

**From:** Benjamin Beasley  
**Sent:** Tuesday, July 19, 2022 4:33 PM  
**To:** peebles@kairospower.com  
**Cc:** Jason Schaperow; Samuel Cuadrado de Jesus; Edward Helvenston; gardner@kairospower.com; Martin Bryan  
**Subject:** Questions on the TMS, PHSS, and SFCS for the General Audit

Drew,

Below are some questions on the Tritium Management System, Pebble Handling and Storage System, and the Spent Fuel Cooling System. We will address these questions as part of the General Audit. We would like to schedule an audit meeting when you are ready to discuss these questions.

Regards,  
 Ben

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|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9.1-19 | Section 9.1.3 of the PSAR states that the amount of tritium accumulated in the tritium mitigation system will be monitored to ensure that it is below the amount that is assumed to be released from the fuel and coolant included in the maximum hypothetical accident analysis. However, it is not clear how Kairos will assure that this assumption will be met. NUREG-1537 states that, for each auxiliary system, the applicant should provide required technical specifications and their bases, including testing and surveillance. Please explain how Kairos plans to ensure that the amount of tritium accumulated is monitored to ensure this assumption will be met. |
| 9.3-1  | Section 9.3.3 of the PSAR states that other portions of the PHSS that do not perform a safety function will be either seismically mounted or physically separated to preclude adverse interactions with other safety-related SSCs during a design basis earthquake. Which portions of the PHSS do not perform a safety related function?                                                                                                                                                                                                                                                                                                                                        |
| 9.3-2  | Section 9.3.3 of the PSAR states that the canister interior is designed to handle radiolysis products from spent fuel to ensure the integrity of the canister, seal, and weld precluding release of radionuclides from the canister. What radiolysis products are being referred to? How do the radiolysis products challenge the canister? Does Kairos plan modeling or testing to show canister robustness to radiolysis products?                                                                                                                                                                                                                                            |
| 9.8-2  | Section 9.8.2 of the PSAR states that temperatures in and around the storage canisters and other SSCs served by the SFCS will be monitored and controlled by the plant control system such that the SFCS fans and piping maintain the temperatures within desired limits. What SSCs does the SFCS serve besides                                                                                                                                                                                                                                                                                                                                                                 |

|       |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | the storage canisters?                                                                                                                                                                                                                                                                                                                                                                                   |
| 9.8-3 | PSAR Section 9.8.2 states, "In the event that normal power is not available, the SFCS is capable of passively cooling spent fuel storage canisters." Please explain how the SFCS would provide cooling to the spent fuel storage canisters if power is lost. Does Kairos intend for the Pebble Handling and Storage System geometry to provide cooling if the SFCS fails to operate due a loss of power? |

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**Sent Date:** 7/19/2022 4:32:53 PM  
**Received Date:** 7/19/2022 4:32:56 PM  
**From:** Benjamin Beasley

**Created By:** Benjamin.Beasley@nrc.gov

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