

Hitachi-GE Nuclear Energy, Ltd.
UK ABWR GENERIC DESIGN ASSESSMENT
Resolution Plan for RO-ABWR-0018
(Examination, Inspection Maintenance and Testing (EIM&T)
Isolations and Configurations)

RO TITLE:	Examination, Inspection Maintenance and Testing (EIM&T) Isolations and Configurations	
REVISION :	Rev. 1	
Overall RO Closure Date (Planned):	26 June 2015	
REFERENCE DOCUMENTATION RELATED TO REGULATORY OBSERVATION		
Regulatory Queries	-	
Linked ROs	RO-ABWR-0016	
Other Documentation	-	

Scope of work :
<p>This Resolution Plan describes Hitachi-GE's current plan to address the RO. It contains the detailed strategy, the planned activities, deliverables, milestones, timescales, resources assignment as well as reference to the audit trail.</p> <p>Apart from Mechanical Engineering, this resolution plan is related to the following technical areas:</p> <ul style="list-style-type: none"> - Radiation protection - Conventional safety - MSQA

Description of work:
<p>The main actions to be undertaken to resolve the RO are described as follows.</p> <p>ACTION 1: Generation of the Resolution Plan</p> <p><u>Actions requested by the Regulator as stated in the RO:</u></p> <p>1. <i>generate a resolution plan that will:</i></p> <p style="padding-left: 40px;">a. <i>present its detailed strategy to demonstrate each mechanical engineering SSC EIM&T isolation and configuration design is aligned to UK RGP and the design has been optioneered to reduce the risks SFAIRP;</i></p>

- b. *define and scope the planned activities;*
- c. *include a controlled programme identifying: planned activities; deliverables; milestones; timescales and resource requirements; and*
- d. *provide the audit trail to each revised SSC design.*

Hitachi-GE's actions:

Hitachi-GE agreed with the Regulator to deliver a draft Resolution Plan (this document) by the end of October. Then, Hitachi-GE and the Regulator will revise this resolution plan and agree the final plan during the Second Technical Exchange Workshop from the 15th to the 20th of December. The official issue of the resolution plan will be no later than the 26th of December 2014.

Deliverables:

- 1) Draft Resolution Plan: by the 31st of October 2014
- 2) Final Resolution Plan: no later than 26th of December 2014

Impacted GDA and GEP Submissions: -

Resources: Hitachi-GE ME SME will prepare the resolution plan in coordination with all the engineering and design sections involved.

ACTION 2: Identification of all applicable legislation and RGP to the design process of ME SSCs

Actions requested by the Regulator as stated in the RO:

2. *identify all the applicable UK RGP codes, standards, guidance and legislation;*

Hitachi-GE's actions:

Hitachi-GE undertook a thorough multidisciplinary search for all the applicable legislation and RGP to the ME safety case, including UK RGP HSG253 "The safe isolation of plant and equipment" (ISBN 978 0 7176 6171 8). A data base to manage all the documents and share the contents with all the sections involved has been constructed and is being regularly updated. In addition, a list indicating all the applicable legislation and RGP per SSC was generated and is being revised and updated regularly as well.

Deliverables:

- 1) List of Applicable Legislation and RGP to ME SSCs Rev.0 (submitted in September 2014)
- 2) List of Applicable Legislation and RGP to ME SSCs Rev. 1 (submitted in February 2015)
- 3) The results and conclusions from this action to be reported in the Final Report on the Conclusions and Recommendations from the Regulatory Observation (by December 2015)

Impacted GDA and GEP Submissions:

- 1) Master Document Submission List
- 2) Basis of Safety Case Documents

3) Support Evidence Documents

Resources:

- 1) Hitachi-GE: ME SME team, systems engineering sections and equipment design sections involved
- 2) Horizon Nuclear Power ME SME
- 3) UK Consultancy for specific areas as necessary

ACTION 3: Review of Hitachi-GE's General Policy on the EIM&T isolations and configurations of the SSCs

