Nebraska Public Power District

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NLS950182
September 6, 1995

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

Subject: Changes to Commitments with Justification and Clarification;
Generic Letter 89-10 Activities
Cooper Nuclear Station
NRC Docket 50-298, DPR-46

Reference:

1) Letter (No. NLS 950006) to U.S. NRC Document Control Desk from G.R. Horn (Nebraska Public Power District) dated January 8, 1995; Subject: Request for Schedule Extension; Generic Letter 89-10 Testing Schedule

2) Letter (No. NLS950043) to U.S. NRC Document Control Desk from J.H. Mueller (Nebraska Public Power District) dated January 27, 1995; Subject: Revision to Request for Schedule Extension; Generic Letter 89-10 Activities

3) Conference Call dated August 21, 1995, between U.S. NRC and Nebraska Public Power District

Gentlemen:

By letter dated January 8, 1995, (Reference 1) and a subsequent revision to the letter dated January 27, 1995, (Reference 2), the Nebraska Public Power District (District) provided its justification to extend the completion of the initial testing portion of Generic Letter (GL) 89-10 Motor Operated Valves (MOV) program at Cooper Nuclear Station (CNS). In those submittals, the District committed to have completed static testing of a total of 82 MOVs and dynamic testing of a total of 52 MOVs by the end of Refueling Outage (RE-16).

At the present time, the District has completed static testing of 82 MOVs as committed and dynamic testing of 35 MOVs of the 52 committed. As a result, 17 MOVs remain to be dynamically tested by the end of RE-16 to meet the commitment for the entire GL89-10 program.

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As discussed in the conference call between the NRC and the District (Reference 3), the District is submitting the following changes to its MOV testing plan based on current industry information:

1) Dynamic testing of 12 out of the remaining 17 MOVs will not be performed.

2) Dynamic retesting of HPCI-MOV-MO58 will not be performed.

These proposed changes involve revision of commitments made in References 1 and 2. Attachment I provides the rationale and technical justifications for the District's proposed changes. This attachment also contains clarification of the design change commitment made with respect to RR-MOV-MO53A and RR-MOV-53B valves in References 1 and 2.

The high margin approach for 10 MOVs suggested in Attachment I has been described in detail in Attachment II to this letter.

Based on the justification and information provided in Attachments I and II respectively, the District has determined that these proposed changes demonstrate sufficient capability and high confidence level in our MOVs' performance under worst case design basis conditions.

The Attached Table summarizes the GL89-10 MOV commitment status taking into account the proposed changes discussed above.

If you have any questions or require additional information, please contact me.

Sincerely,

John H. Mueller
Site Manager

JHM/GS/BT/ko

cc: Regional Administrator
USNRC Region IV

NRC Resident Inspector
Cooper Nuclear Station

NRC Project Manager
USNRC

NPG Distribution

CHANGES TO GL89-10 SUPPLEMENT 6 COMMITMENTS WITH JUSTIFICATION AND CLARIFICATION

Justification For Not Performing Dynamic Testing

RCIC-MOV-MO131, RCIC-MOV-MO132 - References 1 & 2 committed to dynamic testing these valves, due to a high Probabilistic Safety Assessment ranking. These valves have an active safety function to open only and are flow assisted in the open direction or "service conditions assisted". As such, open direction thrust values would not be conservative for calculating valve factor or capability. Frequently, packing friction load is overcome by the stem rejection force and the data becomes unquantifiable. Dynamic testing of other CNS flow assisted globe valves has shown these behaviors and, therefore, dynamic testing of these two valves does not provide any new and credible information in addition to static testing. Consequently, dynamic testing of these valves is not necessary or prudent.

REC-MOV-700MV, REC-MOV-711MV, REC-MOV-714MV, REC-MOV-1329MV, RHR-MOV-MO27B, RHR-MOV-MO66B, SW-MOV-886MV, SW-MOV-887MV, SW-MOV-888MV, and SW-MOV-889MV - These valves were to be static and/or dynamically tested during RE16. Normally these valves would require dynamic testing after static testing to validate calculation results that indicate the valve is capable of performing its design basis function. After performing additional industry reviews and working with other utilities, a different approach and methodology has been used to reevaluate each of these valves. This methodology is termed the "high margin" approach. The conservatism built into this approach eliminates the necessity for dynamically testing these valves. A detailed discussion of this approach is provided in Attachment II.

