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MFN 06-097 Supplement 1

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U.S. Nuclear Regulatory Commission
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Subject: **Supplemental Response to Portion of NRC Request for Additional Information Letter No. 76 – Instrumentation and Control – RAI Number 7.4-1**

Enclosure 1 contains GE's response to the subject NRC supplemental RAI transmitted via the Reference 1 letter. The original RAI was transmitted to GE in Reference 2. The original RAI response was submitted to the NRC in Reference 3

If you have any questions or require additional information regarding the information provided here, please contact me.

Sincerely,

James C. Kinsey
Project Manager, ESBWR Licensing

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Reference:

1. MFN 06-388, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 76 Related to ESBWR Design Certification Application*, October 11, 2006
2. MFN 06-045, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 06 Related to ESBWR Design Certification Application*, January 31, 2006
3. MFN 06-097, Letter from David Hinds to U.S. Nuclear Regulatory Commission, *Partial Response to NRC Request for Additional Information Letter No. 6 Related to ESBWR Design Certification Application – Instrumentation and Control Systems – RAI Numbers 7.1-1 through 7.1-5 and 7.4-1*, April 27, 2006

Enclosure:

1. MFN 06-97 Supplement 1–Response to Portion of NRC Request for Additional Information Letter No. 76 – Related to ESBWR Design Certification Application Instrumentation and Control - RAI Number 7.4-1 Supplement 1

cc: AE Cabbage USNRC (with enclosures)
GB Stramback GE/San Jose (with enclosures)
eDRF 0000-0061-9432

Enclosure 1

MFN 06-097 Supplement 1

Response to Portion of NRC Request for

Additional Information Letter No. 76

Related to ESBWR Design Certification Application

Instrumentation and Control

RAI Number 7.4-1 Supplement 1

NRC RAI 7.4-1 Supplement 1

To followup Staff RAI question 7.4-1, the DCD, Tier 2, Revision 1, Section 7.4.2.2, states that the remote shutdown system (RSS) has two redundant and independent panels, each contains a safety related digital visual display unit (VDU), and a nonsafety related VDU. From these VDUs it is possible to control both safety-related and nonsafety-related systems. Please provide detailed information of RSS control capabilities and provide drawings to demonstrate the separation/isolation between safety and nonsafety systems. Also provide the design basis to qualify the VDU for safety related application. RAI question 7.4-1 specifically requested "drawings to demonstrate the separation/isolation between safety and nonsafety systems." Also, "the design basis to qualify the VDU for safety-related applications" was not specifically addressed. The DCD should be updated to include a simplified drawing and address the design basis to qualify the VDU for safety related application.

GE Response:

Subsequent to submission of GE's response to RAI question 7.4-1, functional design & separation requirements for a typical Remote Shutdown System (RSS) panel have been revised as shown in attached figure ZZ-1 that supersedes figure ZZ attached to GE Response to RAI question 7.4-1. The new Figure ZZ-1 schematically shows the isolation/separation between the constituent compartments of an RSS panel. Design drawings pertaining to isolation and separation will be prepared at the time of detailed design activity, and the requirements of RG 1.75 will be met.

