

Hitachi-GE Nuclear Energy, Ltd.
UK ABWR GENERIC DESIGN ASSESSMENT
Resolution Plan for RO-ABWR-0057
(Hitachi-GE's development of arrangements
for the safety case to be met in practice)

RO TITLE:	Hitachi-GE's development of arrangements for the safety case to be met in practice	
REVISION :	0	
Overall RO Closure Date (Planned):	29 th October 2016	
REFERENCE DOCUMENTATION RELATED TO REGULATORY OBSERVATION		
Regulatory Queries	-	
Linked ROs	-	
Other Documentation	-	

Scope of work :

This Resolution Plan describes Hitachi-GE's current plan to address the RO-ABWR-0057. It contains the detailed strategy, the planned activities, deliverables, milestones, timescales, resources assignment as well as reference to the audit trail. In response to this RO-ABWR-0057, Hitachi-GE will develop a methodology that will ensure that assumptions and requirements of the safety case within its GDA documentation are clearly identified, collated and are readily transferable into the operating regime. Preparation of operating regime documentation is not part of GDA.

This resolution plan is related to the safety case work stream to support the following technical areas:

- Internal Hazards
- Civil Engineering
- External Hazards
- PSA
- Fault Studies
- Control & Instrumentation
- Electrical Power Supply
- Fuel Design
- Reactor Chemistry
- Radiation Protection & (Level 3 PSA)
- Mechanical Engineering
- Structural Integrity

- Human Factors
- MoS & QA
- Radwaste & Decommissioning
- Conventional Safety & Decommissioning
- Security
- Severe Accident Analysis
- Fire Safety
- Project
- Generic Environmental Permitting

Description of work:

Hitachi-GE agreed with the Regulators to deliver a draft Resolution Plan (this document) by the 12th of June, 2015. Then, Hitachi-GE revised this Resolution Plan and agreed the final plan with Regulators by the 29th of June. The official issue of the Resolution Plan will be no later than the 3rd of July, 2015.

The main actions to be undertaken by Hitachi-GE to resolve the RO are described below for each of the RO actions #1 to #3.

ACTION#1

Develop a method of clearly identifying requirements and assumptions in the text of the safety case and supporting documents. This method should address:

- Unique identification of each requirement and assumption.
- The collation and cataloguing of the requirements and assumptions into a table or list in the Safety Case
- Consolidating the information and the resolution of inconsistencies and non-conformities.

Resolution required by: Early in Step 4 and No Later than 30th October 2015

Hitachi-GE's actions:

- ✓ Hitachi-GE will continue to work closely with the Regulators to understand their expectations and update its existing methodology to clearly identify corresponding requirements and assumptions to ensure that these will be readily available for development of corresponding documents after GDA.
- ✓ Hitachi-GE will develop an effective methodology or framework that will be used for identifying requirements and assumptions within safety case documentation, collating and cataloguing the identified requirements and assumptions either as a list or a table. In addition, methodology for grading Requirements and Assumptions will be developed in consideration of the operating rule tiers of [Ref.1] "Limits and Conditions for Nuclear Safety (Operating Rules)"(NS-TAST-GD-035 Rev. 4).

- ✓ Hitachi-GE will make a process to periodically update and review consolidated information to ensure that some design changes are reflected in assumptions and requirements in the list or table. And the inconsistencies and non-conformities found in the periodical review will be disposed and resolved in accordance with Hitachi-GE's existing non-conformance control process.
- ✓ Hitachi-GE will share samples of the list with the Regulators periodically with the aim of confirming and understanding the Regulators' expectations.

Deliverables:

- 1) Updated Standard Procedure for Identification and Registration of Assumptions, Operating Limits and Conditions by 30th October 2015
- 2) Sample of the list of Assumptions, Operating Limits and Conditions by 30th October 2015

Impacted GDA and GEP Submissions:

- 1) [Ref. 2] "Standard Assumption Register" (GA91-0511-0003-00001, XD-GD-0039 Rev. 0)
- 2) List of Assumptions, Operating Limits and Conditions, TBC,

Resources:

Hitachi-GE Prj. Team, Safety Case Steering Group, all technical areas SME and Cross-cutting team of Nuclear Plant Engineering (FS, PSA), Nuclear Plant C&I Engineering(DBA) and Human Factor Engineering etc.

ACTION#2

Produce guidance to the authors of the safety case chapters on the method described in action #1. This guidance should include examples of the types of requirements and assumptions that should be identified. For example requirements and assumptions relating to:

- Construction and commissioning.
- Operation including accident conditions (e.g. operating limits and conditions).
- Maintenance.
- Radiological protection

Resolution required by: Early in Step 4 and No Later than 30th October 2015

Hitachi-GE's actions:

Hitachi-GE will specify the definitions and examples of the types of assumptions and requirements that will be transferred to Operating Regime in "Standard Procedure for Identification and Registration of Assumptions, Operating Limits and Conditions".

In the deliverables, how assumptions and requirements will be identified in the safety case will be clear by labelling and numbering.

