June 4, 2001

Mr. Guy G. Campbell, Vice President - Nuclear
FirstEnergy Nuclear Operating Company
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING RELIEF REQUEST TO IMPLEMENT A RISK-INFORMED INSERVICE TESTING PROGRAM FOR AIR-OPERATED VALVES (TAC NO. MB0520)

Dear Mr. Campbell:

By letter dated September 11, 2000, FirstEnergy Nuclear Operating Company (FENOC), submitted a request to implement a Risk-Informed Inservice Testing (RI-IST) Program as an authorized alternative to the currently Nuclear Regulatory Commission (NRC)-endorsed American Society of Mechanical Engineers (ASME) Code specified by 10 CFR 50.55a(f) for the Davis-Besse Nuclear Power Station (DBNPS), Unit 1. The submittal specifically requests the implementation of this RI-IST Program alternative for air-operated valves. The DBNPS is the pilot plant for demonstrating the Babcock and Wilcox Owners Group (B&WOG) Topical Report BAW-2359, "Demonstration Project to Apply Risk-Informed Inservice Testing to Air-Operated Valves," which is also under review. During the review, the NRC staff has identified that additional information is needed in order to complete the review. Specific questions are presented in the enclosed RAI.

The enclosed questions have been discussed with your staff. As discussed, you committed to respond to this RAI by June 22, 2001. If you have any questions concerning our review, or additional time is needed to respond to the RAI, please contact me at (301) 415-3154.

Sincerely,

/RA/

Stephen P. Sands, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure: Request for Additional Information

cc w/encl: See next page

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PROBABILISTIC SAFETY ASSESSMENT BRANCH (SPSB)/MECHANICAL AND CIVIL

ENGINEERING BRANCH (EMEB) REQUEST FOR ADDITIONAL INFORMATION (RAI)

RISK-INFORMED INSERVICE TESTING PROGRAM FOR AIR-OPERATED VALVES[1]

FIRST ENERGY NUCLEAR OPERATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION

DOCKET NO. 50-346

1. Based on BAW-2359 Section 3.2, Section 4.1, Section 5.3, and Section 6.1, Davis-Besse (DBNPS) appears to have used the Joint Owners Group (JOG) air-operated valve (AOV) Program scoping criteria, which relies in part on the safety designation of the component (e.g., safety-related) and its safety significance (e.g., high safety significant component (HSSC)), to establish the AOVs to be considered as candidates for the DBNPS risk-informed (RI) AOV Program, which includes the DBNPS RI-inservice testing (IST) Program for AOVs. However, at the scoping phase, safety significance has not been quantitatively or qualitatively determined. Use of the JOG AOV Program scoping criteria to determine the AOVs that need to be classified as HSSC or low safety significant component (LSSC) may prematurely eliminate some AOVs. For the DBNPS application, did the selected initial set of AOVs include all the safety-related AOVs, probabilistic risk assessment (PRA)-identified AOVs, JOG Program-identified AOVs, current IST Program AOVs, and any other AOVs that may be risk-significant when considering their importance during non-full power operations (e.g., startup, shutdown, and spent fuel pool cooling) and external conditions (e.g., seismic events, fires, and floods)? Please provide more detail on the scoping that was done to determine the initial set of AOVs that were chosen for potential inclusion in the DBNPS RI-IST Program for AOVs to ensure that all potential HSSC AOVs were identified and evaluated.

2. Per BAW-2359 Section 1.3, Section 5.1, and Section 6.1, there is reliance on the JOG AOV Program. However, the JOG AOV Program only addresses "active" safety-significant AOVs. An "active" AOV is defined in the JOG AOV Program as "a valve that must perform a mechanical motion during the course of accomplishing a system safety-significant function." (JOG AOV Program Section 2 - Revision 1, December 2000) In JOG AOV Program Section 4.1.3 additional considerations of an AOV being active are provided. However, these considerations only address AOVs that are moved to non-safety positions during testing or maintenance. It is not clear how DBNPS defines what an "active" AOV is and what considerations are included. For example, it could include considering: (a) periodic system/component realignments (e.g., a normally-open AOV that may be closed as part of testing or maintenance activities, which would have to open to achieve its safety-significant position); (b) the potential for AOVs to drift open or closed between test cycles, which would then require mechanical movement to achieve its safety-significant position; (c) conditions in which the air supply is used to maintain an AOV in its safety-significant position (e.g., a normally-open AOV whose safety-

[1] Also addresses DBNPS information provided in Enclosure A to the submittal - "Demonstration Project to Apply Risk-Informed Inservice Testing to Air-Operated Valves," B&W Owners Group, Risk Informed Applications Committee, BAW-2359 Topical Report, July 2000.

significant position is to remain open, closes on a loss of air supply); and/or (d) AOVs that have multiple safety-significant positions (e.g., for one condition the AOV must close, but then for other conditions the AOV must open or re-open after being closed). Does DBNPS have any “passive” AOVs? If so, please clarify how DBNPS defines an “active” AOV, including what conditions are considered when determining an AOV is or is not “active.”

3. In the DBNPS worksheet, the F-V and risk assessment worth (RAW) values are single entries, thus, they only address core damage frequency (CDF), but not large early release frequency (LERF), importance. Further, the sensitivity studies and performance history are not explicitly addressed, but may be incorporated under other headings, and not all important failure modes are explicitly identified (e.g., probabilistic safety assessment (PSA)-modeled failure modes and failure modes associated with its safety functions including other operating modes and conditions such as for shutdown and external events). For example, AOV CC1471 is identified as HSSC and the text in BAW-2359 Section 6.9 indicates that all HSSC AOVs were already in the IST Program. From the text discussions in BAW-2359 Section 6, which are not captured in the worksheets, this AOV was initially in Quadrant A but was upgraded to HSSC due to the sensitivity studies. The results of the sensitivity studies need to be summarized in the worksheets to support the final classification of the AOV as HSSC. Where are these factors (i.e., LERF importance values, failure modes, performance history, and sensitivity studies), which are identified in the BAW-2359 generic worksheet, documented?

4. Based on the discussions at the public meeting on January 25, 2001, and a review of the submitted information, including the DBNPS worksheets in BAW-2359 Appendix D, it appears that only the 83 AOVs already in the current IST Program were classified according to safety significance.

    a. In the Risk Informed Classification block there is a box for being “out of scope” in addition to boxes for HSSC and LSSC. The “out of scope” box appears to be the determination that the AOV is not included in the RI-IST Program as a result of the safety-significance determination process. However, this is a conclusion of the process and does not mean that the AOV is neither HSSC nor LSSC. For example, AOV CW620 is in Quadrant A, which means it is LSSC, but this box is not checked. The approach should be to address all AOVs considered (i.e., all 180 AOVs included in the evaluation) by determining them to be either HSSC or LSSC using a blend of the PSA risk ranking, including the related sensitivity studies, and the deterministic/traditional engineering considerations by the expert panel. PSA-identified LSSC AOVs may be raised to HSSC by the expert panel when considering the deterministic/traditional engineering factors and non-PSA AOVs may be classified as HSSC or LSSC by the expert panel based upon their insights using the deterministic/traditional engineering considerations. If the AOV is in the current IST Program, then it remains in the RI-IST Program. In addition, per Regulatory Guide (RG) 1.175, any other AOV identified as HSSC by this integrated decision making process should also be included in the RI-IST Program. All other AOVs that are determined to be LSSC and that are not in the current IST Program can then be considered “out of scope” for the RI-IST Program (e.g., AOV CW620). Why were not all 180 AOVs in the evaluation classified as either HSSC or LSSC? Were any AOVs outside the current IST

Program classified as either HSSC or LSSC? Please clarify if the above described approach was used by DBNPS and/or if any changes to the evaluations/worksheets are needed to make them consistent with this approach.

b. AOV CT2955 is identified as being in Quadrant D, but it is classified as out of scope contingent upon the development of a test to verify its operability. However, Quadrant D AOVs are to be considered HSSC per BAW-2359 Section 3.8. Further, this AOV may be important as it relates to the loss of service water initiating event and related impacts from external events. Since this worksheet indicates that the test had not been developed (at least when the expert panel completed the worksheet initially), this AOV should be classified as HSSC and should be put in Category 1 of the DBNPS RI AOV Program until the test is developed and the RI AOV Program methodology is re-applied with the new information. Has DBNPS developed the recommended flow test? If not, does DBNPS plan to conduct all the requirements of the RI AOV Program for a Category 1 AOV until this test is developed and the RI AOV Program methodology is re-applied for this AOV? How will this program change be documented?

c. AOV SP13A3 is stated as being important for mitigating plant transients, but then this condition seems to be discounted because it does not have a formally-defined “safety function” and is marked as being “out of scope” even though it is in Quadrant A, which would infer it should be at least LSSC. This AOV’s safety-significance classification may be even more important since it is stated to have a poor maintenance history. The AOV should be classified and treated according to its importance, regardless of its formal designation. If the AOV is important, the reason for its importance needs to be addressed and documented in the worksheet. Did DBNPS consider an AOV’s formal safety function designation in determining its RI-IST Program safety-significance classification? If so, how does this approach ensure that RI-IST Program captures all HSSC AOVs, including those without a formal safety function designation?

5. Based on the discussions at the public meeting on January 25, 2001, and a review of the submitted information, including the DBNPS worksheets in BAW-2359 Appendix D, the deterministic/traditional engineering factors do not appear to have been considered, or were not documented as being considered in the RI-IST Program safety-significance classification of AOVs.

a. Per BAW-2359 Section 3.5 and Section 6.6, the Risk Informed IST Program Inclusion Considerations block of the DBNPS worksheets is supposed to be used to support the safety-significance classification of AOVs, which is recorded in the Risk Informed Classification block. This approach is consistent with RG 1.175. However, the worksheets do not reflect this approach, at least for AOVs CC1460, CC1467, CC1471, CV5004, CV5007, DH14B, ICS11A, MS100, MS5889A, MU38, MU66A, SP6B, and SW1424. As an example, for AOV CC1460, which is classified as LSSC, every consideration in the Risk Informed IST Program Inclusion Consideration block states that “This component is already in the IST Program.” It is inferred from this entry that because the AOV was already in the IST Program, the expert panel did not consider the deterministic/traditional engineering factors or at least the considerations were not documented on the worksheets. The safety-significance classification of each AOV should include both the PRA/quantitative considerations and the deterministic/traditional engineering considerations. These latter considerations, which are provided in the Risk Informed IST Program Inclusion Considerations block, need to be documented and used in support of the Risk Informed Classification block determinations, especially if they indicate an LSSC may need to be upgraded to an HSSC (or vice versa) or for AOVs that cannot be, or are not, represented in the PRA models. Please explain how the deterministic/traditional engineering factors are used as part of the safety-significance classification of AOVs and where these considerations are documented.

b. AOV CD420 is stated as not being modeled in the PSA, however, it is stated in the maintenance reliability entry that detection of its failure would occur due to it initiating a transient. If this AOV's failure results in a transient, then it is part of the loss of main feedwater transient initiating event, which should be modeled in the PSA. The impact of component failures on initiating events is specifically stated as needing to be considered in the deterministic/traditional engineering factors cited in BAW-2359 Figure 3-2. The potential impact on this initiating event and its poor maintenance history may support this AOV being classified HSSC if its contribution to the loss of main feedwater initiating event is significant (and this initiating event has a significant contribution to core damage). How were the impacts of AOV failures on initiating events considered by the expert panel and factored into the safety-significance classification of the AOVs?

c. The decision basis for AOV CW620 indicates that it can initiate a plant transient and complicate plant shutdown, but because it does not have a "safety-significant function" it is not considered HSSC. How were the plant transient, shutdown, system reliability, and defense-in-depth affects dismissed as not being important enough for this AOV to be HSSC?

d. Does AOV SP6B have an impact on, or can it induce, a plant transient if it closes? If so, was this impact considered in the safety-significance classification of the AOV?

6. Per BAW-2359 Section 3.4 and ASME Code Case OMN-3, general sensitivity studies are required. Please describe how each of the sensitivity studies were conducted.

a. The human factors sensitivity study indicates that the "... PRA is requantified ... after human actions modeled in the PRA to recover from specific component failures are removed from the models." How does DBNPS interpret "specific component failures?" Is the intent of this phrase to meet Section 2.3.3.3 of RG 1.175 which states that credit should not be taken for post-accident recovery of failed components (e.g., repair or ad hoc manual actions such as manually forcing open a stuck valve)? Is the model requantified after all component failure recoveries are removed or after only the AOV failure recoveries are removed?

b. Did DBNPS address both aspects of the common-cause failure (CCF) sensitivity study: increasing the AOV CCF event probabilities and requantifying the model and then eliminating, or reducing, the AOV CCF event probabilities and requantifying the model? When the CCF probabilities were increased, were they set to unity or to some other value (e.g., multiple greek letter beta/gamma multipliers)? When the CCF probabilities were reduced, were they set to zero or some other value?

