

REGULATORY OBSERVATION

REGULATOR TO COMPLETE

RO unique no.:	RO-ABWR-0074
Date sent:	23 November 2016
Acknowledgement required by:	14 December 2016
Agreement of Resolution Plan Required by:	23 December 2016
Resolution of Regulatory Observation required by:	28 February 2017
TRIM Ref.:	2016/429768
Related RQ / RO No. and TRIM Ref. (if any):	
Observation title:	6.9 kV Switchgear design for UK ABWR
Technical area(s) 7. Electrical Power Supply	Related technical area(s)

Regulatory Observation

Summary

Hitachi-GE has designed the electrical switchgear rooms in the UK ABWR based on the sizing and layout of the 6.9kV switchgear manufactured by Hitachi. For application on the UK ABWR this switchgear is required to comply with IEC standards including protection against internal faults. Compliance with IEC standards will require to be substantiated by Hitachi undertaking a series of type tests to prove the capability of switchgear to perform its specified functions at assigned thermal and short circuit ratings.

Hitachi-GE is currently undertaking a set of comprehensive computer based system studies of the UK ABWR electrical system to model the plant electrical system and determine the required thermal and short circuit ratings for the switchgear. A type testing programme is therefore required to prove the capability of the UK ABWR switchgear to meet the required thermal and short circuit ratings established by the system studies.

Background

Hitachi-GE has developed a programme for the development and type testing required to prove the capability of the UK ABWR switchgear to meet the electrical system ratings in accordance with IEC standards IEC 62271-1, IEC 62271-100 and IEC 62271-200. These ratings will be determined by the system studies. This programme shows development and type testing of the switchgear will continue beyond the timescale of GDA assessment.

Based on preliminary study results the thermal and short circuit ratings required for the switchgear may be at the maximum for commercially available switchgear.

The proposed UK ABWR switchgear design is compact with a small footprint compared to equipment currently available on the market and which may be difficult to accommodate in the space available if the planned switchgear development and testing cannot be successfully completed.

ONR require Hitachi-GE to demonstrate its plans to manage the design risks associated with the current system study work and subsequent switchgear development and testing programme so as to ensure that design requirements are not foreclosed due to plant layout considerations.

Regulatory Expectation

ONR requires Hitachi-GE to complete the planned GDA system study work to determine UK ABWR generic design switchgear thermal and short circuit rating requirements.

ONR requires Hitachi-GE to demonstrate that adequate spatial provisions have been made to accommodate the switchgear within the UK ABWR plant and that adequate provisions have been made for associated power cables.

ONR requires Hitachi-GE to demonstrate that it has a robust and achievable programme to develop its switchgear to IEC standards to meet the thermal and short circuit rating requirements for the UK ABWR.

ONR requires Hitachi-GE to demonstrate that the development programme for the switchgear includes testing the capability to protect against internal faults as defined in IEC 62271-200.

ONR requires Hitachi-GE to provide a development plan which explains how it proposes to manage the design risks associated with current system study work and subsequent development and testing of 6.9kV switchgear to demonstrate the design options available to take account of technology and layout considerations.

Regulatory Observation Actions

RO-ABWR-0074.A1

Hitachi-GE to demonstrate the robustness of the 6.9kV switchgear design proposals for the UK ABWR by submitting the following documents to substantiate the approach being taken :

- Complete the planned system studies to establish thermal and short circuit rating requirements for the UK ABWR 6.9kV switchgear
- Definition of design parameters for the 6.9kV switchgear
- Layout drawings to demonstrate the layout and cabling for the 6.9kV switchgear
- Indicative development and test programme for the Hitachi 6.9kV switchgear to meet UK ABWR requirements
- Design and development plan for 6.9kV switchgear which identifies risks and provides appropriate mitigation strategies

Resolution required by 28th February 2017.

REQUESTING PARTY TO COMPLETE

Actual Acknowledgement date:

RP stated Resolution Plan agreement date: