

Enclosure 1

MFN 09-090

**Response to Portion of NRC Request for
Additional Information Letter No. 249
Related to ESBWR Design Certification Application
RAI Numbers 14.3-415 through 14.3-420**

NRC RAI 14.3-415

It is understood that the SMPM (NEDE-33226P) and SQAPM (NEDE-33245P) provide guidance for completion of the overall system design. The system is expected to consist of multiple projects-each which may consist of a combination of commercial off-the-shelf (COTS), previously developed software (PDS) and/or custom software and hardware. Separate plan sets are expected for each project. These plan sets will encompass all the life cycle information required to fully implement a specific project, although system wide information may be included by reference to the SMPM and SQAPM. Note that throughout this RAI, the term project can refer to a system, platform, or whatever the applicant determines is a reasonable unit for organizing the software development activities (SDA). Please confirm or clarify staffs understanding and clearly identify the manner in which the plans sets are organized-system, platform, etc.

GEH Response

GEH agrees with the Staff and will revise the Tier 1, Section 3.2 Software Development ITAAC's to align with the platforms/projects that comprise the ESBWR Safety-Related I&C systems. The ITAAC tables will address the different software plans, software documentation, and Results Summary Reports required to implement the Software Management Program Manual (SMPM), Software Quality Assurance Manual (SQAPM), and the Cyber Security Program Plan.

The proposed revision of DCD Tier 1, Section 3.2, Software Development ITAAC is shown in the GEH response to RAI 14.3-402 (MFN 09-078).

Further information related to Software Development DAC/ITAAC is provided in the response to RAIs 14.3-416, -417, -418 and -419.

DCD Impact

No DCD changes will be made in response to this RAI.

NRC RAI 14.3-416

A top level or system DAC/ITAAC is expected to cover items that have scope beyond a single project. These items could be such as top level requirements, interface specifications, system integration and test issues, etc. The staff understands that much of this material may be covered in project specific plan sets and/or DAC/ITAAC (as appropriate depending upon if the item is design related.) However, this material should be covered in some location. Please provide top level DAC/ITAAC if needed and/or provide your evaluation as to why it is not required .

GEH Response

GEH believes that platform specific software plans and ITAAC items will be sufficient to support the design, construction, and testing of all ESBWR I&C Systems.

Platform or project specific ITTAC are being developed in association with other RAI responses to support Staff review of the ESBWR Software Development process. These RAI's include RAI 14.3-402, 14.3-415, 14.3-417, 14.3-418 and 14.3-419.

To support the above-mentioned RAIs, the DCD Tier 1, Section 3.2 Software Development ITAAC's will be revised to align with the platforms/projects that comprise the ESBWR Safety-Related I&C systems. The ITAAC tables will address the different software plans, software documentation, and Results Summary Reports required to implement the Software Management Program Manual (SMPM), Software Quality Assurance Manual (SQAPM), and the Cyber Security Program Plan (CySP). Interface specifications, system integration and test issues will be covered within the respective I&C System platform DAC/ITAAC items.

The proposed revision of DCD Tier 1, Section 3.2, Software Development ITAAC is shown in the GEH response to RAI 14.3-402 (MFN 09-078).

DCD Impact

No DCD changes will be made in response to this RAI.

NRC RAI 14.3-417

Current SDA DAC/ITAAC is organized along individual SDA plans. This will not be in agreement with project specific plan sets. If the use of project specific plan sets is confirmed, please revise DAC/ITAAC to be in agreement with the multiple projects and plan sets concept.

GEH Response

GEH agrees with the NRC Staff and will revise the DCD Tier 1, Section 3.2 Software Development DAC/ITAAC to align with the ESBWR I&C System platforms/projects.

DCD Tier 1 Table 2.2.10-1 will be revised to clarify how the individual safety-related systems relate to the different platforms/projects that together, comprise the ESBWR I&C Systems.

The proposed revision of DCD Tier 1, Section 3.2, Software Development ITAAC and the proposed revision of DCD Tier 1, Table 2.2.10-1 are shown in the GEH response to RAI 14.3-402 (MFN 09-078).

Further information related to Software Development DAC/ITAAC is provided in the response to RAIs 14.3-415, -416, -418 and -419.

DCD Impact

No DCD changes will be made in response to this RAI.

