June 13, 2001

MEMORANDUM TO: Stuart A. Richards, Director
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Jack Cushing, Project Manager, Section 2 ***/RA/***
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MEETING WITH JOINT OWNERS GROUP TO DISCUSS MOV PERIODIC VERIFICATION PROGRAM (TAC MA5035)

On May 9, 2001, the NRC staff held a public meeting with representatives of the Joint Owners Group (JOG) to discuss the current status of the JOG Program on Motor-Operated Valve (MOV) Periodic Verification. The Boiling Water Reactor Owners Group (BWROG), B&W Owners Group (B&WOG), Combustion Engineering Owners Group (CEOG), and Westinghouse Owners Group (WOG) are conducting the JOG program as an industry-wide response to Generic Letter (GL) 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves." The JOG program consists of the following three phases: (1) an interim MOV static diagnostic test program; (2) a 5-year MOV dynamic diagnostic test program; and (3) a long-term MOV periodic diagnostic test program. The NRC staff prepared a safety evaluation (SE) dated October 30, 1997, accepting the JOG program with certain conditions and limitations. The NRC staff meets with JOG representatives twice a year to discuss the status of the JOG program. Attachment 1 is a list of the meeting participants. Attachment 2 is a copy of the meeting agenda. The JOG meeting slides are available on the NRC's web site in ADAMS with the accession number ML011300509.

At the outset of the May 9 meeting, the NRC staff discussed the status of its review of MOV programs established at nuclear plants in response to GL 96-05. The staff is relying to a significant extent on the commitment of individual licensees to the JOG program as part of the preparation of SEs closing the NRC review of GL 96-05 programs at nuclear plants. The staff is reviewing, on an individual basis, those GL 96-05 programs developed by licensees not committed to the JOG program. The staff stated that SEs had been prepared closing the NRC review of the GL 96-05 programs at 98 reactor units. The staff also reported that the technical evaluation of the GL 96-05 programs at three additional reactor units had been completed. Since the May 9 meeting, the staff has issued SEs for two of those three additional reactor units, and has conducted an MOV inspection at D. C. Cook Units 1 and 2, to support preparation of an SE on that licensee's GL 96-05 program. Attachment 3 provides the status of the NRC staff's review of the GL 96-05 programs presented during the May 9 meeting.

The JOG representatives presented a status of the JOG program and provided an overview of the test results to date. The JOG representatives reported that licensees of 98 reactor units are participating in the program. The JOG program currently includes 197 valves that are receiving three repetitive dynamic tests with at least a 1-year time interval between tests. The JOG program is beyond the half-way point in the performance of the MOV dynamic testing.
The JOG representatives discussed its key observations to date from the MOV dynamic tests performed as part of the JOG program. For example, JOG has determined in general that gate valves disassembled and reassembled prior to testing may have an initially reduced valve factor that increases with service. Exceptions to JOG's general observations include specific instances of increasing valve factors demonstrated by (1) three gate valves from initially low values to more expected values; and (2) two gate valves from an initially high value. The JOG has identified only minor variations in bearing friction during dynamic tests of butterfly valves with bronze bearings in treated water systems. However, significant variation in bearing friction has been found for bronze bearings in untreated water systems. The JOG is reviewing this information for degradation trends. Butterfly valves with non-bronze bearings in treated or untreated water systems revealed only minor variation in bearing friction during dynamic tests.

The JOG has found low valve factors without degradation during dynamic tests of balanced disk globe valves, but observed certain transitory variations in the thrust requirements for these valves in raw water applications. The JOG has identified small changes in valve factor during dynamic tests of unbalanced disk globe valves, but no current evidence of degradation. Although initially discussed at the previous meeting, the JOG representatives reported that sufficient data does not yet exist to justify discontinuation of dynamic testing of unbalanced disk globe valves as part of the JOG program.

The JOG representatives stated that certain MOV test results obtained since the previous meeting met the JOG program criteria for prompt attention by the JOG oversight group. However, the JOG determined that those test results did not require preparation of new feedback notices to program participants. The JOG is addressing the issues raised in previous feedback notices, including the increase in valve factor for an Aloyco split wedge gate valve; the potential for under-filled test matrix categories in the JOG program; and the temporary reduction in valve factor observed during the dynamic testing of gate valves that had been recently disassembled and reassembled.

The JOG representatives reported that the dynamic testing program is scheduled to be completed in October 2002. However, some MOVs will receive their final dynamic test following the scheduled completion date of the program because (1) some licensees joined the program after its initiation; (2) certain MOV tests had to be repeated because the original test packages did not meet the JOG program acceptance criteria; (3) scheduling MOV dynamic tests at some plants has been more difficult than anticipated; and (4) some MOVs were found to require maintenance. Because the JOG dynamic test program includes more valves than originally envisioned, the JOG representatives expect that adequate MOV test data will be available to support the conclusions of the program. The JOG representatives stated that the impact of any tests to be conducted after October 2002 will be evaluated.

The JOG representatives stated that the ongoing evaluation of the test results will be completed following the conclusion of the MOV dynamic test program. Based on that evaluation, the JOG indicated that it will confirm the appropriate interim program assumptions, specify appropriate modifications to the interim program, and provide a basis for the final long-term periodic verification program. The JOG representatives noted that a final program report will be prepared and submitted to the NRC for review. The NRC staff plans to prepare an SE addressing the JOG final program report.

During the May 9 meeting, the NRC staff discussed a methodology developed by BWROG to provide an improved prediction of the performance of dc-powered MOVs. The BWROG developed the methodology in response to concerns identified by dc-powered motor actuator tests at the Idaho National Engineering and Environmental Laboratory (INEEL) sponsored by the NRC Office of Nuclear Regulatory Research (RES), and reported in NUREG/CR-6620, "Testing of dc-Powered Actuators for Motor-Operated Valves." The NRC staff issued NRC Information Notice 96-48, "Motor-Operated Valve Performance Issues," and its Supplement 1 to alert licensees to updated guidance for predicting ac-powered MOV actuator output and to identify efforts to evaluate dc-powered MOV output. On June 23, 2000, the BWROG forwarded Topical Report NEDC-32958 (Revision 0), “BWR Owners’ Group DC Motor Performance Methodology - Predicting Capability and Stroke Time in DC Motor-Operated Valves,” to the NRC staff for information. The BWROG did not request the preparation of an NRC SE on its dc-motor performance methodology, but did request that the NRC staff acknowledge the availability of the methodology. On October 2, 2000, the BWROG forwarded its recommended BWR utility schedule for implementing the BWROG dc-motor methodology to the NRC. In particular, BWROG recommended that its utilities evaluate their GL 96-05 dc-powered MOVs that have been assigned a static test frequency of 2 cycles or less by the JOG program within 12 months or the first refueling outage, and the remaining GL 96-05 dc-powered MOVs within 2 refueling outages, following NRC acknowledgment of the BWROG methodology. The NRC staff reported that RES is sponsoring a sample comparison of the BWROG dc-motor methodology to an INEEL dc-motor model. Following completion of the sample review, the staff plans to prepare a Regulatory Issue Summary (RIS) on the prediction of dc-powered MOV motor actuator output.

The NRC staff discussed with the JOG representatives the need to improve the MOV performance information used to establish the generic failure rate databases. The JOG representatives indicated that they were not aware of any MOV failures during the dynamic tests as part of the JOG program. The JOG representatives believed that an MOV would have to fail when called upon to operate, or to have been declared inoperable based on a licensee’s evaluation, to be captured in the industry’s EPIX data system. The JOG representatives suggested that MOV performance information could be obtained from plant-specific corrective action programs where MOVs might be determined by analysis to be incapable of performing their safety functions under design-basis conditions. The staff will continue to explore methods to improve the MOV performance information in the generic failure rate databases.

As an action item from the May 9 meeting, the JOG will review as-found test data from its dynamic test program for potential effects of pre-calibration strokes on MOV performance during dynamic tests.

The NRC staff and JOG representatives set a tentative date of October 17, 2001, for the next public meeting to discuss the status of the JOG program.

Attachments: 1. Meeting Participants
2. Meeting Agenda
3. Status of NRC Staff Review of Licensee Programs
Established in Response to Generic Letter 96-05

Docket No. 9

cc w/atts: See next page

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Docket No. 9

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JOG/NRC PUBLIC MEETING

May 9, 2001

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Attachment 1

AGENDA

NRC/JOG PUBLIC MEETING

MOTOR-OPERATED VALVE PROGRAM ON PERIODIC VERIFICATION

May 9, 2001

OWFN O-9B4

8:30 a.m.	Introductions (NRC and JOG)
8:35 a.m.	GL 96-05 Review Issues and Status (NRC)
9:00 a.m.	Status of Utility Testing and Data Submittals (JOG)
9:20 a.m.	JOG Test Program Results since previous meeting (JOG)
10:15 a.m.	BREAK
10:30 a.m.	Continue: JOG Test Program Results (JOG)
11:00 a.m.	Status of Utility Feedback Notices (JOG)
11:15 a.m.	Items of Interest (NRC) - BWROG dc motor performance methodology - MOV performance information for generic failure rate databases
11:45 a.m.	Action Items and Schedule for Next Meeting (NRC and JOG)
Noon	Closing (NRC)

Attachment 2

STATUS OF NRC STAFF REVIEW OF LICENSEE PROGRAMS ESTABLISHED IN RESPONSE TO GENERIC LETTER 96-05 (May 9, 2001)

LICENSEES OF 98 REACTOR UNITS COMMITTED TO IMPLEMENT JOINT OWNERS GROUP PROGRAM ON MOV PERIODIC VERIFICATION IN RESPONSE TO GL 96-05, "PERIODIC VERIFICATION OF DESIGN-BASIS CAPABILITY OF SAFETY-RELATED MOTOR-OPERATED VALVES."

LICENSEES OF 5 REACTOR UNITS ARE IMPLEMENTING PLANT-SPECIFIC GL 96-05 PROGRAMS:

Callaway
Fort Calhoun
Palisades
San Onofre 2/3

NRC STAFF HAS ISSUED SAFETY EVALUATIONS CLOSING ITS GL 96-05 REVIEW FOR 98 REACTOR UNITS.

NRC STAFF IS COMPLETING GL 96-05 SAFETY EVALUATIONS FOR THE 5 OTHER OPERATING REACTOR UNITS:

Callaway	technical review complete
Cook 1/2	inspection planned for spring 2001
Davis-Besse	technical review complete
Fort Calhoun	technical review complete