



PROPRIETARY

Toshiba Energy Systems & Solutions Corporation

72-34 Horikawa-cho, Saiwai-ku Kawasaki-shi, Kanagawa, 212-8585, Japan

No. TOS-CR-FPG-2018-0002
November 9, 2018

10 CFR2.390

NRC Project Number: PROJ0729

Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

99902036

References:

- (1) NRC Letter Dated December 20, 2017: Document Quality Supporting Topical Report. "Licensing Topical Report for Toshiba NRW-FPGA-Based Instrumentation and Control system for Safety-Related Application," UTLA 0020P, Revision 0 and Review Status (CAC No. ME9861; EPID: L-2012-TOP-0003).
- (2) Toshiba Letter TOS-CR-FPG-2018-001 Dated June 19, 2018

Subject: **Toshiba Response to the NRC Letter Dated December 20, 2017 (Docket No. 99902036)**

The purpose of this letter is to provide the summary of the Extent of Condition Review that Toshiba conducted in response to the Reference 1 letter, and to submit the documents that were revised based on the Document Revision Policy C described in our Document Review Report, E2-2018-000531, Rev. 2.

Toshiba conducted an Extent of Condition Review of the documents associated with the NRC review of the Topical Report referenced above for quality of our submittals. Toshiba prepared the Document Review Report, E2-2018-000531, Rev. 2 and put this report on the Toshiba Portal on June 18, 2018.

NRC reviewed the Document Review Report and communicated with Toshiba by an email dated July 9, 2018 that the NRC staff had determined that the Toshiba activities in response to their letter address the NRC staff concerns on the quality of documentation with the conditions, and that Toshiba needed to send letter(s) summarizing the results of the Extent of Condition Review and to submit the revised documents.

Toshiba has been wrapping up the Extent of Condition review considering the NRC's responses communicated by the email above. Toshiba revised the Document Review Report, E2-2018-000531, Rev. 2 to Rev. 3 to include the results of the review of more documents and to make a few corrections. Toshiba uploaded the Document Review Report, E2-2018-000531, Rev. 3 on the portal on Nov. 9, 2018.

Tables B-1 and B-2 in the Document Review Report E2-2018-000531, Rev. 3 list one hundred and twenty-seven (127) documents reviewed that encompass the docketed documents, Toshiba internal design documents and the documents uploaded on the portal.

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Toshiba conducted the Extent of Condition Review focusing on the following Criteria and Baselines:

Criteria:

- i) Validate that the documents correctly address and support the NRC review performed by document review and the Audits by September 30, 2017, with the focus on the consistency with the Baselines listed below.
- ii) Check, correct, and verify any further discrepancies and/or errors that contradict the information Toshiba provided in the responses to the Open Item List and RAIs, with the focus on the consistency with the Baselines below.

Baselines:

- a) The specification (performance) of the test specimens that were tested in the V&V Test and the Qualification Test.
- b) The master configuration list that correctly lists the model number (and the serial number) of the all modules and units that were tested in the V&V Test and the Qualification Test as the test specimens.
- c) The test records and data of the V&V Test and the Qualification Test performed for all the modules and units.

Toshiba believes that the Extent of Condition Review revealed no issues that impact the results of either the IV&V or the Equipment Qualification Test, and the hardware or programmable logic in either the PRM or OPRM.

Toshiba categorized the findings into the following five (5) Categories shown below and setup the following three (3) Document Revision Policies as the Document Review Report, E2-2018-000531, Rev. 3 states.

Categories of the findings:

Category 5	Findings exist that have impacts on the test results, programmable logic, or IV&V.
Category 4	Findings exist that need the update of the information provided by the Toshiba response to RAI3, E2-2017-000812 Rev.0, and FPG-TRT-C51-0101 Qualification Test Summary Report, Rev.2.
Category 3	Findings exist associated with inconsistency among the documents.
Category 2	Findings exist for values/numbers without impacts on the record.
Category 1	Editorial Findings.

Document Revision Policies

Document Revision policy A	Revise the document but the new revision number is not changed in the reference list in the referencing documents. A supplemental document review report is issued to address that both the revised revision and the previous revision are valid.
Document Revision policy B	The document cannot be revised. Supplemental reports are prepared to address the findings.
Document Revision policy C	Revise the document and apply a new revision number which is incorporated in the reference list of the referencing document.

