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SR. VICE PRESIDENT
NUCLEAR POWER

AUG 6 1985

Walter R. Butler, Chief
Licensing Branch No. 2
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket Nos. 50-352
50-353

SUBJECT: Limerick Generating Station, Units 1 and 2

Dear Mr. Butler:

On August 1, 1985, discrepancies were noted by an NRC Region I inspector between the sequence of events observed in a simulated loss of AC power event and the sequence of events that are described for such events in Limerick FSAR Section 15.2.6, Loss of AC Power. Specifically, main steam isolation valve (MSIV) closure did not occur within 2 seconds of event initiation in the simulation as assumed in the FSAR analyses.

Although the Limerick plant simulator studies, which initiated the inspector's concern were performed in support of testing at approximately 25% power and were not, therefore, directly comparable to the FSAR analyses, Philadelphia Electric Company's investigation determined that the sequence of events listed in FSAR Tables 15.2-9 and 15.2-10 were not representative of the expected plant response because of certain Limerick unique design features.

Our investigation revealed that design changes to enhance the reliability of the reactor protection system (RPS) power supply were not reflected in the existing loss of AC power transient analyses. The Limerick design provides the RPS with an uninterruptable power source instead of the standard AC driven motor-generator set. With this enhanced design, the RPS will not cause MSIV closure upon the loss of AC power as is the case with the standard design.

It was further recognized that loss of one or two of Limerick's three auxiliary power transformers would not result in a loss of auxiliary power. However, the simultaneous loss of all three auxiliary transformers would result in the loss of all auxiliary power. This event is identical to the event "Loss of All Grid Connections" which has been reanalyzed for Limerick as described below. This reanalysis directly addresses the guidance of NUREG-0800, Section 15.2.6.

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Using the ODYN code, General Electric reanalyzed the "Loss of All Grid Connections" event at full power using initial conditions and other model inputs that reflect the Limerick as-built design. The results of the reanalysis are shown on the attached Table I and are compared to the original "Loss of All Grid Connections" transient analysis, the original "Loss of Auxiliary Power Transformer" transient analysis and the similar, but more limiting, "Load Rejection Without Bypass" transient results (Section 15.2.2). The ODYN reanalysis showed that all parameters remained bounded by other more severe transients. For this reason, the "Loss of All Grid Connections" transient does not provide any unique or extraordinary challenges to the Limerick reactor systems beyond those previously evaluated and found acceptable.

To address a concern that errors might exist elsewhere in Chapter 15 in spite of existing procedural controls governing content of and changes to the FSAR, a detailed review of Chapter 15 was initiated. This review utilized a number of different teams:

- A multi-disciplined team of PECo system engineers.
- A team of Senior Licensed Operators at the plant.
- A team of system and licensing engineers at Bechtel, the plant architect-engineer.
- A General Electric team of engineers and analysts familiar with both Limerick and Chapter 15 analyses.

Each team reviewed the event descriptions and analysis results in Chapter 15 from its unique perspective for proper application to Limerick. Any concerns were resolved through further investigation or discussion with the responsible organization. In no case were any additional sequences or analysis results found to be inappropriate for Limerick.

The overall results of the review indicated that the error in Section 15.2.6 was an isolated case. Further, they confirmed that the analyses in FSAR Chapter 15 are appropriate for Limerick, that the expected response of Limerick to the Chapter 15 transients and accidents is bounded in each case by the analysis, that this chapter provides the required support for the Technical Specifications, and that Limerick continues to comply with all applicable NRC regulations and licensing commitments.

Changes to FSAR Section 15.2.6 and associated tables and figures which incorporate the results of the reanalysis described above will be formally incorporated into the FSAR in the next revision, scheduled for September, 1985. In addition, that revision will include similar changes to Section 15.9, which serves as a review aid for the remainder of Chapter 15.

Should you require any additional information in this regard, please do not hesitate to call.

Sincerely,

V. S. Boyer

Copy to: (See Attached Service List)

HDH/dg/08068501

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TABLE I

LIMERICK GENERATING STATION
SELECTED FSAR CHAPTER 15 TRANSIENT ANALYSES

Event	Max Neutron Flux (% NBR)	Max Dome Press (psig)	Max Vessel Press (psig)	Max Steamline Press (psig)	Max Core Any Surface Heat Flux % of Initial	Blowdown Duration (sec)
EXISTING FSAR ANALYSES						
- Loss of Auxiliary Power Transformer (FSAR Section 15.2.6.1.1.1)	104.3	1180.0	1194.0	1179.0	100.1	7.5
- Loss of All Grid Connections (FSAR Section 15.2.6.1.1.2)	109.3	1173.0	1190.0	1169.0	100.0	11.6
REVISED FSAR ANALYSIS						
- Loss of All Grid Connections (ODYN Reanalysis)	178.5	1168.4	1175.4	1164.2	101.3	4.8
BOUNDING REFERENCE CASE						
- Generator Load Rejection w/o Bypass (FSAR Section 15.2.2.2.1.2)	222.5	1200	1225.0	1196.0	106.2	12.7

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