

Hitachi-GE Nuclear Energy, Ltd.
UK ABWR GENERIC DESIGN ASSESSMENT
Resolution Plan for RO-ABWR-0051
(Mechanical Engineering - SSCs Qualification)

RO TITLE:	Mechanical Engineering – SSCs Qualification	
REVISION :	0	
Overall RO Closure Date (Planned):	30 March 2016	
REFERENCE DOCUMENTATION RELATED TO REGULATORY OBSERVATION		
Regulatory Queries	-	
Linked ROs	-	
Other Documentation	-	

Scope of work :
<p>This Resolution Plan describes Hitachi-GE’s current plan to address the RO-ABWR-0051. 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"> - Structural integrity - Electrical - Control and instrumentation - Decommissioning and radwaste

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> <ul style="list-style-type: none"> a. <i>present its detailed strategy to demonstrate the UK ABWR SSCs’ testing and commissioning activities are aligned with UK legislation and risks are ALARP;</i> b. <i>define and scope the planned activities;</i> c. <i>include a controlled programme identifying: planned activities; deliverables; milestones; timescales and resource requirements; and</i>

- d. provide the audit trail to demonstrate the UK ABWR SSC's hazards and risks have been reduced SFAIRP and demonstrate the SSCs' design basis to be ALARP.*

Hitachi-GE's actions:

Hitachi-GE agreed with the Regulator to deliver a Resolution Plan (this document) and the official issue of the resolution plan will be no later than mid-May 2015.

- a) Hitachi-GE will prepare "Generic Equipment Qualification Guide" which presents its detailed strategy to demonstrate the UK ABWR SSCs' testing and commissioning activities by end of July, 2015.
- b) Hitachi-GE will prepare the "List of applicable Equipment Qualification" to define the scope and planned activities during the GDA. Sample of Equipment Qualification plan will be demonstrated in the GDA step-4 however Hitachi-GE will conduct the Equipment Qualification in the list along with the construction schedule.
- c) The sample of Equipment Qualification plans are listed below.
 - (1) SC 1 function in the Fine Motion Control Rod Drive (FMCRD)
 - (2) Main Steam Isolation Valve for Reactor Pressure Vessel
 - (3) RCIC pump
 - (4) HVAC Fan

Detail of planned activities; deliverables; milestones; timescales and resource requirements are described below.

- d) Existing test results of FMCRD are able to provide the audit trail to demonstrate the UK ABWR SCC's design basis to be ALARP.

Deliverables:

- 1) Draft Resolution Plan: by end of April 2015
- 2) Final Resolution Plan: by mid-May 2015
- 3) Generic Equipment Qualification Guidance: by end of July 2015
- 4) List of applicable Equipment Qualification: by end of September 2015
- 5) Sample of Equipment Qualification Plan
 - (1) SC 1 Function in the FMCRD: by end of February 2016
 - (2) Main Steam Isolation Valve for Reactor Pressure Vessel: by end of February 2016
 - (3) RCIC pump: by end of February 2016
 - (4) HVAC Fan: by end of February 2016
- 6) Existing test results against UK Equipment Qualification Plan: by end of March 2016

Impacted GDA and GEP Submissions: -

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

Resources:

Hitachi-GE ME and associated mechanical engineering team supported with MSQA SMEs will prepare the

resolution plan in coordination with all the engineering and design sections involved.

Deliverable 1) to 4) MSQA SMEs, applicable engineering team and project team are involved.

Deliverable 5) Applicable engineering line section is involved.

- (1) SC 1 Function in the FMCRD: Precision Equipment Design Section
- (2) Main Steam Isolation Valve for Reactor Pressure Vessel: Valve Design Section
- (3) RCIC pump: by end of December 2015: Reactor Equipment Design Section
- (4) HVAC Fan: by end of March 2016: Nuclear System Equipment Engineering Section

Deliverable 6) Precision Equipment Design Section is involved.

ACTION 2: Provide progress updates to ONR through the planned GDA engagements

Actions requested by the Regulator as stated in the RO:

Provide progress updates

Hitachi-GE's actions:

Hitachi-GE to share the progress updates through ME work shop in GDA step-3 and step-4.

Deliverables: Stated in Action 1

Impacted GDA and GEP Submissions: -

Resources: Hitachi-GE ME SME team and all the engineering and equipment design sections involved.

ACTION 3: Make available to ONR activity deliverables, conclusions and recommendations

Actions requested by the Regulator as stated in the RO:

Make available to ONR activity deliverables, conclusions and recommendations

Hitachi-GE's actions: -

Deliverables: Stated in Action 1

Impacted GDA and GEP Submissions: -

Resources:

Hitachi-GE: ME SME team, systems engineering sections and equipment design sections involved

ACTION 4: If appropriate:

- a. Raise design changes; and
- b. Update the UK ABWR safety case, system designs and substantiation.

Hitachi-GE's actions:

Hitachi-GE will raise design change if the qualification plan finds the something to change. The detail will be updated in the ME work shop in the GDA step-4

Deliverables:

- 1) Revised safety case, system designs and substantiation if changes are raised.

Impacted GDA and GEP Submissions: -

Resources:

Hitachi-GE: ME SME team, systems engineering sections and equipment design sections involved

ACTION 5: Make available any appropriate updated documents and substantiation for ONR assessment.

Actions requested by the Regulator as stated in the RO:

Make available any appropriate updated documents and substantiation for ONR assessment.

Hitachi-GE's actions: -

Deliverables: Stated in Action 1

Impacted GDA and GEP Submissions:

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

Resources:

Hitachi-GE: ME SME team, systems engineering sections and equipment design sections involved

Summary of impact on GDA submissions:

The GDA submissions that will 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.

<u>GDA Submission Document</u>	<u>Submission Date to ONR</u>
Generic Equipment Qualification Guidance	31 July, 2015
List of Applicable Equipment Qualification	30 September, 2015
SC 1 Function in the FMCRD	29 February, 2016
Main Steam Isolation Valve for Reactor Pressure Vessel	29 February, 2016
RCIC Pump	29 February, 2016
HVAC Fan	29 February, 2016

Programme Milestones/ Schedule:

Refer to the attached Gantt Chart (Table 1) for the programmed activities and the schedule for the resolution of the RO.

Reference:

[Ref-1] "Detailed Gantt Chart for UK ABWR Resolution Plan (Corresponding to RO-ABWR-0051)"
(GA91-9201-0005-00047, QGE-GD-0041 Rev.0)

