January 9, 2007

Ms. Andrea Sterdis, Manager
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SUBJECT: WESTINGHOUSE AP1000 COMBINED LICENSE PRE-APPLICATION TECHNICAL REPORT 39 - REQUEST FOR ADDITIONAL INFORMATION (TAC NO. MD1849)

Dear Ms. Sterdis:

By letter dated May 22, 2006 (DCP/NRC1737), you submitted AP1000 Technical Report 39, "Instrumentation and Controls Design Changes," which identified various changes to the instrumentation and controls design. The U.S. Nuclear Regulatory Commission staff has reviewed the report, and has determined that additional information is required. Our questions are provided in the enclosure. We discussed these issues with your staff on November 29, 2006. Your staff indicated that you would attempt to provide your response by January 15, 2007.

Please contact me at (301) 415-1313, if you have any other questions on these issues.

Sincerely,

/RA/

Steven D. Bloom, Senior Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Project No. 740

Enclosure:
Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

WESTINGHOUSE AP1000 DOCUMENT NO. APP-GW-GLN-004, Rev 0

TECHNICAL REPORT 39 - AP1000 INSTRUMENT AND CONTROL DESIGN

PROJECT NUMBER 740

TR39-1 In Figure 7.2-1 Sheet 1 of 20 [Revised Version] the "MEMORY WITH ACTUATION BLOCK" symbol is shown in the legend, but does not have a truth table (with time transition, actuation input, block input, and output) to go with the diagram to aid interpretation and avoid misunderstanding. Provide a detailed description on how this symbol works including output verses inputs using a truth table (with time transition, actuation input, block input, and output, etc.).

TR39-2 The bullet on Page 3 for Figure 7.2-1 Sheet 2 said "Deleted the logic for automatic bypass of a PMS division. This feature is not part of the protection system architecture using Westinghouse Common-Q platform." Removal on the revised version was verified. Discuss why Common-Q platform is different from AP-600 on this feature?

TR39-3 The second logic string in Original of Figure 7.2-1 Sheet 3 of 20 has the label BORON DILUTION BLOCK CONTROL, but the Revised Version of Figure 7.2-1 Sheet 3 of 20 with the same logic pattern has label FLUX DOUBLING BLOCK CONTROL while a new reset logic string was inserted to the left labeled BORON DILUTION BLOCK CONTROL. The bullet for Sheet 3 on Page 3 did not identify this change sufficiently. Explain the reason and meaning of this change in detail. Also, provide cross reference session number in Design Control Document related to this function.

TR39-4 The bullet on Page 3 for Sheet 8 of Figure 7.2-1 says, "A latch was added to maintain the momentary manual system level Passive Residual Heat Removal (PRHR) actuation signal until no longer needed and prevent the operator from inadvertently changing the affected components' state. The safety significance of the PRHR function necessitated the addition of an automatic system level latch as well." The Revised Version of Figure 7.2-1 Sheet 8 of 20 shows that a set of symbols, which is formed with a S/R "Memory" symbol and a L/R "Memory with Actuation Block" symbol, were added similar to other latch applications with required automatic system level latching. What is the detailed logic operation for the two symbol latch set (R/S and R/L) combination?

TR39-5 Sheet 13 of Figure 7.2-1 [Revised Version] has a "P-11 (APP PMS J1 111 Note 4)" input signal from Sheet 11, but on Sheet 11 the output signal to Sheet 13 is labeled "P-11A (APP PMS J1 109 & 111)." Explain why these labels "P-11" verses "P-11A" are different. How will the labeling inconsistency be addressed?

Enclosure

TR39-6 The bullet for Sheet 12 of Figure 7.2-1 on Page 5 states, “The existing unnamed bistable” was changed from a high-going (trip above set point) bistable to a low-going (trip below the set point) bistable.” A resulting move of the “NOT” gate to maintain the same overall function logic was performed. What is the “existing unnamed bistable” and what is its purpose? How will the lack of a label be addressed?