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The Extent of Condition Review revealed that the following documents have findings that fall into the categories higher than Category 3 and requires to update the information provided in NRC correspondence and to update the inconsistent information to improve the quality of our submittals. The Document Revision Policy C (revise the document and apply a new revision number) was applied to these documents.

This letter submits the following documents 1) through 11) that contain proprietary information of Toshiba Energy Systems & Solutions Corporation. An affidavit setting forth the basis on which the information identified as proprietary may be withheld from public disclosure is provided in Enclosure 1. Accordingly, it is requested that Enclosures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 (which are the proprietary versions of the 11 documents listed below) be withheld from public disclosure in conformance with the requirements of 10 CFR Section 2.390, as amended, of the Commission's regulations. Enclosures 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23 provide the non-proprietary versions. If this letter becomes separated from the proprietary material it is no longer proprietary.

- 1) E2-2017-000812 Rev. 1, Toshiba response to RAI3
- 2) FPG-TRT-C51-0101, Rev. 3, Qualification Test Summary Report
- 3) UTLR-0020P Part II, Rev. 4, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application
- 4) UTLR-0020P Part III, Rev. 3, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application
- 5) UTLR-0020P Part IV, Rev. 3, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application
- 6) FPG-RQS-C51-0001, Rev. 8, Equipment Requirement Specification
- 7) FC51-3002-1000, Rev. 6, Equipment Design Specification
- 8) FC51-7012-1000, Rev. 3, Equipment Qualification Test Plan
- 9) FPG-PLN-C51-0005, Rev. 5, Master Test Plan
- 10) FPG-TRT-C51-0002, Rev. 1, Availability/Reliability Analysis Report (for PRM)
- 11) FC51-3809-1000, Rev. 2, Availability/Reliability Analysis Report (for OPRM))

It was identified that the remaining documents have findings that fall into categories below Category 2, or have no findings. Document Review Policy A or B was applied to the documents that have findings which fall into categories below Category 2, depending on the document type.

The Document Revision Policy B (supplemental reports are prepared to address the findings) was applied to V&V Reports, Critical Digital Review Reports, Hazard (or Safety) Analysis Reports, and test procedures in accordance with Section 6 and Section 5.1 of the Document Review Report, E2-2018-000531, Rev. 3. Toshiba considers that it is appropriate not to revise the latest revisions of these documents because they were prepared as reports in each software life cycle phase at that time. Instead, Toshiba prepared the supplemental documents listed below to address the impacts of later revisions of the design document such as Module Design Specifications and FPGA Design Specifications, and findings identified in the documents themselves. The Document Revision Policy B was applied to sixty-four (64) documents.

The Document Revision Policy A (revise the document but the new revision number is not changed in the reference list in the referencing documents) was applied to the fifty (50) documents. Toshiba revised these documents and prepared the following supplemental documents in accordance with Section 6 of the Document Review Report, Rev. 3. Since the Document Revision Policy A considers that the

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previous revisions of the documents are still valid, Toshiba considers it is appropriate to submit the following supplemental documents instead of submitting every revised document to which the Document Revision Policy A applied.

Supplemental documents for the documents to which the Documents Revision Policy B was applied:

- a. FC51-3704-0007, Rev. 0, NED OPRM VVR (Supplemental)
- b. FC51-3704-0008, Rev. 0, NED OPRM SSAR (Supplemental)
- c. FC51-3704-1119, Rev. 0, OPRM RTM (Supplemental)
- d. FC51-3704-1120, Rev. 0, OPRM VVR (Supplemental)
- e. FC51-3704-1121, Rev. 0, OPRM RTM Report (Supplemental)
- f. FC51-3704-1484, Rev. 0, OPRM SSAR (Supplemental)
- g. FPG-DRT-C51-0017, Rev. 0, NED V&V Final Report (Supplemental)
- h. FPG-DRT-C51-0024, Rev. 0, NED Hazard Analysis Report
- i. FPG-DRT-C51-0027, Rev. 0, NED PRM RTM (Supplemental)
- j. FPG-DRT-C51-1001, Rev. 0, PRM RTM Report (Supplemental)
- k. FPG-DRT-C51-1002, Rev. 0, NICSD Hazard Analysis Report (Supplemental)
- l. FPG-DRT-C51-1003, Rev. 0, PRM VVR (Supplemental 2)
- m. FPG-DRT-C51-1004, Rev. 0, PRM RTM (Supplemental)
- n. MEM-JHA-000071, Rev. 0, Confirmation of OPRM Qualification Testing Records
- o. QAS-2018-000185, Rev. 0, Evaluation among procedure revisions and record
- p. FPG-DRT-C51-0007, Rev. 0, Critical Digital Review (Supplemental)
- q. E2-2018-001141, Rev. 0, Document Review Report (Supplemental)

Since the documents a. through q. are newly prepared documents, Toshiba considers that it is appropriate to put these documents in Toshiba Portal first so that the NRC staff can review before submitting these documents officially. Toshiba plans to put these documents on Toshiba Portal in a few weeks. After NRC review Toshiba will submit these documents with NRC concurrence. In addition, for older revisions of existing documents on the Portal, the new revisions will be uploaded as needed.

