

Omaha Public Power District
1623 Harney Omaha, Nebraska 68102
402/536-4000

July 1, 1987
LIC-87-435

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

- References:
1. Docket No. 50-285
 2. OPPD letter (W. C. Jones) to NRC (J. R. Miller) dated September 26, 1983 (LIC-83-226)
 3. LER 87-010 dated May 7, 1987

Gentlemen:

SUBJECT: Request for Exemption and Revision of the Fort Calhoun Station
Inservice Inspection (ISI) Plan

Pursuant to the provision of 10 CFR §50.55a(g)(5)(iii), the Omaha Public Power District requests that an exemption be granted from the requirements of the Winter 1980 addenda to the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWV-3520 and that select pages of the Fort Calhoun Station ISI Plan, for Category C Valves, be revised as proposed in Attachment 1. The reason for this request is that the present plan requires testing which has been determined to be impractical, as discussed in Attachment 2. LER 87-010 was issued on May 8, 1987 and also discusses the need for the requested exemption.

The present ISI plan, Reference 2, calls for the discharge check valves (FW-173 and FW-174) on the auxiliary feedwater pumps to be stroke tested quarterly. This is normally done by verifying flow through the valve to be tested. At Fort Calhoun, quarterly stroke testing of FW-173 and FW-174 is not practical because the piping configuration requires that flow through these valves must flow into the steam generators. Stroke testing during power operation would require injection of cold water into hot steam generators. FW-173, the check valve on the motor driven AFW pump, is stroke tested during the normal startup procedure when the motor driven AFW pump supplies feedwater to the steam generators. Since the steam driven AFW pump is not normally operated during startup, check valve FW-174 on the discharge of the steam driven pump is not routinely stroke tested by present procedures.

Revisions have been made to Fort Calhoun's procedures to document the stroke test of FW-173 that is accomplished during startup. A new procedure to remove FW-174 from the line for inspection and exercise during refueling outages was written and conducted. It is necessary to revise the ISI plan to change the testing frequency of FW-173 from quarterly to once per cold shutdown but not more than once every three months and the testing frequency of FW-174 to

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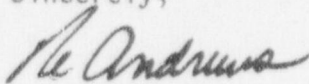
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once per refueling outage. The proposed revisions to the ISI plan include changes in the test frequency column of the Category C valve table for valves FW-173 and FW-174 and the addition of supporting information in Appendix 2C, "Justification for Exception to ASME Section XI Code" under Category C valves. These revisions are shown by bars to the right of the revised information.

Also attached pursuant to 10 CFR §170.21 is a check for the application fee of \$150.00.

If you have questions regarding this request, please contact us.

Sincerely,



R. L. Andrews
Division Manager
Nuclear Production

RLA/me

cc: LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Ave., N.W.
Washington, DC 20036

R. D. Martin, NRC Regional Administrator
A. Bournia, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector

ATTACHMENT 1
Revisions to the ISI Plan
Category C Valves

- AC-101
104
107
- These valves shall be tested to ensure they open during normal component cooling water pump cycling.
- RW-115
117
121
125
- These valves shall be tested to ensure they open during normal raw water pump cycling.
- FW-161
162
- These valves are normally open during operation and to cycle these valves closed would result in a loss of normal feedwater to the Steam Generators (S.G.) This may result in S.G. water level drop and possible reactor trip. These valves shall be exercise tested each cold shutdown or refueling outage. In the case where more than one cold shutdown or refueling occurs during a three-month period of time, the valve(s) shall only be exercise tested once during that three-month period. Since failure of these valves to function in the back flow direction would not interfere with the plant's ability to shut down or mitigate the consequences of an accident, these valves shall only be tested in the forward flow direction.
- FW-163
164
- These valves open for auxiliary feedwater flow to the S.G. Cycling these valves during operation would result in cold water injection to a portion of the S.G., normally at operating temperatures. These valves will be cycled open during start-up after each cold shutdown. These valves shall be exercise tested each cold shutdown or refueling outage. In the case where more than one cold shutdown or refueling occurs during a three-month period of time, the valve(s) shall only be exercise tested once during that three-month period. Since failure of these valves to function in the back flow direction would not interfere with the plant's ability to shut down or mitigate the consequences of an accident, these valves shall only be tested in the forward flow direction.
- FW-173
- This valve opens for auxiliary feedwater flow to the steam generator when the motor driven AFW pump (FW-6) is operated. Cycling this valve during operation would result in cold water injection to a portion of the steam generator normally at operating temperature. This valve shall be cycled open during startup following each cold shutdown or refueling outage. In the case where more than one cold shutdown occurs during a three-month period of time, the valve shall only be tested once during that three-month period. Since failure of this valve to function in the backflow direction would not interfere with the plant's ability to shutdown or mitigate the consequences of an accident, this valve shall only be tested in the forward flow direction.

