

Assessing new nuclear reactor designs

Generic Design Assessment Quarterly Report
July-October 2015

Contents

1	INTRODUCTION AND BACKGROUND	4
2	GDA of the UK ABWR	5
2.1	Progress update	5
2.2	Meetings in period	7
2.3	Communications	7
2.4	Enhanced collaborative working – Hitachi-GE and Horizon Nuclear Power	7
2.5	International work	8
2.6	Technical Support Contracts	8
2.7	Summary of regulator charges	8
2.8	Metrics summary	10
2.9	Metrics detail	14
	Civil Engineering	14
	External Hazards	14
	Internal Hazards	14
	Probabalistic Safety Assessment	14
	Severe Accident Analysis	15
	Fault Studies	15
	Control and Instrumentation	16
	Electrical Engineering	16
	Fuel and Core Design	16
	Reactor Chemistry	16
	Radiation Protection	17
	Mechanical Engineering	17
	Structural Integrity	17
	Human Factors	17
	Management of Safety and Quality Assurance (MSQA) Arrangements	17
	Radioactive Waste Management	18
	Decommissioning	18
	Spent Fuel Management	18

Security	18
Environmental (GEP)	19
Conventional Safety	19
Fire Safety	19
2.10 Forward look	19
3 GDA of the AP1000	20
3.1 Progress update	20
3.2 Meetings in period	21
3.3 International work	21
3.4 Communications	21
3.5 Technical Support Contracts	21
3.6 Summary of regulator charges	22
3.7 Forward look	22
3.8 Metrics summary	23
3.9 Metrics detail	26
Civil Engineering	26
Structural Integrity	26
Mechanical Engineering	26
Electrical Engineering	26
Control and Instrumentation	26
Fault Studies	27
Fuel and Core	27
Human Factors	27
Reactor Chemistry	27
Internal Hazards	28
Probabalistic Safety Assessmentis	28
Radiological Protection	28
GI-AP1000-CC-01 Limits and conditions	28
GI-AP1000-CC-02 Pre-Construction Safety Report to support GDA	28
GI-AP1000-CC-03 Consider and action plans to address the lessons learned from the Fukushima event	29
3.10 Forward look	29



1 INTRODUCTION AND BACKGROUND

- 1 This report provides information on the work that we have been carrying out on the Generic Design Assessment (GDA) of Hitachi-GE's UK Advanced Boiling Water Reactor (UK ABWR), and the closure phase of the GDA project for the Westinghouse AP1000[®] reactor design, during the period July to October 2015. We extended the period of this report to include the end of ONR's Step 3 for the UK ABWR project.
- 2 During this period we completed our assessment of Hitachi-GE's submissions for ONR's GDA Step 3 of the UK ABWR project. As part of our governance, we undertook a gateway review to consider the regulators' and Hitachi-GE's readiness to move to ONR's Step 4. The review concluded that sufficient progress had been made by Hitachi-GE, and that the regulators had the resources available to progress to Step 4.
- 3 Step 4 of the UK ABWR GDA commenced on 2 November 2015. The Environment Agency and Natural Resources Wales are continuing on Step 3 ('detailed assessment') of their GDA process for the UK ABWR. This has a longer duration than ONR's Step 3 and concludes when the environmental regulators begin consulting on their preliminary findings at the end of that step.
- 4 For the AP1000 project, this period has been one of business as usual as we continue our assessment of the GDA Issues. There has been some programme slippage in a number of topic areas, and Westinghouse is working to re-baseline the overall programme, with the objective of enabling regulators to make decisions about issuing a Design Acceptance Confirmation (DAC) and Statement of Design Acceptance Confirmation (SoDA) in January 2017, as per the current programme.
- 5 On 21 October 2015, the UK and Chinese Governments announced a 'Statement of Cooperation in the Field of Civil Nuclear Energy 2015', and a Strategic Investment Agreement between EDF and its partner China General Nuclear Corporation (CGN). The agreement sets out the terms of the companies' partnership for the Hinkley Point C project and their proposed collaboration at the Sizewell and Bradwell sites. The agreement expects that a Chinese designed reactor will be submitted for GDA in 2016. The regulators are planning to begin this GDA in 2016 when requested by Government.
- 6 We welcome comments on this report. Please send them to us at new.reactor.build@onr.gsi.gov.uk.
- 7 To find out more about GDA visit <http://www.onr.org.uk/new-reactors/>
- 8 To receive the latest news and information on GDA, subscribe to our eBulletin by visiting www.onr.org.uk/newreactors/ebulletin.htm

