1981. At that meeting we could more fully explain the justifications for our interpretation of the acceptance criteria and point out to you some of the uncertainties in our schedule.

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If you have any questions, regarding the information presented herein, please direct them to this office.

Very truly yours,



Larry D. Root
Assistant Vice President
Nuclear Generation

LDR/HWS/kmh

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