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                          Office of Nuclear Reactor Regulation, Director

SUBJECT: Provides info re intentions concerning open items & commits to resolutions developed at 820615-16 meeting w/NRC & EG&G. Resolutions will be incorporated into Revision 4 to ASME Code inservice testing program.

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# NSP

N O R T H E R N   S T A T E S   P O W E R   C O M P A N Y

August 12, 1982

Director  
Office of Nuclear Reactor Regulation  
US Nuclear Regulatory Commission  
Washington, DC 20555

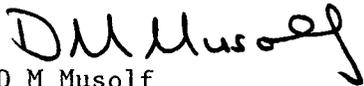
MONTICELLO NUCLEAR GENERATING PLANT  
Docket No 50-263 License No. DPR-22

Supplemental Information Concerning Inservice Testing Program

The NRC Staff is currently reviewing the second ten year interval of our ASME Code Inservice testing program of pumps and valves. This program is described in a report entitled, "ASME Code Section XI Inservice Inspection and Testing Program, Second Ten Year Inspection Interval June 1981 - June 29, 1991." This program was submitted for review on March 27, 1981. Periodic revisions have been made with the last revision submitted for NRC Review on May 12, 1982.

Pursuant to an NRC letter to D M Musolf, dated June 10, 1982, a meeting was held June 15-16 1982, at the Monticello Nuclear Generating Plant between NRC staff, EG & G and responsible site engineers. The purpose of the meeting was to answer questions forwarded in the subject letter and further resolve related issues. The purpose of this letter is to respond to these questions, provide requested information on NSP's intentions concerning open items developed during the course of the meeting, and commit to resolutions.

The required information is provided as attachments to this letter. All resolutions listed in these attachments will be incorporated in Revision 4 to our current ASME Code inservice testing program. This revision will be submitted after receipt of the related safety evaluation and completion of the 1982 refueling outage. Please contact us if you have any questions related to our responses.



D M Musolf  
Manager of Nuclear Support Services

cc: J G Keppler  
G Charnoff  
NRC Resident Inspector

Attachments

A047

QUESTIONS AND RESOLUTIONS FROM THE OCTOBER 15, 1981  
REQUEST FOR ADDITIONAL INFORMATION FOR THE MONTICELLO  
IST PROGRAM REVIEW

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1.     QUESTION:     Review the safety-related functions of valves RHR-8-1 and RHR-8-2 to determine if they should be categorized A/C.

RESPONSE:     See response 6.d.
  
2.     QUESTION:     It is our opinion that the safety related position of RHR-SW-17 is open. What exercise test can be performed to demonstrate this valve will open to permit design accident flow and at what frequency can this test be performed? It is current NRC position that full stroke exercise testing must be accomplished at least once each refueling outage; partial stroke testing alone is unacceptable.

RESPONSE:     RHR-SW-17 will be partially stoked quarterly. It will also be partially disassembled to manually full stroke exercise the disc during the 1982 refueling outage. If the mechanical operability is satisfactory and visual inspection shows the valve in good physical condition then the valve will be disassembly-exercised every 5 years thereafter. If problems are found, repairs will be made and the above inspection process repeated each refueling outage until a satisfactory inspection is completed, after which the disassembly-exercising will revert back to a 5 year interval.
  
3.     QUESTION:     Why was Request for Relief 14 deleted?

RESPONSE:     Valves PCV-3004, 3005, 2092, & 3492 are system pressure regulating valves and are exempted per IWV-1200a. Resolved per meeting minutes.
  
4.     QUESTION:     What is the exercising frequency for CV-7436 and CV-7437, N<sub>2</sub> Pumpback isolation valves?

RESPONSE:     CV-7436 and CV-7437 are physically located in a system that is partially removed and is no longer functional; they perform no safety related function. CV-7436 will be categorized "A passive" and leak rate tested per Appendix J (exercising and stroke timing will not be performed). CV-7437 will be categorized "A", leak rate tested per Appendix J each refueling outage and exercised and stroke timed quarterly. Reference to IWV-3416 will not be utilized. Manual isolation valve N<sub>2</sub>-1 will be included in the IST program as category "A passive" and leak rate tested per Appendix J. Resolved per meeting minutes.