2 GDA of the UK ABWR

2.1 Progress update

- 9 During the period the project has concluded ONR's Step 3. The main activities included completing the Step 3 assessments; writing up the progress statements in each of the top ic areas; and planning for Step 4 in terms of developing the assessment plans and scoping the technical support required.
- 10 Upon completion of the technical work, we undertook a gateway review to consider whether the project was sufficiently advanced to move into Step 4. This review considered the progress made in each of the topic areas against the Step 3 criteria and our assessment plans; whether the scope is agreed for Step 4; and whether the regulators have the resource and processes in place to complete Step 4 in line with expected timeframes.
- 11 The panel concluded that sufficient progress had been made by Hitachi-GE, and that the regulators have the processes in place, and the required resource in some of the technical areas. In six of the technical topic areas the regulators deemed that there is insufficient resource to proceed. These were identified as improvement actions and mitigation is in progress; securing additional resource both internally and through the supply chain to ensure that we are able to meet Hitachi-GE's programme.
- 12 This essentially involves the increased use of Technical Support Contractors (TSCs), some of whom will be embedded into the GDA regulatory team. However it is important to highlight that all regulatory decisions and judgements are only taken by warranted ONR inspectors or Environment Agency and NRW staff.
- 13 We published a Summary Report on our Step 3 work in October 2015. This report describes the main achievements of Step 3; the design and operational changes agreed; and the main technical issues to be addressed during Step 4. The Summary Report highlights the substantial amount of interaction and assessment work that has been undertaken in the period, and concludes that Hitachi-GE has made significant progress throughout the Step 3 assessment period. Progress has been made both technically in terms of progressing the UK ABWR design and safety case to meet UK regulatory expectations, and also organisationally in terms of building its capability and capacity.
- 14 In addition, throughout Step 3 we have published all of the Regulatory Observations (ROs) and Regulatory Issues (RIs), which contain the technical detail of our assessment findings. How Hitachi-GE intends to address these issues is contained in the resolution plans for the ROs and RIs, which are also published on our website.
- 15 Hitachi-GE continues to maintain pace and has not slowed down its delivery. It continues to drive the programme forward, which builds our confidence for Step 4. It continues to increase its resource both internally and through the UK and worldwide supply chain, and is addressing regulatory concerns and issues with vigour.

16 Despite this strong position there is a vast amount of work to be delivered throughout Step 4, and right-first-time quality will be critical. Hitachi-GE also needs to continue to improve its processes and oversight for identifying and resolving issues proactively itself. Though the assessment has so far proceeded broadly on the expected timeframe, to achieve a full DAC and SoDA in their aspired timescales, Hitachi-GE will have to increase pace and be more proactive on issues. Hitachi-GE's recent appointment of an additional layer of technical programme-management is targeted specifically to meet this need.

Reactor Chemistry

17 In our last quarterly statement we provided information on our first RI in the area of reactor chemistry, relating to derivation and justification of source terms. Work has progressed in this area and we consider that Hitachi-GE's knowledge and understanding has improved markedly. This has resulted in improved quality of submissions and a general upward trend in performance.

18 Sufficient information has been provided to enable progress to Step 4; however in line with the agreed resolution plan, there remains a large volume of work to be undertaken in Step 4, which has been deferred from Step 3. If the time scales outlined in the resolution plan are met, the RI should be adequately resolved within the GDA for UK ABWR.

Probabilistic Safety Assessment (PSA)

19 In our last quarterly report we reported regulatory concerns in the area of PSA and highlighted our intention for a Regulatory Issue in this area. This was subsequently published on 16 July 2015. In the intervening period, Hitachi-GE formed a world-class team with experience of modern standards (Boiling Water Reactor) PSA and UK PSA application. They developed a completely revised level 1 (core damage) internal events at power PSA model, which was peer reviewed against international standards and submitted to ONR at the end of August 2015.

20 The updated PSA includes additional initiating events due to the loss of support systems and improved treatment of dependencies. In Step 3 we had identified that this was an issue. This has resulted in the increase of the Core Damage Frequency (CDF) by a factor of 3, but still the same order of magnitude as the CDF for EPR and AP1000, and a significant change of the risk profile.

21 This means that there were risks associated to the ABWR design that were not reflected in the 2014 PSA and the updated PSA can provide useful insights to help reduce them. Further analyses/interpretation of results will need to be provided by Hitachi-GE.

22 We have not yet fully reviewed the model and analyses in sufficient detail to form a view of whether they are fully representative. Much of this intelligence should come from our detailed review during Step 4.

Other Topic Areas

- 23 There are emerging issues in other technical areas, as described in the metrics summary. However as noted earlier, this is expected at this stage and is beneficial in terms of providing regulatory clarity to Hitachi-GE, particularly as there are more than two years remaining on Hitachi-GE's GDA programme.
- 24 We remain confident that the current RIs will not impact on completion of GDA by the end of 2017, subject to continued high quality delivery by Hitachi-GE. We emphasise that ROs and RIs are routine regulatory business in GDA that provide clarity and focus on technical areas requiring action.
- 25 Within the period the regulators have issued 105 Regulatory Queries (RQs), six ROs and one RI.

2.2 Meetings in period

- 26 Within the period there were 77 technical meetings and 19 non-technical project meetings.

2.3 Communications

- 27 Within the period there were three comments posted on the Hitachi-GE comments website bringing the total number submitted to 43 at the end of October 2015, all of which have now been responded to. There were no repeated questions.
- 28 The regulators' public dialogue project supported by Sciencewise, was completed and the final report has been published on the [Sciencewise website](#) and regulators' website. The purpose of this work was primarily to help the regulators to better understand the needs of members of the public in relation to engagement in the GDA of new nuclear reactor designs, particularly during the Environment Agency's and NRW's consultation.
- 29 The regulators are using the Sciencewise work to further improve their communications and engagement and are continuing to consider its findings.

2.4 Enhanced collaborative working – Hitachi-GE and Horizon Nuclear Power

- 30 During this period a tripartite way of working in Safety Case matters has been implemented, including Hitachi-GE, Horizon and the regulators. This provides a forum where ONR can oversee safety case developments both for the UK ABWR by Hitachi-GE and Wylfa Newydd site specific activities by Horizon. This ensures that expectations in terms of development and transition of the safety case from the GDA project to the licensing project (and beyond) are understood by all the relevant parties. The first Safety Case tripartite meeting was held in September. This way of working further fosters engagement and collaboration to ensure maximum usability of the UK ABWR GDA safety case throughout the UK ABWR new build projects.
- 31 During this period we have seen further progress with the implementation of the Hitachi-GE – Horizon Joint Safety Case Office (JSCO). The JSCO has been involved in the review of the UK ABWR Pre-Construction Safety Report (PCSR) Rev B. This JSCO activity has facilitated learning on ways of working and has

provided better consideration of UK expectations in the development of the UK ABWR PCSR.

