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

SUBJECT: Forwards revised relief request VR-013 re inservice testing program, in response to Generic Ltr 89-04.

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Iowa Electric Light and Power Company

June 16, 1992
NG-92-2727

JOHN F. FRANZ, JR.
VICE PRESIDENT, NUCLEAR

John Zwick
W
Docket

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
Response to NRC Generic Letter 89-04,
"Guidance on Developing Acceptable
Inservice Testing Programs"

- References:
- 1) Letter from D. Mineck (Iowa Electric) to T. Murley (NRC) dated October 15, 1990 (NG-90-2454)
 - 2) Letter from J. Hannon (NRC) to L. Liu (Iowa Electric) dated March 11, 1992;
Subject: Duane Arnold Energy Center - Second 10-Year Inservice Testing (IST) Program, Revision 9 (TAC No. M76095)

File: A-101b, A-286e

Dear Dr. Murley:

Revision 9 of the Duane Arnold Energy Center (DAEC) Inservice Testing (IST) Program was submitted on January 5, 1990, in response to NRC Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs." Relief Request VR-013 was subsequently revised and resubmitted in response to NRC comments (Reference 1).

Appendix A to the Technical Evaluation Report (TER) provided with the NRC's Safety Evaluation (SE) of the DAEC IST program identified three anomalies pertaining to relief request VR-013 (Reference 2). Attachment 1 states these anomalies and Iowa Electric's response to them. Attachment 2 is the revised relief request.

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Dr. Thomas E. Murley
June 16, 1992
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Should you have any questions regarding this matter, please contact this office.

Very truly yours,



for John F. Franz, Jr.
Vice President, Nuclear

JFF/CJR/pjv~

Attachments: 1) Description of Changes to VR-013
2) Relief Request No. VR-013

cc: C. Rushworth
L. Liu
L. Root
R. McGaughy
C. Shiraki (NRC-NRR)
A. Bert Davis (Region III)
NRC Resident Office
Commitment Control No. 920054

Description of Changes to VR-013

Relief Request VR-013 has been revised in accordance with the NRC's SE of the DAEC IST program. In addition, minor editorial changes were made to correct typographical errors and to modify valve numbers to comply with the valve numbering system currently in use.

Anomaly 9

NRC Comment:

In valve relief request No. 13, the licensee has requested relief from the valve exercising frequency, stroke time measurement, and corrective action requirements of Section XI, Paragraphs IWV-3411, -3413, and -3417, respectively, for the scram discharge volume vent and drain valves' solenoid valves, SV-1868A, -1868B, -1869A, and -1869B. This relief request was preapproved by Generic Letter No. 89-04. The licensee has proposed testing these solenoid valves with the associated scram discharge volume vent and drain valves during the Mode Switch Placed in Shutdown Test performed each refueling outage. This testing method is acceptable, however, the licensee has not provided a technical justification for not performing this testing during cold shutdowns. The licensee should respond to this staff concern within 90 days.

Iowa Electric Response:

Valves SV-1868A, SV-1868B, SV-1869A and SV-1869B have been added to the "Category" section of the revised relief request. Justification for not testing these valves during cold shutdown has been added to the "Basis for Relief" section of the revised relief request (Attachment 2).

Anomaly 10

NRC Comment:

In valve relief request No. 13, the licensee has requested relief from the valve exercising frequency, stroke time measurement, and corrective action requirements of Section XI, Paragraphs IWV-3411, -3413 and -3417, respectively for the following control rod drive hydraulic system air and solenoid operated valves. This relief request was preapproved by Generic Letter No. 89-04. The licensee's proposed testing for all these valves, with the exception of the backup scram valves, is in accordance with Generic Letter No. 89-04, Position 7 and would, therefore,

provide an acceptable level of quality and safety. However, since the backup scram valves, SV-1840A and -1840B, provide a redundant protective function degradation of these valves may not be evidenced by rod insertion times. Verifying only that these solenoid valves energize to vent the scram valve pilot air header also provides no measure of valve degradation. Since these are rapid-acting solenoid valves, the licensee may consider stroke timing these valves as outlined in Generic Letter 89-04, Position 6. The licensee should respond to this staff concern within 90 days.