5. QUESTION: Why was Request for Relief 12 deleted from the IST Program?
- RESPONSE: AS-39 and DM-38 are used only during outages. They will be included in the IST program as "category A-passive" valves and leak rate tested per Appendix J (exercising not required). Reference to IWV-3416 will be dropped. Resolved per meeting minutes.
6. QUESTION: Request for Relief 7 states the listed check valves "will be functionally tested on a periodic basis". Does this mean these valves will be full-stroke exercised quarterly? The main concern is that the safety related position of each check valve be tested. Also partial stroke testing by itself is an unacceptable means of testing check valves.
- RESPONSE: In view of 10 CFR 50.55a which permits relief from code requirements that are impractical due to limitations of design geometry or materials of construction; NSP studied a number of feasible alternatives and proposes the following:
- a. SW-101, 102, 103 and 104 are two series pairs of check valves which prevent emergency service water from supplying the service water header in event of an accident. Present piping configuration does not permit verifying the closure of each valve. A modification will be completed by the end of the 1983 refueling outage which will allow verification that each valve pair will shut to provide the necessary system barrier function.
  - b. ESW-4-1 and ESW-4-2 will be partial stroke exercised quarterly. These valves will be partially disassembled to manually full stroke exercise their discs during the 1982 refueling outage. If the mechanical operability is satisfactory and visual inspection shows each valve to be in good physical condition then the valves will be disassembly-exercised every 5 years thereafter. If deficiencies are noted, they will be corrected and the above inspection process repeated each refueling outage until a satisfactory inspection is completed upon which the disassembly-exercising will revert back to a 5 year interval.
  - c. FW-91-1 and FW-91-2 cannot be exercised shut (safety related position) during power operation since isolating feedwater could result in a plant

trip. These valves can only be verified shut by leak rate testing and will be so tested during refueling outages. Resolved per meeting minutes.

- d. RHR-8-1, RHR-8-2, HPCI-42 and RCIC-37 will be partially disassembled to manually full stroke exercise their discs during the 1982 refueling outage. If the mechanical operability is satisfactory and visual inspection shows each valve to be in good physical condition, then the valves will be disassembly-exercised every five (5) years thereafter. If deficiencies are noted, they will be corrected and the above inspection process repeated each refueling outage until a satisfactory inspection is completed upon which the disassembly-exercising will revert back to a 5-year interval.
- e. RHR-21 will be deleted from the IST program since this valve performs no safety related function. See Additional Item at the end of this attachment for discussion of valves MO-2026 and MO-2027.
- f. The safety function of HPCI-14 and RCIC-16 is shut and the only method to verify valve closure is by leak rate testing which will be performed each refueling outage. These valves are not required to be tested per Appendix J, versus that which was recorded in the meeting minutes.
- g. The safety related position of HPCI-65 and HPCI-71 (HPCI turbine exhaust line vacuum breaker check valves ) is "shut". Closure will be verified by leak rate testing each refueling outage. These are not Appendix J related valves and therefore will not be categorized "A". This applies to RCIC-57 and RCIC-59, also. Resolved per meeting minutes.
- h. HPCI-60 (Turbine exhaust vacuum breaker) has a safety related position of "shut", which will be verified quarterly when in cold shutdown. Resolved per meeting minutes.
- i. HPCI-31 and RCIC-31 cannot be exercised during power operation ("open" safety related position), since this would require injecting torus water into RCS which would cause chemistry control problems. These valves will be partial stroked with flow during cold shutdown utilizing existing test connections. These valves will be full

stroke exercised after partial disassembly as noted in the meeting minutes except that during the 1982 refueling outage, if mechanical operability is satisfactory and visual inspection show these valves in good physical condition then there is no reasonable need to disassemble every refueling outage as stated in the meeting minutes. Instead the valves will be full stroke tested on a 5 year basis as stated previously in 6.b. for valves ESW-4-1 & 4-2.

- j. HPCI-15 is not required to be tested per Appendix J, but has been determined to be containment isolation related. Therefore a modification will be completed by the end of the 1983 refueling outage to allow leak rate testing each refueling outage to verify the valve shuts (safety function).
- k. RCIC-17 will be modified and tested as stated above in 6.j. for the same reason as HPCI-15.
- l. SW-16, 18, 21-1, and 21-2 are check valves that prevent diversion of RHR service water and emergency service water to the non-safety grade service water system during an accident condition. Modifications will be made by the end of the 1983 refueling outage to allow verification of valve closure. Thereafter these check valves will be full stroke exercised quarterly.
- m. PC-20-1 and PC-20-2 are full stroke exercised open quarterly. Valve closure verification is also necessary to determine safety function operability, however this can only be accomplished by partial disassembly. The first disassembly inspection will be conducted during the 1982 refueling outage and follow the same guidelines presented in response 6.b.

7. QUESTION: How does scram testing demonstrate proper operation of check valves CRD-115 and CRD-138. How is safety related position of "shut" verified?

RESPONSE: As noted per meeting minutes:

- a. The accumulator charging water check valves, CRD 115 (121 valves) will be tested to their closed position by doing a special test during cold shutdowns. The test would involve depressurizing the accumulator charging water header and watching for accumulator low pressure alarms.

Depressurizing the charging water header would cause a reversal of flow and the ball discs of the CRD 115 valves should move to their seats. If a ball disc did not move to its seat, the associated accumulator would rapidly depressurize and an alarm on low accumulator pressure would be received shortly thereafter.

- b. The cooling water check valves, CRD-138 (121 valves), cannot be exercised shut during power operation or cold shutdowns due to the elaborate test rig required and the number of valves to be tested. These valves will be tested to their closed position by modifying control rod drive differential pressure (CRD D/P) testing, currently performed each refueling outage. Rod motion plots now exist which show settling periods with and without CRD-138 leakage. Control rod drive systems with leaking CRD-138 valves will show shortened settling times by test plot comparison. Gross leakage of a CRD-138 valve could result in CRD notch-out double notching or notch-in failure for a particular mechanism. CRD D/P testing is done to include both notch-in and notch-out testing of every CRD mechanism each refueling outage and will be modified to include a check for CRD-138 leakage.

8. QUESTION: What is the acceptance criteria used in lieu of IWV-3413 for stroke timing power operated valves in Request for Relief 28.

RESPONSE: A statistical analysis of a representative sample of each valve's opening and closing stroke time is used to determine the acceptance criteria. The acceptance criteria is based on plus or minus three standard deviations from the mean opening and closing stroke times. This method of determining the acceptance criteria will not allow a step lengthening of the acceptable stroke time for a valve as would be possible with the method in IWV 3413. For example, the acceptance criteria of IWV 3413 would allow a valve with a stroke time of greater than 10 seconds to have an acceptable increase in its stroke time of 244% within a four quarter period. The acceptance criteria developed by our statistical method will identify valve problems sooner than the method of IWV 3413 in this case by maintaining a narrower acceptance band. A discussion of this acceptance criteria will be included in Request for Relief 28 on our next IST revision as resolved in the minutes.

9. QUESTION: Can pressure be bled off to test AO-14-13 A & B and AO-10-46 A & B?

RESPONSE: Valves AO-10-46 A & B will be exercised during cold shutdowns. Valves AO-14-13 A & B cannot be exercised during power operation or cold shutdowns when the drywell is inerted since drywell entry is required. These valves will be full stroke exercised during cold shutdowns when the drywell is de-inerted and during refueling outages. During unplanned or forced shutdowns, Section XI testing will not commence until 48 hours after cold shutdown conditions have been established and testing will be pursued on a not-to-delay startup basis. Resolved per meeting minutes.

ADDITIONAL ITEM

QUESTION: Is MO-2030 also a pressure isolation valve?

RESPONSE: Valves MO-2026, MO-2027 and MO-2030 will be included in the list of pressure boundary isolation valves on Request for Relief 50 and leak tested accordingly. Resolved per meeting minutes.