2.5 International work

- 32 Our international activity during this period has included our participation in, and chairing of, the fourth meeting of the ABWR Working Group (ABWRWG) within the Multinational Design Evaluation Programme (MDEP). The ABWRWG has made significant progress in the understanding of the different ABWR designs and their variety of technical solutions to address safety. The group has also made progress with the development of an ABWR common position paper addressing issues related to the Fukushima Dai-ichi accident (recognising that the technology in place at Fukushima was not an ABWR). The two technical expert sub-groups (TESG) within MDEP’s ABWRWG have also met during this period. These meetings have provided useful insights on control and instrumentation (C&I) topics such as: diversity of Reactor Pressure Vessel (RPV) level measurement; back-up building instrumentation; and man-machine interfaces, and Severe Accident (SA) topics such as: ex-vessel core management; suppression pool pH control; and hydrogen management, as well as SA instrumentation requirements. ONR will use insights obtained from all this work to inform our assessment of the adequacy of the UK ABWR design and safety case during Step 4 of GDA.
- 33 We have continued engagement with the US Nuclear Regulatory Commission (NRC) during this period, mainly to share information on ABWR assessment developments in both countries and to discuss seismic margins analysis with US NRC’s specialists.

2.6 Technical Support Contracts

- 34 Between July and October 2015 ONR has let two technical support contracts relating to the UK ABWR project:

Topic Area	Contractor Organisation	Value
Support for the GDA Civil Engineering Assessment of the UK ABWR	ARUP	£455,000
Support for the GDA Step 3 External Hazards Assessment of the UK ABWR	ABS Consulting	£106,927

2.7 Summary of Regulator Charges

UK ABWR

Office for Nuclear Regulation:

- Charges for the quarter July – September 2015 £ 1,949,434
- Cumulative charges: £ 13,310,670

Environment Agency:

■	Charges for the quarter July –September 2015	£146,815
■	Cumulative charges:	£ 2,648,028

2.8 Metrics Summary

GDA Metrics Definitions	
Category 1 (Programme)	Category 2 (Quality of submissions)
<p>Red – Significant slippage against the baseline programme has occurred, with delays highly unlikely to be recoverable. Successful completion of the step in accordance with the Regulators Baseline Programme will require the programme to be re-baselined and the target dates changed (via Change Control).</p> <p>Amber – Some slippage against the baseline programme has occurred, with delays capable of being recovered. Prompt action is required to ensure that there is an improvement in delivery in order to successfully complete the step in accordance with the Regulators Baseline Programme.</p> <p>Green – Activities are generally on plan to successfully deliver the current step in accordance with the Regulators Baseline Programme.</p> <p>Blue – Activities are ahead of plan to successfully deliver the current step in accordance with the Regulators Baseline Programme.</p>	<p>Red - For the current Step, submissions are significantly below expectations in terms of scope and/or quality. The Regulators will require significantly improved submissions to support their assessment.</p> <p>The Regulators should explain what is required to meet their expectations.</p> <p>Amber - For the current Step, submissions are below expectations in terms of scope and/or quality. The Regulators will require submissions to be updated/revised to support their assessment.</p> <p>The Regulators should explain what is required to meet their expectations.</p> <p>Green - For the current Step, submissions have generally met the expected scope and quality.</p> <p>Blue - For the current Step, submissions have exceeded the expected scope and quality.</p>

	<p><u>Grey</u> – No submissions received during the period.</p>
<p>Category 3 (Quality of interactions)</p>	<p>Category 4 (Regulatory Observations/Issues progress)</p>
<p>Red – Communications and interactions have been significantly below expectations, in terms of clarity, openness, or technical content. This has resulted in a high degree of ambiguity and/or a lack of confidence in the other parties’ intentions. The values in the Regulatory Nuclear Interface Protocol (RNIP)¹ have been compromised.</p> <p>Amber - Communications and interactions have been below expectations in terms of clarity, openness, timeliness or technical content, This has resulted in a degree of ambiguity and a lack of confidence in the other parties’ intentions. Some aspects of the RNIP have been challenged</p> <p>Green - Communications and interactions have met expectations, resulting in confidence in the other parties’ intentions.</p> <p>Blue – Communications and interactions have exceeded expectations, resulting in a high degree of confidence in the other</p>	<p>Red - Submissions are not addressing the Regulatory Observation / Regulatory Issue (RO/RI) and immediate action is required to ensure the successful completion of the RO/RI.</p> <p>There is a high risk that further RO/RI or associated Actions may be raised or transferred to a GDA Issue(s)</p> <p style="text-align: center;">OR</p> <p>The draft RO/RI Res Plan cannot be agreed even after several discussions and revisions of drafts</p> <p>Amber - Submissions are not fully addressing the RO/RI and action may be required to ensure the successful completion of the RO/RI.</p> <p>There is a risk that further RO/RI or associated Actions may be raised or transferred to a GDA Issue(s)</p>

¹ The Regulatory Nuclear Interface Protocol (RNIP) and the associated ways of working, is a standard protocol that has been introduced to maximise the effectiveness of ONR, Environment Agency, licensee, and requesting party relationships

