REGULATORY OBSERVATION

REGULATOR TO COMPLETE

RO unique no.:	RO-ABWR-0017
Date sent:	16 September 2014
Acknowledgement required by:	07 October 2014
Agreement of Resolution Plan Required by:	*28 November 2014*
Resolution of Regulatory Observation required by:	*26 June 2015*
TRIM Ref.:	2014/253119
Related RQ / RO No. and TRIM Ref. (if any)**:**	
Observation title:	Nuclear Ventilation Codes and Standards
Technical area(s) Mechanical Engineering	**Related technical area(s)** Environment Agency Conventional safety MSQA Radiation protection Internal hazards Chemistry Decommissioning and radioactive waste Civil engineering and external hazards

Regulatory Observation

Summary
This mechanical engineering regulatory observation is cross cutting and is being raised to ensure the UK ABWR nuclear ventilation structures, systems and components (SSCs):

1. are designed and supplied in accordance with UK relevant good practice (RGP); and
2. are optioneered to reduce risks so far as is reasonably practicable (SFAIRP).

Assessment Observation
The requesting party (RP) has stated that it is to adopt UK RGP NVF/DG001 nuclear industry guidance for its ventilation SSCs. This is aligned with my expectations; however, I also consider ISO 17873:2004 and ISO 26802:2010 to be applicable.

Through discussion of the HVAC, off-gas and standby gas systems the RP has provided limited assurance that it understands the impact of adopting its stated guidance of NVF/DG001 to the UK ABWR nuclear ventilation system designs.

Discussions on undertaking filter examination, inspection, maintenance and testing also identified the RP has limited understanding of other applicable UK legislation and its impact on the proposed system designs.

Through discussions of the systems I noted the following observations that are examples of aspects that are not aligned with my expectations:

1. systems do not incorporate safe change filter housings or circular type filters;
2. systems do not incorporate primary and secondary filter banks;
3. a number of extract systems are reliant on bag type filtration in preference to high efficiency particulate air (HEPA) filtration;
4. the standby gas system fan is located upstream of the system filter bank;
5. the standby gas system incorporates an unfiltered bypass process line;
6. the active workshops and waste treatment facilities are not assigned with dedicated local filtered extract systems; and
7. the system temperature design basis (+33 to -9.3 ºC) is not aligned with external hazard expectations.

The RP has stated that it is currently undertaking a review and an impact assessment to understand the implications of aligning its ventilation designs to NVF/DG001. I am also encouraged that the RP is seeking the support of a UK consultancy that is familiar and knowledgeable of working to the NVF/DG001 guidance to aid the review.

The assessment observation is cross-cutting and of interest to:

1. Environment Agency;
2. conventional safety;
3. MSQA;
4. radiation protection;
5. chemistry;
6. internal hazards;
7. decommissioning and radioactive waste; and
8. civil engineering and external hazards.

In conclusion:

1. The RP’s claim is reasonable but is not complete and further assurance is required;

2. the RP has not provided sufficient assurance that it adequately understands the design requirements to incorporate UK RGP codes and standards to its nuclear ventilation SSCs;
3. I acknowledge the RP is undertaking a review to understand the impact of aligning its design to UK RGP, which I see as a positive approach; and
4. a GDA can not be concluded without the nuclear ventilation SSCs being of a design that are aligned with UK RGP.

Regulatory Expectations
It is my regulatory expectation that the RP designs its nuclear ventilations SSCs in accordance with:

1. NVP/DG001 “Nuclear Industry Guidance An Aid to the Design of Ventilation of Radioactive Areas”;
2. ISO 17873:2004 “Nuclear facilities - Criteria for the design and operation of ventilation systems for nuclear installations other than nuclear reactors”; and
3. ISO 26802:2010 “Nuclear facilities - Criteria for the design and operation of containment and ventilation systems for nuclear reactors”

I consider the above guidance and standards to broadly set out UK RGP.

Other applicable UK legislation that will also place requirements onto the SSCs designs includes, but is not limited to the:

1. Ionising Radiations Regulations 1999;
2. Confined Spaces Regulations 1997;
3. Manual Handling Operations Regulations 1992; and
4. Lifting Operations and Lifting Equipment Regulations 1998.

Regulatory Observation Actions

It is my expectation that the RP will:

1. generate a resolution plan that will:
    a. present its detailed strategy to update each UK ABWR nuclear vent system design to align to UK RGP;
    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 each revised system design.
2. identify all UK RGP codes, standards, guidance and legislation applicable to the UK ABWR nuclear ventilation systems;
3. undertake a gap analysis of the UK RGP requirements against its Step 2 submission;
4. evaluate the gap analysis and where necessary:
    a. raise and implement design changes; and
    b. update the UK ABWR safety case, system designs and substantiation;
5. provide progress updates to ONR through the planned GDA engagements; and
6. make available appropriate updated documents and substantiation for ONR assessment.

Actual Acknowledgement date:	
RP stated Resolution Plan agreement date:	