RESPONSES TO QUESTIONS IN LETTER DATED APRIL 14, 1982

1. QUESTION: Are all check valves indicated in the IST program full stroke exercised except where relief is requested?  
RESPONSE: All check valves are full stroke exercised quarterly unless specific relief is requested.
2. QUESTION: Are valves that have "fail safe actuators" fail safe tested per IWV-3415?  
RESPONSE: Yes, valves with fail safe actuators are tested per IWV-3415.
3. QUESTION: Are valves with remote position indicators, which are inaccessible during plant operation visually observed to verify remote valve indication accurately reflects valve position per IWV-3300.  
RESPONSE: The requirements of IWV-3300 are complied with for inaccessible valves with remote position indicators.
4. QUESTION: Are the following valves always closed during power operation?  
  
CV-7436 (N<sub>2</sub> pumpback isolations)  
CV-7437  
DM-58 (Drywell demin. water iso.)  
AS-39 (Service air iso.)  
RESPONSE: See responses 4 and 5 in attachment 1.
5. QUESTION: Provide the relief request for not measuring inlet pressure and differential pressure for the emergency service water pumps.  
RESPONSE: Relief request #1 will be expanded to include the Emergency Service Water Pumps.
6. QUESTION: Provide a more detailed technical justification for not complying with acceptance criteria outlined in IWV-3413 (Relief Request #28).  
RESPONSE: See response 8 in attachment 1.

7. QUESTION: What alternate tests have been considered for verifying operability of excess flow check valve X-28F.
- RESPONSE: A modification will be made during the 1983 refueling outage that will allow testing of X-28F and it will be tested every refueling outage thereafter.
8. QUESTION: Provide the detailed technical justification for not full stroke exercising the two upper seal leakoff block valves during shutdown (Relief Request #5).
- RESPONSE: Recirc pump upper seal valves (2) will be full stroke exercised during cold shutdowns when the drywell is de-inerted and during refueling outages, as noted in response 9 of Attachment 1.
9. NO QUESTION: Per meeting minutes: Valves CS-3305, 3306, 3309 and 3310 were physically removed from the system and subsequently removed from the IST program.

ADDITIONAL CHANGES TO IST PROGRAM

1. MO-1751 and MO-1752 will be changed to Category A in the IST program since these valves are leak rate tested per Appendix J.
2. CRD Seal Water to Recirc Pumps valves XR-25-1, XR-25-2, XR-27-1 and XR-27-2 will be included in the IST program as Category A/C valves and relief requested to exercise shut during leak testing at refueling outages.
3. Relief Request #3 will be modified to include a chart (attachment 4) of corrective action/alert action ranges similar to table IWP-3100-2 for vibration velocity versus vibration amplitude. This chart was developed from Table IWP-3100-2 and the General Machinery Vibration Severity Chart (attachment 5) assuming all our pumps are 1800 rpm machines and the vibration frequency of concern is the same as the rotational frequency.

ALLOWABLE RANGES OF VIBRATION VELOCITY FOR TESTS IWP-3110, 3210 AND 4500

Test Quantity	Acceptable Range	Alert Range	Required Action Range
V When $0 \leq V_r \leq 0.05$ in/sec	0 to 0.10 in/sec	0.10 to .15 in/sec	>0.15 in/sec
V When $0.05 \text{ in/sec} < V_r \leq .18$ in/sec	0 to $2 V_r$ in/sec	$2V_r$ to $3V_r$ in/sec	> $3 V_r$ in/sec
V When $.18 \text{ in/sec} < V_r \leq .45$ in/sec	0 to $(.18 + V_r)$ in/sec	$(.18 + V_r)$ in/sec to $(3.5 + V_r)$ in/sec	> $(3.5 + V_r)$ in/sec
V When $V_r >.45$ in/sec	0 to $1.4 V_r$ in/sec	$1.4 V_r$ to $1.8 V_r$ in/sec	> $1.8 V_r$ in/sec.

# GENERAL MACHINERY VIBRATION SEVERITY CHART

For use as a GUIDE in judging vibration as a warning of impending trouble.