Hitachi-GE's actions:

Hitachi-GE is reviewing its general policy (criteria) on the EIM&T isolations and configurations of the SSCs to meet UK expectations in coordination with project management and all the engineering and design sections involved. The current Hitachi-GE's strategy on EIM&T isolation and configuration was issued as "Translation of Valve Selection and Configuration Guide (Response to RQ-ABWR-0017)" (SE-GD-0050) on 24-Feb-2014, and Hitachi-GE has been incorporating UK expectations in accordance with action 2. In addition, collaboration of an independent expert will be considered as requested by ONR. The first issue of this task was done in March 2015. The revised strategy on the EIM&T isolations and configurations of the SSCs (rev.1) will be issued by August 2015. The draft revision 1 will be issued on July 2015 for discussion with ONR.

Deliverables:

- 1) Valve Installation Standard (by February 2015)
- 2) Strategy on the EIM&T isolations and configurations of the SSCs Rev.0 (submitted in March 2015)
- 3) Strategy on the EIM&T isolations and configurations of the SSCs Rev.1 (by August 2015)
- 4) The results and conclusions from this action to be reported in the Final Report on the Conclusions and Recommendations from the Regulatory Observation (by December 2015)

Impacted GDA and GEP Submissions:

- 1) Generic PCSR Sub-chapter 5.7: Monitoring, Inspections and Testing Rev. A
- 2) Master Document Submission List (to include the new deliverable)

Resources:

- 1) Hitachi-GE: ME SME team, MSQA team, Radiation protection team, Conventional safety team and project management team
- 2) Independent expert

ACTION 4: Multidisciplinary Design Review

Actions requested by the Regulator as stated in the RO:

3. *identify all the mechanical engineering SSCs that need to be reviewed;*

4. *review its extant design process arrangement against the stated expectations;*
6. *if appropriate:*
 - a. *raise design changes; and*
 - b. *update its design process arrangement, the UK ABWR safety case, system designs and substantiation;*

Hitachi-GE's actions:

In accordance with its general policy (criteria) on the EIM&T isolations and configurations of the SSCs to meet UK expectations, Hitachi-GE will:

- 1) Identify all ME SSCs relevant to the general policy;
- 2) Evaluate required EIM&T isolation and configuration for each SSC in accordance with selection tool identified in the general policy;
- 3) Evaluate the adequacy of existing isolation and configuration for each SSC;
- 4) If appropriate determine design changes; and
- 5) Establish if it is reasonable and ALARP to undertake further qualification

These tasks are expected to be carried out during the GDA and update on the progress will be provided during all the regular progress meeting video conferences and workshops already agreed with the Regulator.

This task (Action 4) includes the design activity after RO closure.

Deliverables:

- 1) Safety case documentation (see actions 5 and 6)
- 2) The results and conclusions from this review to be reported in the Final Report on the Conclusions and Recommendations from the Regulatory Observation (by December 2015)

Impacted GDA and GEP Submissions: see actions 5 and 6

Resources:

- 1) Hitachi-GE: ME SME team, related SMEs, systems engineering sections, layout engineering section and equipment design sections
- 2) Outsourcing: External equipment suppliers
- 3) UK consultancy as necessary

ACTION 5: Update of the Safety Case Documents

Actions requested by the Regulator as stated in the RO:

7. *provide progress updates to ONR through the planned engagements; and*
8. *make available any appropriate updated documents and substantiation for ONR assessment.*

Hitachi-GE's actions:

The results of the review, including the design changes, will be reflected in the UK ABWR safety case documentation (substantiation), which will clearly show the claims, arguments and evidence. The submission to the Regulator of the safety case documents containing the fixed concept design of applicable ME SSCs will start from August 2015 and extend throughout Step 4. Where substantiation or qualification needs to be extended or repeated, as a result of the review, the timescales to achieve this will be defined. If revised EIM&T isolations and configurations are not possible within GDA timeframes, the proposed method and timescales will be presented during GDA.

