

March 1, 2022

Docket No. 50-7513

US Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Kairos Power LLC
Transmittal of Changes to Maximum Hypothetical Accident Dose Results in Hermes
Construction Permit Application

References: 1. Letter, Kairos Power LLC to Document Control Desk, "Submittal of the Preliminary Safety Analysis Report for the Kairos Power Fluoride Salt-Cooled, High Temperature Non-Power Reactor (Hermes)," September 29, 2021 (ML21272A376)
2. Letter, Kairos Power LLC to Document Control Desk, "Submittal of the Environmental Report for the Kairos Power Fluoride Salt-Cooled, High Temperature Non-Power Reactor (Hermes)," October 31, 2021 (ML21306A131)

In September and October 2021, Kairos Power submitted a Construction Permit Application (CPA) for the Hermes non-power reactor, including a Preliminary Safety Analysis Report (PSAR) (Reference 1) and an Environmental Report (ER) (Reference 2). Subsequent to the initial submittal of these documents, minor errors in the Maximum Hypothetical Accident calculation were identified and corrected via the Kairos Power corrective action program. These changes have a negligible impact on the conclusions in the CPA but has a minor effect on content in Chapter 13 of the PSAR and Chapter 4 of the ER. The changes to PSAR and ER content are reflected in the enclosures to this letter. Kairos Power requests NRC review of these changes as part of continued review of the Hermes CPA.

Changes to the pages of the PSAR affected by this decision are provided in Enclosure 1. Changes to the pages of the ER affected by this decision are provided in Enclosure 2.

If you have any questions or need any additional information, please contact Drew Peebles at peebles@kairospower.com or at (704) 275-5388 or Darrell Gardner at gardner@kairospower.com or (704) 769-1226.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on March 1, 2022.



Peter Hastings, PE
Vice President, Regulatory Affairs and Quality

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Enclosures:

- 1) Change Pages for PSAR
- 2) Change Pages for ER

xc (w/enclosure):

William Kennedy, Acting Chief, NRR Advanced Reactor Licensing Branch

Benjamin Beasley, Project Manager, NRR Advanced Reactor and Licensing Branch

Edward Helvenston, Project Manager, NRR Advanced Reactor Licensing Branch

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Tamsen Dozier, Environmental Project Manager, NMSS, Environmental Review Branch

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Enclosure 1
Change Pages for PSAR
(Non-Proprietary)

Table 13.2-1: Site-Specific χ/Q Values

Distance (m)	$\frac{\chi}{Q}$ (s/m ³)				
	0-2 hrs	2-8 hrs	8 hrs – 1 day	1 – 4 days	4 – 30 days
250	1.51x10 ⁻⁴	N/A	N/A	N/A	N/A
800	3.61x10 ⁻⁵	3.51 x10 ⁻⁵	1.44x10⁻⁵ 1.45 x10 ⁻⁵	1.53x10⁻⁵ 1.54 x10 ⁻⁵	1.44x10⁻⁵ 1.49 x10 ⁻⁵

Table 13.2-2: Maximum Hypothetical Accident Dose Consequences

Location and Duration	Whole Body Dose (rem)		Thyroid Dose (rem)	
	10 CFR 100 Limit	MHA Result	10 CFR 100 Limit	MHA Result
Exclusion Area Boundary (First 2 hrs at 250m)	25	0.201 0.227	300	0.161 0.235
Low Population Zone (30 days at 800m)	25	0.056 0.059	300	0.083 0.081

Enclosure 2
Change Pages for ER
(Non-Proprietary)

Table 4.11-1: Dose Consequence from the MHA

Location and Duration	Whole Body Dose (rem)		Thyroid Dose (rem)	
	10 CFR 100 Limit	MHA Result	10 CFR 100 Limit	MHA Result
Exclusion Area Boundary (First 2 hours at 250m)	25	0.201 0.227	300	0.161 0.235
Low Population Zone (30 days at 800m)	25	0.056 0.059	300	0.083 0.081