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January 26, 1990

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Zion Station Units 1 and 2
Schedule Extension Request for
NRC Bulletin 89-02
NRC Docket Nos. 50-295 and 50-304

References: (a) NRC Bulletin 89-02, dated July 19, 1989.
(b) M.H. Richter letter to U.S. NRC, dated January 17, 1990.

Dear Sir:

NRC Bulletin 89-02 (Bulletin) described occurrences which have raised concerns about the use of Anchor Darling swing check valves (Model S350W), and valves of similar design, which contain Type 410 stainless steel (SS) bolting material that is susceptible to stress corrosion cracking (SCC). The Bulletin requested licensees to identify, disassemble and inspect those types of safety-related swing check valves. The schedule for the check valve inspections was delineated in Bulletin Action I.B. By this letter, Commonwealth Edison Company (CECo) is proposing an alternative inspection schedule for Zion Station Units 1 and 2.

Zion Station has identified a total of 48 swing check valves (24 for each unit) in safety-related applications which require inspection to address the Bulletin concerns. All of the check valves are Anchor Darling Model S350W. Based on the schedule delineated in Bulletin Action I.B, the applicable outages for inspecting these valves would begin in March 1990 (Unit 2), and February 1991 (Unit 1), as currently scheduled. Pursuant to Reporting Requirement 3 of the Bulletin, CECo requests that the disassembly and inspection of the identified valves at Zion Station be performed over the next two, or possibly three, refueling outages for each unit. This request is based on the estimated resource expenditure (in man-hours and man-rem) which will be required to perform the valve inspections, the acceptable condition of recently inspected valves, and the ability to detect retaining block stud failures during normal surveillance testing.

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Technical Justification

The 48 Anchor Darling Model S350W check valves are located in the Safety Injection and Residual Heat Removal Systems. The Attachment to this letter provides a listing of the valves.

Zion Station has only experienced a broken retaining block stud on one of the Anchor Darling Model S350W check valves (1SI-8956A). The stud failure was found after performing a full flow test on the check valve. A subsequent back leakage test identified excessive seat leakage (greater than 10 gpm) and the check valve was repaired (May 1988).

Zion Station performs full flow and seat back leakage surveillance testing on the Anchor Darling Model S350W check valves in accordance with the schedule indicated on the Attachment to this letter. It should be noted that full flow testing of the accumulator check valves (1/2SI8948A,B,C,D and 1/2SI-8956A,B,C,D) was initiated in 1987. To date, four (4) Unit 2 valves have not been tested. An accelerated testing schedule is being performed to ensure these remaining accumulator check valves (indicated in the Attachment) are tested during the upcoming Unit 2 refueling outage (scheduled to begin in March 1990).

Restriction in full disc lift or failure of the disc to properly seat are identified through the combined results of these full flow and back leakage surveillance tests. Based on the fact that the surveillance testing has previously provided indication of a broken retaining block stud, Edison believes there is assurance that any future stud failures would be detected.

During the recent Zion Unit 1 refueling outage, which began in September 1989, four (4) Anchor Darling swing check valves (1SI-9002C and D, 1SI-8956D and 1SI-8957B) were disassembled and inspected. The inspection included Non-Destructive Examination (NDE) of the retaining block studs. No evidence of SCC was found. Hardness tests of the removed studs revealed that some of the studs had Rockwell hardness values above Rc26 (with the highest hardness being Rc29). All of the retaining block studs were replaced with Type 410 SS studs with a hardness value of less than Rc26. For future valve inspections associated with this Bulletin, Zion Station intends to replace the retaining block studs with Type 410 SS studs with a hardness value of less than Rc26.

The inspection of the four (4) valves on Unit 1 took approximately 300 man-hours per valve and incurred an average radiation dose of 0.45 man-rem per valve. Since these valves were located outside of the missile barrier and did not require extensive use of temporary shielding or a freeze seal to isolate the line, these man-hour and dose values are considered to be conservative. Zion Station has 12 valves on each unit located inside the missile barrier. Since use of the freeze seal is dependent upon the status of the Reactor Coolant System during an outage, it is unknown at this time the number of valve inspections which would require a freeze seal. Current estimates are that it will require approximately 10,800 man-hours and 24 man-rem to complete all of the inspections in one refueling outage for each unit.