If the NRC has any requests and/or questions, please contact with Jim Powers at 704-548-7910 or by electronic mail at Jim.Powers@toshiba.com

Sincerely,



Hirofumi Takeda
Senior Manager
Electrical System Design & Engineering Dept.
Nuclear Energy Systems & Solutions Division
Toshiba Energy Systems & Solutions Corporation

- Enclosures:
- (1) 10 C.F.R. § 2.390 Supporting Affidavit
 - (2) E2-2017-000812 Rev. 1, Toshiba response to RAI3 (Proprietary version)
 - (3) FPG-TRT-C51-0101, Rev. 3, Qualification Test Summary Report (Proprietary version)
 - (4) UTLR-0020P Part II, Rev. 4, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application (Proprietary version)
 - (5) UTLR-0020P Part III, Rev. 3, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application (Proprietary version)
 - (6) UTLR-0020P Part IV, Rev. 3, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application (Proprietary version)
 - (7) FPG-RQS-C51-0001, Rev. 8, Equipment Requirement Specification (Proprietary version)
 - (8) FC51-3002-1000, Rev. 6, Equipment Design Specification (Proprietary version)
 - (9) FC51-7012-1000, Rev. 3, Equipment Qualification Test Plan (Proprietary version)
 - (10) FPG-PLN-C51-0005, Rev. 5, Master Test Plan (Proprietary version)
 - (11) FPG-TRT-C51-0002, Rev. 1, Availability/Reliability Analysis Report (for PRM) (Proprietary version)
 - (12) FC51-3809-1000, Rev. 2, Availability/Reliability Analysis Report (for OPRM) (Proprietary version)
 - (13) E2-2017-000812 Rev. 1, Toshiba response to RAI3 (Non-proprietary version)
 - (14) FPG-TRT-C51-0101, Rev. 3, Qualification Test Summary Report (Non-proprietary version)
 - (15) UTLR-0020NP Part II, Rev. 4, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application (Non-proprietary version)
 - (16) UTLR-0020NP Part III, Rev. 3, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application (Non-proprietary version)
 - (17) UTLR-0020NP Part IV, Rev. 3, Licensing Topical Report for Toshiba NRW-FPGA-based Instrumentation and Control System for Safety-Related Application (Non-proprietary version)
 - (18) FPG-RQS-C51-0001, Rev. 8, Equipment Requirement Specification (Non-proprietary version)
 - (19) FC51-3002-1000, Rev. 6, Equipment Design Specification (Non-proprietary version)
 - (20) FC51-7012-1000, Rev. 3, Equipment Qualification Test Plan (Non-proprietary version)
 - (21) FPG-PLN-C51-0005, Rev. 5, Master Test Plan (Non-proprietary version)
 - (22) FPG-TRT-C51-0002, Rev. 1, Availability/Reliability Analysis Report (for PRM) (Non-proprietary version)
 - (23) FC51-3809-1000, Rev. 2, Availability/Reliability Analysis Report (for OPRM) (Non-proprietary version)

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Enclosure 1
Letter No. TOS-CR-FPG-2018-0002
Affidavit for Withholding Confidential and Proprietary Information from Public Disclosure
under 10 CFR § 2.390

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

AFFIDAVIT

I, Hirofumi Takeda, hereby affirm and state that I am the Senior Manager, Electrical System Design & Engineering Department, Nuclear Energy Systems & Services Division, Toshiba Energy Systems & Solutions Corporation (Toshiba ESS Corporation), and I have been authorized to execute this affidavit on behalf of Toshiba ESS Corporation to file with the Nuclear Regulatory Commission the following application for withholding Toshiba ESS Corporation's confidential and proprietary information from public disclosure; that I am familiar with the content thereof; and that the matters set forth therein are true and correct to the best of my knowledge and belief.

