Iowa Electric Light and Power Company
September 19, 1988
NG-88-3187

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Response to NRC Bulletin 88-07, "Power Oscillations in Boiling Water Reactors"
File: A-101a

Dear Dr. Murley:

We have evaluated our ability to identify and respond to potential reactor instability events at the Duane Arnold Energy Center (DAEC) in response to NRC Bulletin 88-07. This evaluation consisted of reviews of our operating procedures, our licensed reactor operator training program, and our neutron monitoring hardware.

As required by Bulletin 88-07, the DAEC licensed reactor operator staff and Shift Technical Advisors (STA's) performing shift duties were thoroughly briefed on the March 9, 1988 LaSalle Unit 2 instability event either prior to June 30, 1988 or prior to returning to control room duty.

We have determined by review of our operating procedures that they provide adequate direction for avoiding plant conditions that may result in the initiation of uncontrolled power oscillations. The DAEC Technical Specifications forbid operation in the natural circulation mode while above one percent thermal power. Because of this requirement, procedures require the reactor to be manually scrammed following trip of both reactor recirculation pumps. Our Technical Specifications also contain requirements resulting from General Electric's Service Information Letter No. 380, Rev. 1 (SIL-380, Rev. 1). In accordance with SIL-380, Rev. 1, the Technical Specifications specify a forbidden region on the power-to-flow operating map for single recirculation pump operation; and they specify a region where Average Power Range Monitor (APRM) and Local Power Range Monitor (LPRM) signals must be monitored for excessive noise amplitude while in either single or two recirculation pump operation (see attached figure). In practice, the APRM/LPRM noise surveillance region is avoided during normal startups and shutdowns.

Although we have procedures for avoiding the operating region most susceptible to instability events and procedures for performing surveillances to detect instabilities, we believe that procedure enhancements to provide additional direction for recognizing the onset of uncontrolled power oscillations and for actions to be taken in response to uncontrolled power oscillations are appropriate.

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Our review of DAEC licensed operator and STA training programs indicates that our personnel are trained on Technical Specifications and operating procedures pertaining to avoidance of the forbidden and noise surveillance regions of the power-to-flow operating map. However, we feel that greater training emphasis on reactor instability events would be beneficial. We intend to add a review of such events to our current SIL-380 based training. This review will focus on operator identification and mitigation of reactor instability conditions.

Finally, our review of DAEC neutron monitoring systems indicates that the response times of our APRM and LPRM systems are adequate to enable control room personnel to detect unstable reactor behavior. We have not installed any signal filters or time delays on our neutron monitoring equipment similar to the thermal power monitor installed at LaSalle Unit 2. With the current instrument response times, our control room APRM recorders and LPRM indicators will adequately display unstable reactor behavior such that operators can identify it and initiate the necessary corrective actions.

To provide the aforementioned enhancements to our operating procedures, appropriate operating procedures will be revised to specifically address reactor instability events. Likewise, the aforementioned review of reactor instability events will be developed to enhance our licensed operator and STA training programs. These projects will be completed prior to restart from our refueling outage that is scheduled to begin September 29, 1988.

In addition, Iowa Electric is an active member of the Boiling Water Reactor Owners' Group (BWROG) committee on reactor stability. The BWROG committee is continuing to work with the NRC staff on this issue. We will consider future procedure, training, or instrumentation enhancements recommended by this committee.

IOWA ELECTRIC LIGHT AND POWER COMPANY

By _____
William C. Rothert
Manager, Nuclear Division

Subscribed and sworn to before me on this 19th day of September, 1988.

_____
Notary Public in and for the State of Iowa

WCR/BGH/pjv+

Attachment: 1) Power-to-Flow Operating Map

cc: B. Hopkins
L. Liu
L. Root
R. McGaughy
J. R. Hall (NRC-NRR)
A. Bert Davis (Region III)
NRC Resident Office
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POWER-FLOW MAP