TR39-7 The bullet on Page 5 for Sheet 12 of Figure 7.2-1 failed to mention a significant label change in the “Low Pressurizer Level CMT Block Control” logic string from “P-12A (PMS J1 116)” on the Original to “4th STAGE ADS ACTUATION (APP PMS J1 116)” on the Revised Version. Why was this change made?

TR39-8 The fourth bullet under GENERAL MODIFICATIONS on Page 2 says, “Alarms, indicators, and information data points have been deleted from the functional diagrams.” What is the justification for this action? At least the minimum inventory items (identified in DCD Tier 1) should be shown.

TR39-9 Sheet 15 of Figure 7.2-1 [Revised Version] has an input from Sheet 12 in the Low-1 Core Makeup Tank Level Logic string labeled “CMT ACTUATION SIGNAL (APP PMS J1 112),” but the apparent output signal from Sheet 12 is labeled “ADS ACTUATION (APP PMS J1 115).” Explain this labeling inconsistency. How will the labeling inconsistency be addressed?

TR39-10 The bullet on Page 5 for Sheet 13 of Figure 7.2-1 says a Note 4 was added to accommodate the P-11 signal that says for only Divisions A and B, but this is not obvious. Explain how only two divisions are involved?

TR39-11 In Sheet 10 of Figure 7.2-1 [Revised Version] in the “STAGE 1 STEAM DUMP COOLDOWN CONTROL” logic string, what is the reason for the time delay just before the AND gate when “2 of 4 Divisions LOW-2 RCS T(AVG) signal” is received?

TR39-12 On Sheet 15 of Figure 7.2-1 [Revised Version] an element with NOTE 6 attached is not observed. What component is NOTE 6 associated with? How will the labeling inconsistency be addressed?

TR39-13 Sheet 12 of Figure 7.2-1 [Revised Version] has an input from Sheet 15 labeled “FIRST STAGE AUTOMATIC DEPRESSURIZATION SYSTEM ACTUATION (APP PMS J1 115)”, but the output signal on Sheet 15 has the label “CMT ACTUATION LOGIC (APP PMS J1 112).” Explain this labeling inconsistency. How will the labeling inconsistency be addressed?

TR39-14 The bullet on Page 5 for Sheet 16 of Figure 7.2-1 did not mention the input signal label change in Low-2 RCS Hot Leg Level logic string from “P-12A (PMS J1 112)” in the Original to “CMT CONTROL (APP PMS J1 112)” in the Revised Version. Why was this change made?

TR39-15 There is no bullet for Sheet 17 of Figure 7.2-1 [Revised Version]. Several changes to the original have been explained elsewhere, but some have not been addressed. In the CMT C. L. Balance Line Isolation Valves logic string, the input labeled “PRESSURIZER LEVEL >= P-12 (PMS J1 112)” on the Original was changed to “P-12 (APP J1 112)” on the Revised Version, but does not match any output label on Sheet 12. What is the specific label on Sheet 12 for this input signal to Sheet 17? How will the labeling inconsistency be addressed?

TR39-16 There is no bullet for Sheet 17 of Figure 7.2-1. Several changes to the original have been explained elsewhere, but some have not been addressed. In the CMT C. L. Balance Line Isolation Valves logic string the input labeled “CMT CONTROL CONFIRMATORY OPEN (PMS J1 112)” has a “Adjustable Time Delay Actuating” symbol that was added following the input. Explain why was this delay added?

TR39-17 The bullet on Page 4 for Sheet 10 of Figure 7.2-1 did not sufficiently explain the major design changes in the steam dump interlock logic. Provide a detail logic description of the steam dump interlock logic in Sheet 10 of Figure 7.2-1 [Revised Version] including the true or false (1 or 0) status expected from each of the initiating blocks (ENABLE MOMENTARY, ON, DISABLE, NORMAL, OFF).

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