

**FOURTH REQUEST FOR ADDITIONAL INFORMATION REGARDING
THE TOSHIBA LICENSE TOPICAL REPORT
"LICENSING TOPICAL REPORT FOR TOSHIBA NRW-FPGA-BASED INSTRUMENTATION
AND CONTROL SYSTEM FOR SAFETY-RELATED APPLICATION"
(TAC NO. ME9861; EPID: L-2012-TOP-0003)**

Instrumentation and Controls Branch

By letter dated November 9, 2018 (Agencywide Document and Accession Management System (ADAMS) Accession No.: ML18320A026), Toshiba submitted revised documents to support the review of the topical report of its "Licensing Topical Report for Toshiba NRW [Nonrewritable]-FPGA [Field Programmable Gate Array]-Based Instrumentation and Control System for Safety-Related Application". (ADAMS Accession No. ML12292A320). The U.S. Nuclear Regulatory Commission (NRC) staff reviewed this information and performed an electronic audit of the Toshiba documentation supporting the findings in the submittal.

The NRC staff has identified the following information that is needed to complete its review. This information is needed to verify compliance with 10 CFR 50.55(a), "Codes and Standards" as applicable, and in conformance with implementing guidance such as Regulatory Guides 1.169, "Configuration Management Plans For Digital Computer Software Used in Safety Systems Of Nuclear Power," Plants 1.171, "Software Unit Testing For Digital Computer Software Used In Safety Systems Of Nuclear Power Plants," and 1.209, "Guidelines For Environmental Qualification of Safety-Related Computer-Based Instrumentation And Control Systems in Nuclear Power Plants."

1. (Open Item 1) Please provide a clear description of Toshiba's updated organization, including roles and responsibilities of the organizations involved in the design, development and testing of the Power Range Monitor (PRM) system and Oscillation PRM unit.
2. (Open Item 3) Table 5-5-2 of Toshiba's document FC51-3704-1119, Rev. 0, "Oscillation Power Range Monitoring Requirement Traceability Matrix," includes the following notes:

"The revisions of the module test procedure listed in Table 5-5-2 with the note "*1" were limited to adding the test procedures that are applicable for Japanese domestic plants only."

"The revision of the Module Test Procedure listed in Table 5-5-2 with the note "*2" is limited to incorporating the update of the revision number of the test program which was made after the module testing in this project. The new revision of the test program was not applied to the module testing of this project.

Please answer the following:

- a. Explain the differences between the modules developed for approval in this topical report (i.e. Note 2 items) and those only for Japanese domestic plants (i.e. Note 1 items).
- b. Clarify if the test modules procedures used were the same.
- c. Confirm that the scope of review does not include the modules for Japanese domestic plants (i.e. Note 1 items).

ENCLOSURE

3. (Open Item 8). Toshiba document FPG-DRT-C51-0027, Rev. 0, "NED [Nuclear Energy Systems and Services Division Software Safety] Power Range Monitoring System Requirements Traceability Matrix," was revised to describe how the failure of the watchdog timer is transmitted to the Average Power Range Monitoring. Please describe how the test of the watchdog timer was performed and the configuration used.