FW-174

This valve opens for auxiliary feedwater flow to the steam generator when the steam driven AFW pump (FW-10) is operated. Cycling this valve during operation would result in cold water injection to a portion of the steam generator normally at operating temperature. This valve is not cycled during startup because steam is not available to run FW-10. This valve shall be removed from the line for exercise during each refueling outage. Since failure of this valve to function in the backflow direction would not interfere with the plant's ability to shutdown to mitigate the consequences of an accident, this valve shall only be tested in the forward flow direction.

CH-198

This valve functions to prevent back-flow to the charging pump discharge header. The valve is normally open and there is no way that back-seating can be tested on reversal of flow due to system piping arrangements. Partial stroke-testing cannot be performed for the same reason. Forward flow testing shall be performed at each refueling outage.

CH-143
155

These valves serve to permit direct feed of concentrated boric acid solution to the charging pump suction header. These valves cannot be stroke-tested during cold shutdown or quarterly because doing so would allow concentrated boric acid storage to the charging pump suction header through the boric acid pumps. Boration of the primary system during normal operation would cause reactivity transients and possibly shutdown the plant and during cold shutdowns would delay startup. These valves cannot be partial-stroked for the same reason. These valves shall be exercise tested during each refueling outage.

SI-100
113

These valves serve to prevent back-flow from high pressure headers to main safety injection headers. They cannot be fully exercise tested during operation, quarterly or during cold shutdowns, since to do so would require safety injection to the reactor coolant system. Partial-stroking, quarterly, is possible since these pumps can be placed in a minimum recirculation mode of operation.

SI-102
108
115
121
129
135
143
149

These valves function to prevent back-flow to high pressure and low pressure safety injection pumps and containment spray pumps. They cannot be tested during operation quarterly or at cold shutdowns because doing so would disrupt the safeguard system alignment, and safety injection into the containment or the reactor system would be required for valve testing. Partial-stroking cannot be performed for the same reasons. Exercising shall be performed during each refueling outage.

SI-139
140

These valves function to prevent back-flow to the safety injection and refueling water tank. They will be partial stroke exercised every three months and full-stroke exercised each refueling outage. Full-stroke testing cannot be performed during cold shutdown or quarterly during operation so would require safety injection to the containment or reactor coolant system. A safety injection to the reactor coolant system during operation would cause uncontrolled boration and would introduce thermal shock to the system. The recirculation lines used for testing LPSI and HPSI pumps for partial-stroking are not large enough to fully open the check valves.

SI-159
160

These valves function to prevent back flow to the containment lower level and are normally closed. They are backed up by motor operated isolation valves HCV-383-3 and HCV-383-4, which are normally closed, fail as is, and open only on receipt of a containment recirculation actuation signal.

No feasible means exist to perform an in-place operational test of valve SI-159 or SI-160. In lieu of the required testing frequency of once per quarter, the District shall remove and inspect either SI-159 or SI-160 during the first five years of the 10-year inspection interval. During the second five years of the 10-year interval, the other valve will be inspected.

These inspections shall photographically document the valve's condition and shall manually test the valve disk for free movement. This shall duplicate the inspection done in 1980 and 1981 in response to an NRC request. (In the June 29, 1981 letter from Robert Clark of the NRC W. C. Jones of OPPD, the attached Safety Analysis clearly indicated that upon receiving an acceptable report from the District on the condition of SI-160, the NRC would consider inspection of SI-159 and SI-160 on a five year basis adequate for this ISI interval. In the same letter, it was noted that this exception should be presented with other exceptions for the ISI program.)

Due to the timing of the first two inspections, our next inspection will be of valve SI-159, during or prior to 1986, and SI-160 will be examined during or prior to 1991.

SI-175
176

These valves serve to prevent back-flow from the containment spray headers. These valves cannot be tested to the open position since to do so could cause spray in containment. Not stroking these valves poses no safety impact for the following reasons:

1. Adequate heat removal from containment can be achieved during a DBA by use of only one containment spray header with three containment spray pumps. Hence, only one of the check valves is required to open.
2. The containment air filtration and cooling system is fully redundant to the containment spray system.
3. The containment air filtration and cooling system contains redundant components. During a DBA, sufficient iodine removal is achieved with 50% of the system operating and sufficient pressure reduction accomplished with any three air coolers operating.

SI-196
199
202
205

These valves function to prevent back-flow through the safety injection pump discharge headers. These valves cannot be stroke-tested during cold shutdowns or quarterly during operation because to do so using the safety injection system would require introducing cold water into the reactor coolant system causing thermal shock and possibly a reactivity excursion. To do so using the chemical volume control system would disrupt charging and letdown flow to the reactor coolant system causing chemical and volume control to the system to be disrupted. Exercising shall be performed during each refueling outage.

