Office for Nuclear Regulation

An agency of HSE

Redgrave Court Merton Road Bootle Merseyside L20 7HS
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WESTINGHOUSE AP1000® GENERIC DESIGN ASSESSMENT

GDA ISSUE

PRIMARY SAMPLING SYSTEMS

GI-AP1000-RC-02 REVISION 0

Technical Area	**REACTOR CHEMISTRY**		
Related Technical Areas	Mechanical Engineering Radiation Protection		
GDA Issue Reference	**GI-AP1000-RC-02**	**GDA Issue Action Reference**	**GI-AP1000-RC-02.A1**
GDA Issue	Demonstrate that the sampling arrangements for the primary circuit and connected auxiliary systems of AP1000 are adequate to support safe operation of the plant.		
GDA Issue Action	Westinghouse to provide a detailed schedule of sampling required to support operation of AP1000. This schedule should include consideration of all modes of operation and should consider: • Parameters to be measured from which location and the frequency of sampling. • The schedule should be clearly linked back to the safety case. • Where the sample is expected to be collected (i.e. using the Grab Sample Panel (GSP), radiochemical laboratory or local provisions). • Primary circuit and auxiliaries, including but not limited to the Spent Fuel Pool and Waste Liquid System (WLS). The details should be specific to AP1000 and any differences in plant design; reference to industry guidelines is not a sufficient response in itself. With agreement from the Regulator this action may be completed by alternative means.		

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Technical Area		**REACTOR CHEMISTRY**	
Related Technical Areas		Mechanical Engineering Radiation Protection	
GDA Issue Reference	**GI-AP1000-RC-02**	**GDA Issue Action Reference**	**GI-AP1000-RC-02.A2**
GDA Issue Action	Westinghouse to provide a justification and evidence that the primary sampling systems (PSS) in AP1000 will support the sampling schedule delivered under A1. The response by Westinghouse should consider: • Specific features of the AP1000 design, such as the location of cooling provisions and the maintenance of high pressure lines. • The effect of recent design changes on system performance should be considered, for example the reduction in line diameter. • Specific consideration should be given to representative sampling of zinc, corrosion products and hydrogen. • A justification should be given to which sample lines are or are not included in the PSS, specifically why backup cooling systems are not sampled through the PSS and why the design of AP1000 does not include an inlet sample from the Chemical Volume control System (CVS). • Justification and evidence should be given on the use of a GSP, as opposed to a ventilated enclosure (as expected in the SAPs ECV 1 - ECV1 – 10 and associated paragraphs), and sampling provisions outside of the GSP (i.e. as currently for some systems and not others). • Justification should be provided for not including a boron meter as a means of continuously monitoring the coolant boron concentration now that a design change to flowing samples has been included. • The impact of the design change on the served and dependant systems should be clearly reviewed and documented (for example, the impact of increased PSS flow on the WLS input or CVS make-up requirements). • Evidence should be provided to demonstrate that waste generation of the system is within the safety case and that the design has sufficient redundancy to accommodate operational transients. With agreement from the Regulator this action may be completed by alternative means.		