7. BAW-2359 Section 3.8 states that a component in Quadrant B should be assumed to be HSSC unless there are known compensatory measures to support downgrading it to LSSC. Quadrant B AOVs are not risk-significant, except when they are out of service. Thus, a proper compensatory measure would need to assure that the AOV is available and operable/functional during plant operating modes in which the AOV must function. Further, Section A3.1 of the DBNPS submittal states that all AOVs in Quadrant B were categorized as HSSC. DBNPS has identified only one AOV in Quadrant B, AOV MU38, but it is designated as LSSC instead of HSSC.

    a. The AOV's importance measures indicate that it is not relatively important during normal conditions, since it is normally open and its reactor coolant pump (RCP) seal injection safety function (as opposed to its isolation, fail-safe, safety function) is to remain open. However, the AOV becomes relatively important when out-of-service (i.e., closed), which could result from maintenance events, failure to remain open, or failure to reopen/be reopened after closing. There are conditions in which this AOV may need to be reopened after being closed by a real or spurious safety features actuation signal (SFAS) Level 3 signal. Were spurious signals modeled in the PSA and was the need for the AOV to reopen following real or spurious signals modeled in the PSA?

    b. It does not appear that the deterministic/traditional engineering factors were considered for this AOV since it was already in the IST Program. Were deterministic/traditional engineering factors considered in the downgrading of this AOV and, if so, where are these considerations documented?

    c. It is important that this AOV be maintained open during normal conditions, as well as following upset conditions, which may require operator actions to reset isolation signals and manually reopen this AOV. Per BAW-2359 Section 6.7 and Section 6.9, the focus of the decision criteria for this Quadrant B AOV seems to be to lower it from HSSC to LSSC based on the compensatory measure that the AOV is placed in RI AOV Program Category 2 to ensure timely preventive maintenance and setpoint control. This is basically the same text presented for some Quadrant A AOVs. This seems to be inconsistent with BAW-2359 Section 3.8 as these actions will not provide the controls to address the particularities that make this AOV important. The specific rationale for downgrading an AOV from HSSC to LSSC should be documented, preferably in the DBNPS worksheet. Please explain how the cited compensatory action addresses the condition that makes this AOV important and revise the worksheet to more appropriately reflect the specific rationale for downgrading the AOV.

8. DBNPS submittal Section A3.1 states that all Quadrant B and C AOVs were classified as HSSC. There are 11 Quadrant C AOVs and 1 Quadrant B AOV. In addition, the

2 AOVs in Quadrant D are identified in BAW-2359 Section 6.9 as being HSSC, as well as 2 AOVs in Quadrant A that were raised to HSSC due to the sensitivity studies. These 16 AOVs that are stated to be HSSC are modeled in the DBNPS PSA. DBNPS submittal Section A3.1also states that 3 AOVs not modeled in the DBNPS PSA were also classified as HSSC, but these 3 non-PSA HSSC AOVs are not identified. Thus, there appears to be a total of 19 HSSC AOVs, but DBNPS submittal Section A3.3 states that there are only 15 HSSC AOVs, which are also listed in BAW-2359 Section 6.9. Please clarify this apparent discrepancy and identify the 3 non-PSA HSSC AOVs, including if these AOVs are already in the DBNPS IST Program or if they have been added to the DBNPS RI-IST Program and if they have been placed in Category 1 of the DBNPS RI AOV Program.

9. As a result of the classification process, some AOVs were identified as having weaknesses in their operability/performance testing. In these cases, DBNPS identified modifications that would be implemented to address these weaknesses.

    a. AOV CC1471 is identified as HSSC. From the text discussions in BAW-2359 Section 6, this AOV was upgraded to HSSC even though it was initially in Quadrant A as a result of the sensitivity studies that were performed. It is stated in the DBNPS worksheet for the normal function entry and the other considerations entry that there is a plant modification planned to ensure the AOV fails open. It is also stated that the modification will eliminate the AOV from the IST and JOG AOV Program requirement. Under what process will the AOV be removed from the IST Program? As part of the risk-informed process, since the AOV is part of the current IST Program, the AOV may be downgraded to LSSC and its RI AOV Program Category changed to 2 or 3, but it should not be eliminated from the RI AOV Program or the RI-IST Program for AOVs. This discussion in the worksheet needs to be clarified.

    b. For AOV ICS11A, it is stated on the worksheet that a modification during the Cycle 12 refueling outage will replace this AOV. Will the replacement be with a similar type of AOV? How does this replacement affect the RI-IST Program safety-significance classification and the RI AOV Program categorization?

    c. For modifications that impact the determinations used in the RI-IST Program, how does DBNPS plan to control and document the RI-IST Program implementation changes? Will DBNPS reconvene the expert panel and revise the analyses and worksheets using the RI AOV Program methodology before implementing different RI AOV Program Category requirements? If so, does DBNPS plan to conduct all the requirements of the existing RI AOV Program Category for the affected AOV until the modification is completed?

