

Westinghouse UK
AP1000® GENERIC DESIGN ASSESSMENT
Resolution Plan for GI-AP1000-ME-02
Metrication of Mechanical Equipment and Civil Structural Steelwork
Connections

| MAIN ASSESSMENT AREA | RELATED ASSESSMENT AREA(S) | RESOLUTION PLAN REVISION | GDA ISSUE REVISION |
|--|----------------------------|--------------------------|--------------------|
| Mechanical Engineering/ Civil Engineering | Transverse | 4 | 1 |

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| GDA ISSUE: | <p>The Guidance to Requesting Parties requires that documents submitted for GDA use SI units. As a corollary it is the expectation that the design submitted by the Requesting Party is essentially metric, using metric Structures, Systems and Components. ONR has provided advice to clarify the detail of its expectations, and to allow variation from this expectation for a limited, controlled, and justified sub-set of equipment.</p> <p>ONR does not consider that Westinghouse has satisfactorily met this expectation for mechanical equipment and associated systems. This issue also affects civil structural steelwork.</p> |
| ACTION: GI-AP1000-ME-02.A1 | <p>Provide an updated response to document titled ‘AP1000® Standard Plant Metrication, APP-GW-G1-011’, to reflect the guidance provided by ONR. Westinghouse should commit to re-designing equipment in line with the guidance, or provide a more rigorous justification (which aligns with the guidance provided) as to why they consider equipment should be an exception to metrication. With agreement from the Regulator this action may be completed by alternative means.</p> |
| ACTION: GI-AP1000-ME-02.A2 | <p>Provide an updated response to document titled ‘AP1000 Standard Plant Metrication, APP-GW-G1-011 Rev 3’ to explicitly list the exclusions from metrication for Civil Steelwork SSCs. This should include Westinghouse’s intention for all the component parts of structural steelwork connections. It is accepted that the generic design for permanent civil steel structures is based on imperial sections (and materials). However, the exceptions listed in Table A-1 of APP-GW-G1-011 Rev 3 do not clearly define what approach will be used for the design of the detailed connections which will be carried out by local suppliers. The widescale used of imperial bolting / fastenings is not acceptable. Although strict quality control during construction can be adopted, there is an increased risk of last minute substitutions with locally supplied, metric bolts. APP-GW-G1-011 Rev 3 does not confirm whether the</p> |

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| | <p>supplier's design will be quasi metric and or in imperial. The update of this document should clarify Westinghouse's intentions on this, and discuss the effects if the other approach is used.</p> <p>With agreement from the Regulator this action may be completed by alternative means.</p> |
| RELEVANT REFERENCE DOCUMENTATION RELATED TO GDA ISSUE | |
| Technical Queries | N/A |
| Regulatory Observations | RO- AP1000 -38 - Metrication of AP1000 for the UK |
| Other Documentation | <p>Step 3 & 4 Mechanical Engineering Assessment of the Westinghouse AP1000</p> <p>SAPs EMT series</p> <p>APP-GW-G1-011 - AP1000 Standard Plant Metrication</p> |

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| Scope of work: |
| <p>Westinghouse is requested to provide an updated version of APP-GW-G1-011, "AP1000 Standard Plant Metrication" to provide more rigorous justification of the metrication exceptions for the use of Imperial fasteners and bolts and the use of imperial units in design analysis work. In addition, Westinghouse is requested to explicitly list the exclusions from metrication for Civil Steelwork SSCs.</p> |

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| Description of work: |
| <p>Westinghouse provided APP-GW-G1-011, Revision 4 on 25 February 2011. This revision includes resolution of the remaining open items from Revision 3 and an expanded and clarified discussion of the design analyses exception. Westinghouse will subsequently revise this report to Revision 5. Westinghouse requests that the ONR assess Revision 5 when complete.</p> <p>After Westinghouse reviews the ONR's assessment of Revision 5, a meeting(s) will be organised to discuss the Westinghouse position on metrication and justification of exceptions as well as the comments received from ONR.</p> <p>As such, APP-GW-G1-011 may be revised as appropriate to incorporate the resolutions that come from the meeting(s). Other Westinghouse documents will be revised as identified to be necessary. Subsequent to agreement on the metrication approach, a formal design change proposal (DCP) to the AP1000 design will be completed to update the design criteria for the plant.</p> |

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| Schedule/ programme milestones: |
| Please see the following page for the detailed schedule. |

| Activity Name | 2015 | | | | | | | | | | | | NPP-001075 | | | | | | | | | | | |
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| | D | Jan | F | M | Apr | M | Jun | Jul | A | S | Oct | N | D | Jan | F | M | Apr | M | J | Enclosure | Oct | N | D | |
| BL6-02262016 - UK Generic Design Assessment (GDA) Resolution Plans (51) | | | | | | | | | | | | | | | | | | | | | | | | |
| MECHANICAL ENGINEERING | | | | | | | | | | | | | | | | | | | | | | | | |
| ME.02 Metrication of Mechanical Equipment & Civil Structural Steelwork Connections-Resolution Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| ME.02 WEC Create APP-GW-G1-011 Rev.5 | | | | | | | | | | | | | | | | | | | | | | | | |
| APP-GW-G1-011 Rev.5-Submit to ONR | | | | | | | | | | | | | | | | | | | | | | | | |
| APP-GW-G1-011 Rev.5-ONR Review of Submittal | | | | | | | | | | | | | | | | | | | | | | | | |
| WEC/ONR Meeting to Discuss and Resolve Comments | | | | | | | | | | | | | | | | | | | | | | | | |
| ME.02 WEC Revise APP-GW-G1-011 to Rev.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| APP-GW-G1-011 to Rev.6-Submit to ONR | | | | | | | | | | | | | | | | | | | | | | | | |
| APP-GW-G1-011 to Rev.6-ONR Review of Submittal | | | | | | | | | | | | | | | | | | | | | | | | |
| ME.02 WEC Revise APP-GW-G1-011 to Rev.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| APP-GW-G1-011 to Rev 7 - Submit to ONR | | | | | | | | | | | | | | | | | | | | | | | | |
| APP-GW-G1-011 to Rev 7 - ONR Review of Submittal | | | | | | | | | | | | | | | | | | | | | | | | |

Methodology:

See the Description of Work.

Justification of adequacy:

Westinghouse will address all identified open issues related to metrication in APP-GW-G1-011, Revision 5 and all comments provided by ONR per letters WEC70243R and WEC70251N, and during the December Level 4 mechanical engineering meeting. Once the ONR has assessed APP-GW-G1-011, Revision 5 Westinghouse and the ONR will hold a meeting(s) to discuss open issues and bring this GDA issue to closure. As such, APP-GW-G1-011 may be revised as appropriate to incorporate the resolutions that come from the meetings. Other Westinghouse documents will be revised as identified to be necessary.

Impact assessment:

The following documents are anticipated to be effected:

- Master Submission List
- Roadmap
- APP-GW-G1-011