



# Entergy Operations

Entergy Operations, Inc.

Route 3, Box 1573

Russellville, AR 72801

Tel 501/864-3100

April 6, 1993

OCAN049306

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Mail Station P1-137  
Washington, D. C. 20555

Subject: Arkansas Nuclear One - Units 1 and 2  
Docket Nos. 50-313 & 20-368  
License Nos. DPR-51 & NPF-6  
Supplemental Response to Inspection Report  
50-313/92-18; 50-368/92-18  
Motor Operated Valve Program

Gentlemen:

Arkansas Nuclear One (ANO) has initiated a comprehensive program to implement the requirements of Generic Letter 89-10, "Safety-Related Motor Operated Valve (MOV) Testing and Surveillance." As stated in the subject inspection report, this program was developed and implemented to verify the capabilities of safety-related MOVs. The attached information addresses the supplemental information requested in the Nuclear Regulatory Commission (NRC) letter dated October 16, 1992.

On September 3, 1992, ANO provided information to the NRC on 69 MOVs that were judged to possess less than desirable thrust windows between minimum required and maximum allowable values based on expanded factors to determine switch settings. As stated in our September 3, 1992, response, these 69 marginal MOVs were evaluated and found to contain sufficient capability to perform their safety function and were operable. Additionally, a modification and testing schedule to upgrade selected marginal MOVs was also provided.

In a NRC letter dated October 16, 1992, a supplemental response to the subject inspection report was requested. It requested ANO to provide, 1) the results of the ANO review of MOV static diagnostic test results for those MOVs designated as being marginal, 2) planned actions taken as the result of the review and, 3) an update of any changes in the modification and testing schedule for the marginal MOVs. Attachment A provides the requested supplemental information which includes allowances for the Liberty Technologies Part 21 notification of October 2, 1992.

In summary, we have evaluated the static test results for 67 of the 69 marginal MOVs and have determined that the present torque switch settings provide reasonable assurance of operability. Additionally, other actions taken, either through evaluation or modification, have reduced the number of marginal MOVs from 69 to 55. Two MOVs require initial static testing which will be accomplished by the end of the initial Generic Letter period. Three MOVs require additional vendor information due to the use of ball screw stem nuts in order to account for the Liberty Part 21 affects. These three have been previously evaluated and found operable based on existing data.

9304120236 930406  
PDR ADDCK 05000313  
Q PDR

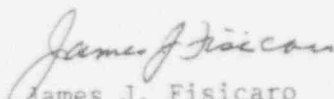
120002

120011

We are continuing to pursue the actions detailed in our September 3, 1992, response to further reduce this number. Where applicable, planned actions will be proposed to ANO's Change Review Board to ensure that Program MOVs continue to meet the design criteria based on system safety significance. The potential exists for schedule impacts such as long lead time parts availability, plant status, and changes to certain calculational factors. In addition, the planned scope may vary from those detailed as additional scoping is accomplished. It is our intent to meet all existing commitments related to our implementation of Generic Letter 89-10. A schedule for completing these commitments was submitted to the NRC on March 19, 1993.

Should you have questions or comments please call me at 501-964-8601.

Very truly yours,

  
James J. Fisicaro  
Director, Licensing

JJF/RMC/prg  
Attachment

cc: Mr. James L. Milhoan  
Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

NRC Senior Resident Inspector  
Arkansas Nuclear One - ANO-1 & 2  
Number 1, Nuclear Plant Road  
Russellville, AR 72801

Mr. Roby B. Bevan, Jr.  
NRR Project Manager, Region IV/ANO-1  
U. S. Nuclear Regulatory Commission  
NRR Mail Stop 13-H-3  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852

Mr. Thomas W. Alexion  
NRR Project Manager, Region IV/ANO-2  
U. S. Nuclear Regulatory Commission  
NRR Mail Stop 13-H-3  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852

ATTACHMENT A  
MOV EVALUATION RESULTS

The ANO Units 1 and 2 Generic Letter 89-10 MOV Program, as reviewed in May 1992 contained 284 MOVs. ANO has used the Liberty Technologies Inc., Valve Operation Test and Evaluation System (VOTES) almost exclusively since early 1991 and has, therefore, tested a majority of these MOVs with this system.

On October 2, 1992, Liberty Technologies Inc. notified the NRC, in accordance with Part 21 of the Code of Federal Regulations, that they had determined that three new factors can affect the thrust values obtained with the VOTES equipment. Those factors involve 1) the possible use of improper stem material constants, 2) the failure to account for a torque effect when the VOTES equipment is calibrated by measuring strain in the threaded portion of the valve stem and, 3) new effective stem diameter values.

