

Westinghouse UK
AP1000® GENERIC DESIGN ASSESSMENT
Resolution Plan for GI-AP1000-HF1
Completeness of the Human Factors Safety Case

| MAIN ASSESSMENT AREA | RELATED ASSESSMENT AREA(S) | RESOLUTION PLAN REVISION | GDA ISSUE REVISION |
|-----------------------------|-----------------------------------|---------------------------------|---------------------------|
| Human Factors | - | 1 | 0 |

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| GDA ISSUE: | Completeness of the Human Factors Safety Case, specifically in the areas of human error mechanisms, operator misdiagnosis potential and violation potential. |
| ACTION: GI-AP1000-HF-01.A1 | <p>Westinghouse submitted a significant volume of important HF analysis towards the end of GDA Step 4 relating to human error mechanisms, operator misdiagnosis and violation potential. ONR undertook a very high review of the submission to gain confidence in the approach, but was unable to undertake a detailed and thorough assessment within the Step 4 timescales.</p> <p>This GDA Issue Action requires Westinghouse to support ONR's full assessment of this submission; specifically Westinghouse should:</p> <ul style="list-style-type: none"> • Provide adequate responses to questions raised from ONR assessment of documents submitted during Step 4. <p>With agreement from the Regulator this action may be completed by alternative means.</p> |

RELEVANT REFERENCE DOCUMENTATION RELATED TO GDA ISSUE

Technical Queries

| TQ and Subject | Response Date | Status |
|---|---------------|-----------------------------|
| TQ-AP1000-1278 - Changes made to the Human Factors Safety Case since issue of Revision A of the PCSR | 4 Feb 2011 | Closed - Full Response Sent |
| TQ-AP1000-1177 - HF issue tracking and resolution (TQ-AP1000-908 follow on) | 16 Dec 2010 | Closed - Full Response Sent |
| TQ-AP1000-1163-Fire arrangements | 26 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1144-Queries relating to Supplemental Submission 'Potential Improvements as proposed in the ALARP analysis' | 13 Dec 2010 | Closed - Full Response Sent |
| TQ-AP1000-1143-Overarching ALARP approach | 10 Dec 2010 | Closed - Full Response Sent |
| TQ-AP1000-1133 - Aligning CVS to aux spray | 15 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1131 - Computer formats | 26 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1129 - Temperatures and atmospheric conditions | 17 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1128 - Local-to-Plant Controls | 30 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1126 - Maintenance task target times | 15 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1112 - Maintenance - Adjunct/Peripheral Systems | 23 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1111 - Maintainability Guidelines | 24 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1110 - Maintenance consideration in OEF reviews | 24 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1096 - FLISM Operator Action time | 28 Oct 2010 | Closed - Full Response Sent |
| TQ-AP1000-1095 - Changes to EOP E-3, APP-GW-GJP-204 | 15 Oct 2010 | Closed - Full Response Sent |
| TQ-AP1000-1084 - SQUIB Valve HF Issues | 17 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1083 - Normal and passive RHR issues | 28 Oct 2010 | Closed - Full Response Sent |
| TQ-AP1000-1082 - Relative humidity information | 2 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1081 - Deterioration of lighting levels | 5 Nov 2010 | Closed - Full Response Sent |
| TQ-AP1000-1080 - Operator action times | 15 Oct 2010 | Closed - Full Response Sent |
| TQ-AP1000-1004 - Anthropometric Data | 30 Oct 2010 | Closed - Full Response Sent |
| TQ-AP1000-908 - HF Issues List | 15 Oct 2010 | Closed - Full Response Sent |
| TQ-EPR-901 - Dissemination of Human Factors guidance to suppliers | 8 Oct 2010 | Closed - Full Response Sent |
| TQ-AP1000-900 - Human Factors organisation | 8 Oct 2010 | Closed - Full Response Sent |
| TQ-AP1000-660 - Tailoring AP1000 to UK national requirements | 22 Nov 2010 | Closed - Full Response Sent |