Justification For Not Performing Dynamic Retesting

HPCI-MOV-MO58 - A commitment was made by the District to dynamically test this valve during RE16. The basis for this commitment stems from a hydrostatic test which was performed on this valve during RE14 during which high unseating torque was noted. Since that test, the valve has been reworked (lapped seat) and the actuator refurbished. Three subsequent static diagnostic tests were successfully performed which consistently demonstrated a significant reduction in the unseating torque (106.4 ft-lbs. vs 185.7 ft-lbs.). Although this valve has active safety functions to both open and close, no meaningful data beyond that produced by the static tests is achievable since a hydrostatic test can only be performed in the open direction. Therefore, CNS has determined that a second hydrostatic test is not required for this MOV since 1) reworking the valve corrected the apparent unseating problem and 2) data from the original hydrostatic test produced conservative results with regard to the stem friction coefficient and valve factor.

Clarification Of Design Change

RR-MOV-MO53A and RR-MOV-MO53B - These valves were listed as requiring an additional design change. During the 1994 forced outage larger cabling and motors were installed on these valves. CNS engineering is currently conducting an evaluation that will change the design basis stroke time and reduce the valves maximum expected differential pressure. Pending completion of this evaluation, no further modifications to these valves are expected with the exception that a gear change may be required. As a contingency, an alternate plan is to implement a method to limit switch close versus torque switch close the valves.

High Margin Approach

In order to determine whether an MOV has sufficient capability, all parameters relative to sizing the actuator for the specific application must be considered. Analytical sizing equations have many known parameters that can be quantitatively derived such as pressures, seat and stem diameters, stuffing box or packing loads, stem friction coefficients, etc. However, one unknown that cannot be analytically determined is the valve factor or disc/seat coefficient of friction. Resultant data from a dynamic test can provide the means to back-calculate this factor.

The need for dynamically testing each MOV in the Generic Letter 89-10 program is to determine specific valve factors and coefficients of friction. With this information, the analytical methodology is then complete and accurate for each application. The minimum required thrust values are determined to indicate if the existing motor-actuator has sufficient capability for the design basis conditions. Without dynamically testing each MOV to quantitatively determine these factors, assumptions are made to complete the theoretical analysis. The confidence level in this approach is directly related to the basis for the information and validity of the justification supporting the assumption.

The high margin approach involves a theoretical design method using conservative parameters to envelope the required design basis values. This approach does not require dynamic testing to validate the assumptions made in the theoretically determined design basis values. This method is based on three criteria: 1) the amount of margin available after optimizing the actuators, if necessary; 2) adjusting the thrust output for each MOV as high as possible in its analytically calculated window, if necessary; and 3) assessing the results of industry and plant data for similar MOVs. The determination that this methodology conservatively bounds the design requirements is based on information and data obtained from CNS specific dynamic testing and other applicable industry testing. This approach is only used for MOVs with low MEDPs and/or valves originally designed with conservatively sized actuators (i.e., very large margins). When using this approach, each MOV or family group is evaluated on a case-by-case basis.

The conservatism used in this approach ensures a high confidence factor in MOV performance capability. Ample margins in both opening and closing directions allow for degrading effects such as stem lubrication degradation, unknown flow and temperature effects, seat/disc coefficient of friction degradation, and/or any other types of unforeseen/unknown degradation. The net result of this approach is an MOV with a maximum capability and reliability to exceed its design requirements while fulfilling its design basis function under the worst operational conditions.

This methodology is performance-based and is considered well justified based on review of actual test results obtained from numerous sources of testing including site specific tests at CNS, EPRI sponsored testing, and other industry testing and initiatives. In addition, the approach and philosophy are considered by the District to be in compliance with the Generic Letter 89-10 requirements.