This task (Action 5) includes the design activity after RO closure.

Deliverables:

- 1) Basis of Safety Case Documents:
 - A) Fixed Basis of Safety Case Documents for mechanical systems (from August 2015)*
- 2) Support Evidence Documents:
 - A) Evidence documents of the safety case mechanical systems (from the start of Step 4)*
 - B) Generation Plans for those systems that evidence will not be available during the GDA (from Step 4)*

*Note; This item might be extended the action after RO closure.

Impacted GDA and GEP Submissions:

- 1) Generic PCSR Sub-chapters Rev. A (changes to be reflected in Revisions B and C)
- 2) Basis of Safety Case Documents
- 3) Support Evidence Documents
- 4) Master Document Submission List

Resources:

- 1) Hitachi-GE: ME SME team, systems engineering sections, layout engineering section and equipment design sections
- 2) Outsourcing: External equipment suppliers

ACTION 6: Report on the Conclusions and Recommendations

Actions requested by the Regulator as stated in the RO:

5. *make available to ONR the review conclusions and recommendations;*

Hitachi-GE's actions:

The conclusions and recommendations from all the actions of the regulatory observation, including the results of the multidisciplinary review, will be summarised in a final report which will be submitted to ONR after the conclusion of the process by December 2015

Deliverables:

- 1) Final Report on the Optioneering regarding the EIM&T isolations and configurations of the SSCs (by December 2015)

Impacted GDA and GEP Submissions:

- 1) Master Document Submission List (to reflect the new deliverable)

Resources: Hitachi-GE ME SME team in coordination with all the sections involved.

ACTION 7: Actions outside the GDA Scope

Hitachi-GE's actions:

Depending on the results of the design reviews, the fabrication process, the qualification tasks, the installation and tests during commissioning, the EIM&T tasks during operation and the decommissioning tasks might be affected. Therefore, these tasks will have to be undertaken in accordance with the policy described in Hitachi-GE's Strategy on the EIM&T isolations and configurations of the SSCs as well as the design documents (supporting documents of safety case + the whole suite of documents outside GDA scope) containing the results from the design reviews.

After the conclusion of the GDA, those design documents outside of its scope will be generated with the results from the design reviews of this regulatory observation reflected on them. In addition, the design documents already generated before will be updated as necessary. These documents will be applied to perform all the stages of the plant life and thus, the safety case will be implemented into the plant life cycle.

Finally, Hitachi-GE will update its general policy on ME SSCs design life described in Hitachi-GE's Strategy on EIM&T isolations and configurations of the SSCs as necessary to reflect the progress during the plant life cycle.

This task (Action 7) is the design activity after RO closure.

Deliverables: -

Impacted GDA and GEP Submissions: -

Resources:

- 1) Hitachi-GE ME SME team in coordination with all the sections involved
- 2) Horizon Nuclear Power
- 3) Equipment Suppliers
- 4) Sub-contractors
- 5) Etc.

Summary of impact on GDA submissions:

The GDA submissions that may be affected by the actions to resolve this RO are summarised below. These documents will be originated and/or revised in accordance with the corresponding actions.

Related RO Actions	GDA Submission Document Title	Document ID (Document No.)	Submission Date to the Regulators
AOA2,A3,A5,A6	Master Document Submission List	GA91-0011-0003-00001 (XE-GD-0158)	Regularly updated
AOA3,A5	Generic PCSR	-	Middle of October 2015
AOA2,A5	Basis of Safety Case Documents	-	from August 2015
AOA2,A5	Support Evidence Documents	-	from the start of Step 4

Programme Milestones/ Schedule:

Refer to the attached Gantt-chart for the programmed activities and the schedule for the resolution of the RO.

Reference:

Ref.	Document Title	Document ID	Rev.
1	Detailed Gantt Chart for UK ABWR Resolution Plan (Corresponding to RO-ABWR-0018)	GA91-9201-0005-00021	1