Regulatory Observations

RO-AP1000-90
RO-AP1000-96
RO-AP1000-97

Other Documentation

| Document Identification | Date | Title | Subject Matter |
|-------------------------|------------------|---|---|
| UN REG WEC 000464 | 30 December 2010 | Westinghouse AP1000 Human Factors Document Submission | UKP-GW-GL-075, Revision 0; "United Kingdom AP1000 Supplemental Information for the UK AP1000 Human Factors Safety Case – Additional UK Fault Schedule Faults" |
| UN REG WEC 000453 | 17 December 2010 | Westinghouse Response to Regulatory Observations RO-AP1000-90, RO-AP1000-96, and RO-AP1000-97 | UKP-GW-GL-076, revision 0; "United Kingdom AP1000 Supplemental Information for the UK AP1000 Human Factors Safety Case – Operator Error Mechanisms" |
| UN REG WEC 000476 | 16 December 2010 | Submittal of UKP-GW-GL-144 Revision 1 | UKP-GW-GL-144, Rev. 1; "AP1000 UK Safety Categorization and Classification of Systems, Structures, and Components" |

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| | UN REG WEC 000475 | 16 December 2010 | Revised C&I GDA Scope | High-level scope statement for the GDA for the AP1000 C&I application and platforms |
| | UN REG WEC 000438 | 2 December 2010 | Westinghouse AP1000 Human Factors Document Submission | UKP-GW-GL-074, Rev 0; “Supplemental Information for the UK AP1000 Human Factors Safety Case - AP1000 Maintainability” |
| | UN REG WEC 000418, | 4 November 2010 | Westinghouse AP1000 Human Factors Document Submission | UKP-GW-GL-069, Revision 0; “United Kingdom AP1000 Supplemental Information for the UK AP1000 Human Factors Safety Case as Reflecting the UK AP1000 PRA Update” |
| | UN REG WEC 000377 | 1 October 2010 | Westinghouse AP1000 Human Factors Document Submission: “ AP1000 Local Panels and Maintainability HFE Assessment” | APP-OCS-JCR-001, Rev A; AP1000 Local Panels and Maintainability HFE Assessment” |
| | UN REG WEC 000150 | 26 February 2010 | Westinghouse AP1000 Human Factors Safety Case Submission | UKP-GW-GL-042, Rev. 1; “ AP1000 Human Factors Program and Assessment for the United Kingdom” |

Scope of Work:

In acknowledgement of ONR's continuing assessment of the **AP1000**[®] Human Factors Safety Case, the scope of work associated with this Resolution Plan is defined as Westinghouse's facilitation of the ONR review through appropriate and timely responses to Technical Queries, attendance at meetings, and provision of requested supporting documentation.

Description of Work:

Westinghouse shall formally respond to ONR-supplied Technical Queries as documented through the normal GDA processes, actively participate in subject meetings and telephone conferences, and provide relevant supporting technical documentation.

Schedule / Programme Milestones:

The schedule for this Scope of Work is dependant upon the ONR review activities; however, it is expected that the total assessment completion and corresponding Westinghouse support period shall be within 4 calendar months of the ONR review initiation.

Methodology:

Westinghouse responses to ONR Technical Queries and provision of supporting documents

shall be based on existing relevant technical information and in accordance with the existing GDA processes. Further, meetings and conferences shall be held on a Level 4 basis as defined by existing GDA processes.

Justification of Adequacy:

The previously supplied body of supporting information to the **AP1000** Human Factors Safety Case was designed and developed to augment the original Safety Case submission. As such, this information reflected Westinghouse's response to the relevant Regulatory Observations as identified above. The scope of work identified herein provides the same level of support to the ONR assessment as during the Step 4 GDA activities.

Impact Assessment:

As the Safety Case augmentation to be reviewed addresses each of the Regulatory Observations, minimal impact to the existing **AP1000** Human Factors Safety Case is expected.