REGULATORY OBSERVATION

REGULATOR TO COMPLETE

RO unique no.:	RO-ABWR-0077
Date sent:	16 December 2016
Acknowledgement required by:	11 January 2017
Agreement of Resolution Plan Required by:	10 February 2017
Resolution of Regulatory Observation required by:	*In accordance with HGNE delivery programme.*
TRIM Ref.:	2016/491981
Related RQ / RO No. and TRIM Ref. (if any)**:**	
Observation title:	Demonstration of adequate protection for Pellet-cladding Interaction in response to Control-rod Movement Faults
Technical area(s) 8. Fuel Design	**Related technical area(s)** 5. Fault Studies 6. Control & Instrumentation

Regulatory Observation

Background

ONR expects that protection is provided to maintain the integrity of the fuel pin cladding in normal operation and anticipated faults, so far as is reasonably practicable.

Hitachi-GE analysis indicates that failure of the rod control system has the potential to lead to power-distribution faults and a subset of these faults can lead to multiple fuel pin cladding failures as a result of thermal stress.

Hitachi-GE has proposed the use of differences in signals from the Local Power-Range Monitor (LPRM) to initiate a reactor trip. LPRMs are a part of the Class 1 Neutron Monitoring System (NMS) and this system supplies signals to the Reactor Protection System (RPS). Although they continue to examine other options.

In view of the need to potentially introduce a design change to the protection system, ONR considers it appropriate to raise a regulatory observation in order to monitor this work and ensure that the safety case is progressed sufficiently within GDA.

Regulatory Observation Actions

Hitachi-GE to develop a safety case meeting UK expectations that fuel pin failures by corrosion-assisted cracking can be prevented in normal operation and control-rod movement faults. Hitachi to report this work in one or more topical reports.

The case will include:

1. Identification of the proposed change to the protection system and the modifications required to relevant protection-system design documents.
2. Documentation detailing the impact of the protection on response to anticipated rod-movement faults and justification of the proposed set points (and alarm levels if appropriate). This is to include analysis demonstrating that the proposed setpoint will not have an adverse impact on the normal operation of the plant.
3. An ALARP optioneering study if appropriate. Generally this will be necessary if the option Hitachi-GE favour cannot be shown to reduce the risk of rod-movement faults to Broadly Acceptable levels.

ONR recognise that our expectations may be met by other means.	
REQUESTING PARTY TO COMPLETE	
Actual Acknowledgement date:	
RP stated Resolution Plan agreement date:	