The impact of this Part 21 report has been reviewed for the 69 marginal MOVs and efforts completed which evaluated the present torque switch setting (TSS) of each for adequate thrust delivery and overthrust concerns. The results of our review took into consideration the information provided in the Liberty Technologies, Inc. Part 21 and NRC Information Notice 93-01, "Accuracy of Motor-Operated Valve Diagnostic Equipment Manufactured by Liberty Technologies." The results of our review concluded that all marginal MOVs are operable. Efforts to assess the impacts on all other non-marginal MOV Program valves are underway. The information requested by your October 16, 1992, letter is as follows:

1. PROVIDE THE RESULTS OF THE ANO REVIEW OF MOV STATIC DIAGNOSTIC TEST RESULTS FOR MARGINAL MOVs.

The existing TSS for 64 of the 69 MOVs identified as marginal were evaluated and found to be adequate to assure operability. This operability determination includes consideration for providing adequate thrust and accounting for any MOV overthrust conditions produced by reanalysis of previous test data made necessary by the VOTES Part 21 notification. An additional area addressed by this determination is inaccuracy differences in the open versus closed direction for the VOTES system.

Two MOVs require initial static testing and three MOVs utilize ball screw configurations in lieu of conventional stem nuts. Information on these valves has been requested from Liberty Technologies, Inc. and the ball screw manufacturer in order to address the TSS for each. The adequacy of the TSS of each ball screw valve, without consideration for the VOTES system Part 21 impacts was previously evaluated in accordance with MES-01, "Guideline for Preparing MOV Setpoint Calculations", Revision 2 and determined to be operable.

2. ACTIONS TO BE TAKEN AS A RESULT OF THIS REVIEW

With respect to resetting torque switches to provide increased stem thrust so that design criteria can be met, such action is desired but not required to assume operability on certain of the original 69 marginal MOVs. Most of these MOVs were previously identified for modification in our September 3, 1992, response or have been separately identified by our response to the Nuclear Management and Resources Council guidance on MOVATS tested values. On any MOV where such torque switch resetting is needed to attain design criteria, this has been taken into account in the prioritization of the MOV Program test schedule.

Of the MOVs evaluated, some were found to have a deliverable stem thrust either above the original actuator thrust rating or the valve allowable limit. For those actuators where the original thrust limit was exceeded, credit for increased thrust levels as justified by the Kalsi study was taken. For these cases, immediate actions have been taken to evaluate proper valve to actuator bolt torque values and retorquing if necessary.

For those MOVs evaluated for overthrust conditions, longer term actions not related to operability were identified and will be pursued under normal MOV Program activities.

3. CHANGES IN THE MODIFICATIONS AND TESTING SCHEDULE AS PROVIDED IN THE SEPTEMBER 3, 1992, RESPONSE

To date, limited changes to the modification and testing schedule for the 69 marginal MOVs previously reported in attachments B and C of the September 3, 1992, response have been identified. The following status is offered for your information:

- Six of the valves originally screened as marginal were found to meet all design criteria when analyzed individually. These valves are: CV-1214, CV-1216, CV-1233, 2CV-1039, 2CV-0340 and 2CV-4824.
- Modifications identified for the ANO unit 2 refueling outage 2R9 (fall of 1992) were installed as scheduled. The modifications performed have allowed six additional MOVs to meet established design criteria and are no longer considered marginal. These valves are, 2CV-1000, 2CV-1002, 2CV-1050, 2CV-1052, 2CV-1313 and 2CV-1519.
- Two MOVs, CV-2624 and CV-2674, were evaluated and justification provided to remove them from the scope of the ANO MOV Program required by Generic Letter 89-10. These MOVs are non-safety related and are not required for accident mitigation as was previously assumed. They will remain in the larger ANO MOV Program which includes some MOVs not covered by the Generic Letter.

- The capability of MOV 2CV-4820, was not reported in the September 3, 1992, response due to the unavailability of vendor data at that time. The data has been obtained, evaluated and 2CV-4820 was found to be operable both from the standpoint of capability and adequacy of the present TSS. Currently, no modifications are planned for this marginal MOV since only a slight reduction in assumed packing loads will allow the MOV design criteria to be met. Further static and dynamic test results will be used to confirm these assumptions or identify modifications, if required.
- MOV modifications, stated in our September 3, 1992, response, for the ANO Unit 1 refueling outage 1R11 (fall of 1993) are planned for installation with the following exceptions which will be individually justified.
  - a. CV-2617 and CV-2663 will be modified with gear and/or spring pack changes only, not actuator upgrades.
  - b. CV-2625 and CV-2675 will be modified by changing valve stroke times and by possible increase in the electrical cable size for CV-2625.
  - c. CV-1416 should receive a new valve only. The existing actuator should meet the design criteria with the new valve added although actuator spring pack or gear modifications may be required.
  - d. CV-1206 will receive an entire new valve instead of a valve disc, as well as a new spring pack and new gears.
  - e. CV-1234 will receive a new spring pack in addition to the modifications previously reported.
- Planned modifications identified for the ANO unit 2 refueling outage 2R10 (spring of 1994) and the ANO unit 1 refueling outage 1R12 (spring of 1995) remain as originally stated in our September 3, 1992, response.

In summary, actions taken to date have reduced the number of marginal valves from the 69 reported in our September 3, 1992, response to 55. We are continuing to pursue our action plan to address the remaining marginal MOVs. Should any changes occur to those actions detailed in paragraphs a. through e. above, justification will be added to the applicable scoping documents. Additionally, the number of MOV Program valves have been reduced from 284 to 282. To date, no operability concerns have been identified.