In accordance with 10 CFR § 2.390(b)(ii), I hereby state, depose, and apply as follows on behalf of Toshiba ESS Corporation:

- (A) Toshiba ESS Corporation seeks to withhold from public disclosure the document entitled and identified as;
 - Toshiba Response to the NRC Letter Dated December 20, 2017 (Docket No. 99902036) and all information identified as "Proprietary" therein.
- (B) The Confidential Information is owned by Toshiba ESS Corporation. In my position as Senior Manager, Electrical System Design & Engineering Department, Nuclear Energy Systems & Services Division, Toshiba ESS Corporation, I have been specifically delegated the function of reviewing the Confidential Information and have been authorized to apply for its withholding on behalf of Toshiba ESS Corporation.
- (C) This document provides Toshiba ESS Corporation's lifecycle process and qualification activities for developing and qualifying Non-Rewritable (NRW) Field Programmable Gate Array (FPGA) Based Safety I&C systems to the Nuclear Regulatory Commission. The Confidential Information which is entirely confidential and proprietary to Toshiba ESS Corporation is identified as "Proprietary" in the document.
- (D) Consistent with the provisions of 10 CFR § 2.390(a)(4), the basis for proposing that the Confidential Information be withheld is that it constitutes Toshiba ESS Corporation's trade secrets and confidential and proprietary commercial information.
- (E) Public disclosure of the Confidential Information is likely to cause substantial harm to Toshiba ESS Corporation's competitive position by (1) disclosing confidential and proprietary commercial information about the design, manufacture and operation of the FPGA based I&C platform for nuclear power reactors to other parties whose commercial interests may be adverse to those of Toshiba ESS

Corporation, and (2) giving such parties access to and use of such information at little or no cost, in contrast to the significant costs incurred by Toshiba ESS Corporation to develop such information.

Toshiba ESS Corporation has a rational basis for determining the types of information customarily held in confidence by it, and utilizes a system to determine when and whether to hold certain types of information in confidence.

The basis for claiming the information so designated as proprietary is as follows:

- (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Toshiba ESS Corporation's competitors without license from Toshiba ESS Corporation constitutes a competitive economic advantage over other companies.
- (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.
- (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
- (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Toshiba ESS Corporation, its customers or suppliers.
- (e) It reveals aspects of past, present, or future Toshiba ESS Corporation or customer funded development plans and programs of potential commercial value to Toshiba ESS Corporation.
- (f) It contains patentable ideas, for which patent protection may be desirable.
- (g) It contains security information that could reasonably be expected to be useful to a potential adversary.
- (h) It contains privacy act and personally identifiable information.

There are sound policy reasons behind the Toshiba ESS Corporation system which include the following:

- (a) The use of such information by Toshiba ESS Corporation gives Toshiba ESS Corporation a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Toshiba ESS Corporation competitive position.
- (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Toshiba ESS Corporation ability to sell products and services involving the use of the information.
- (c) Use by our competitor would put Toshiba ESS Corporation at a competitive disadvantage by reducing his expenditure of resources at our expense.

- (d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Toshiba ESS Corporation of a competitive advantage.
- (e) Unrestricted disclosure would jeopardize the position of prominence of Toshiba ESS Corporation in the world market, and thereby give a market advantage to the competition of those countries.
- (f) The Toshiba ESS Corporation capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (g) SECY-04-0191 states that security information should be withheld from public disclosure.
- (h) Personally identifiable information is required to be protected from public disclosure by 10 CFR § 2.390.

Further, on behalf of Toshiba ESS Corporation, I affirm that:

- (i) The Confidential Information is confidential and proprietary information of Toshiba ESS Corporation.
- (ii) The Confidential Information is information of a type customarily held in confidence by Toshiba ESS Corporation, and there is a rational basis for doing so given the sensitive and valuable nature of the Confidential Information as discussed above in paragraphs (D) and (E).
- (iii) The Confidential Information is being transmitted to the NRC in confidence.
- (iv) The Confidential Information is not available in public sources.
- (v) Public disclosure of the Confidential Document is likely to cause substantial harm to the competitive position of Toshiba ESS Corporation, taking into account the value of the Confidential Information to Toshiba ESS Corporation, the amount of money and effort expended by Toshiba ESS Corporation in developing the Confidential Information, and the ease or difficulty with which the Confidential Information could be properly acquired or duplicated by others.



Hirofumi Takeda
Senior Manager
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Nuclear Energy Systems & Services Division
Toshiba Energy Systems & Solutions Corporation

Date

