

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

MECHANICAL SYSTEM PIPEWORK DESIGN

GI-AP1000-ME-03 REVISION 0

Technical Area		MECHANICAL ENGINEERING	
Related Technical Areas		Structural Integrity Radiation Protection Radioactive Waste and Decommissioning Environment Agency	
GDA Issue Reference	GI-AP1000-ME-03	GDA Issue Action Reference	GI-AP1000-ME-03.A1
GDA Issue	Westinghouse is required to provide further justification for the pipework design of the AP1000 for systems important to safety. In particular Westinghouse is required to justify that the AP1000 system designs incorporate adequate isolation and drainage arrangements to enable all anticipated EMIT activities to be carried out in a safe and controlled manner.		
GDA Issue Action	Westinghouse shall generate the arguments and evidence to justify that each isolation that proposes to use pipe freezing technology is ALARP. Westinghouse's proposal to use pipe freezing technology to provide process isolation in support of their planned EMIT regime is considered not to be good engineering practice for the anticipated isolation requirements for a new reactor design, but rather a technology utilised to recover from a scenario that has not been generally predicted. ONR considers that good engineering practice for a new modern NPP incorporates adequate engineered arrangements for anticipated and planned process isolation to support EMIT activities. ONR's expectation is for Westinghouse to review their design and either revise their proposal in line with ONR expectations or demonstrate with appropriate arguments and evidence that the anticipated process isolations that propose the use of pipe freezing technology are ALARP. With agreement from the Regulator this action may be completed by alternative means.		

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Related Technical Areas		None	
GDA Issue Reference	GI-AP1000-ME-03	GDA Issue Action Reference	GI-AP1000-ME-03.A2
GDA Issue Action	<p>Westinghouse shall generate the arguments and evidence to justify that EMIT isolations that rely on single valve isolations are ALARP.</p> <p>The IRWST isolation is provided by a single isolation valve to undertake EMIT of the injection squib valves. This does not achieve ONR expectations when considering the IRWST has a capacity circa 2100m³ and if the single isolation valve was to fail (in its isolation function) then a significant hazard would arise. The system design does not have any other provision to contain the fluid within the IRWST.</p> <p>ONR considers a system isolation first design choice is provided by a suitable valve arrangement, with double valve isolation being provided for systems that are subject to a significant pressure, or temperature, or where there is some other significant hazard e.g. a large volume of fluid is held back.</p> <p>ONR's expectation is for Westinghouse to review their design and either revise their proposal in line with ONR expectations or demonstrate with appropriate arguments and evidence that all anticipated isolations that propose to use single isolation that are the subject of either a significant pressure, temperature or some other significant hazard are ALARP.</p> <p>With agreement from the Regulator this action may be completed by alternative means.</p>		

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Related Technical Areas		None	
GDA Issue Reference	GI-AP1000-ME-03	GDA Issue Action Reference	GI-AP1000-ME-03.A3
GDA Issue Action	<p>Westinghouse shall generate the arguments and evidence to justify that all process pipework designs are adequately engineered to provide drainage facilities to enable the anticipated EMIT activities to be carried out in a safe and controlled manner.</p> <p>Isolation of the motor operator valve to allow EMIT to be carried out on the 4th Stage Squib valves requires the downstream leg of fluid to be drained by ad hoc means i.e. splitting of flanges and use of temporary fluid collection containers. This is an example of the AP1000 design not incorporating adequate engineered arrangements for carrying out anticipated EMIT in a safe and controlled manner.</p> <p>ONR considers that a system design should incorporate adequate engineered arrangements to enable the process pipework to be drained in a safe and controlled manner.</p> <p>ONR's expectation is for Westinghouse to review their design and either revise their proposal in line with ONR expectations or demonstrate with appropriate arguments and evidence that the AP1000 design incorporates adequate engineered drainage facilities to enable anticipated EMIT activities to be carried out in a safe and controlled manner.</p> <p>With agreement from the Regulator this action may be completed by alternative means.</p>		