<p>parties' intentions</p>	<p style="text-align: right;">OR</p> <p>The draft RO/RI Res Plan is under development but will require further revisions to enable agreement</p> <p>Green - The RO/RI is likely to be closed; Submissions are addressing the RO/RI</p> <p style="text-align: right;">OR</p> <p>The draft RO/RI Res Plan is under development and is on track to be agreed</p> <p>Blue - No RO/RI Issued</p> <p style="text-align: right;">OR</p> <p>The RO/RI has been closed</p>
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	Civil Engineering				External Hazards				Internal Hazards				Mechanical Engineering				Structural integrity				Conventional Safety				Fire Safety				PSA				Reactor Chemistry															
Category 1 - Programme	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 2 - Submissions	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 3 - interactions	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 4 - Existing Issues	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 5 - Emerging Issues	Y	N	Y	Y	Y	Y	N	Y	N	N	N	Y	Y	Y	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y								
	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O
	Radiation Protection				Human Factors				MSQA				Rad Waste				Decommissioning				Spent Fuel Interim Store				Severe Accident				Fault Studies				C&I															
Category 1 - Programme	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 2 - Submissions	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 3 - interactions	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 4 - Existing Issues	Green				Green				Green				Green				Green				Green				Green				Green				Green															
Category 5 - Emerging Issues	N	N	N	Y	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y								
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	Electrical Engineering				Fuel & Core Design				Security				Environmental																																			
Category 1 - Programme	Green				Green				Green				Green																																			
Category 2 - Submissions	Green				Green				Green				Green																																			
Category 3 - interactions	Green				Green				Green				Green																																			
Category 4 - Existing Issues	Green				Green				Green				Green																																			
Category 5 - Emerging Issues	N	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	N	Y																																
	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O	J	A	S	O																												

2.9 Metrics Detail

Civil Engineering

- 35 All of the expected documentation has been received and is being assessed with the support of our contractors. There are no issues to note within the period and we continue to progress into Step 4.

External Hazards

- 36 Overall performance remains good and all submissions have been made on time. There are several outstanding issues and a number of RQs were issued in October. The post-Fukushima work submitted by Hitachi-GE does not provide sufficient information relating to external hazards, and we will be following this up. In addition, the plan to complete the external flooding and biological fouling external hazards assessment during the site specific safety case phase, not during the GDA programme, is a concern and again will be followed up.

Internal Hazards

- 37 All of the expected documentation has been received and overall the structure and quality has been adequate. We are progressing our planning and assessment for Step 4.

PSA

- 38 Hitachi-GE has submitted the updated Internal Events L1 PSA at power in response to RI-ABWR-002 according to plan, but in line with the agreed resolution plan still needs to provide full visibility of what remains and when it will be implemented. Hitachi-GE has provided additional information on fire, flood, Seismic Margin Analysis (SMA) methodologies and prioritisation of hazards, but there are still areas that will need further information to be provided early in Step 4. Further effort is required to deliver the remaining areas of the PSA within short timescales. However the updated model does meet regulatory expectations at the methodological level. This improvement in quality and completeness of the updated PSA and documentation provides us with confidence that Hitachi-GE's improved PSA arrangements and PSA capability has set up the basis to develop and deliver the PSA information that is required during Step 4. The following are emerging issues:

- Hitachi-GE has not been able to demonstrate the convergence of the internal events UK ABWR PSA at power. ONR has requested Hitachi-GE to provide a plan to address this quantification issue as soon as possible in Step 4.
- Hitachi-GE has informed ONR of the long-term intention to conduct the probabilistic analyses of some external hazards such as external flood beyond the GDA programme. ONR considers this will result in an inadequate scope of the GDA safety case. ONR will write to Hitachi-GE to follow up this issue.

- Hitachi-GE has informed ONR of their intention to update the internal events Level 1 PSA and power model and documentation to address open issues before the end of 2015. ONR welcomes this as it will provide an improved model and documentation. However, without a clear and detailed identification of the areas of the PSA model and documentation that will be updated, ONR will not be able to plan the detail of the Step 4 review. ONR has requested this information to Hitachi-GE to be provided as soon as possible.
- In order to provide a response to RO-ABWR-0040 and RO-ABWR-0041, Hitachi-GE's PSA teams need a significant amount of information from Hitachi-GE's internal hazards and external hazards teams as well as engineering teams. The lack of information or a delay in providing this information to Hitachi-GE PSA teams will result in an impact on the ability to address regulatory expectations and deliver the PSA according to plan. We have requested Hitachi-GE to provide an update on the progress with this work early in Step 4.

Severe Accident Analysis

- 39 A number of submissions were submitted by Hitachi-GE towards the end of Step 3 and it is our intention that these will be considered in detail in Step 4. This included Hitachi-GE's Venting Strategy Report, and venting during severe accidents has been identified by ONR as a key topic requiring further consideration during Step 4. In addition, a number of Hitachi-GE Severe Accident measures appear to be at the conceptual level; and we will seek further information about when detailed design information is available to enable a meaningful Step 4 assessment. The Severe Accidents Safety Case for shutdown and the Spent Fuel Pool will not be delivered until February 2016, but Hitachi-GE has provided sufficient confidence on this that work is progressing and will be delivered in Step 4.

Fault Studies

- 40 In general, good quality submissions are being provided by Hitachi-GE, and there is a lot of information to commence Step 4. However, against this generally positive outlook, there are two notable shortfalls relating to de-inerted operations and errors in venting dose evaluations. We also note that the associated methodology descriptions of venting doses in the venting strategy report had not been improved from the RO-09 Station Black Out topic report.
- 41 In addition, the early results of the updated PSA have been supplied to ONR. This shows high importances linked to heat sink and Heating Ventilation Air Conditioning (HVAC) faults. ONR will be considering this alongside the response to RO-10, so that we have confidence Hitachi-GE has suitably analysed the functional demands on these support systems and determined appropriate failure frequencies.

