

**ARPANSA Regulatory Assessment of the Replacement Reactor Construction Application**

9 August 2001 - Reactive Review Comments, Questions and Issues

PSAR Chapter 10 – Auxiliary Systems (continued)

Question reference	Section number and name	Topic	ARPANSA Comment, Issue or Question and ANSTO Response
<b>Compressed Air</b>			
10.91.	10.5.2 System Categorisation	Safety system tanks and distribution	Please explain the reason why this is classified as safety Category 2.
			Response: The approach to the safety classifications of structures, system and components is given in Chapter 2, Section 2.5. The Safety Category 1 items to which the tanks provide compressed air are fail-safe and so do not need the air supply to fulfil their safety function.
10.92.	10.5.3 Design Basis	The system shall have a connection to the existing LHSTC compressed air	Under what conditions will the Reactor system be isolated from the LHSTC system?
			Response: A check valve located in the connection line closes in the event of low pressure in the LHSTC compressed air supply. A manual isolation valve in the interconnection line can also be used to isolate the Reactor Facility’s compressed air system from the LHSTC supply in the event of planned maintenance or unavailability.
10.93.	10.5.3 Design Basis	There shall be tanks fitted with air retention valves to supply air to actuate Safety Category 1 equipment (such as valves).	Where is the interface between Category 1 and Category 2 systems established?
			Response: The interface is the air connections to the actuator of each pneumatic valve.
10.94.	10.5.4 Circuit Description	The following Safety Category 1 systems have dedicated compressed air storage tanks: a) First Shutdown System b) Second Shutdown System c) Containment Isolation System	Are the tanks classified as Category 1? (See 10.5.2)
			Response: No, they are Category 2 – see response to Question 10.91.

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REV 1 PSAR Chapter 10, page 1 of 5

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10.95.	10.5.5 Breathing Air System	The Breathing Air System is a branch of the Compressed Air System.	What is the purpose of the Breathing Air System? Will it be used for accident operations? Should it be a Category 1 system?
			Response: The Breathing Air System provides breathing air supplies to operators when accessing areas for inspection or maintenance that have the potential for significant levels of airborne activity (eg. the heavy water plant room). It is not required for “accident operations” since no operator actions are claimed to achieve and maintain a safe shutdown state and as such, need not be Category 1.
10.96.	10.5.7 Surveillance, Inspection and Testing	The system has been designed to ensure appropriate in-service surveillance in accordance with the requirements of Chapter 17.	Chapter 17 states that the compressed air must be available for normal operation. There is no mention of the surveillance, inspection and testing requirements. What are the in-service surveillance measures?
			Response: The surveillance, testing and inspection requirements will be determined during the detail engineering phase and presented in the FSAR.
10.97.	10.5.8 Evaluation	The interconnection with the LHSTC compressed air system is the normal source of compressed air to the reactor facility and the compressor sets are the available stand-by facilities.	Would it not be better to have the normal supply from the facility’s own compressors so that all plant is under the control of the reactor manager? In the abnormal situation that normal supply is not available it could then be taken from the site supply.
			Response: No, the LHSTC system is normally available and there are operational and cost benefits associated with only having a single system operating. The Reactor Facility’s air compressors will start automatically in the event of the loss of the LHSTC compressed air supply

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10.98.	10.5.8 Evaluation	... the air supply to Safety Category 1 systems will not be affected because of the provision of dedicated air tanks attached to each Safety Category 1 system.	What Instrumentation relies upon the compressed air system? If there is a breach in the compressed air line do the isolation valves (for containment) operate? Will the dedicated tanks attempt to back feed the break?
			Response: There is no instrumentation that relies upon the compressed air system. The isolation valves are fail-safe so would isolate the containment only if the breach in the compressed air line occurred between the valve and its dedicated air tank. If the breach occurred elsewhere, the tank would be isolated by the air retention valve as explained in Section 10.5.4, last 2 paragraphs.
10.99.	10.5.8 Evaluation	The ability to isolate the compressed air to the Containment and the provision of the dedicated air tanks, ensures that the compressed air system will not cause pressurisation of the containment when the containment is isolated.	What is the basis for this statement? Have calculations been completed?

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			<p>Response: The basis for the statement is that the system has been designed to prevent possible pressurisation. In addition to the automatic containment isolation valves on the compressed air supply, the system can also be isolated by the operator if it is considered necessary. The volume of the dedicated air reservoirs for the safety systems inside the containment is negligible in relation to the containment volume should they be ruptured.</p> <p>The quoted paragraph would be clearer if the reference to the dedicated tanks is omitted, namely: “The ability to isolate the compressed air to the Containment ensures that the compressed air system will not cause pressurisation of the containment when the containment is isolated.” This amendment will be included in the next revision of the PSAR.</p>
10.100.	10.5.8 Evaluation	The instrumentation provided in the dedicated air tanks will give an early alarm to the operator if the pressure drops below pre-established values.	Is this the only Instrumentation that relies upon the compressed air system?
			Response: The instrumentation on the dedicated air tanks does not rely on the compressed air system – it is used to monitor the compressed air system.
10.101.	<b>De-mineralised Water Supply</b>		
10.102.	10.6.4 Description	The current also splits the water molecules into hydrogen and hydroxyl ions, constantly regenerating the resin bed.	Is there the production of hydrogen gas that may increase the fire/explosion hazard?
			Response: The hydrogen and hydroxyl ions (H <sup>+</sup> , HO <sup>-</sup> ) combine to form water and there is no production of gases.

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REV 1 PSAR Chapter 10, page 4 of 5

**ARPANSA Regulatory Assessment of the Replacement Reactor Construction Application**

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10.103.	10.6.4.1 Circuit Description	...concentrated water bleed is diverted to LHSTC drainage line C (trade liquids).	Is this the appropriate line?
			Response: There is no possibility for radioactive contamination of water supplied to the demineralised water plant so drainage line C is the appropriate line.
10.104.	10.6.4.1 Circuit Description	...an external supplier will provide the initial fill	With who does the responsibility to acquire the initial supply of demineralised water reside with?
			Response: INVAP is contracted to supply the initial fill of demineralised water.