March 26, 2007

Ms. Andrea Sterdis, Manager
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Westinghouse Electric Company
Nuclear Power Plants
P.O. Box 355
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SUBJECT: WESTINGHOUSE AP1000 COMBINED LICENSE (COL) PRE-APPLICATION TECHNICAL REPORT 42 AND 88 - REQUEST FOR ADDITIONAL INFORMATION (TAC NOS. MD1850 AND MD3831)

Dear Ms. Sterdis:

By letter dated May 22, 2006 (DCP/NRC1736), you submitted AP1000 Technical Report 42, "Resolution of Common Q NRC Items for AP1000," and by letter dated December 13, 2006, (DCP/NRC1808), you submitted AP1000 Technical Report 88, "AP1000 I&C Data Communication and Manual Control of Safety Systems and Components," which discuss the instrumentation and controls platform for the AP1000. The Nuclear Regulatory Commission's staff has reviewed these reports, and has determined that additional information is required. Our questions are provided in the Enclosure. We discussed these issues with your staff on February 21, 2007. Your staff indicated that you would attempt to provide your response by April 16, 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
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-GLR-017, REV 0

TECHNICAL REPORT 42 - RESOLUTION OF COMMON Q NRC ITEMS FOR AP1000

AND

WESTINGHOUSE AP1000 DOCUMENT NO. APP-GW-GLR-065, REV 0

TECHNICAL REPORT 88 - AP1000 I&C DATA COMMUNICATION AND MANUAL CONTROL

OF SAFETY SYSTEMS AND COMPONENTS

PROJECT NUMBER 740

The Field Propgrammable Gate Array (FPGA).

TR 88-01 Functionally describe the FPGA input and output interfaces including inputs and outputs supporting test functions (e.g., a simple electrical description of the input/output (I/O) lines and the states that the inputs and outputs may take).

TR88-02 Provide a typical functional logic diagram for the FPGA as configured for each type of plant load.

The FPGA acceptance process

TR88-03 Describe the process for accepting the A54SX16 FPGA as a *basic component.*

TR88-04 Describe the process for verifying and validating the FPGA programming including the process for accepting any software tools used to assure the quality of the design and implementation.

TR88-05 Describe the routine production acceptance process for configured FPGAs.

TR88-06 Describe the process for identifying and addressing known issues with the FPGA and programming tools. What significant issues were identified?

The Communication Interface Module (CIM)

TR88-07 Describe how the CIM design deals with the power-up and power-down behavior of the A54SX16 FPGA as described in the Actel Corporation application note on this topic.

TR88-08 Describe any provisions for ensuring the integrity (i.e., messages were not corrupted in transmission) and validity (i.e., messages belong to the set of legitimate messages) of messages passed between the Remote Node Controller (RNC) and the Communication Card Module.

Enclosure

TR88-09 Describe any provisions for ensuring the integrity, validity, and authenticity (i.e., messages originated from an expected network location) of messages passed between the RNC and the plant control system (nonsafety related) (PLS).

TR88-10 Describe the system response when field components do not respond to a PLS control signal. For example, does the PLS continue to send the command until it is accomplished? Does the FPGA store the command until either it is accomplished or withdrawn? Can memory of PLS commands sent, but not completed, result in unexpected action of field components when a protection and monitoring system (safety related) (PMS) actuation signal is reset?

TR88-11 Functionally describe the CIM input and output interfaces, including inputs and outputs, supporting test functions (e.g., a simple electrical description the I/O lines, information source or destination, and the states that the inputs and outputs may take).

TR88-12 Describe CIM random failure modes and the effect upon safety actuation.

TR88-13 Describe any potential CIM common cause failures that could result in spurious actuation of multiple engineered safety feature functions.

TR88-14 Describe operator notification port select switch position and local control switch position.

Configuration Control

TR88-15 Describe any features provided to prevent improper configuration of a CIM in the field.

TR88-16 Describe any features provided to prevent assigning a CIM to a function different than the one for which is configured.

TR88-17 Describe the features provided to prevent unauthorized or incorrect reconfiguration of the RNC via the Ovation network.

The Advant/Ovation Gateway

TR88-18 Do the fiber optic ports of the fiber optic modems physically contain only a transmitter or receiver or do they contain optical transceivers which have been configured to perform only one or the other function? If these ports contain transceivers, describe the provisions to prevent reconfiguration.

TR88-19 Describe the response of the non-safety systems to receipt of corrupt, invalid, unauthentic, late, out of sequence, or no messages from the PMS via the Advant/Ovation gateway.

Priority of Diverse Actuation System over Soft Control

TR88-20 Describe how priority of diverse actuation system commands over soft control commands is assured, for motor operated valves.

AP1000 PMS Qualification Concerns

TR88-21 Identify the hardware modules to be used in the AP1000 PMS and for each module identify the corresponding test article in the hardware qualification test report (00000-ICE-37764).

TR88-22 Provide the seismic response spectra for location of PMS equipment.

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