Control and Instrumentation (C&I)

- 42 A number of revised Basis of Safety Case documents were delivered at the end of August. ONR provided Hitachi-GE with a view on the adequacy of these during the technical meetings in November, which will be reported on in the next quarterly report.
- 43 Relating to RO-ABWR-0028, a resolution plan and deliverables have been agreed to close this RO. However we have noted that justification of the adequacy of the Human Machine Interface (HMI) design will require Human Factors analysis and design principles to be established before the C&I HMI design can be determined. This is likely to be the subject of a Human Factors RO. A suitable and timely response to this will be necessary to avoid delays in closure of this RO.

Electrical Engineering

- 44 There are no issues to report; all submissions required for Step 3 were assessed as adequate. There are no emerging issues.

Fuel and Core Design

- 45 There are no issues to report. We note that the safety case on cask drop intends to demonstrate cask high integrity, which will remove focus from the fuel assessment towards mechanical engineering and structures.

Reactor Chemistry

- 46 Hitachi-GE submitted a sufficient amount of information necessary for Step 3, although there is now an increased amount of work to be undertaken for Step 4, and Hitachi-GE also needs to produce a Step 4 plan that integrates submissions being produced by other disciplines. At present it is not clear that they will produce and submit all of the evidence required during Step 4. The current plan only focusses on submissions being produced by the chemistry discipline and is not full scope.
- 47 The reactor chemistry PCSR Rev B has been developed using an approach of Claims, Arguments, and Evidence (CAE) as used for other aspects of the UK ABWR safety case. Hitachi-GE needs to undertake additional work to consider if this is the best approach for Reactor Chemistry and present that case to ONR. Whilst the approach has been useful in answering a specific RO and providing the line of sight from Hitachi-GE's safety case strategy to planned activities, we are concerned that the CAE approach may not be fit-for-purpose for producing the narrative required for a PCSR.
- 48 Based on the current scope of work of the team supporting Hitachi-GE, there are no identified conflicts of interest and Hitachi-GE have committed to discuss with ONR should the situation change.
- 49 We are also concerned about the lack of consistency of Hitachi-GE's assumptions across different areas of the safety case i.e. materials selection. Hitachi-GE understands that this is a risk, and has strengthened its internal crosscutting work.

- 50 Recent information on Hitachi-GE's proposed approach to dealing with chemistry effects during accidents has raised concerns that it may not meet regulatory expectations. Hitachi-GE understands this and has discussed it with the regulators, to clarify UK requirements for accident-scenario chemistry.

Radiation Protection

- 51 All radiation protection submissions have been received in line with the plan. However, a number of topic reports including those covering radiation shielding, zoning of areas and worker and public doses have incomplete areas or are yet to be determined. Significantly, until resolution of the Reactor Chemistry RI-ABWR-001 on source terms, the adequacy of all radiological protection submissions and their quality/completeness may be insufficient to undertake a meaningful assessment.

Mechanical Engineering

- 52 Hitachi-GE is making some progress in this area, but there are still some issues with quality. A number of submissions have not met regulatory expectations and we have issued a further five ROs to help clarify. We note that the optioneering studies and risk assessment in particular remain immature, and progress needs to be made quickly. We are encouraged by Hitachi-GE's commissioning of UK consultants to assist in this area and we expect that progress and quality will improve.

Structural Integrity

- 53 Overall progress has been satisfactory within the period and our assessment continues. We note that the submission of some important information has been delayed to Step 4 by Hitachi-GE, although we do not expect the overall programme to be affected at this stage. There are issues of quality within this area and Hitachi-GE's understanding of ALARP in the context of structural engineering remains immature.

Human Factors

- 54 Submissions have been made on time and largely meet expectations. However there is an issue regarding the errors of commission analysis and it does not meet regulatory expectations. Expansion of the scope is required. In addition there are issues with the errors in maintenance report and the high integrity C&I provisions require Human Factors assessment.

Management of Safety and Quality Assurance (MSQA) Arrangements

- 55 MSQA submissions (consisting of the MSQA procedures and processes) have been sufficient to demonstrate that Hitachi-GE has a management system for GDA and for the MSQA assessment.
- 56 Our main issue is for the method and guidance for capturing safety case requirements and assumptions to be available to the safety case development team for use at the start of Step 4.

Radioactive Waste Management

- 57 Hitachi-GE has recently advised the regulators that it is considering a potential change to the liquid waste management system design, including the introduction of treatment using ion-exchange and filtration rather than an evaporator in the High Conductivity Waste (HCW) process flow. Should Hitachi-GE implement this potential change, this would arguably reflect a potential move from a “concentrate and contain” to a “dilute and disperse” approach for this system, and a joint Environment Agency/ONR RQ has been issued to understand.

Decommissioning

- 58 Hitachi-GE has made significant improvements to its organisational arrangements for a dedicated decommissioning resource, using the JSCO and external contractors. In addition, improved arrangements for document production, review, internal approval and issue have been introduced. We consider this positive progress. There are no new or emerging issues to highlight.

