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 MURLEY,T.E. Office of Nuclear Reactor Regulation, Director (Post 870411)

SUBJECT: Responds to Generic Ltr 89-19, "Request For Action Related to Resolution of USI A-47...."

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Iowa Electric Light and Power Company

May 4, 1990

NG-90-1089

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, DC 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
NRC Generic Letter 89-19, "Request For Action
Related to Resolution of Unresolved Safety
Issue A-47 'Safety Implication of Control
Systems in LWR Nuclear Power Plants' Pursuant
to 10 CFR 50.54(f)," dated September 20, 1989
Reference: Letter from S. Floyd (BWROG) to J. Partlow
(NRC) "Submittal of BWR Owners' Group
Response to Generic Letter 89-19,"
dated April 2, 1990
File: A-101b, C-31

Dear Dr. Murley:

NRC Generic Letter 89-19 "Request for Action Related to Resolution of Unresolved Safety Issue A-47, 'Safety Implication of Control Systems in LWR Nuclear Power Plants' Pursuant to 10 CFR 50.54(f)," concludes that all BWR plants should provide automatic reactor vessel overfill protection. The Generic Letter also states that plant procedures and technical specifications should include provisions to verify periodically the operability of the overfill protection. We are members of the GE BWR Owners' Group and participated in formulating the group response to this Generic Letter. That response and this letter provide our response to the Generic Letter.

The Duane Arnold Energy Center (DAEC) design includes an automatic high vessel level trip of the reactor feed pumps on indication of high vessel level. This function is currently tested once per refuel outage as part of the preventative maintenance program. We intend to replace this test with an augmented Surveillance Test Procedure (STP) which calibrates reactor water level and pressure instruments by including a step to verify the high vessel level trip function. This revision will be completed by July 31, 1990.

The attached evaluation of the DAEC high vessel level trip design against the requirements of NUREG 1218 "Regulatory Analysis for Resolution of USI A-47," and referenced BWR Owners' Group response provides our justification for not making additional modifications to the plant hardware or technical specifications.

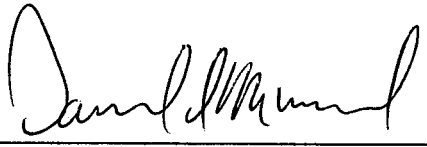
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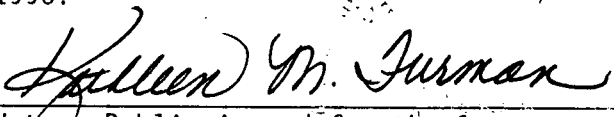
Dr. Thomas E. Murley
May 4, 1990
NG-90-1089
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This letter is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

By 
DANIEL L. MINECK
Manager, Nuclear Division

Subscribed and sworn to before me on
this 4th day of May,
1990.


Notary Public in and for the State
of Iowa

DLM/SRC/pjv+

Attachment: Evaluation of DAEC Reactor Vessel High Level Protection

cc: S. Catron
L. Liu
L. Root
R. McGaughy
J. R. Hall (NRC-NRR)
A. Bert Davis (Region III)
NRC Resident Office
Commitment Control 890382

Evaluation of DAEC Reactor Vessel High Level Protection

The Feedwater Control system at the DAEC includes an automatic trip of the Reactor Feed Pumps and the Main Turbine on high reactor vessel level. This trip is initiated by 2 out of the 3 trip modules resulting in a 2-out-of-3 logic. The 3 trip modules receive input from the 3 vessel level instruments in the Feedwater Control System. The instruments and trip modules are not safety grade, but receive power from diverse supplies. Two of the channels utilize a common instrument line. This design is similar to that of the reference GE BWR plant analyzed in NUREG 1218 "Regulatory Analysis for Resolution of USI A-47" (Table A-1). The conclusion in NUREG 1218 for the reference design is that modification is not warranted considering the questionable safety benefit of adding another channel and the high cost of the modification. The NUREG estimates that the core-melt frequency would be "reduced by 7×10^{-7} per reactor-year" by modifying the existing 2-out-of-3 system to a 2-out-of-4 system. The BWR Owners' Group response (letter from S. Floyd (BWROG) to J. Partlow (NRC), "Submittal of BWR Owners' Group Response to Generic Letter 89-19" dated April 12, 1990) estimates the cost to modify the overfill protection system for a Group B Plant (DAEC design) to range from \$305,000 to \$937,000 for the plants participating in the submittal. This closely matches the estimate in NUREG 1218.

The BWR Owners' Group response also provides an analysis of industry experience with high vessel level incidents. This analysis provides a breakdown of these incidents (including those at DAEC) which shows that none involved a failure to trip. The conclusion is "that the existing systems provide adequate RPV overfill protection and that any safety benefits from modifying these systems in full accordance with GL 89-19 would not be significant." This conclusion is consistent with that contained in NUREG 1218 which states that design changes to improve existing overfill protection systems at GE BWR plants would not significantly reduce risk.

Based on the referenced documents, no modifications to the existing DAEC vessel overfill protection system are deemed necessary.

The Generic Letter further suggests that plant procedures and technical specifications include provisions to verify the operability of the overfill protection system. In order to satisfy the intent of the Generic Letter, the Surveillance Test Procedure (STP) which calibrates the Technical Specification required vessel level instrumentation which provides input to the trip logic will be revised to include verification of the trip signal. (This verification is currently performed through the preventive maintenance program). Use of the modified STP, which is currently performed every 6 months, will verify operability of the overfill protection system. Since the vessel level instrumentation is already included in the DAEC Technical Specifications, no further changes are necessary.

It is concluded that the existing automatic vessel overfill protection system at the DAEC is adequate to prevent overfill events. The Surveillance Test Procedure, which is performed once every six months, will verify proper function of the system during plant operation. In addition, plant operating procedures currently address vessel overfill events.

We plan to modify the STP to include verification of the trip function by July 31, 1990.