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Your ref: Project Number 740  
Our ref: DCP/NRC1976

August 21, 2007

Subject: AP1000 COL Responses to Requests for Additional Information (TR #100)

In support of Combined License application pre-application activities, Westinghouse is submitting responses to NRC requests for additional information (RAI) on AP1000 Standard Combined License Technical Report 100, APP-GW-GLN-020, Rev. 0, AP1000 Valve Inservice Testing Requirement Update. These RAI responses are submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in the responses is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

The responses are provided for requests for additional information RAI-TR100-CIB2-01 through RAI-TR100-CIB2-03. These responses complete all requests received to date for Technical Report 100.

Pursuant to 10 CFR 50.30(b), the responses to requests for additional information on Technical Report 100 are submitted as Enclosure 1 under the attached Oath of Affirmation.

Questions or requests for additional information related to the content and preparation of these responses 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,

*Monte D. Bantley* FOR

A. Sterdis, Manager  
Licensing and Customer Interface  
Regulatory Affairs and Standardization

/Attachment

1. "Oath of Affirmation," dated August 21, 2007

/Enclosure

1. Responses to Requests for Additional Information on Technical Report No. 100

cc:	D. Jaffe	- U.S. NRC	1E	1A
	E. McKenna	- U.S. NRC	1E	1A
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	C. Ionescu	- Progress Energy	1E	1A
	D. Lindgren	- Westinghouse	1E	1A
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ATTACHMENT 1

“Oath of Affirmation”

ATTACHMENT 1

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of: )  
NuStart Bellefonte COL Project )  
NRC Project Number 740 )

APPLICATION FOR REVIEW OF  
"AP1000 GENERAL COMBINED LICENSE INFORMATION"  
FOR COL APPLICATION PRE-APPLICATION REVIEW

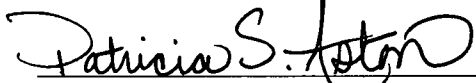
W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs & Standardization, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.



W. E. Cummins  
Vice President  
Regulatory Affairs & Standardization

Subscribed and sworn to  
before me this 21<sup>st</sup> day  
of August 2007.

COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Patricia S. Aston, Notary Public  
Murrysville Boro, Westmoreland County  
My Commission Expires July 11, 2011  
Member, Pennsylvania Association of Notaries

  
Notary Public

ENCLOSURE 1

Responses to Requests for Additional Information on Technical Report No. 100

# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-TR100-CIB2-01  
Revision: 0

### **Question:**

The revision to AP1000 Design Control Document (DCD), Tier 2, Section 3.9.6.2.2 provided in AP1000 COL Standard Technical Report APP-GW-GLN-020 (Revision 0), "AP1000 Valve Inservice Testing Requirement Update," submitted on March 9, 2007, discusses power-operated valve (POV) operability tests. The initial test frequency is said to be the longer of every 3 refueling cycles or 5 years until sufficient data exists to determine a longer test frequency is appropriate in accordance with Generic Letter (GL) 96-05. It is also stated that static testing with diagnostic measurements will be performed on these valves. The proposed revision to the DCD is unacceptable. For example, the NRC regulations in 10 CFR 50.55a require that quarterly stroke-time testing of motor-operated valves (MOVs) be supplemented by a program (such as GL 96-05 or ASME Code Case OMN-1 as accepted in Regulatory Guide 1.192) to periodically verify MOV design-basis capability. Further, other types of POVs (such as air-operated valves) need to be addressed for their design-basis capability as discussed in Regulatory Issue Summary 2000-03, "Resolution of Generic Safety Issue 158, "Performance of Safety-Related Power-Operated Valves under Design Basis Conditions." Westinghouse is requested to provide information to demonstrate that Section 3.9.6 of the revised DCD will assure that COL applicants develop a program for periodic verification of the design-basis capability of all POVs.

### **Westinghouse Response:**

This question addresses the DCD Subsection 3.9.6.2.2 paragraph on **Power-Operated Valve Operability Tests**. This paragraph is found in Revision 16 of the DCD on page 3.9-87.

The question in reference to quarterly stroke time testing of motor operated valves (all power operated valves) is discussed in RAI-TR100-CIB2-02 and RAI-TR100-CIB2-03.