NRC RAI 14.3-418

It is not clear if closure activities will take place on a project basis, a life cycle phase basis, or system wide. As discussed above, it is anticipated that there will be an overall DAC for the system, with project specific DAC provided for each constituent project. Alternately, a single DAC can incrementally be closed as the development activities progress. One of these options or something in between will be needed. Please explain the closure process and DAC setup as it relates to the overall system (if used) and/or individual projects.

GEH Response

GEH agrees with the NRC Staff that the DAC closure process needs to be clarified within DCD Tier 1, Section 3.2 Software Development. To support this, GEH will align the individual ESBWR I&C System platforms/projects with specific DAC/ITAAC items. The number of Items will be increased to further align the DAC/ITAAC with the software development process described within the ESBWR I&C Software Management Program Manual (SMPM) and the Software Quality Assurance Program Manual (SQAPM). This change will facilitate the closure of DAC items during the detailed design process of the ESBWR I&C Systems.

The proposed revision of DCD Tier 1, Section 3.2, Software Development ITAAC is shown in the GEH response to RAI 14.3-402 (MFN 09-078).

Further information related to Software Development DAC/ITAAC is provided in the response to RAIs 14.3-415, -416, -417 and -419.

DCD Impact

No DCD changes will be made in response to this RAI.

NRC RAI 14.3-419

The current DAC/ITAAC does not clearly delineate between design and inspection tasks.

It is not clear where the DAC stage ends and the ITAAC stage begins. In meetings, the applicant has discussed where they assert design is complete for the DAC process and this should be more clearly explained in each DAC/ITAAC item. The current items are too vague and generally stated to allow for proper evaluation. Please provide clearer detail as to the task allocation and descriptions for each DAC and/or ITAAC task.

GEH Response

GEH agrees with the NRC Staff and will revise the DCD Tier 1, Section 3.2 Software Development ITAAC as requested. GEH has added new DAC/ITAAC Items with more detail and clarified the alignment of Items with the completion of the software design lifecycles. This change will facilitate the closure of DAC items during the detailed design process of the ESBWR I&C Systems.

The proposed revision of DCD Tier 1, Section 3.2, Software Development ITAAC is shown in the GEH response to RAI 14.3-402 (MFN 09-078).

Further information related to Software Development DAC/ITAAC is provided in the response to RAIs 14.3-415, -416, -417 and -418.

DCD Impact

No DCD changes will be made in response to this RAI.

NRC RAI 14.3-420

In staff discussions with the applicant, the concept of using the SMPM and SQAPM to identify and provide greater detail for the DAC/ITAAC acceptance criteria was considered. This concept seems to have much merit, but if it is to be implemented, the SMPM and SOAPM should be Tier 2. It is already understood that these documents will be Tier 2* but this needs to be confirmed. Please confirm that the SMPM and SQAPM are Tier 2*. In addition, please provide further details on the use of references to the SMPM and SQAPM in DAC/ITAAC acceptance criteria - such as by providing examples of proposed DAC.*

GEH Response

GEH agrees with the NRC Staff and will designate the ESBWR I&C Software Management Program Manual (SMPM) and the ESBWR I&C Software Quality Assurance Manual (SQAPM) as Tier 2* within the DCD. The proposed revision of DCD Tier 2 identifies DCD sections where the SMPM and SQAPM designations will be made.

Further information related to Software Development DAC/ITAAC is provided in the response to RAIs 14.3-415, -416, -417, -418 and -419.

DCD Impact

DCD Tier 2, Subsections 7.1.8, 7.2.1.3.5, 7.2.2.3.5, 7.2.5, 7.3.5.3.5, 7.3.8, 7.8.2.1, 7.8.7, 17.1.25 and 17.1.3 will be revised to add Tier 2* designation for the SMPM and SQAPM as shown in the DCD markups in Enclosure 2. A footnote explaining the Tier 2* designation will be added to these DCD Subsections.

DCD Tier 2, Subsections 7.1.1, 14.3.3.2 and 14.3.11 will be revised to add Tier 2* designation for the SMPM and SQAPM as shown in the DCD markups in the GEH response to RAI 14.3-402 (MFN 09-090). A footnote explaining the Tier 2* designation will be added to these DCD Subsections.