10. For AOV DH14B, the compensatory action entry incorrectly states it is in Category 2 of the DBNPS RI AOV Program. It should state, based on the checked box in the worksheet, that it is in Category 1.

11. In BAW-2359 Section 3.10 and Section 6.10.2, it is stated that grouping components and testing on a staggered basis over a test frequency reduces the importance of common cause failure. Staggered testing allows the AOVs to be tested over a

lengthened interval, with the presumption that if degraded performance is detected, other similar AOVs (including those susceptible to common cause failure) will be tested to verify their continued operability. Only in this manner is CCF potentially affected for a group of AOVs. Do the DBNPS feedback and corrective actions processes have the requirement to verify the operability/performance of similar AOVs if degraded performance is identified for an AOV?

12. Based on the discussions at the public meeting on January 25, 2001, and a review of the DBNPS submitted information, the aggregate risk calculations appear to have taken credit for other periodic tests. This is a reasonable consideration in calculating the aggregate risk if these other tests adequately validate the operability of the AOVs. However, the periodic test that is used as the basis for the test interval (and thus, the AOVs' standby time) should be documented, preferably in the DBNPS worksheets.

    a. Per BAW-2359 Section 6.11, the change in risk is stated as being zero. Is this due to the fact that all AOVs have other tests performed on a regular basis that demonstrate operability (i.e., were there any AOVs that did not have another periodic test credited)? How/where are these other tests documented? Please explain the reason for the negligible change in risk.

    b. RG 1.175 indicates that the preferred method of calculating the CDF and LERF values is by requantifying the PSA model, as opposed to only requantifying the original PSA cutsets. Did DBNPS requantify the PSA model?

13. This RAI is applicable only for those AOVs in which the aggregate risk calculations use an increased test interval from that of the original PSA model as a result of implementing the RI-IST Program. If the response to the above question (RAI 12) indicates that there are no AOVs that had an increased test interval for the aggregate risk calculation, then this RAI does not apply and can be skipped.

    a. Actuation circuitry and signal logic operability is typically confirmed as a result of valve testing, unless other tests are conducted to verify their operability. In the aggregate risk calculations, how are associated valve actuation circuitry and signal logic failure probabilities and common cause failure probabilities addressed by the increased test interval? Are these failure probabilities also increased proportionally with the increased test interval?

    b. BAW-2359 Section 3.11 indicates that the sensitivity studies from BAW-2359 Section 3.4 are to be re-performed based on the increased test intervals. Did DBNPS re-perform the sensitivity studies using the increased test intervals? What is done if an LSSC becomes an HSSC as a result of increasing the test interval? Does DBNPS reclassify the AOV as HSSC and return the test interval back to the original code of record or are additional compensating measures identified and credited for maintaining these AOVs as LSSC? If the latter, how does DBNPS justify and document the LSSC classification and the adequacy of the associated compensatory measures?

    c. Since Quadrant B AOVs are numerically already HSSC due to their RAW value, but possibly lowered by the expert panel to LSSC due to known compensatory measures, it is not clear how these AOVs become HSSC based on the safety-significance recalculations per BAW-2359 Section 3.11 unless their F-V values also increase enough to become HSSC too. How are the safety-significance classifications reconsidered for these AOVs?

d. BAW-2359 Section 3.11 allows an alternative in which the component failure history is separated by time-related and demand-related failure modes. This alternative failure data manipulation would require the licensee to provide additional justification of the appropriateness of the standby failure rate used in the model. For example, demand failure rates typically have an inherent, unstated, assumption that they are tested regularly. If the time between tests or AOV manipulations that would provide positive evidence of functionality (i.e., the standby time) exceeds quarterly, then the demand failure rate must include time-related factors (i.e., use a standby failure rate). In simple terms, the assumption is that the longer an AOV is in the same position, the greater the likelihood that it won't be able to change position when required. Therefore, even if the component failure history is separated into cyclic and time-in-service failures, the current history represents the conditions in which the assumption on testing is valid, allowing consideration of demand failures separate from time-dependent failures. However, for the proposed extended intervals the assumption on regular/frequent testing may not be valid and a standby demand failure rate, which is also time-dependent, would have to be used. Did DBNPS use this alternative approach? If so, was a time-dependent standby demand failure rate used? If DBNPS used this alternative, please describe the process to ensure that the failure data manipulation is appropriate.

