

REGULATORY OBSERVATION

REGULATOR TO COMPLETE

RO unique no.:	RO-ABWR-0050
Date sent:	6 May 2015
Acknowledgement required by:	28 May 2015
Agreement of Resolution Plan Required by:	28 May 2015
Resolution of Regulatory Observation required by:	To be determined by Hitachi-GE Resolution Plan
TRIM Ref.:	2015/167056
Related RQ / RO No. and TRIM Ref. (if any):	
Observation title:	Mechanical Engineering – Crane control measures
Technical area(s) Mechanical engineering	Related technical area(s) Control and instrumentation Internal hazards Radiation protection Spent fuel interim storage Human factors

Regulatory Observation

Summary

This mechanical engineering regulatory observation is cross cutting. It is being raised to ensure the designs of the UK ABWR cranes and fuel handling machine incorporate an adequate level of engineered control for lifts important to safety.

Assessment Observation

During the first Step 2 mechanical engineering technical workshop; Jan 2014 (2014/62657); the Requesting Party (RP) stated the operator's own judgement sets the main building Electrical Overhead Travelling Crane (EOTC) traversing height for manoeuvring the steam dryer and separator modules.

I consider the reliance of an operator to judge the correct traversing height for a lift important to safety:

1. Is not aligned with UK relevant good practice;
2. Does not reduced the risks so far as reasonably practicable (SFAIRP); and
3. Does not secure an As Low As Reasonably Practicable (ALARP) design.

I consider the following Safety Assessment Principles (SAPs) to be pertinent to this topic:

1. EKP.1 – Inherent safety - the underpinning safety aim for any nuclear facility should be an inherently safe design, consistent with the operational purposes of the facility;
2. EKP.2 – Fault tolerance - the sensitivity of the facility to potential faults should be minimised;
3. EKP.3 – Defence in depth - nuclear facilities should be designed and operated so that defence in depth against potentially significant faults or failures is achieved by the provision of multiple independent barriers to fault progression; and
4. EDR.1 – Failure to safety – due account should be taken of the need for structures, systems and components to be designed to be inherently safe, or to fail in a safe manner, and potential failure modes should be identified, using a formal analysis where appropriate.

RQ-ABWR-0259 (2014/407171) response sets out the RP's arguments and rationale for retaining operator control in preference to the SSC incorporating engineered means to control the elevation of the steam dryer and the separator module lifting beam. I consider the presented arguments and rationale not to meet my regulatory expectations.

I consider this regulatory observation to be cross-cutting and of interest to:

1. Control and instrumentation;
2. Internal hazards; and
3. Radiation protection.

In conclusion, I consider:

1. The building crane not incorporating engineered means to control the lifting beam traversing height does not reduce the risks SFAIRP; thus is not an ALARP design; and
2. A GDA can't be concluded without the assessment observation being adequately addressed in an auditable manner.

Regulatory Expectations

It is my regulatory expectation that the:

1. EOTCs and fuel handling machine incorporates positional engineering control means for all lifts important to safety to:
 - a. Reduce the risks SFAIRP; a requirement of UK legislation (Health & Safety at Work etc.

Act 1974);

- b. Meet the expectations of UK relevant good practice; and
- c. Meet the expectations of the ONR's SAPs.

Regulatory Observation Actions

RO-ABWR-0050.A1

The RP is expected to:

1. Generate a resolution plan that will:
 - a. Present its detailed strategy to demonstrate the UK ABWR EOTC and fuel handling machine is reviewed and optioneered to be ALARP;
 - 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 demonstrate the UK ABWR EOTC and fuel handling machine design risks have been reduced SFAIRP and demonstrate the designs are ALARP.

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2. provide progress updates to ONR through the planned GDA engagements;

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3. Make available to ONR activity deliverables, conclusions and recommendations;

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

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

Resolution required by: To be determined by Hitachi-GE Resolution Plan

Actual Acknowledgement date:

RP stated Resolution Plan agreement date: