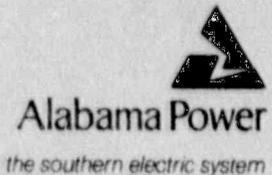


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December 28, 1989



Docket No. 50-348  
50-364

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

Gentlemen:

Joseph M. Farley Nuclear Plant  
Response To Generic Letter No. 89-10  
Safety-Related Motor-Operated Valve Testing and Surveillance

On June 28, 1989, the NRC issued Generic Letter 89-10, which extends the scope of I.E. Bulletin 85-03 to include all safety-related and position-changeable motor-operated valves (MOV's). Item 1 of the Generic Letter (G.L.) requested that each licensee advise the NRC whether the recommendations and schedule contained in the G.L. would be met. The letter further requested that for any recommendations or schedule elements which would not be met, the licensee should present technical justification along with alternative actions and/or schedules. The attachment to this letter provides the Alabama Power Company (APCo) response to these requests.

Alabama Power Company concurs with the need to increase the overall functional reliability associated with motor-operated valves. This concurrence is demonstrated by the current MOV Program at Farley Nuclear Plant (FNP). This program was developed in response to IEB 85-03 and other industry identified concerns. Since inception of the program, more than one hundred MOV's per unit have been refurbished/replaced and tested. Alabama Power Company program plans include all safety-related motor-operated valves. The FNP MOV Program addresses the concerns associated with MOV's in a prioritized manner. MOV maintenance and testing activities take into account the experience gained and present level of knowledge available from diagnostic performance testing.

Alabama Power Company has concerns regarding the generic letter issue of delta-p testing. Based on the experience Alabama Power Company has acquired with MOV testing, the decision has been made to defer additional delta-p testing. In-situ delta-p testing is a complex, time consuming effort which has the potential of placing the plant in undesirable test configurations. Alabama Power Company has developed a program that concentrates on ensuring that actuator and valve units are electrically and mechanically sound and are appropriately adjusted to provide a high level of functional reliability for both opening and closing under assumed design bases conditions. Alabama Power Company believes that the continuation of the current program is the prudent course of action. Additional information regarding this position is provided in the attachment.

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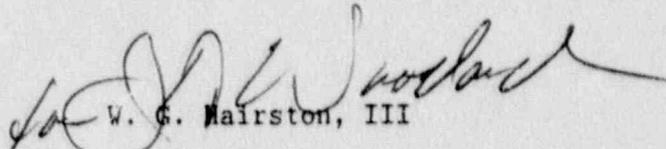
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Alabama Power Company will continue to monitor industry sponsored MOV delta-p performance research and other MOV-related activities. The results from such research and/or activities will be evaluated and appropriate items will be factored into the existing program.

Alabama Power Company has an additional concern regarding the NRC's position requiring utilities to consider inadvertent mispositioning of non-safety related MOVs within the scope of their programs. APCo considers this item to be a generic backfit as defined under 10 CFR 50.109, and we are concerned that an appropriate backfit analysis has not been performed for Farley Nuclear Plant. It is Alabama Power Company's intention to monitor and participate in the Nuclear Management and Resources Council (NUMARC) activities in resolving the backfit issue.

The information provided herein is true to the best of my knowledge and belief. If you have any questions, please advise.

Respectfully submitted,

  
W. G. Mairston, III

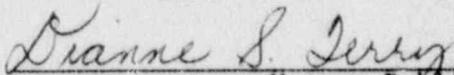
Attachment

WGH,III/SLG:cht-pgr.NRC.3

cc: Mr. S. D. Ebnetter  
Mr. E. A. Reeves  
Mr. G. F. Maxwell

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 28<sup>th</sup> DAY OF December, 1989

  
Notary Public

My Commission Expires: December 29, 1992

bc: Mr. Scott Fulmer  
Mr. J. E. Garlington  
Mr. D. E. Mansfield  
Mr. R. P. McDonald  
Mr. J. W. McGowan  
Mr. B. L. Moore  
Mr. D. N. Morey  
Mr. C. D. Nesbitt  
Mr. J. J. Thomas  
Mr. B. R. Yance  
Commitment Tracking System (2)  
File: A5004 (G.L. 89-10)

ATTACHMENT  
ALABAMA POWER COMPANY  
RESPONSE TO G. L. 89-10

I. INTRODUCTION

The MOV program currently in effect at Farley Nuclear Plant (FNP) is a refinement of the program developed in response to IEB 85-03. The present approach has been refined using additional industry input and the experience gained during actual MOV refurbishment and testing. This program will continue to be periodically reevaluated and revised as necessary.

The program Alabama Power Company plans for MOVs includes the safety-related motor-operated valves. This program is based upon the prudence of maintaining electrically and mechanically sound MOVs. However, APCo has concerns regarding the NRC's position requiring utilities to consider inadvertent mispositioning of non safety-related MOVs (defined as "position changeable") within the scope of their programs. APCo considers this to be a generic backfit as defined under 10 CFR 50.109 and we are concerned that an appropriate analysis has not been performed for Farley Nuclear Plant. However, Alabama Power Company will include the "position changeable" valves in the MOV program, pending resolution of the backfit issue, with exceptions justified on a case by case basis.

II. RESPONSES TO GENERIC LETTER RECOMMENDATIONS

Recommendations a and e

Generic Letter Item a

"Review and document the design basis for the operation of each MOV. This documentation should include the maximum differential pressure expected during both the opening and closing of the MOV for both normal operations and abnormal events, to the extent that these MOV operations and events are included in the existing approved design basis."

Generic Letter Item e

"Regarding item a., no change to the existing plant design basis is intended and none should be inferred. The design basis review should not be restricted to a determination of the estimated maximum design-basis differential pressure, but should include an examination of the pertinent design and installation criteria that were used in choosing the particular MOV. For example, the review should include the effects on MOV performance of design-basis degraded voltage, including the capability of the MOV's power supply and cables to provide the high initial current needed for operation of the MOV."

#### APCo Response

Alabama Power Company performs a design basis review for the operation of each MOV included in the program consisting of the following:

- a. Design documentation is reviewed to establish a maximum differential pressure for each MOV within the program.
- b. Actuator vendors, valve vendors, and the FNP designers are requested to provide certain design data. Typical of the data requested are actuator gearing ratios, actuator reduced voltage capability, valve stroke time, valve seat bore, and maximum valve and actuator thrust ratings.

The above information is evaluated to ensure that each MOV is appropriate for its design application and to provide a basis for determining switch settings. Pertinent data, including maximum thrust/torque ratings and appropriate switch settings, is incorporated into a MOV Setpoint Document.

#### Recommendation b

##### Generic Letter Item b

"Using the results from item a., establish the correct switch settings. This should include establishing a program to review and revise, as necessary, the methods for selecting and setting all switches (i.e., torque, torque bypass, position limit, overload) for each valve operation (opening and closing). One purpose of this letter is to ensure that a program exists for selecting and setting valve operator switches to ensure high reliability of safety-related MOVs."

##### APCo Response

To provide a high level of confidence in determining and selecting correct switch settings, information is obtained from several sources. As an example, the differential pressure determined from the design basis review is normally provided to the valve vendor and/or the actuator vendor for use in calculating the required thrust/torque to open and close the valve at this condition. Additionally, the MOVATS delta-p database or, in certain cases, previous Farley Nuclear Plant delta-p data for the valve type in question, may be utilized to develop thrust requirements for comparison to those calculated by the vendors. Subsequently, thrust/torque values are evaluated and a determination made as to the most appropriate value to be used as the basis for the minimum delta-p thrust.

This minimum delta-p thrust value is evaluated with the valve maximum rating, the actuator maximum rating, and the calculated reduced voltage capability to arrive at a target thrust range. This range, which is specified in the setpoint document, is then used to set the torque switch in the field. Where possible, this setup is performed using diagnostic test equipment.

Limit switch settings and thermal overload sizes are also evaluated for each MOV. This information is incorporated into the MOV Setpoint Document to ensure proper switch settings are maintained.

#### Recommendation c

##### Generic Letter Item c

"Individual MOV switch settings should be changed, as appropriate, to those established in response to item b. Whether the switch settings are changed or not, the MOV should be demonstrated to be operable by testing it at the design-basis differential pressure and/or flow determined in response to item a. Testing MOVs at design basis conditions is not recommended where such testing is precluded by the existing plant configuration. An explanation should be documented for any case where testing with the design-basis differential pressure or flow cannot practicably be performed. This explanation should include a description of the alternatives to design-basis differential pressure testing or flow testing that will be used to verify the correct settings."

"Each MOV should be stroke tested, to verify that the MOV is operable at no-pressure or no-flow conditions even if testing with differential pressure or flow cannot be performed."

##### APCo Response

The switch settings and thermal overload sizes discussed in Item b are verified in the field to agree with the setpoint document. Verification of the switch settings, if possible, includes stroking the valve under static conditions while recording pertinent information using diagnostic test equipment. If this method is not possible, alternative means of switch verification are used. Thermal overload sizing verification is performed using actual test data supported by engineering evaluations.

Alabama Power Company has made the decision to defer additional MOV delta-p testing. This position is based upon the experience gained from delta-p testing more than fifty MOVs at Farley Nuclear Plant. These test results have not conclusively proven that in-situ delta-p testing is the best method to establish torque switch settings. While additional refinement in torque switch setting methodology may be possible from further delta-p testing, the benefits associated with such refinements do not appear to justify the added costs and time involved with this testing. This is especially true considering the uncertainties associated with predicting and measuring MOV performance under dynamic conditions. In cases where an acceptable level of confidence is not realized with the analytically derived torque switch setting, Alabama Power Company may elect to perform additional delta-p testing. Certain questions involving delta-p testing remain unanswered. Some examples of these questions are summarized as follows:

- a. What factors can affect the delta-p thrust requirements for a given valve or valve type;
- b. How might these factors change with time and operating conditions;
- c. How can the MOV be setup using existing diagnostic equipment to ensure the required thrust is available and maintainable; and
- d. What is an acceptable procedure for using data taken at less than design conditions to establish switch settings for ensuring functional capability at design basis conditions?

