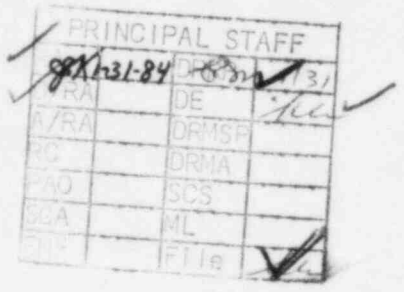
DMB

Iowa Electric Light and Power Company

January 27, 1984
NG-84-0436



Mr. James Keppler
Regional Administrator
Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Duane Arnold Engery Center
Docket No: 50-331
Op. License No: DPR-49
HVAC Damper Actuators

Dear Mr. Keppler:

This letter is submitted in regard to the HVAC damper actuators installed at the DAEC. On January 26, 1984, Iowa Electric notified the NRC by telephone that the subject actuators were potentialy deficient in meeting the purchase specification.

We have continued to review the material relating to this discrepancy in order to determine the scope of the problem and to identify any safety concerns.

This review has included the specifications for the damper assemblies which were purchased originally complete with actuators as well as the purchase specifications issued subsequently for replacement actuators only. The subsequent orders for "like-for-like" replacements were placed directly with the actuator manufacturer who was the subvendor to the damper manufacturer. Our investigation shows that a quality assurance program, as required by our most recent purchase order, is not currently in effect at the actuator manufacturer's facility. Accordingly, the provided documentation is not adequate.

An engineering evaluation was performed to review the replacement components discussed above. Purchase documents verified that replacements were made with the same model number actuators. A visual examination of a replacement actuator confirmed that the actuator configuration and construction was the same as originally supplied. Additional analysis was performed on the actuators which was equivalent to the seismic analysis performed on the dampers themselves. The results of these analyses indicate that the actuators will meet the original design basis for the plant.

JAN 30 1984

IE01
1/1

In addition, an engineering evaluation of the affected systems and the effects on each system was performed. The results of this evaluation are summarized in Attachment 1 to this letter. The following points are relevant for all the damper operators in question, and in conjunction with the evaluation summarized in Attachment 1 constitute our justification for continued operation.

a. The dampers actuated by the damper actuators in question are mounted in the ducting in series pairs. Failure of any one damper to move to its safe position (closed) due to non-common mode failure of its associated operator would not prevent the redundant damper from isolating the penetration.

b. The only identified cause of potential common mode, simultaneous failure of operator for redundant dampers is the seismic event. These failures would be of consequence only in the highly unlikely event of a concurrent accident which creates a high radiation environment within the secondary containment, that is, pipe break, rod drop, or refueling accident. Without a major radiation source term, the dampers isolation function is unnecessary.

c. Under most postulated accident conditions the dampers in question can be accessed. Therefore, as an additional precautionary interim measure, operators will be instructed that should a secondary containment isolation signal or other isolation signal which initiates damper closure occur, verify negative reactor building pressure of 1/4" water. If 1/4" water is not maintained, the affected dampers which are accessible must be inspected to ensure that they are closed and if any are not, manual closure must be accomplished. This instruction will be issued prior to restart.

In addition to the engineering evaluation discussed above, we are continuing to evaluate the replacement components in order to determine their adequacy. Our objective is to complete resolution of all questions concerning adequacy of qualification by May 1, 1984. If this evaluation indicates the need to replace any of the actuators, our objective will be to complete the replacement by the end of the next refueling outage. Actual completion of replacement, if required, will depend upon availability of replacement parts.

Based upon our evaluation as summarized above, it is our conclusion that continued operation of the DAEC does not endanger the health and safety of the public.

Very truly yours,

R. W. McGaughy

Richard W. McGaughy
Manager, Nuclear Division

RWM/BWR/dmb*
Attachment: 1) Summary of Damper System Evaluation

cc: B. Reid
L. Liu
S. Tuthill
M. Thadani
NRC Resident Office
Commitment Control No. 84-0

ATTACHMENT 1
SUMMARY OF DAMPER SYSTEM EVALUATION

Radwaste Building Air Intake Dampers, 1VAD-44A & B

Although the Radwaste Building Air Intake Isolation Dampers were purchased at the same quality requirements as safety-related isolation dampers, they are not required to perform a safety function, since they only isolate the Radwaste Building Air Intake which is outside the secondary containment boundary. Isolation of the Radwaste Building from Secondary Containment is performed by the Radwaste Building Exhaust Isolation Dampers 1VAD-42A & B.

