

Westinghouse UK
AP1000® GENERIC DESIGN ASSESSMENT
Resolution Plan for GI-AP1000-FS-01
Spent Fuel Safety Case

MAIN ASSESSMENT AREA	RELATED ASSESSMENT AREA(S)	RESOLUTION PLAN REVISION	GDA ISSUE REVISION
Fault Studies	Electrical Engineering Mechanical Engineering PSA	4	0

GDA ISSUE:	The design basis case developed in GDA Step 4 for the spent fuel pool for the Fault Studies topic area needs to be cascaded into other technical areas and any new claims clearly identified in the PCSR. The design change process needs to be followed to incorporate the various physical modifications identified and all the affected documents need to be updated. Fault Studies concerns on the availability of the RNS and the protection of fuel above the spent fuel racks are to be addressed.
ACTION: GI-AP1000-FS-01.A1	Westinghouse to identify the impact of the new spent fuel pool safety case on relevant sections of the PCSR and report / discuss the implications with the relevant ONR topic leads in an appropriate manner. It is likely that Westinghouse will need to provide supplementary information to allow ONR to consider in detail the specifics of the design changes and the capability of SSCs to deliver newly identified safety functions. Westinghouse to revise the PCSR and other affected documents to reflect the updated safety case and all new safety claims. With agreement from the Regulator this action may be completed by alternative means.
ACTION: GI-AP1000-FS-01.A2	Westinghouse to complete the design change process for the identified modifications to the spent fuel pool active cooling system and blow out panels. The proposed design changes are to provide an engineered connection from the fire fighting system to supply cooling water to the CCW heat exchanger and to add filters to the ventilation blowout panels on the spent fuel pool. These modifications will limit the frequency of pool boiling to less than 10 ⁻³ per year and meet ONR's expectations on ventilation and preservation of barriers set out in SAPs ECV.1, ECV.2 and FA.7.

	<p>These design changes need to be complete the six-stage modification process for inclusion in the consolidated PCSR.</p> <p>With agreement from the Regulator this action may be completed by alternative means.</p>
<p>ACTION: GI-AP1000-FS-01.A3</p>	<p>Westinghouse to update the relevant parts of the safety case to address outstanding concerns on the consequences of a fault occurring while fuel is being moved above the racks, and on competing claims in the availability of the RNS.</p> <p>The safety case provided for the Spent Fuel Pool does not adequately address the consequences of faults occurring while fuel is being moved above the racks. It is also not clear if it is planned for the RNS to be available without restriction for spent fuel pool cooling in response to operational requirements, or if its use will be subject to time constraints defined by Technical Specification. This has relevance for the GDA Issue on the RNS design for RCS safety injection following a LOCA (GI-AP1000-FS-05). No safety claims were made on the function of the RNS in the EDCD other than for its piping to retain its integrity. However, as a result of Step 4 Regulatory Observation responses, claims are now made in the UK safety case for both the reactor and the spent fuel pool. Further information is therefore required from Westinghouse to identify if competing claims are of concern.</p> <p>With agreement from the Regulator this action may be completed by alternative means.</p>
<p>RELEVANT REFERENCE DOCUMENTATION RELATED TO GDA ISSUE</p>	
<p>Technical Queries</p>	
<p>Regulatory Observations</p>	
<p>Other Documentation</p>	<p>UKP-GW-GL-077 UKP-GW-GL-793</p>

<p>Scope of work:</p>
<p>Westinghouse will work closely with the ONR to ensure the design basis safety case for the spent fuel pool has been properly assessed and finalised in all applicable technical areas. This includes providing a detailed description of the design changes implemented at the end of the Step 4 review and justifying their incorporation into the safety case; expanding the discussion on the availability of the RNS in order to clear up competing claims; and addressing outstanding concerns on the consequences of a fault occurring while fuel is being moved above the racks.</p>

Description of work:

In order to complete the spent fuel pool safety case, Westinghouse will update the spent fuel pool fault Section in Chapter 9 of the PCSR to expand on the discussion regarding the consequences of faults occurring while fuel is being moved above the racks. A subsection will be added to both the loss spent fuel pool cooling and loss of spent fuel pool inventory sections.

Furthermore, a more detailed explanation about the availability of the RNS system to support the safety claims of the spent fuel pool. This issue will be resolved in parallel to the resolution of the GDA Issue on the RNS design for RCS safety injection following a LOCA (GI-**AP1000**-FS-05). The availability of the RNS system for spent fuel pool cooling will be clarified in the response so that there is no confusion and overlap in regards to the claims on the RNS system for RCS and SFS safety cases.