Deliverables:

- 1) Updated Standard Procedure for Identification and Registration of Assumptions, Operating Limits and Conditions by 30th October 2015

Impacted GDA and GEP Submissions:

- 1) [Ref. 2] "Standard Assumption Register" (GA91-0511-0003-00001, XD-GD-0039 Rev. 0)

Resources:

Hitachi-GE Prj. Team, Safety Case Steering Group, all technical areas SME and Cross-cutting team of Nuclear Plant Engineering (FS, PSA), Nuclear Plant C&I Engineering(DBA) and Human Factor Engineering etc.

ACTION #3

Produce the arrangements required by (4.3) showing how the requirements and assumptions will be moved to the operating regime. This should include:

- How the requirements and assumptions are collated and catalogued.
- How they are graded based on safety significance.
- How they will be passed to the operator (e.g. Safety Case, Standard Tech Specs, Manuals, etc.)
- How Hitachi-GE will ensure the requirements and assumptions from the safety case are included in the standard Tech Specs, Manuals etc. which will be supplied to the operators and in construction and commissioning documentation.

Resolution required by: 29th October 2016

Hitachi-GE's actions:

Taking the following into consideration, Hitachi-GE will arrange the process and the control procedure for transferring the Requirements and Assumptions identified, listed or tabled in Action 1 and Action 2 to the Operating Regime.

- ✓ As to collating and cataloguing the Assumptions and Requirements, an effective methodology or framework will be developed in Action 1 and Action 2.
- ✓ Methodology for grading Requirements and Assumptions based on safety significance will be developed in

Action 1 and Action 2 in consideration of the operating rule tiers of [Ref.1] “Limits and Conditions for Nuclear Safety (Operating Rules)” (NS-TAST-GD-035).

- ✓ Technology transfer documents (General Tech Specs and Manual etc.) will be identified so that the Requirements and Assumptions in the Safety Case could be clearly transferred to the Operating Regime. Hitachi-GE will prepare “Technology Transfer to Licensee and Operating Regime” in consideration of this.
- ✓ A procedure will be developed to ensure that the Requirements and Assumptions specified in the Safety Case will be included in each appropriate technology transfer document such as General Tech Specs, Manual etc. This procedure will also include arrangements to ensure that the changed Requirements and Assumptions will be transferred to the Operating Regime on the occurrence of design change relating to the Safety Case. Hitachi-GE will prepare “Technology Transfer to Licensee and Operating Regime” in consideration of this.

Deliverables:

- 1) Technology Transfer to Licensee and Operating Regime, TBC, by 29th October, 2016

Impacted GDA and GEP Submissions:

- 1) Technology Transfer to Licensee and Operating Regime, TBC,
- 2) General Tech Specs, TBC,

Resources:

Hitachi-GE MSQA SME, MSQA Staff and all technical areas SME and Cross-cutting team of Nuclear Plant Engineering (FS, PSA), Nuclear Plant C&I Engineering(DBA) and Human Factor Engineering etc.

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.

GDA Submission Document	Submission Date to ONR
1) Standard Procedure for Identification and Registration of Assumptions, Operating Limits and Conditions, GA91-0511-0003-00001(XD-GD-0039) Rev. 0	30 th October, 2015
2) List of Assumptions, Operating Limits and Conditions, TBC	By the end of GDA
3) Technology Transfer to Licensee and Operating Regime, TBC	29th October, 2016
4) General Tech Specs, TBC	By the end of GDA

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] "Limits and Conditions for Nuclear Safety (Operating Rules)" (NS-TAST-GD-035 Rev. 4)

[Ref. 2] "Standard Assumption Register" (GA91-0511-0003-00001, XD-GD-0039 Rev. 0)

Table 1 RO-ABWR-0057 Gantt Chart

Gantt Chart for UKABWR Draft Resolution Plan (Corresponding to RO-ABWR-0057 Rev.0)

Hitachi-GE's development of arrangements for the safety case to be met in practice Resolution Plan for RO-ABWR-0057 Rev.0				2015						2016						2017																																
				June			July		August		September			October		November		May			June		September			October			June		July		November			December												
				1	8	15	22	29	15	31	15	31	7	14	21	28	5	26	15	30	...	2	9	16	23	30	6	27	...	5	12	19	26	3	#	17	24	31	...	15	30	15	31	...	6	13	20	27
Level	Action Title	Start	Finish																																													
1	Draft Resolution Plan	1-Jun-15	12-Jun-15																																													
2	Final Resolution Plan	15-Jun-15	3-Jul-15																																													
3	Standard Procedure for Identification and Registration of	3-Jul-15	30-Oct-15																																													
4	List for Requirement and Assumptions	3-Jul-15	31-Dec-17																																													
4.1	Sample Issue	3-Jul-15	31-Aug-15																																													
5	Technology Transfer to Licensee and Operating Reg	1-Sep-15	29-Oct-16																																													
6	General Tech Specs	1-Nov-15	30-Jun-17																																													

*Note; This item includes the activities after RO closure, and Hitach-GE will determine and present the action plan of activity in this item.