



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

October 11, 2023

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

SUBJECT: KAIROS POWER LLC – HERMES 2 CONSTRUCTION PERMIT APPLICATION
REVIEW SCHEDULE AND RESOURCE ESTIMATE (EPIDS: L-2023-CPS-0000
AND L-2023-CPE-0000)

Dear Mr. Hastings:

This letter provides a summary of the schedule and a resource estimate for the detailed review of the Hermes 2 construction permit (CP) application. On September 11, 2023, the U.S. Nuclear Regulatory Commission (NRC) staff sent Kairos Power LLC (Kairos) a letter accepting the Hermes 2 CP application for detailed review (Agencywide Documents Access and Management System (ADAMS) Accession No. ML23233A167). A notice of the acceptance for docketing was published in the *Federal Register* on September 15, 2023 (88 FR 63632). The tables below provide key milestones for both the safety review and the environmental review.

Milestone Group – Safety Review	Estimated Completion
Draft Safety Evaluation ⁽¹⁾	March 11, 2024
Safety Evaluation Completion ⁽²⁾	August 5, 2024
ACRS Review of Safety Evaluation ⁽³⁾	September 30, 2024
Final Safety Evaluation ⁽⁴⁾	November 11, 2024

Notes:

- (1) Safety evaluation (SE) sections drafted and information gaps identified.
- (2) NRC management and legal review of SE complete.
- (3) Advisory Committee for Reactor Safeguards (ACRS) meetings and review complete.
- (4) Final SE updated and issued.

Milestone Group – Environmental Review	Estimated Completion
Draft Environmental Assessment ⁽¹⁾	March 29, 2024
Final Environmental Assessment ⁽²⁾	August 30, 2024

Notes:

- (1) Draft and legal review of Environmental Assessment (EA) sections completed. Open items resolved.
- (2) Publication and issuance activities completed.

The schedule reflects historical review timelines, the NRC staff's best estimate of the level of effort needed for application review areas, similarities and differences in the Hermes 1 and Hermes 2 designs, competing resource demands for concurrent projects, and the NRC staff's understanding of Kairos's deployment timeline for Hermes 2. This schedule does not reflect any

adjustments that would need to be made if the NRC staff determines that it will need to prepare an environmental impact statement (EIS) instead of concluding a finding of no significant impact for the EA. If an EIS is necessary, the NRC staff will issue a revised schedule and resource letter and work to mitigate impacts to the overall project schedule. Additionally, this schedule does not include the hearing process, which would follow the completion of the SE and EA (or EIS, if needed).

The schedule is also based, in part, on Kairos's commitment to provide its responses to Requests for Additional Information (RAIs) within 30 days after the issuance of the RAIs and within 45 days after the issuance of the second round of RAIs, if needed. The applicant is also expected to provide support in a timely and organized manner during technical audits determined necessary by the NRC staff. To achieve this schedule, the NRC staff intends to engage Kairos frequently during the permit review to address review progress and emerging technical issues. Delays in the NRC staff's receipt of necessary information could result in changes to the review schedule. The NRC requests that Kairos inform the NRC staff in writing, as early as possible, should potential delays arise in its support of the schedule.

The NRC staff will conduct its safety-focused review in a risk-informed manner based on the guidance in NUREG-1537, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors," Part 1, "Format and Content" (ML042430055), and Part 2, "Standard Review Plan and Acceptance Criteria" (ML042430048). The schedule could change due to several factors, including RAIs, unanticipated changes to the scope of the review, unsolicited supplements to the application, design changes, and other factors.

Based on Kairos's pre-application activities, the recently issued SE (ML23158A265) and EIS (ML23214A269) for the Hermes 1 test reactor, and the information provided in Kairos's Hermes 2 CP application submittal, the NRC staff has estimated that it will need approximately 10,000 NRC staff hours and \$75,000 in contractor support to complete the safety and environmental reviews of the Hermes 2 CP application. While the NRC staff intends to leverage as much information as possible from the Hermes 1 safety and environmental reviews, the NRC staff also recognizes that there are several important differences between the Hermes 1 and Hermes 2 facility designs that will necessitate appropriate evaluation by the staff. Notably, the Hermes 2 test reactor includes 2 units with each having an intermediate salt loop, operate for seven years longer than the Hermes 1 test reactor, and include common turbine generator set. These design modifications will necessitate a risk-informed assessment of the staff's findings on the Hermes 1 design in select areas to support a determination of the safety of the Hermes 2 design.

If there are emergent complexities or challenges in the NRC staff's review that would cause changes to the initial forecasted completion date or significant changes in the estimated resources, the reasons for the changes, along with the new estimates will be communicated via separate correspondence. Milestones and resource estimates for hearing activities are not included in the schedule or resource estimate because hearing dates will be established by the Commission, or the Atomic Safety and Licensing Board, and new resource considerations will need to be developed.

P. Hastings

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If you have any questions specific to the safety review, please contact me at 301-415-3229 or Michael.Orenak@nrc.gov. Questions regarding the environmental review may be directed to Peyton Doub at 301-415-6703 or Peyton.Doub@nrc.gov.

Sincerely,

Michael Orenak, Project Manager
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Docket Nos.: 50-611
50-612

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NRR-106

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