

**Enclosure 1**  
**Response to PSAR 9.1 RCI**  
**(Non-Proprietary)**

**Kairos Power Hermes Test Reactor  
Preliminary Safety Analysis Report  
Responses to Requests for Confirmatory Information**

**Chemistry Control System**

**RCI-01**

KP-FHR PDC 70, "Reactor coolant purity control," requires the system to maintain the purity of the reactor coolant within specified design limits.

In order to demonstrate how the design bases for the chemistry control system satisfy PDC 70, confirm the following information for Section 9.1.1:

Will information in the FSAR show the selected location(s) for coolant chemistry sampling to be a well-mixed, representative sample of the coolant?

Kairos Power Response:

Yes, information provided with the application for an operating license will show the selected location(s) for coolant chemistry sampling to be well-mixed, representative samples of the coolant.

**Inert Gas System**

**RCI-02**

KP-FHR PDC 70, "Reactor coolant purity control," requires that coolant purity limits be based on consideration of air or moisture ingress due to a cover gas leak.

In order to demonstrate how the design bases for the inert gas system (IGS) satisfy PDC 70, confirm the following information for Section 9.1.2:

Will the IGS be capable of measuring both air and moisture content of the cover gas?

Kairos Power Response:

Yes, the IGS will be capable of measuring both the air and moisture content of the cover gas.

**RCI-03**

KP-FHR PDC 70, "Reactor coolant purity control," requires that coolant purity limits be based on consideration of air or moisture ingress due to a cover gas leak.

In order to demonstrate how the design bases for the inert gas system (IGS) satisfy PDC 70, confirm the following information for Section 9.1.2:

Can the entirety of the IGS be periodically checked for leakage?

Kairos Power Response:

Yes, the entirety of the IGS can be periodically checked for leakage.

**RCI-04**

In order to clarify the design bases of the IGS, confirm the following information for Section 9.1.2:

Is the IGS needed to control the 'hot cell' temperature stated in Chapter 13, Table A5-1, "Key Input Parameters for Pebble Handling and Storage System Malfunction Event?"

Kairos Power Response:

No, the IGS is not needed to control the hot cell temperature referenced in the analysis of the PHSS Malfunction Event.