The two DCPs that have been approved and are now part of the safety case for the spent fuel pool will be formally submitted to the ONR for inclusion in GDA. A letter and report describing the details of the modifications will be supplied to the ONR to provide a detailed description of the design changes implemented and accepted within the GDA review in accordance with the six-stage modification process for inclusion in the consolidated PCSR. A meeting with the ONR will be held to make certain the description of the modifications and relationship to the safety claims are consistent with the regulator's understanding and that the modifications do indeed deliver the identified safety functions in the response to RO-**AP1000**-54.

Finally, once the above actions are completed, the design basis safety case will be complete for the spent fuel pool, with all of the ONR's comments and concerns incorporated into the response to RO-**AP1000**-54. As stated by the ONR, it is then necessary to identify the impact of the spent fuel pool safety case on relevant sections of the PCSR and discuss the implications with the relevant ONR technical lead in an appropriate manner. This action will be completed by performing a complete and systematic review of the safety claims included in the final spent fuel pool safety case, and then mapping to the sections in the PCSR that provide the supporting arguments and evidence, to thus confirm in a systematic manner that the final safety case is correctly connected to other portions of the PCSR and that all cross-cutting issues have been fully addressed. If a gap exists, Westinghouse will identify the gap and work with the respective ONR technical lead to ensure the supporting arguments and evidence for the spent fuel pool safety claims have been incorporated into the relevant sections of the PCSR.

Spent fuel pool faults will be clearly identified and populated in the Fault Schedule.

The completion of the above tasks will result in a complete and agreed upon safety case for the spent fuel pool that has been satisfactorily consolidated into all necessary sections of the PCSR.

Schedule/ programme milestones:

Please see the following page for the schedule.

#	Activity Name	2015												2016												2017
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	UK Generic Design Assessment (GDA) Resolution Plans (51) **LIVE**																									
2	FAULT STUDIES																									
3	FS.01 Spent Fuel Pool Safety Case-Resolution Plan																									
4	FS.01 Approved DCPs																									
5	DCP 2070 & 2517 - Submit to ONR																									
6	DCP 2070 & 2517 - ONR Review of Submittal																									
7	FS.01 DCP APP-GW-GEE-5151																									
8	FS.01 DCP-Submit to ONR																									
9	FS.01 DCP-ONR Review of Submittal																									
10	FS.01 Create UKP-FHS-M3C-XXX Rev.0																									
11	UKP-FHS-M3C-XXX Rev.0-Submit to ONR																									
12	UKP-FHS-M3C-XXX Rev.0-ONR Review of Submittal																									
13	FS.01 ALARA Letter																									
14	ALARA Letter Rev.0-Submit to ONR																									
15	ALARA Letter Rev.0-ONR Review of Submittal																									
16	FS.01 Provide Update to Spent Fuel Pool Faults Response-UKP-GW-GL-077 Rev.1																									
17	UKP-GW-GL-077 Rev.1-Spent Fuel Pool Faults Response - Submit to ONR																									
18	UKP-GW-GL-077 Rev.1-Spent Fuel Pool Faults Response - ONR Review of Submittal																									

Methodology:

The spent fuel pool safety claims, as presented in the PCSR, will be reviewed in detail to:

- 1) Identify if there are arguments and evidence that reference other sections of the PCSR.
 - a. Referenced sections will be reviewed to ensure that the arguments and evidence and associated safety claims are properly addressed in the various technical areas
- 2) Identify if there are arguments and evidence that should be incorporated and referenced in other PCSR sections
 - a. Initiate a meeting with the ONR technical lead for the relevant technical area to discuss how to close the gap
 - b. Review the Fault Schedule to verify that all spent fuel pool faults are incorporated.

The DCP letter and additional detail on RNS availability claims and potential faults when fuel is being moved above the racks is self explanatory and does not require any new methodology.

Justification of adequacy:

The above description of work outlines how Westinghouse will directly address the ONR's concerns reported in GI-**AP1000**-FS-01.

Impact assessment:

The following documents are anticipated to be affected:

- PCSR, Chapter 9.11 and any other areas identified as needing to be updated to identify supporting information for spent fuel pool claims
- PCSR, Chapter 8 Fault Schedule
- UKP-GW-GL-077
- DCP Submittal Letter