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Your ref: Docket No. 52-006
Our ref: DCP_NRC_002783

February 18, 2010

Subject: AP1000 Response to Proposed Open Item (Chapter 3)

Westinghouse is submitting the following responses to the NRC open item (OI) on Chapter 3. These proposed open item response are submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in these responses is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Enclosure 1 provides the response for the following proposed Open Item(s):

OI-SRP3.9.6-CIB1-02 R1
OI-SRP3.9.6-CIB1-03 R1

Questions or requests for additional information related to the content and preparation of this response should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,

A handwritten signature in black ink that reads 'R. Sisk / FOR'.

Robert Sisk, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Enclosure

1. Response to Proposed Open Item (Chapter 3)

cc:	D. Jaffe	- U.S. NRC	1E
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	C. Pierce	- Southern Company	1E
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	G. Zinke	- NuStart/Entergy	1E
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ENCLOSURE 1

AP1000 Response to Proposed Open Item (Chapter 3)

AP1000 DESIGN CERTIFICATION REVIEW

Response to SER Open Item (OI)

RAI Response Number: OI-SRP3.9.6-CIB1-02
Revision: 1

Question:

The DCD reference to static testing identified in RAI-SRP3.9.6-CIB1-08 needs to be consistent with the JOG MOV Program, which might require dynamic testing based on the results of the evaluation of the MOV margin.

Westinghouse Response:

Based on a review of the JOG report, MPR-2524, revision 0, the only time a dynamic test is required is if the functional margin is based on a coefficient of friction less than the "threshold" value (with allowance) is applied and the resulting functional margin is less than zero (see page 7-18). In the "Power-Operated Valve Operability Tests" discussion in DCD subsection 3.9.6.2.2, Valve Testing, a commitment to perform a "combination of static and dynamic tests" is included.

The current language in DCD subsection 3.9.6.2.2 of "Meet" or "Do not meet" JOG is not clear. The JOG document has many variables and the end user can opt out of using the "threshold" values. The DCD revision markup shown below is provided to clarify the requirements for the AP1000.

Response Revision 1:

The current language in DCD subsection 3.9.6.2.2 has been clarified to be consistent with the guidance set forth in the JOG MOV Program.

Design Control Document (DCD) Revision (The Revision 1 changes shown below supersede the changes shown in Revision 0.):

Revise the discussion of "Power-Operated Valve Operability Tests" in Revision 17 of DCD Subsection 3.9.6.2.2 as shown below. This revision includes revisions that also address both OI-SRP3.9.6-CIB1-03 and OI-SRP3.9.6-CIB1-04.

Power-Operated Valve Operability Tests - The safety-related, power-operated valves (POVs) are required by the procurement specifications to have the capabilities to perform diagnostic testing to verify the capability of the valves to perform their design basis safety functions. Operability testing as required by 10 CFR 50.55a(b)(3)(ii) is performed on motor-operated valves (MOV) that are included in the ASME OM Code inservice testing program to demonstrate that the MOVs are capable of performing their design basis safety function(s). Table 3.9-16 identifies valves that will require valve operability testing. ~~For POVs that meet~~

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the JOG MOV Program requirements, the initial test frequency will be consistent with the JOG MOV Program based on the valve risk ranking and margin.

The POVs meeting the JOG MOV Program will be statically tested consistent with MPR-2524-A with a maximum test frequency of once every 10 years.

For POVs that do not meet the JOG MOV Program, the initial test frequency will be based on the functional margin determined from QME-1 and baseline testing with supplementary analysis covering uncertainties and risk ranking. The initial test frequency shall be in accordance with OMN-1, paragraph 3.3.1, until sufficient data is collected. The POVs that do not meet the JOG MOV Program will have a combination of static and dynamic tests performed to confirm operability and develop the basis for future testing. See subsection 3.9.8.4 for a discussion on developing the inservice test program, which will also include analysis of trends of valve test parameters resulting from the valve operability.

POVs will be tested at periodic frequencies consistent with the Joint Owners Group (JOG) MOV Periodic Verification (PV) Program (MPR-2524-A, Reference 37; see also NRC Safety Evaluation on periodic verification, Reference 38). This approach utilizes POV risk ranking and functional margin as its basis.

The initial test frequency of POVs shall be in accordance with applicable ASME OM Code Cases and the OM Code. The use of ASME OM Code Cases is consistent with NRC Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability, ASME OM Code. This approach may utilize POV risk ranking and functional margin as its basis. The initial functional margin shall be determined from ASME QME-1 (Reference 36) and baseline testing with supplementary analysis covering uncertainties and risk ranking.

- Risk Ranking

The risk ranking shall consist of calculating the at-power risk importance, developing component ranking worksheets, and conducting an expert panel review.

- Functional Margin

The functional margin for POVs will use the methodology in the JOG MOV Program considering the valve design features, material of construction, operating parameters, actuator capability, and uncertainties. The uncertainties shall consider degradations, and variations of diagnostic measurements and control logic. ~~For the POVs that do not meet the JOG MOV Program, the functional margin will be determined by analysis and supplemented by QME-1 testing with uncertainties taken into account.~~

~~Valves for which functional margins have not been determined due to the use of different valve design features, materials of construction, operating parameters, actuator capability, and~~

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~~other uncertainties will require a dynamic test program (differential pressure testing) to determine the appropriate margins.~~

Add the following references to Subsection 3.9.9, References:

36. ASME-QME-1-2007, Qualification of Active Mechanical Equipment Used in Nuclear Power Plants.
37. MPR-2524 "Joint Owners' Group (JOG) Motor Operated Valve Periodic Verification Program Summary," Revision A, November 2006.
38. Final Safety Evaluation by the Office of Nuclear Reactor Regulation Joint Owners' Group Program On Periodic Verification Of Design-Basis Capability of Safety-Related Motor-Operated Valves Project Nos. 691, 693, and 694, U. S. Nuclear Regulatory Commission, September 2006 (ADAMS Accession Number ML061280315).

PRA Revision:

None

Technical Report (TR) Revision:

None

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RAI Response Number: OI-SRP3.9.6-CIB1-03
Revision: 1

Question:

The AP1000 DCD needs to specify the edition of the ASME Standard QME-1 referenced in Section 3.9 because the NRC staff has not accepted ASME Standard QME-1 editions issued prior to 2007 as an acceptable functional qualification approach for valves.

Westinghouse Response:

The DCD will be revised to specify the use of ASME-QME-1-2007.

Response Revision 1:

The DCD mark-up for 3.9.6.2.2, "Valve Testing," provided in Revision 0 of this response was inconsistent with the DCD mark-up with OI-SRP3.9.6-CIB1-02. The mark-up for this portion of the DCD is removed from this response and the DCD mark-up in the response to OI-SRP3.9.6-CIB1-02 includes the DCD mark-up required for OI-SRP3.9.6-CIB1-03.

Design Control Document (DCD) Revision:

See the Revision 1 response to OI-SRP3.9.6-CIB1-02 for the revisions under Power-Operated Valve Operability Tests of DCD Subsection 3.9.6.2.2 to address this issue.

PRA Revision:

None

Technical Report (TR) Revision:

None