The following Table is an example of present actual test results and an estimation of potential results using the conservative high margin approach. These numbers are not a commitment but provide information as to how much improvement and assurance of performance the high margin approach can add to the valve's capability to perform under design basis conditions.

CLOSED DIRECTION APPLICATION

Valve Number	Current MRST @ VF (.5 & 1.1) lbs.	Raw Current CST Thrust lbs.	Current Margin Above MRST %	New MRST @ VF (1.0 & 2.0) lbs.	Percent Increase Over old MRST %	Projected CST @ Middle of Window lbs.	Projected Margin Above MRST %	Percent Increase Over old VF %	Allowance for Thrust Increase @ CST & MAX
REC-MOV-700MV	5242	9599	83	9332	78	12064	29	130	Kalsi/1.4%
*REC-MOV-711MV	3334	5865	76	4310	29	5977	39	79	Gear chg. & Spring Pack(S.P.)
*REC-MOV-714MV	3334	5945	78	4310	29	5339	24	60	Kalsi/1.4%, S.P. & Gear chg.
REC-MOV-1329MV	4786	7188	50	8458	77	14029	66	193	Kalsi/1.4% & S.P.
*RHR-MOV-MO27B	70588	90296	28	122319	73	150160	23	113	Gear ratio Chg.
RHR-MOV-MO66B	25301	80185	217	43023	70	82262	91	225	Presently capable
SW-MOV-886MV	1488	3497	135	2355	58	5246	123	253	Presently capable
SW-MOV-887MV	2058	4304	109	2537	23	5567	119	171	Presently capable
SW-MOV-888MV	1551	2931	89	2532	63	5334	111	244	Presently capable
SW-MOV-889MV	1551	3544	128	2532	63	5334	111	244	Presently capable

OPEN DIRECTION APPLICATION

Valve Number	Current MRST @ VF (.5 & 1.1) lbs.	Current Limiting Open Thrust lbs.	Current Margin Above MRST %	New MRST @ VF (1.0 & 2.0) lbs.	Percent Increase Over old MRST %	New Limiting Open Thrust lbs.	New Margin Above MRST %	Allowance for Open Allowable Increase
REC-MOV-700MV	4061	12134	199	7275	79	12134	67	Presently capable
*REC-MOV-711MV	2769	4851	75	3397	23	6352	87	Gear chg. & Spring Pack(S.P.)
*REC-MOV-714MV	2769	4835	75	3397	23	5292	56	S.P. & Gear chg.
REC-MOV-1329MV	3934	11460	191	6701	70	11460	71	Presently capable
*RHR-MOV-MO27B	4000	142564	3464	5000	25	192000	3740	Gear ratio Chg.
RHR-MOV-MO66B	6806	121500	1685	14261	110	121500	752	Presently capable
SW-MOV-886MV	1379	5756	317	2246	63	5756	156	Presently capable
SW-MOV-887MV	1921	7061	268	2400	25	7061	194	Presently capable
SW-MOV-888MV	1429	5756	303	2409	69	5756	139	Presently capable
SW-MOV-889MV	1429	5756	303	2409	69	5756	139	Presently capable

* Data shown assumes that the appropriate actuator gear change has been implemented.

Nomenclature:

MRST = Minimum Required Stem Thrust
VF = Valve Factor
CST = Close Stem Thrust (at torque switch trip)
MAX = Maximum thrust closed

NOTE: .5 & 1.0 are the industry standard and NRC accepted valve factors for gate and globe valves respectively; however, the more conservative 1.0 & 2.0 valve factors are used in the high margin calculations for gate and globe valves respectively.

#	VALVE	Table 1 Supplement 6 Commitments	Table 2 Supplement 6 Commitments	Design Change Commitments	Performed During Forced Out	Commitment Complete	Recommended Commitment Change	Testing Prior to Supplement 6
1	RR-MOV-MO53A	Static test prior to restart.	Mods prior to restart	DESIGN	MOTOR/STATIC		Design basis not hardware change (tentative)	No previous tests performed.
2	RR-MOV-MO53B	Static test prior to restart.	Mods prior to restart	DESIGN	MOTOR/STATIC		Design basis not hardware change (tentative)	No previous tests performed.
3	HPCI-MOV-MO58	DP retest scheduled for RE16.					Low DP, no meaningful data. No DP.	Static and DP test.
4	RCIC-MOV-MO131		DP RE16		REFURB/STATIC		No DP. Flow assisted globe valve.	Static test only.
5	RCIC-MOV-MO132		DP RE16				No DP. Flow assisted globe valve.	Static test only.
6	REC-MOV-1329MV	Static test prior to restart.	DP RE16		REFURB/STATIC		Margin approach. No DP test.	No previous tests performed.
7	REC-MOV-700MV	Static test prior to restart.	DP RE16		STATIC		Margin approach. No DP test.	No previous tests performed.
8	REC-MOV-711MV	Static test prior to restart.	DP RE16		STATIC		Margin approach & mod. No DP test.	No previous tests performed.
9	REC-MOV-714MV	Static test prior to restart.	DP RE16		STATIC		Margin approach & mod. No DP test.	No previous tests performed.
10	RHR-MOV-MO27B	DP retest scheduled for RE16.	DP RE16				Margin approach & mod. No DP test.	Static test only.
11	RHR-MOV-MO66B		DP RE16				Margin approach. No DP test.	Static test only.
12	SW-MOV-886MV	Static test prior to restart.	DP RE16		REFURB/STATIC		Margin approach. No DP test.	No previous tests performed.
13	SW-MOV-887MV	Static test prior to restart.	DP RE16		REFURB/STATIC		Margin approach. No DP test.	No previous tests performed.
14	SW-MOV-888MV	Static test prior to restart.	DP RE16		REFURB/STATIC		Margin approach. No DP test.	No previous tests performed.
15	SW-MOV-889MV	Static test prior to restart.	DP RE16		REFURB/STATIC		Margin approach. No DP test.	No previous tests performed.
16	CS-MOV-MO12B		DP RE16					Static test only.
17	SW-MOV-650MV	Static test prior to restart.	DP RE16		STATIC			No previous tests performed.
18	SW-MOV-651MV	Static test prior to restart.	DP RE16		STATIC			No previous tests performed.
19	HPCI-MOV-MO14	Static retest scheduled for RE16.						Static and DP test.
20	HPCI-MOV-MO16	Static retest scheduled for RE16.						Static test only.
21	HPCI-MOV-MO19	Static retest scheduled for RE16.						Static test only.
22	HPCI-MOV-MO25	Static retest scheduled for RE16.						Static test only.
23	MS-MOV-MO74	Static retest scheduled for RE16.						Static test only.
24	MS-MOV-MO77	DP retest scheduled prior to restart, deferred to RE16.	DP RE16	DESIGN	STATIC			Static and DP test. (previous DP w/old valve)
25	RCIC-MOV-MO16	Static retest scheduled for RE16.						Static test only.
26	RCIC-MOV-MO15	Static retest scheduled for RE16.						Static test only.
27	RCIC-MOV-MO21	Static retest scheduled for RE16.						Static test only.
28	RCIC-MOV-MO27	Static retest scheduled for RE16.						Static test only.
29	RCIC-MOV-MO41	Static retest scheduled for RE16.						Static and DP test.
30	REC-MOV-702MV	Static test prior to restart.	DP RE16		REFURB/STATIC			No previous tests performed.
31	REC-MOV-709MV	Static test prior to restart.	DP RE16		REFURB/STATIC			No previous tests performed.
32	RHR-MOV-920MV	Existing DP test not valid. DP retest scheduled.	DP RE16					Static and DP test.
33	RHR-MOV-MO16B	Static retest scheduled for RE16.						Static and DP test.
34	RHR-MOV-MO25B	DP retest scheduled for RE16.						Static and DP test.
35	RHR-MOV-MO27A	Static retest scheduled for RE16.						Static and DP test.
36	RHR-MOV-MO39A			DESIGN				Static and DP test.
37	RHR-MOV-MO39B			DESIGN				Static and DP test.
38	RWCU-MOV-MO18	Static retest scheduled for RE16.						Static test only.
39	CS-MOV-MO5A	DP test prior to restart.			DP	CMP		Static and DP test.
40	PC-MOV-1303MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
41	PC-MOV-1304MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
42	PC-MOV-1305MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
43	PC-MOV-1306MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
44	PC-MOV-1308MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
45	PC-MOV-1310MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
46	PC-MOV-230MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
47	PC-MOV-231MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
48	PC-MOV-232MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
49	PC-MOV-233MV	Static test prior to restart.			STATIC	CMP		No previous tests performed.
50	REC-MOV-712MV	Static test prior to restart.	DESIGN	Prior to Restart	REFURB/STATIC	CMP		No previous tests performed.
51	REC-MOV-713MV	Static test prior to restart.	DESIGN	Prior to Restart	REFURB/STATIC	CMP		No previous tests performed.
52	SW-MOV-36MV	DP test prior to restart.	DP		DP (will mod & retest RE16)	CMP		No previous tests performed.

#	VALVE	Table 1 Supplement 6 Commitments	Table 2 Supplement 6 Commitments	Design Change Commitments	Performed During Forced Out	Commitment Complete	Recommended Commitment Change	Testing Prior to Supplement 6
53	SW-MOV-37MV	DP test prior to restart	DP		DP (will mod & retest RE17)	CMP		No previous tests performed
54	SW-MOV-M2128MV	Static test prior to restart			STATIC	CMP		No previous tests performed
55	SW-MOV-M2129MV	Static test prior to restart			REFURB/STATIC	CMP		No previous tests performed
56	CS-MOV-MO12A					N/A		Static and DP test
57	CS-MOV-MO5B				DP	N/A		Static and DP test
58	CS-MOV-MO7A					N/A		Static and DP test
59	CS-MOV-MO7B					N/A		Static and DP test
60	HPCI-MOV-MO15					N/A		Static test only
61	HPCI-MOV-MO17					N/A		Static and DP test
62	PC-MOV-1301MV					N/A		Static and DP test
63	PC-MOV-1302MV					N/A		Static and DP test
64	PC-MOV-1311MV					N/A		Static and DP test
65	PC-MOV-1312MV					N/A		Static and DP test
66	PC-MOV-305MV					N/A		Static and DP test
67	PC-MOV-306MV				STATIC	N/A		Static and DP test
68	RCIC-MOV-MO18					N/A		Static and DP test
69	RHR-MOV-MO13A					N/A		Static and DP test
70	RHR-MOV-MO13B					N/A		Static and DP test
71	RHR-MOV-MO13C					N/A		Static and DP test
72	RHR-MOV-MO13D					N/A		Static and DP test
73	RHR-MOV-MO16A					N/A		Static and DP test
74	RHR-MOV-MO17					N/A		Static test only
75	RHR-MOV-MO18					N/A		Static test only
76	RHR-MOV-MO25A					N/A		Static and DP test
77	RHR-MOV-MO34A					N/A		Static and DP test
78	RHR-MOV-MO34B					N/A		Static and DP test
79	RHR-MOV-MO66A					N/A		Static and DP test
80	RWCU-MOV-MO15					N/A		Static test only
81	SW-MOV-MO89A					N/A		Static and DP test
82	SW-MOV-MO89B					N/A		Static and DP test
	52 committed	82 valves static tested prior to startup.						
	-12 removed	35 dynamic tested prior to startup						
	40 committed							
	+3 new added							
	43 total DPs	43 total dynamic tests instead of 52 at end RE16						
	52%	of total valves Dynamic tested at end of RE-16						

Correspondence No: NLS950182

The following table identifies those actions committed to by the District in this document. Any other actions discussed in the submittal represent intended or planned actions by the District. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
1. Dynamic testing of the following MOVs will be performed: CS-MOV-MO12B REC-MOV-702MV REC-MOV-709MV SW-MOV-650MV SW-MOV-651MV	Refueling Outage (RE-16)
2. Spring packing and/or gear ratio changes will be performed on the following MOVs: REC-MOV-711MV REC-MOV-714MV REC-MOV-1329MV RHR-MOV-MO27B	Refueling Outage (RE-16)