VALVE NUMBER	FUNCTION
SV-1840A, -1840B	Scram valve pilot air header vent valves (backup scram valves)
CV-1849	Scram inlet valve from the charging water header
CV-1850	Scram outlet valve to the scram discharge header
SV-1855, -1856	Instrument air vent valves for CV-1859 and CV-1860

Iowa Electric Response:

Stroke timing rapid acting solenoid valves is extremely burdensome and would cause routine surveillances to become lengthy. Therefore, these particular valves have been placed in the Preventative Maintenance Program to be inspected and refurbished or replaced every other outage (every 3 years). This will eliminate the need to monitor stroke times for purposes of detecting degradation.

Anomaly 11

NRC Comment:

In valve relief request No. 13, the licensee has proposed exercising the backup scram check valve, V-17-0062, each refueling outage by verifying that the backup scram valves vent air when energized. This check valve can be verified to stroke open by ensuring that both backup scram valves vent air when energized. However, as outlined in Generic Letter 89-04, Position 1, verifying only that both backup scram valves vent air is not sufficient to demonstrate a full-stroke of this check valve. The licensee should investigate and implement a method of

verifying the full-stroke capability of this check valve. The licensee should respond to this staff concern within 90 days.

Iowa Electric Response:

It has been confirmed that non-intrusive testing may be used to prove the valve fully open during performance of surveillance testing. This method will provide assurance that the valve acceptance criteria is being met. The use of non-intrusive testing has been added to the Alternative Testing section of relief request VR-013 and will be implemented by the next refuel outage.

RELIEF REQUEST NO. VR-013

SYSTEM:

Control Rod Drive (CRD) Hydraulic

COMPONENTS:

SV-1840A & B	V-17-0062
CV-1849	V-18-0118(CRD #)*
CV-1850	V-18-0919(CRD #)*
SV-1855	V-18-1453(CRD #)*
SV-1856	
SV-1868A & B	*Typical of 89 Valves, one per CRD
SV-1869A & B	

CATEGORY:

B -- CV-1849, CV-1850, SV-1840A & B, SV-1855, SV-1856
SV-1868A & B, and SV-1869A & B.

C -- V-17-0062, V-18-0118(CRD #), V-18-0919(CRD #) and
V-18-1453(CRD #)

FUNCTION:

SV-1840A & B	Backup scram valves; bleed off scram air header upon receiving a SCRAM signal from the Reactor Protection System.
CV-1849	Opens with SCRAM signal to pressurize lower side of CRD piston from accumulator.
CV-1850	Opens with SCRAM signal to vent top of CRD piston to scram discharge header.
SV-1855 & SV-1856	Pilot valves for CV-1849 & CV-1850, respectively. Open on SCRAM signal to vent air operators.
V-17-0062	Back-up SCRAM check valves; ensure the venting of the scram valve pilot air header if SV-1840B has a plugged vent port with the air supply isolated.
V-18-0118 (CRD #)	Prevent bypassing SCRAM water (from the accumulator) to charging water header (if depressurized); open to charge accumulators following SCRAM.

RELIEF REQUEST NO. VR-013 (Continued)

V-18-0919 Prevent backflow into cooling water
(CRD #) header during SCRAM; allow cooling water
 circulating during normal operation.

V-18-1453 Open to allow flow from top of CRD pistons
(CRD #) to the SCRAM discharge header.

SV-1868A & B Safety related pilot valves for CV-1859A & B
SV-1869A & B and CV-1867A & B. Open on SCRAM signal to vent
 air operators.

TEST REQUIREMENTS:

Exercise and time air-operated and solenoid valves every three months (BTO, BTC). IWV-3411, IWV-3413, IWV-3417.

Exercise check valves every three months (CT-CO, CT-CC) IWV-3521. The corresponding fail-safe test is discussed in VR-017.

BASIS FOR RELIEF:

Individual testing of the backup scram valves SV-1840A and SV-1840B requires modifying the electrical configuration of the reactor protection system by jumpers, etc. and inserting a scram signal to each valve -- a complex test.

Testing of valves SV-1840A, SV-1840B, V-17-0062 would require or result in depressurization of the SCRAM air header and the initiation of a full SCRAM signal. Valves CV-1849, CV-1850, SV-1855, SV-1856 and V-18-1453(CRD #) can only be tested by scrambling each individual control rod. Due to the extensive effort and operational constraints associated with scram testing, this is impractical to accomplish on a quarterly basis or even during cold shutdown periods.