SI-207
211
215
219

These valves function to isolate reactor coolant pump leakage flow from the safety injection tanks. These valves cannot be stroke-tested during cold shutdowns or quarterly during operation as to do so would cause drainage from the safety injection tanks. Technical Specifications require safety injection tank levels to be maintained. The valves cannot be partial-stroked for the same reason. Exercising shall be performed during each refueling outage.

CATEGORY C VALVES (Cont'd)

Valve Number	Valve Type	P&ID Number	P&ID Location	Size	Normal Position	Test Frequency	Exceptions (Refer to Appendix 2C)
MS-281	Relief	GHR-11405-M-252	A1	2.5"	NC	Table IWV-3510-1	
MS-282	Relief	GHR-11405-M-252	A1	2.5"	NC	Table IWV-3510-1	
MS-291	Relief	GHR-11405-M-252	A1	2.5"	NC	Table IWV-3510-1	
MS-292	Relief	GHR-11405-M-252	A1	2.5"	NC	Table IWV-3510-1	
FW-161	Check	GHR-11405-M-253	C1	16"	NO	RO	Ex
FW-152	Check	GHR-11405-M-253	B1	16"	NO	RO	Ex
FW-163	Check	GHR-11405-M-253	B2	3"	NC	CS	Ex
FW-164	Check	GHR-11405-M-253	B2	3"	NC	CS	Ex
FW-173	Check	GHR-11405-M-253	C5	4"	NC	CS	Ex
FW-174	Check	GHR-11405-M-253	D5	4"	NC	RO	Ex
FW-658	Vacuum Breaker	GHR-11405-M-254	B5	1.5"	NC	Q	
RC-141	Relief	CE-E-23866-210-110	G6	3"	NC	RO	
RC-142	Relief	CE-E-23866-210-110	G5	3"	NC	RO	

Attachment 2

Justification for Requested Exemption

Request for Exemption from Compliance with the Frequency Requirements of Subsection IWV-3520 of the Winter 1980 Addenda to the ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inspection of Nuclear Power Plant Components.

Subsection IWV-3520 requires that safety related check valves be stroke tested quarterly unless full stroke testing is not practical during plant operation, in which case IWV-3522 allows the interval between tests to expand to once per cold shutdown.

FW-174 is a check valve on the discharge of the steam driven auxiliary feedwater pump (FW-10) that is identified as a safety related valve in Fort Calhoun's ISI Program Plan. The test frequency for FW-174 is presently listed as quarterly. Only two ways of stroke testing FW-174 are considered practical; 1) verify flow through the valve when pump FW-10 is operated, and (2) remove the valve from the line for examination and exercising.

It is not desirable to establish flow through this valve when the plant is operating because the piping configuration is such that any flow passing through FW-174 must enter the steam generators. This would mean that cold auxiliary feedwater would be injected on hot components creating unnecessary thermal cycling. Therefore, quarterly testing of this valve is not practical.

A similar valve (FW-173) on the discharge of the motor driven AFW pump (FW-6), is stroke tested during startup following each cold shutdown when steam generator feed is supplied by FW-6 as a standard startup procedure. This approach is impractical for FW-174 because steam is not available to operate the steam driven AFW pump during this part of the startup procedure.

The most practical way to confirm that FW-174 is operable is to remove it from the line for examination and exercise. This examination must be done during cold shutdown to avoid taking the AFW pump out of service during operation. The short duration of most cold shutdowns that are not related to a refueling outage makes it impractical to remove FW-174 for examination except during refueling.

The potential for deterioration of FW-174 is considered to be low because it operates in a clean environment (de-ionized water) and is seldom used, so the valve is clean and has very little wear. FW-174 is a 4" Mission Duo-Check Valve. If it failed, it would most likely fail in the open position due to failure of one of the springs that drive the valve flappers closed. Failure in the open position is not considered a safety problem. Therefore, testing of FW-174 once per refueling outage is considered adequate to verify operability.

Since it is impractical to test FW-174 more often than once per refueling outage, the valve is considered to have a low potential for deterioration and the most probable failure mode would not have safety implications, OPPD requests an exemption from the test frequency requirements for FW-174 from those specified in IWV-3520 to once per refueling outage. The valve was inspected during the 1987 outage.

Similarly, since it is impractical to test FW-173 during plant power operation, the valve can be stroke tested at each cold shutdown, and the most probable failure mode would not have safety implications, OPPD requests an exemption from the test frequency requirements for FW-173 from those specified in IWV-3520 to once each cold shutdown, but not more than once every three months.