Spent Fuel Management

- 59 RO-ABWR-0056 was raised in order to make clear ONR’s expectations regarding the demonstration of optioneering for the removal of spent fuel from the reactor building, which would form part of the overall ALARP justification for the UK ABWR fuel route. In that respect, the response to RO-ABWR-0056 should be used or referenced as part of the broader requirements of RO-ABWR-0011 for a complete safety case for the UK ABWR. ONR expects that a safety case should include an evaluation of the risks arising from faults in facilities by using the techniques of design basis analysis, probabilistic safety analysis, and, if appropriate, severe accident analysis. However, it is not sufficient for Hitachi-GE to simply show compliance with identified risk targets and limits. An important aspect of demonstrating that risks have been reduced so far as is reasonably practicable (SFAIRP) is to use a rigorous optioneering process which has considered the full range of practicable solutions.
- 60 Hitachi-GE's response has included an optioneering report on removal of fuel from the Spent Fuel Pool. We have documented our concerns with this report and further discussions took place during a workshop in November 2015, where Hitachi-GE presented an extensive level of additional information, over a multi-day programme of technical meetings. This will be reported on in the next quarterly report
- 61 We continue to have concern over the ALARP case for removal of Spent Fuel out of the reactor building, with the potential for 20m drop. We recognise, however, that Hitachi-GE will address this issue within its optioneering report. This will be followed up in Step 4.

Security

- 62 The submission of Final Revision B of the Conceptual Security Arrangements (CSA) was submitted on time and to schedule. The quality of the CSA is

satisfactory and provides all of the necessary information for a meaningful assessment at this stage.

63 There are no new or emerging issues.

Environmental

64 Hitachi-GE is considering a potential design change of the Liquid Waste Management System (LWMS) system. Should Hitachi-GE progress this design change, the Best Available Technique (BAT) / ALARP basis for this decision needs to be understood and assessed.

Conventional Safety

65 Assessment continues and the submissions are of a consistent quality. There are no issues of note within the period and no emerging areas of concern.

Fire Safety

66 Recent submissions have improved the position in fire safety, particularly with regard to the justification for some of the departures from building design codes of practice. Adequate progress is being made and there are no emerging issues.

2.10 Forward look

67 Over the coming months we will:

- Move into the detailed technical assessment of Step 4.
- Secure additional resource both internally and through the supply chain to ensure that we are able to meet Hitachi-GE's programme.
- Undertake a cross-cutting workshop in Japan across involving multiple disciplines.
- Focus on influencing the development of a holistic fuel route safety case for the UK ABWR.

3 GDA of the AP1000

3.1 Progress update

- 68 Assessment has gathered pace in the reporting period and progress is being made in a number of areas. The vast majority of GDA Issues are being progressed in a timely manner and there is convergence on the specific requirements for closure of the GDA Issue. Westinghouse has also reported an increase in resource throughout its GDA organisation; at the leadership level, project management and technical team levels. It is also increasing its UK support team, which combined with its in-house reactor expertise is driving improvements in submission quality, which is welcomed by the regulators.
- 69 We also welcome the additional oversight that has been put in place at executive level in Westinghouse, as this provides confidence that additional resource can be secured if required, and that the programme delivery is routinely challenged.
- 70 Within this period the issues relating to the release of information on the initiator element of the squib valves for Mechanical Engineering Issue-01 have been resolved. This allows the GDA Issue to progress, although Westinghouse is continuing to work on recovering the schedule for ME-01. This latter point is proving difficult for Westinghouse and we will work with them on developing a credible schedule for ME-01 that aims to maintain the overall DAC and SoDA date as far as possible.
- 71 There have also been a number of GDA Issue resolution plan schedule re-baselines by Westinghouse. This is concerning as we are entering the final year of the programme, when high quality delivery at pace is paramount. We will continue to monitor the overall programme and report our views on the likelihood of completion in early 2017.
- 72 There are also instances where there is lack of convergence on what is required to close the GDA Issue and negotiations have been protracted. We propose a convergence meeting before the end of the year to finalise the discussions to enable the project to move forward at pace.
- 73 We continue to stress to Westinghouse the importance of right first time, on-time submissions if it is to maintain their desired DAC and SoDA date. The coming period will require an increase in pace and activity, and an absolute focus on GDA Issue closure through enhanced management attention and oversight.
- 74 There are technical issues emerging, which is to be expected as we are now into detailed assessment. However, early agreement on the way forward and a focus on delivery is required to resolve issues as they arise.
- 75 The standard AP1000 plant design has continued to develop, partly in response to construction experience in China and the US. As a result, Westinghouse has proposed a number of design changes to the UK plant and many of these have been submitted for the regulators' consideration as a revision to the Design

Reference Point (DRP). The DRP had previously been fixed, following acceptance of earlier batches of design changes in September 2010 during Step 4. The most significant (in terms of potential consequences for the safety or environment cases) design changes can only be accepted into the scope of GDA by agreement of the regulators. ONR and the Environment Agency are currently considering the batch of design changes included in the proposed revised DRP and will provide a response to Westinghouse as soon as practicable.

76 Within the period the regulators have issued 73 RQs.

3.2 Meetings in period

77 Within the period there were 148 technical meetings and 13 non-technical project meetings.

3.3 International work

78 Our international activity during this period has also included our participation in the 12th meeting of MDEP's AP1000 Working Group (AP1000 WG) in Washington DC. This was a valuable forum to share information and learning on areas of common interest with other international regulators considering the AP1000 reactor design, notably US NRC and the Chinese National Nuclear Safety Administration (NNSA). As part of this meeting, ONR participated in a visit to the VC Summer AP1000 construction site in South Carolina. This provided an opportunity for ONR to see first-hand the innovative modular construction techniques being used for the AP1000 and discuss with both the regulator and licensee the challenges (and advantages) of building reactors in this way.

3.4 Communications

79 Within the period there were no comments posted on the Westinghouse comments website, and zero submitted since the remobilisation of the AP1000 project.