Alabama Power Company believes that the continuation of the current program is the prudent course of action until such time as a technically justifiable basis for additional delta-p testing is established. This justification would include, as a minimum, a method for using the test data to substantially improve MOV switch settings. Alabama Power Company will continue to establish switch settings in a consistent, conservative manner, while concentrating on correcting other identified MOV problems (mechanical/electrical) for which there are known solutions.

#### Recommendations d and j

##### Generic Letter Item d

"Prepare or revise procedures to ensure that the correct switch settings are determined and maintained throughout the life of the plant. These procedures should include provisions to monitor MOV performance to ensure the switch settings are correct. This is particularly important if the torque or torque bypass switch setting has been significantly raised above that required."

"It may become necessary to adjust MOV switch settings because of the effects of wear or aging. Therefore, it is insufficient to merely verify that the switch settings are unchanged from previous established values. The switch settings should be verified in accordance with the program schedule (see item j.). The ASME Code Section XI stroke-timing test required by 10 CFR Part 50 is not oriented toward verification of switch settings. Therefore, additional measures should be taken to adequately verify that the switch settings ensure MOV operability. The switch settings need not be verified each time the ASME Code stroke-timing test is performed."

#### Generic Letter Item j

"The program for the verification of the procedures outlined in item d., as well as other tests or surveillance that the owner may choose to use to identify potential MOV degradations or misadjustments, such as those described in Attachment A, should be implemented after maintenance or adjustment (including packing adjustment) of each MOV, and periodically thereafter. The surveillance interval should be based on the licensee's evaluation of the safety importance of each MOV as well as its maintenance and performance history. The surveillance interval should not exceed 5 years or three refueling outages, whichever is longer, unless a longer interval can be justified (see item h.) for any particular MOV."

#### APCo Response

Procedures and administrative controls are in place to guide the initial setup and verification of switch settings and to control activities that could affect or alter these settings. Additionally, procedures and/or other guidance will be developed to provide for periodic testing to verify switch settings are adequate to maintain a high level of confidence in the ability of the MOV to perform the required safety function(s). An initial periodic test interval will be established in the future. This interval will be based on factors such as the safety significance of the MOV, the operating environment and the results of testing. The test interval may be adjusted as experience is gained. The frequency for testing and the basis for this frequency will be retained and will be available for NRC review. Post maintenance testing to verify switch settings will be performed, as necessary, based upon maintenance performed.

#### Recommendation f

##### Generic Letter Item f

"Documentation of explanations and the description of actual test methods used for accomplishing item c. should be retained as part of the required records for the MOV. . . ."

##### APCo Response

The method of determining acceptable MOV switch settings, including test methodology, will be documented.

#### Recommendations g and h

##### Generic Letter Item g

"A number of deficiencies, misadjustments, and degraded conditions were discovered by licensees, either as a result of their efforts to comply with Bulletin 85-03 or from other experiences. A list of these conditions (including improper switch settings) is included in Attachment A to this letter for licensee review and information."

Generic Letter Item h

"Each MOV failure and corrective action taken, including repair, alteration, analysis, test, and surveillance, should be analyzed or justified and documented. The documentation should include the results and history of each as-found deteriorated condition, malfunction, test, inspection, analysis, repair or alteration. All documentation should be retained and reported in accordance with plant requirements. . . ."

APCo Response

Administrative controls are currently in place to document equipment failures at FNP, including MOVs. The failure information, including the corrective actions performed, are included in this documentation. MOV failures will be evaluated and assessed on a periodic basis to provide guidance for improvement of the MOV program.

Recommendations i and k

Generic Letter Item i

"Each licensee with an operating license (OL) should complete all design-basis reviews, analyses, verifications, tests, and inspections that have been instituted in order to comply with items a. through h. within 5 years or three refueling outages of the date of this letter, whichever is later. . . ."

"For plants with an OL, the documentation described in item 1. and 2. below should be available within 1 year or one refueling outage of the date of this letter, whichever is later. . . . The documents should include:

1. The description and schedule for the design-basis review recommended in item a. (including guidance from item e.) for all safety-related MOVs and position changeable MOVs as described, and
2. The program description and schedule for items b. through h. for all safety-related MOVs and position changeable MOVs."

Generic Letter Item k

"In recognition of the necessity for preplanning, refueling outages that start within 6 months of the date of this letter need not be counted in establishing the schedule to meet the time limits recommended in item i. and j."

APCo Response

Utilizing the FNP MOV Program described above, Alabama Power Company intends to complete all safety-related MOVs within the five (5) years or three (3) refueling outage schedule. The NRC will be notified if the above schedule cannot be met.

Alabama Power Company will have available a program description and a schedule for completing all safety-related MOVs within one (1) year of the date of the generic letter. The NRC will be notified within thirty (30) days following the completion of activities described in the first paragraph of item i of the generic letter.

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