



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 13, 2023

Mr. Peter Hastings
Vice President, Regulatory Affairs
and Quality
Kairos Power LLC
707 W Tower Ave.
Alameda, CA 94501

SUBJECT: KAIROS POWER LLC – FINAL SAFETY EVALUATION FOR TOPICAL REPORT “GRAPHITE MATERIAL QUALIFICATION FOR THE KAIROS POWER FLUORIDE SALT-COOLED HIGH-TEMPERATURE REACTOR” (REVISION 4) (EPID NO. L-2021-TOP-0022/CAC NO. 000431)

Dear Mr. Hastings:

This letter provides the final safety evaluation (SE) for the Kairos Power LLC (Kairos) topical report (TR) “Graphite Material Qualification for the Kairos Power Fluoride Salt-Cooled High-Temperature Reactor,” Revision 4. By letter dated July 8, 2021, Kairos submitted Revision 1 of the TR for the U.S. Nuclear Regulatory Commission (NRC) staff review (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21190A218). On November 2, 2021, the NRC staff provided its review questions to Kairos (ML23059A265). The review questions were discussed during closed meetings held between the NRC staff and Kairos on December 15, 2021, February 10, 2022, February 15, 2022, February 22, 2022, March 1, 2022, March 8, 2022, and March 15, 2022. By letter dated May 11, 2022, Kairos submitted Revision 2 of the TR (ML22132A202) to address the NRC staff review questions. By letter dated July 13, 2022, Kairos submitted Revision 3 of the TR (ML22194A943) to address questions discussed during a closed meeting held between the NRC staff and Kairos on June 14, 2022. By letter dated September 16, 2022, Kairos submitted Revision 4 of the TR (ML22259A142) to address a question from the NRC staff related to the Kairos Hermes reactor design.

The NRC staff’s final SE for “Graphite Material Qualification for the Kairos Power Fluoride Salt-Cooled High-Temperature Reactor,” Revision 4, is enclosed. The NRC staff provided Kairos a draft of the SE for the purpose of identifying proprietary information on December 7, 2022 (ML22343A285). On December 19, 2022, Kairos confirmed that the proprietary information in the draft SE was appropriately marked (ML23058A226).

Enclosure 1 to this letter contains Proprietary and Export Controlled Information. When separated from Enclosure 1, this letter is DECONTROLLED.

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The Advisory Committee on Reactor Safeguards (ACRS) was briefed on this TR on January 12, 2023, and February 1, 2023. The ACRS provided its recommendations for the publication of this SE in a letter dated February 13, 2023 (ML23038A168). The enclosed SE is final, and a redacted version will be made publicly available.

The NRC staff requests that Kairos publish an accepted version of this TR within 3 months of receipt of this letter. The accepted version shall incorporate this letter and the enclosed SE after the title page. The accepted version shall include an "-A" (designating accepted) following the TR identification number.

If you have any questions, please contact Richard Rivera at Richard.Rivera@nrc.gov.

Sincerely,



Signed by Jessup, William
on 03/13/23

William Jessup, Chief
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Project No.: 99902069 and Docket No.: 05007513

Enclosures:

1. Proprietary (Non-Public) Safety Evaluation
2. Redacted (Public) Safety Evaluation

Cc w/ redacted encl: Distribution via Kairos Power FHR and Kairos Power Hermes

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Letter: ML23062A734

Safety Evaluation: ML23039A166

Redacted Safety Evaluation: ML23062A733

NRR-106

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