CECo is proposing to inspect at least eight (8) valves per unit per refueling outage at Zion Station. It is the intent to complete all of the inspections over the next two refueling outages for each unit; however, an additional outage may be required depending upon the plant condition and the progress made in the first two outages. The schedule will be reevaluated and revised as necessary should retaining block stud degradation/failure be identified during the inspections. Since an alternative to the schedule delineated in the Bulletin is being proposed, CECo will provide an update on the results of these inspections 60 days after completion of each refueling outage.

CECo believes that the proposed schedule for inspecting the Anchor Darling valves is still aggressive. It is not expected that a one, or two, cycle delay in inspecting the valves will impact safe plant operation since recent valve inspections have not identified evidence of a SCC problem. As indicated previously, the proposed inspection schedule will be reevaluated and revised, as necessary, if warranted by inspection results. Additionally, Zion Station will continue to perform full flow and back leakage surveillance testing, which has previously identified check valve problems.

Please direct any questions that you may have concerning this response to this office.

Respectfully,

Milton H Richter

M.H. Richter
Generic Issues Administrator

Attachment

cc: A.B. Davis - Regional Administrator, Region III
Resident Inspector - Zion
C. Patel - Project Manager, NRR

SUBSCRIBED AND SWORN to
before me this 26 day
of January, 1990

Patricia Lynn Marlow
Notary Public

" OFFICIAL SEAL "
PATRICIA LYNN MARLOW
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11/5/91

/lmw:MHR:0479T

ATTACHMENT

VALVE NUMBER	DESCRIPTION	VALVE SIZE (IN.)	FULL FLOW TEST FREQUENCY	SEAT BACK LEAKAGE TEST FREQUENCY
1(2)RH-8736A	LOOP 'A' RHR HOT LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)RH-8736B	LOOP 'D' RHR HOT LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)RH-8949A	LOOP 'A' RHR/SI HOT LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)RH-8949B	LOOP 'D' RHR/SI HOT LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-8949C	LOOP 'B' SI HOT LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-8949D	LOOP 'C' SI HOT LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9001A	LOOP 'B' RHR/SI COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9001B	LOOP 'C' RHR/SI COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9001C	LOOP 'D' RHR/SI COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9001D	LOOP 'A' RHR/SI COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9002A	LOOP 'B' RHR COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9002B	LOOP 'C' RHR COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9002C	LOOP 'D' RHR COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-9002D	LOOP 'A' RHR COLD LEG INJECTION	8	NOTE(1)	NOTE (3)
1(2)SI-8948A	LOOP 'A' ACCUMULATOR INJECTION	10	NOTE(2)	NOTE (3)
1(2)SI-8948B	LOOP 'C' ACCUMULATOR INJECTION	10	NOTE(2)	NOTE (3)
1(2)SI-8948C	LOOP 'D' ACCUMULATOR INJECTION	10	NOTE(2)	NOTE (3)
1(2)SI-8948D	LOOP 'B' ACCUMULATOR INJECTION	10	NOTE(2)	NOTE (3)
1(2)SI-8956A	'A' ACCUMULATOR DISCHARGE	10	NOTE(2)	NOTE (3)
1(2)SI-8956B	'C' ACCUMULATOR DISCHARGE	10	NOTE(2)	NOTE (3)
1(2)SI-8956C	'D' ACCUMULATOR DISCHARGE	10	NOTE(2)	NOTE (3)
1(2)SI-8956D	'B' ACCUMULATOR DISCHARGE	10	NOTE(2)	NOTE (3)
1(2)SI-8957A	TRAIN 'A' RHR COLD LEG INJECTION	10	NOTE(1)	NOTE (3)
1(2)SI-8957B	TRAIN 'B' RHR COLD LEG INJECTION	10	NOTE(1)	NOTE (3)

See following page for NOTES

ATTACHMENT
(Cont'd)

NOTE(1): Full flow testing on the check valve is performed every refueling outage or following maintenance.

NOTE(2): Full flow testing on the check valve is performed every fourth refueling outage. Check valves 2SI-8948C, 2SI-8948D, 2SI-8956C and 2SI-8956D will be tested during the Unit 2 Spring 1990 outage.

NOTE(3): Technical Specification Section 4.3.3.F requires seat back leakage testing at the following frequency;
- each refueling outage,
- prior to entering MODE 2 operation if in Cold Shutdown for 72 hours or more and testing has not been performed in the previous 9 months,
- after maintenance or repair on the valve, or
- following valve actuation resulting in water being injected into the reactor coolant system.