SV-1868A, SV-1868B, SV-1869A, and SV-1869B activate CV-1859A, CV-1859B, CV-1867A and CV-1867B; however, these control valves may also be tested quarterly by use of alternate solenoid valves which are not tied to the Reactor Protection System (RPS). Testing the SCRAM discharge volume vent and drain solenoid valves SV-1868A, SV-1868B, SV-1869A, and SV-1869B to activate CV-1867A & B, CV-1859A & B would require or result in an initiation of a full SCRAM signal. Due to the extensive effort and operational constraints associated with scram testing, this is impractical to accomplish on a quarterly basis or even during cold shutdown.

RELIEF REQUEST NO. VR-013 (Continued)

Closure testing of valves V-18-0118(CRD #) require that the control rod drive pumps be stopped to depressurize the charging water header. This test will not be performed during power operation because stopping the pumps results in loss of cooling water to all control rod drive mechanisms and seal damage could result. In addition, stopping the control rod drive pumps stops the flow of seal purge water to the reactor recirculation pumps seals which could result in seal damage due to the ingestion of dirt from an unclean piping system. This test cannot be performed during each cold shutdown because one of the recirculation pumps is usually kept running. USNRC Generic Letter 89-04, Attachment 1, Position 7, provides pre-approval for this testing frequency.

Proper operation of the check valve V-18-0919(CRD #) is monitored during plant operation. Failure of any of these valves manifests itself in abnormal operation of the associated control rod drive which would be noted (and corrected) by the plant staff.

ALTERNATIVE TESTING:

Proper operation of these valves is demonstrated by testing performed during plant operation or each refueling outage. SV-1840A & B are tested once per operating cycle as required by a commitment (NG-84-0825). During the test, valve operation is locally observed upon initiation of a manual scram. This testing of the backup SCRAM valves meets the requirements of NUREG-0979, "Safety Evaluation Report Related to the Fuel Design Approval of the GESSAR II, BWR/6 Nuclear Island Design."

V-17-0062

Valves SV-1840A and SV-1840B will be tested at each refueling by inserting a SCRAM signal and monitoring that the valves energize to vent the air header. Check valve V-17-0062 is verified open when SV-1840A and SV-1840B energize and vent. In order for air to exhaust from both SV-1840A and SV-1840B, check valve V-17-0062 must be fully open. Non-intrusive test methods will be applied to V-17-0062 to prove the valve fully open. Valves SV-1868A and SV-1868B, SV-1869A and SV-1869B will be tested at each refueling by initiating a SCRAM signal to the valves and verifying that the de-energized CRD supplies air to the main valves (CV-1867A, CV-1867B, CV-1859A and CV-1859B).

RELIEF REQUEST NO. VR-013 (Continued)

SV-1840A, SV-1840B, CV-1849, CV-1850, SV-1855, SV-1856 and
V-18-1453(CRD #)

These valves are tested once each operating cycle per DAEC Technical Specifications, Section 4.3.C. Following each refueling outage, all operable control rods are SCRAM time tested from the fully withdrawn position with nuclear system pressure above 950 psig. The time-position performance of each control rod and all rods collectively are compared against the acceptance criteria established for various rod insertion positions per DAEC Technical Specifications, Section 3.3.C.

In addition to the rod insertion time test, SV-1840A and SV-1840B are also included in the Preventative Maintenance Program, where they are rebuilt or replaced every three years. Since obtaining stroke times for purposes of noticeable degradation is unlikely and burdensome, the refurbishment or replacement will meet the intent of trending stroke times.

V-18-0118(CRD #)

Once each operating cycle, the CRD charging header is depressurized and HCU accumulator levels monitored over a period of time. Proper operation of these valves is verified by each accumulator remaining in a charged condition during the test.

V-18-0919(CRD #)

During normal plant operation at power, each partially or fully withdrawn operable control rod is exercised one notch at least once each week (Technical Specification, Section 4.3.A.2.a). Excessive backleakage through these valves would prevent rod movement.

SV-1868A & B and SV-1869A & B

These valves are tested with the associated main valves (CV-1859A & B and CV-1967A & B). The main valves are exercised closed and the stroke times are verified to be within specified limits, during the Mode Switch Placed in Shutdown test, performed each refueling.