3.5 Technical Support Contracts

80 Between July - October 2015 ONR have let three technical support contracts relating to the AP1000 project:

Topic Area	Contractor Organisation	Value
C&I - The Provision of Control and Instrumentation Technical Review Support for the Close-out of the Westinghouse UK AP1000 C&I GDA Issues	Altran UK	£880,000
C&I - Provision of a Control and Instrumentation Assessor for the Generic Design Assessment of the Westinghouse AP1000 Reactor	Altran UK	£278,000
Internal hazards - TSC Support for the AP1000 GDA Issues Closure - Internal Hazards Assessment	GRS	£165,900

3.6 Summary of regulator charges

AP1000

Office for Nuclear Regulation:

- | | |
|---|--------------|
| ■ Charges for the quarter July – September 2015 | £ 941,817 |
| ■ Cumulative charges: | £ 26,345,203 |

Environment Agency:

- | | |
|--|-------------|
| ■ Charges for the quarter July –September 2015 | £38,811 |
| ■ Cumulative charges: | £ 2,501,891 |

3.7 Forward look

81 Over the coming months we will focus on:

- Resolving the programme issues relating to GDA Issue ME-01.
- Converging on those GDA Issues where agreements have not yet been reached.

3.8 Metrics Summary

GDA Metrics Definitions	
Category 1 (Programme)	Category 2 (Quality of submissions)
<p>Red – Significant slippage against the baseline programme has occurred, with delays highly unlikely to be recoverable. Successful completion of the closure phase in accordance with the Regulators Baseline Programme will require the programme to be re-baselined and the target dates changed (via Change Control).</p> <p>Amber – Some slippage against the baseline programme has occurred, with delays capable of being recovered. Prompt action is required to ensure that there is an improvement in delivery in order to successfully complete the closure phase in accordance with the Regulators Baseline Programme.</p> <p>Green – Activities are generally on plan to successfully deliver the closure phase in accordance with the Regulators Baseline Programme.</p> <p>Blue – Activities are ahead of plan to successfully deliver the closure phase in accordance with the Regulators Baseline Programme.</p>	<p>Red - For the closure phase, submissions are significantly below expectations in terms of scope and/or quality. The Regulators will require significantly improved submissions to support their assessment.</p> <p>Amber - For the closure phase, submissions are below expectations in terms of scope and/or quality. The Regulators will require submissions to be updated/ revised to support their assessment.</p> <p>Green - For the closure phase, submissions have generally met the expected scope and quality.</p> <p>Blue - For the closure phase, submissions have exceeded the expected scope and quality.</p> <p>Grey – No submissions received during the period.</p>

Category 3 (Quality of interactions)	Category 4 (GDA Issues progress)
<p>Red – Communications and interactions have been significantly below expectations, in terms of clarity, openness, or technical content, This has resulted in a high degree of ambiguity and/or a lack of confidence in the other parties’ intentions. The values in the RNIP have been compromised.</p> <p>Amber - Communications and interactions have been below expectations in terms of clarity, openness, timeliness or technical content, This has resulted in a degree of ambiguity and a lack of confidence in the other parties’ intentions. Some aspects of the RNIP have been challenged</p> <p>Green - Communications and interactions have met expectations, resulting in confidence in the other parties’ intentions.</p> <p>Blue – Communications and interactions have exceeded expectations, resulting in a high degree of confidence in the other parties’ intentions</p>	<p>Red - Submissions are not addressing the GDA Issue and immediate action is required to enable closure. There is a high risk that further GDA Issue Actions or GDA Issues may be raised.</p> <p>Amber - Submissions are not fully addressing the GDA Issue and action may be required to enable closure. There is a risk that further GDA Issue Actions or GDA Issues may be raised.</p> <p>Green - Submissions are addressing the GDA Issue and closure appears likely.</p> <p>Blue - Submissions have addressed the GDA Issue and the GDA Issue has been closed.</p>

	CSI				Fault Studies				Internal Islands				Structural Integrity				Civil Engineering				Full Scope Design				Mechanical Engineering				Reactor Chemistry									
Category 1 - Programme	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 2 - Submissions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 3 - interactions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 4 - GDA Issue 10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						
Category 5 - Emerging Issues	J	N	N	N	O	Y	Y	Y	Y	Y	Y	Y	Y	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O

	FSA				Electrical Engineering				Radiological Protection				Human Factors				Cross-Quiry1				Cross-Quiry2				Cross-Quiry3										
Category 1 - Programme	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 2 - Submissions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 3 - interactions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 4 - GDA Issue 10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
Category 5 - Emerging Issues	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O	J	N	N	N	O

3.9 Metrics Detail

Civil Engineering

82 The submissions received have been at a summary level only and will require underpinning evidence to support them. We have no schedule issues or emerging concerns in this area.

Structural Integrity

83 We await revised schedules for SI01 and SI06.

84 There are delays in completing the fracture assessment work, which is important as the assessments are required to inform the reconciliation task for SI01. At present the inputs from the fracture assessment would not be available prior to the reconciliation and so closure within the GDA timescale is currently not achievable. For SI06 the way forward to close-out the Reactor Coolant Pump (RCP) bowl missile interaction with the Steam Generator (SG) vertical support remains uncertain. Westinghouse is investigating several options and is now proposing work in parallel rather than sequence.

Mechanical Engineering

85 The challenges in regards to ME-01 and slippage of the delivery programme continue. A number of RQs have been extended, with one RQ date now extending beyond 12 months from the time of issue. Recovery of these timescales (now approx. seven months for the project scope) will be very difficult. Westinghouse is in the progress of developing a revised recovery schedule, although we are concerned that this Issue may impact the overall DAC and SoDA date.

