



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

June 20, 2023

Mrs. Joy L. Rempe, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: RESPONSE TO ACRS LETTER ON THE KAIROS NON-POWER REACTOR HERMES
CONSTRUCTION PERMIT APPLICATION

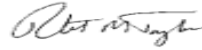
Dear Joy Rempe:

By letter dated May 16, 2023, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML23130A183), the Advisory Committee on Reactor Safeguards (ACRS) reported on its review of the U.S. Nuclear Regulatory Commission (NRC) staff's safety evaluation (SE) and Kairos Power, LLC (Kairos) preliminary safety analysis report for the Hermes non-power test reactor construction permit (CP) application submitted under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." This CP application describes the preliminary design and analysis of Kairos's proposed non-power test reactor facility, to be located in Oak Ridge, Tennessee. The ACRS undertook this review to fulfill the requirements of 10 CFR 50.58, "Hearings and report of the Advisory Committee on Reactor Safeguards," which mandate that the ACRS review and report on CPs for facilities of the type described in 10 CFR 50.21, "Class 104 licenses; for medical therapy and research and development facilities," paragraph (c).

In its letter, the ACRS recommended that a CP for Hermes should be approved. Based on information provided to the ACRS and discussions during meetings with Kairos and the NRC staff, the ACRS noted that the following topics should be addressed during the evaluation of the operating license application: (1) combustible gas generation, associated with graphite-air oxidation, for air ingress events; (2) levels of tritium release from the facility; and (3) management of airborne beryllium and tritium in the facility to less than relevant regulatory limits and to protect the safety of workers. The NRC staff recognizes the ACRS conclusions and recommendations and will ensure there is appropriate review of these topics as part of a future operating license application for Hermes. The NRC staff notes that consideration of beryllium hazards would be focused on the potential for beryllium to impact operator actions during operation or accident response consistent with the agency's authority and regulations.

The NRC staff appreciates the ACRS's timely and thorough review of the Hermes CP application and SE. We thank the Committee for its novel review approach, which focused on the most safety significant aspects of the design and significantly complemented the NRC staff's efforts to optimize the review schedule and ensure that the review was efficient and thorough.

Sincerely,



Taylor, Robert signing on behalf
of Veil, Andrea
on 06/20/23

Andrea D. Veil, Director
Office of Nuclear Reactor Regulation

cc: Chairman Hanson
Commissioner Baran
Commissioner Caputo
Commissioner Crowell
Commissioner Wright

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