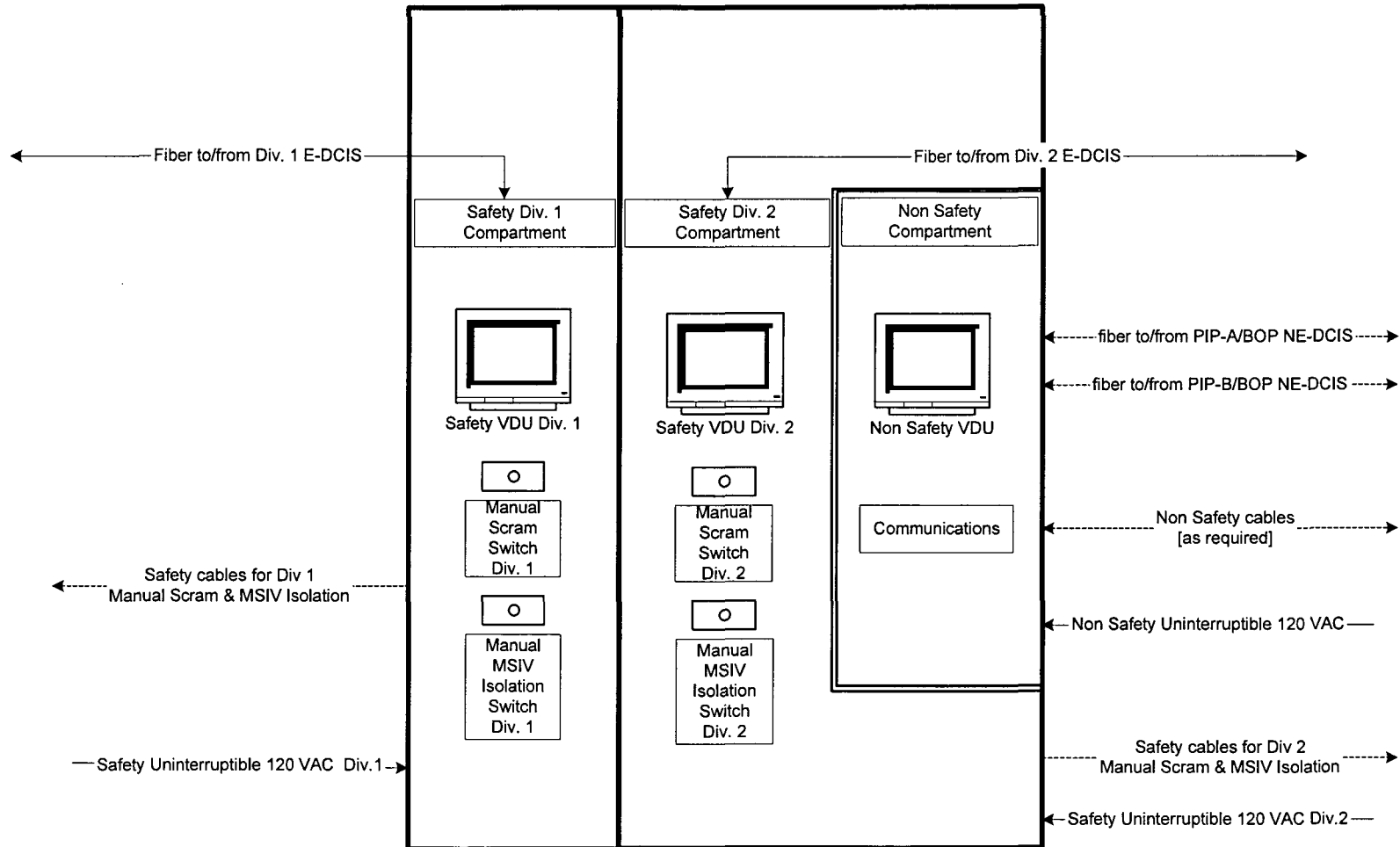
As described in Section 7.4.2 of DCD Tier 2 Rev 2, each RSS panel has two safety-related compartments (Divisions 1 and 2) and a nonsafety-related compartment. Each safety-related compartment houses a safety-related VDU, manual scram switch, and manual MSIV isolation switch that correspond to the applicable Division. The nonsafety-related compartment with a nonsafety-related VDU remains unchanged. The two RSS panels located in rooms at two different areas in the reactor building are identical and redundant. Division 1 and 2 VDUs on the RSS panels are connected to E-DCIS through the safety-related networks that individually serve the Division 1 and 2 VDUs at the MCR. Similarly, the nonsafety-related VDU on each RSS panel is connected to the nonsafety-related network that serves the nonsafety related VDUs at the MCR. Therefore the RSS VDUs have all the control/display capabilities as the corresponding VDUs at the MCR. Isolation between E-DCIS and NE-DCIS as described in Sections 7.9.1 and 7.9.2 of DCD Tier 2 Rev 2 applies to isolation between safety-related and nonsafety-related components of RSS. The Human Factors Engineering (HFE) processes described in Chapter 18 of DCD Tier 2 Rev 2 will determine the design details of the MCR and RSS display/controls.

The safety-related VDUs will be qualified and tested in accordance with 10 CFR 50 Appendix B requirements and meet, as a minimum, the applicable sections of IEEE Std 603-1991 pertaining to information display, IEEE Std 323-2003 for environmental qualification (as endorsed by DG-1142), and IEEE Std 344-1987 for seismic qualification.

DCD/LTR Impact

Section 7.4 of DCD Tier 2 Rev 3 will be revised to include the figure attached to this response.

Figure ZZ-1
ESBWR DCIS Remote Shutdown Panel
Reactor Building



Notes:

1. Each RSS panel can control the entire set of Plant Investment Protection (PIP) and Balance of Plant (BOP) Systems using the same controls/displays as in the main control room.
2. Each RSS panel can control the entire set of Division 1 and 2 Safety Systems using the same controls/displays as in the main control room.
3. There are two Remote Shutdown Panels that are identical and redundant. Typical, one panel is shown.
4. Separation and isolation is in accordance with RG 1.75.