86 There is also slippage in the delivery of ME-02, albeit relatively small and partly due to ONR availability, however, the trend is now beginning to show in this area which is concerning. Equally, in ME-03 we understand that resources have been removed from this area to meet demands in ME-01 and other Westinghouse projects, and hence there is an increasing potential that this will impact delivery and agreed submission dates.

Electrical Engineering

87 The Basis of Safety Case document and RQ response on the status of compliance with the UK Grid Code have not met ONR expectations. We have outlined our points of concern and Westinghouse is currently revising the submissions. The impact on the Westinghouse baseline programme has still to be determined, but the closure date is likely to be impacted.

Control and Instrumentation

88 There have been a number of submission delays in this area. Cumulatively of the 40 submissions identified on the resolution plan, 12 have now been delayed. Westinghouse does not believe that the delays will affect the critical path to

closure of the C&I GDA Issues. We will continue to monitor the situation. In addition a number of the submissions will require revision following assessment and our raising of RQs.

Fault Studies

- 89 A review of the delivery schedule was undertaken in September by Westinghouse and ONR. There are delays/changes to the original resolution plans but technical progress is going well; revised dates are understood and closure of individual GDA Issues should be in line with PCSR chapter update strategies. We have received submissions for assessment and we have concerns with some of the claims and arguments being made, which we will follow up in subsequent interactions. In addition, the LOCA safety case has raised concerns across fault studies, fuel and core and structural integrity.

Fuel and Core

- 90 We intend to close out FD01 imminently.
- 91 Analysis on FD02 is progressing satisfactorily although we await a revised submission with results. Westinghouse has acted on the outcome of regulatory discussions for FD03, but further work is needed to provide adequate safety justification. In addition we have advised that Westinghouse need to engage on interim spent fuel storage in the context of pond sizing.

Human Factors

- 92 Both the DCP reviews and the review of the other non-Human Factors 50 GDA issues (performed to determine what Human Factors support work will be required) are now complete. The DCP review has been issued to ONR, and whilst not fully meeting our expectations, the work required to update the document to meet expectations is manageable.
- 93 The programme impact of the work scope identified by the DCP and GDA issue reviews has yet to be determined by Westinghouse.

Reactor Chemistry

- 94 Westinghouse is proposing a three month extension to the current programme of work in relation to RC 02 (primary sampling system). We do not foresee this extension having any impact on the overall programme,
- 95 Further work will be necessary on or in relation to submissions for RC02 and RC03, which have been captured by RQs and feedback given to Westinghouse at Level 4 meetings. Westinghouse has been advised that its current approach of ALARP justifications for not implementing several design changes in relation to RC02 would not meet regulatory expectations. However we are encouraged by the fact that Westinghouse has now committed to extend its programme by three months in order to conduct extra work on this Issue.
- 96 Westinghouse has committed to respond to RQ's in relation to RC02 and RC03 in revised submissions for each at the end of October 2015.

Internal Hazards

- 97 The Westinghouse submissions are largely in line with its baseline programme of submissions. Westinghouse is proposing to transfer more of the work scope to its TSC who appear to be familiar with ONR's regulatory expectations.
- 98 Westinghouse has made significant progress in resolving the six Internal Hazard GDA issues, with resolution in some topic areas better than others. However there is a need to clarify the suitability and sufficiency of the methodologies being used, undertake sensitivity analysis where appropriate, consider cross-cutting impacts, take account for any operational experience or new learning from global incidents, clarify the basis of design, define and justify claims and arguments and supporting evidence, and provide a hazard schedule.
- 99 The Internal Flooding Topic Report did not meet ONR's regulatory expectations; Westinghouse is utilising different acceptance criteria for the purposes of internal hazards pressure part failure to those used for structural integrity. They will develop a paper detailing their position and logic on the use of leak before break and other aspects within internal hazards.

PSA

- 100 Completion of ONR's assessment of PSA-01 is slower than expected. However, there is sufficient float in the programme to accommodate this. The submissions to date appear adequate, although a number of the initial reports assessed have lacked detail and needed updating by Westinghouse. Westinghouse has started a new Human Factors / Human Reliability Analyses (HRA) task to support the PSA Issues and HF-01, which is welcome.

Radiological Protection

- 101 Westinghouse has presented the main submission in this area – the ALARP assessment, and our initial assessment queries have been captured in an RQ. The ALARP option proposed by Westinghouse presents potential challenges on permitted fuel cooling prior to a need for export from the spent fuel pond. We continue to discuss this together with fuel and core colleagues.

GI-AP1000-CC-01 Limits and conditions

There are currently no indications that this GDA Issue cannot be closed in an acceptable and timely manner.

GI-AP1000-CC-02 PCSR to support GDA

- 102 Based on the PCSR strategy letters, satisfactory individual PCSR chapters should be achievable by mid-2016 - which will facilitate the delivery of a consolidated PCSR within the target schedule. Progress with key chapters requiring major changes will be monitored carefully in the coming months.

GI-AP1000-CC-03 Consider and action plans to address the lessons learned from the Fukushima event

- 103 Overall, the performance of Westinghouse so far indicates that this GDA Issue can be closed by the agreed date.
- 104 However there are two emerging issues: the Human Factors work associated with this GDA Issue is on the critical path, but Westinghouse has two teams working in parallel to mitigate this risk. In addition there is a concern regarding the predicted control room temperature following loss of nuclear island non-radioactive ventilation system, and RQ-AP1000-1419 has been submitted requesting further information.

3.10 Forward look

- 105 The next period will focus on:
- Convergence on the detailed scope required to address GDA Issues in particular areas.
 - Agreeing a credible programme for ME-01 and a regulatory way forward.
 - Progressing assessment and identifying emerging issues as soon as practicable.