In reference to the question related to "other types of POVs need to be addressed for their design basis capability", the aforementioned paragraph in Subsection 3.9.6.2.2 is to cover all Power Operated Valves (POVs). It requires that the Power Operated Valves (POVs) identified in Table 3.9-16 need an inservice test program developed that considers the risk significance of the valves and their function margin which considers design features, materials degradations, diagnostic measurements, etc. The inservice test program for the Power Operated Valves (POVs) would be supplemented by a program such as the Joint Owners Group (JOG) Program in reference to GL 96-05, "Periodic Verification of Design-Basis Capability of Safety Related Motor-Operated Valves" or the ASME Code Case OMN-1. As with the JOG Program when function margin has not been determined due to different valve design features, materials, operating parameters, etc. dynamic testing may be required to determine the margins.

# **AP1000 TECHNICAL REPORT REVIEW**

## **Response to Request For Additional Information (RAI)**

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As described in Subsection 3.9.8.4 in Revision 16 of the DCD, the Combined License applicant is required to develop an inservice test program in conformance with the valve inservice test requirements outlined in subsection 3.9.6 and Table 3.9-16.

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

None

# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-TR100-CIB2-02  
Revision: 0

### **Question:**

Table 3.9-16 of the AP1000 DCD, Tier 2, provides specific tests and intervals for POVs in the In-service Testing (IST) Program. The table is not acceptable in that it does not reflect the requirement of 10 CFR 50.55a that supplements MOV quarterly stroke-time testing with a periodic design-basis capability program, nor does it reflect the need for the COL applicant to address diagnostic testing and periodic design-basis capability verification for other types of POVs. Westinghouse is requested to provide information to demonstrate that Table 3.9-16 of the revised DCD will assure that COL applicants develop a program for periodic verification of the design-basis capability of all POVs.

### **Westinghouse Response:**

In reference to question on the requirement for quarterly testing, Westinghouse has previously reviewed the inservice testing intervals with the NRC for both AP600 and AP1000. These reviews resulted in the present inservice testing requirements described in DCD Table 3.9-16 and its notes. See RAI-TR100-CIB2-01 and RAI-TR100-CIB2-03 for additional information.

DCD Table 3.9-16 and paragraph 3.9.6.2.2 sub-paragraph titled "Power-Operated Valve Operability Tests" do require that inservice operability testing of power-operated valves be performed to permit periodic assessment of the operability at the design basis conditions. As shown in this DCD table and section, these requirements apply to Motor Operated Valves (MOVs), Air Operated Valves (AOVs), Solenoid Operated Valves (SOVs) and other types of power operated valves. Table 3.9-16 indicates which valves require valve operability testing. Paragraph 3.9.6.2.2 specifies diagnostic static testing performed at a frequency based on the risk ranking and function margin of the valve; this testing applies to valves whose functional margins due to materials, operating parameters, uncertainties, etc. have been determined. For valves whose functional margins have not been determined, then dynamic testing may be required. As described in 3.9.8.4, the Combined License applicants is required to develop an inservice test program in conformance with the valve inservice test requirements outlined in subsection 3.9.6 and Table 3.9-16.

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
None



# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-TR100-CIB2-03  
Revision: 0

### **Question:**

Table 3.9-16 of the AP1000 DCD, Tier 2, indicates in-service testing type and frequency for valves in the IST Program for AP1000. Some of the valves are indicated to have cold shutdown or refueling outage test frequencies. Discuss the provisions in the AP1000 design to provide for compliance with the ASME OM Code requirements for quarterly valve testing, and the basis for testing specific valves at cold shutdown or refueling outage frequencies.

### **Westinghouse Response:**

In reference to the above question, the test type and frequency was not changed as a result of this requested DCD change described in TR100. In paragraph 3.9.6.2.2, sub-paragraph titled "Manual/Power-Operated Valve Exercise Tests," it states that safety-related and other select active valves, both manual and power operated will be exercised periodically and that the ASME Code specifies a quarterly valve exercise frequency. It also states that in some cases the valves are tested on a less frequent basis because it is not practicable to exercise that valve during plant operation. Table 3.9-16 lists the inservice testing frequency; notes provide the basis for testing specific valves at cold shutdown or refueling outages. The test frequencies and the notes in Table 3.9-16 in the DCD were previously reviewed and certified by the NRC.

**Design Control Document (DCD) Revision:**  
None

**PRA Revision:**  
None

**Technical Report (TR) Revision:**  
None



Westinghouse