

Enclosure 1

General Information (Non-Proprietary)

Consistent with 10 CFR 50.33(a)-(e), (h), and (j); 10 CFR 50.34(a)(9); and 10 CFR 50.55(a), the following general application information is provided.

Name of Applicant

This construction permit application for a non-power test reactor is submitted by Kairos Power LLC. All references herein to "Kairos Power" or "Kairos," as an entity, refer to Kairos Power LLC.

Address of Applicant

The headquarters for Kairos Power LLC is located at 707 W. Tower Ave., Suite A, Alameda, CA 94501.

Description of Business

Kairos Power is a mission-driven engineering company focused on the delivery of clean, affordable, and safe energy solutions through the integrated design, licensing, and demonstration of advanced reactor technology. Kairos Power LLC is developing and marketing nuclear power plant designs based on the Kairos Power fluoride salt-cooled, high temperature reactor (KP-FHR) technology. The KP-FHR is a novel advanced reactor technology that leverages TRISO fuel in pebble form combined with a low-pressure fluoride-lithium-beryllium (Flibe) salt coolant.

Company Description

Kairos Power LLC is the applicant for the construction permit and subsequent operating license for the test reactor and will own and operate the facility to be located in Oak Ridge, Tennessee in the East Tennessee Technology Park (ETTP).

Additional information regarding Kairos Power LLC is provided in Enclosure 4 to this letter and in Chapter 15 of the Safety Analysis Report.

License Type

This application is for a construction permit for a utilization facility under 10 CFR 50. Kairos Power expects to apply for a future Class 104c operating license pursuant to 10 CFR 50.21(c) (for testing, research, and development activities), as well as future licenses for receipt, possession, and use of source material under 10 CFR 40, byproduct material under 10 CFR 30, and special nuclear material under 10 CFR 70. Kairos Power projects a 10-year operating period for the non-power reactor facility.

Construction Schedule

Kairos Power LLC is requesting NRC review and approval of the construction permit application by April 2023 to support construction of safety-related structures, systems, and components anticipated to begin in mid-2023. Kairos Power LLC is a recipient of a Department of Energy (DOE) Advanced Reactor Demonstration Program (ARDP) award for Risk Reduction funding for the KP-FHR technology with initial operations planned by mid-2026.

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Given these objectives, the earliest start date for construction is expected April 2023; the earliest projected date for completion of construction is the latter half of 2025, and the latest projected date for completion is December 2026.

Restricted Data or Other Defense Information

This construction permit application does not include any Restricted Data or other defense information requiring separation from the remainder of the application in accordance with 10 CFR 50.33(j). Kairos Power will not permit any individual to have access to any facility to possess Restricted Data or classified National Security Information until the individual and/or facility has been approved for access under the provisions of 10 CFR Parts 25 and/or 95.

Technical Qualifications

Kairos Power LLC was formed in 2016. At the time of submittal of the Hermes Preliminary Safety Analysis Report, Kairos Power has over 200 employees with scientific and engineering backgrounds including disciplines such as nuclear, mechanical, electrical, chemical, industrial, materials, and thermal hydraulics. These scientists and engineers have backgrounds in engineering, operations, maintenance, licensing, and testing, with many having experience at national laboratories, utility nuclear plants, nuclear development vendors, and academia. Kairos Power has also drawn resources from other industries outside of nuclear power to provide diversity of ideas and approaches. Of the 200 employees with scientific or engineering backgrounds, more than half have advanced degrees.

Kairos Power has developed a robust testing program and is implementing a “design-test-build” approach to enhance the design process and confirm aspects of the design. This is an iterative process that provides learning at each stage of the design evolution and enhances the quality of the final design. Kairos Power is also developing fabrication and construction experience as part of the design-test-build approach. This includes experience from several laboratory facilities as well as the Kairos Power Engineering Testing Unit, a non-nuclear facility that demonstrates the capability to design, fabricate, and construct an operational facility using molten fluoride coolant.

Kairos Power has engaged in substantive pre-application interactions with the NRC staff in the three years preceding the submittal of this preliminary safety analysis report. These interactions have included numerous technical and topical reports, and have resulted in several NRC safety evaluations. Pre-application engagement has also included various audits and discussions focusing on detailed technical topics supporting both the Hermes test reactor and the future KP-FHR commercial design, including several interactions with the Advisory Committee on Reactor Safeguards.

This information demonstrates Kairos Power’s technical qualifications to engage in the activities discussed in this application in accordance with NRC regulations, pursuant to 10 CFR 50.34(a)(9).