14. Since the development of BAW-2359 and the DBNPS submittal, the JOG AOV Program guidance has been revised, including its categorization criteria, such that any AOV that is HSSC is placed in RI AOV Program Category 1, regardless of its designation as safety-related or not. Thus, those AOVs that are HSSC should be maintained at the highest level of the DBNPS RI AOV Program (i.e., Category 1) and the LSSC AOVs can be segregated further based on their function and features and other criteria per the DBNPS AOV RI Program Categories (i.e., Categories 2 or 3 or out of scope), with all current IST Program AOVs required to be at least Category 3. The JOG AOV Program revision affects the BAW-2359 Section 5.1 categorization criteria and DBNPS categorization criteria, as described in BAW-2359 Section 6.10.3 and as documented in the AOV Program Categorization block of the DBNPS worksheets.

a. RG 1.175 states that the licensee's RI-IST Program should include non-Code components (i.e., components not currently in the IST program) that the licensee's integrated decision making process categorizes as HSSC. Per the revised JOG AOV Program guidance, the HSSC AOVs should also receive the most extensive capability evaluation, such as that provided by also identifying them as RI AOV Program Category 1. Does DBNPS have any HSSC AOVs that are not placed in the RI-IST Program and/or not placed in RI AOV Program Category 1? If so, please update the worksheet categorization criteria to reflect the current criteria for RI AOV Program Categories 1, 2, and 3, and revise the entries for any affected AOVs.

b. Are all current DBNPS IST Program AOVs required to be placed in one of the three DBNPS RI AOV Program Categories (i.e., none are out of scope)?

c. How will DBNPS address future changes to the referenced JOG AOV Program or ASME Code Cases, which form the underlying bases for its RI-IST Program for AOVs? How will program changes be documented and under what conditions will these changes require a re-submittal to the Nuclear Regulatory Commission (NRC) for review and approval?

15. The current testing requirements in the American Society of Mechanical Engineers (ASME) Code for AOVs are to stroke-time test each safety-related AOV and compare the tested value with acceptance criteria as specified by the Code at intervals of once every three months. DBNPS, in conjunction with their RI-IST submittal, has proposed to use an alternate test strategy for safety-related and high safety-significant, non safety-related, AOVs in lieu of the ASME Code requirements. The following questions are related to the details of DBNPS's new test strategy.

a. Clarify the definitions of Category 1, 2, and 3 AOVs.

b. Clarify the use of dynamic-test based information (e.g., plant-specific data, industry validated methodologies, etc.) to confirm the design-basis capability in terms of operating requirements and actuator output for safety-related and high safety-significant Category 1, 2, and 3 AOVs which are included in the DBNPS RI AOV Program.

c. Describe the pedigree of design information collected for Category 1, 2, and 3 AOVs.

d. Clarify the periodic testing and setpoint control that will be conducted that monitor potential degradation of operating requirements and actuator output for Category 1, 2, and 3 AOVs, including use of industry-wide degradation evaluation programs.

e. Clarify the pre- and post-maintenance testing that will be conducted for monitoring Category 3 AOVs.

f. Clarify acceptance criteria for Category 1, 2, and 3 AOVs, including final safety analysis report (FSAR)-required stroke times.

g. Clarify the grouping of AOVs to share information on design-basis capability and periodic test feedback for Category 1, 2, and 3 AOVs.

h. Discuss the diagnostic data that will be monitored for Category 1, 2, and 3 AOVs.

i. Discuss the collection of information prior to extending test intervals as a performance-based approach.

j. Provide a list of the Category 1, 2, and 3 AOVs with actuator and valve manufacturer; valve type, size, and rating; actuator type and model; and differential pressure, flow, and temperature conditions.

k. Does DBNPS have any air-operated dampers and/or air-operated, testable check valves? Are any of these components included in the DBNPS RI AOV Program? If so, discuss how DBNPS plans to address these components under the DBNPS RI AOV Program.