Control Building Isolation Dampers 1VAD-30A & B and 1VAD-31A & B

Dampers IVAD30A & B Isolate make up air to the Control Building. Dampers 1VAD31A & B isolate the return air exhausting from the Control Building. In the unlikely event of a common mode damper failure concurrent with the radiation release, as discussed above, some radiation protection is provided by the operation of either of two high efficiency air filtration trains for the make up air. As discussed in the UFSAR, Section 6.4, radiation is the only external hazard to the Control Room.

Air Ejector Room Exhaust Isolation Dampers 1VAD-15A & B

These dampers isolate the Turbine Building Air Ejector Room exhaust from the offgas stack as a result of differential pressure. In addition, the air ejector exhaust fan 1VEF-13A & B shutdown.

At least one of the offgas stack fans 1VEF-18A or 18B is running at all times. These fans are sized to handle a larger air flow that is produced by the Standby Gas Treatment System which is the only other source of exhaust flow to the Offgas Stack. Therefore, should dampers 1VAD15A & B both fail to isolate, an overall negative pressure will be maintained in the exhaust plenum by the exhaust stack exhaust fan with the Standby Gas Treatment System running at design flow and no back flow of the Standby Gas Treatment System exhaust into the Turbine Building will occur.

Miscellaneous Secondary Containment Isolation Dampers 1VAD-17A1 & B1, 1VAD-17A2 & B2 (Reactor Building Supply Dampers) 1VAD-17A3 & B3 1VAD-42A & B (Radwaste Building Exhaust) 1VAD-51A & B (Machine Shop Exhaust 1VAD-52A & B (Machine Shop Supply) 1VAD-19A & B (Offgas Retention Building Exhaust)

Redundant Secondary Containment Isolation dampers are provided for ventilation flow paths from the Reactor Building into non-seismic structures including the Radwaste Building, Machine Shop and Off-Gas Retention Building and from the Reactor Building Supply Fan. If one or more pairs of redundant dampers fail to close, leaving a potential flow path to the environment, the Standby Gas Treatment System would be expected to function properly by exhausting air from the Reactor Building. Although the negative pressure established by the Standby Gas Treatment System would be reduced (closer to zero) by the breach of Secondary Containment, flow would tend to be into the Reactor Building through the unisolated ducting rather than vice versa. The

Reactor Building Supply and Exhaust fans would be tripped upon receipt of a secondary containment isolation signal so that the only air flow would be associated with operation of the Standby Gas Treatment System.

Reactor Building Vent Shaft and Refueling Floor Pool Exhaust Isolation Dampers 1VAD-13A & B 1VAD-14A & B

The Reactor Building Vent Shaft which exhausts several areas of the Reactor Building and the Refueling Floor Pool Exhaust discharge through the ductwork and fans into the Reactor Building Main Exhaust Plenum. During normal operation, exhaust from these areas flow through the plenum to the main exhaust fans and out of the Reactor Building through the Main Exhaust Stack. When the Secondary Containment is isolated, redundant isolation dampers close to ensure that exhaust from these areas flows to the Standby Gas Treatment System. Should a failure occur which prevents both dampers in each line from closing, a flow path for airborne radioactive releases could exist to the environment through the main exhaust plenum and exhaust stack; however, the Reactor Building Isolation signal would also trip the exhaust fan located downstream of the redundant isolation dampers in each line and close the fan discharge damper. These fan discharge dampers are provided with position indication in the Control Room. Operation of the Standby Gas Treatment System would establish a slightly negative pressure in the vent shaft which would tend to assist closing of the fan discharge dampers. Additionally a connection from the pool exhaust duct, upstream of the secondary containment isolation dampers to the vent shaft, would also establish a slightly negative pressure in this duct when the SGTS is in operation. This would also tend to close the fan discharge damper for the pool exhaust line, closing off the flow path to the main exhaust plenum and diverting most of the pool exhaust to the vent shaft. Should either of the fan discharge dampers fail to close or a breach of the ductwork occur, the main exhaust fan could be manually tripped, closing the fan inlet dampers and minimizing leakage out of the main exhaust stack. Therefore, failure of the redundant secondary containment isolation dampers on the Reactor Building Vent Shaft and Refueling Floor Pool Exhaust would not be expected to result in significant leakage of airborne radioactivity to the environment.