Office for Nuclear Regulation

An agency of HSE

Redgrave Court Merton Road Bootle Merseyside L20 7HS
Tel: 0151 951 4000 www.hse.gov.uk/nuclear

# WESTINGHOUSE AP1000® GENERIC DESIGN ASSESSMENT
# GDA ISSUE
# VALIDATION OF THE IRWST COOLING FUNCTION FOR THE PRHR
# GI-AP1000-FS-06 REVISION 0

| | | | |
|---|---|---|---|
| **Technical Area** | **FAULT STUDIES** | | |
| **Related Technical Areas** | Probabilistic Safety Assessment | | |
| **GDA Issue Reference** | **GI-AP1000-FS-06** | **GDA Issue Action Reference** | **GI-AP1000-FS-06.A1** |
| **GDA Issue** | Westinghouse is to provide validation evidence that the IRWST is functionally capable cooling the passive residual heat removal (PRHR) during intact circuit faults for 72 hours. | | |
| **GDA Issue Action** | • Westinghouse is to provide validation evidence that the IRWST is functionally capable cooling the passive residual heat removal (PRHR) during intact circuit faults for 72 hours.<br>Or<br>• Propose a design change to rectify the situation.<br>No design basis transient analysis is presented within the DCD to demonstrate that the IRWST and PCS has the functional capability to act as an adequate heat sink to the PRHR when the latter is performing its post-trip heat removal safety function following an intact circuit fault. For this reason, Westinghouse is to provide explicit transient analysis using design basis techniques to demonstrate the functional capability of these systems. If relevant, Westinghouse needs to identify any bounding single failure.<br>The analysis needs to be performed on a conservative basis with justification given for any modelling assumptions. Where possible, the analytical models should be validated by comparison with appropriate experiments or tests. The validation should be of the model as a whole or, where this is not practicable, on a module basis, against experiments that represent as closely as possible the expected plant conditions. Interpretation of experiments should take account of uncertainties in replicating the range of anticipated plant conditions. The limits of applicability of any analytical model should be identified.<br>In particular, Westinghouse is required to provide validation evidence supporting the claimed condensate return efficiency of 95% to the IRWST and to demonstrate that the effect of containment pressure on the effectiveness of the IRWST cooling function for the PRHR has been taken into account in the safety analysis for loss of feed faults. The resultant transient analysis studies will need to be incorporated within the PCSR.<br>With agreement from the Regulator this action may be completed by alternative means. | | |