

From: Wade Creswell <wade.creswell@roanecountytn.org>
Sent: Wednesday, October 26, 2022 8:57 AM
To: KairosHermes-CPEIS Resource
Subject: [External_Sender] Roane County TN- Comment Submission Letter NUREG-2263
Attachments: Comment Submission Letter for NRC EIS Kairos Hermes Reactor Construction Permit 10.26.22.pdf; Comment_Submission Letter-FINAL-Kairos_Hermes_Reactor-EIS-20221025RA.pdf

Please accept the attached letters as the official comment for NUREG-2263, Environmental Impact Statement for the Construction Permit for Kairos Hermes Test Reactor. Please contact me or my office for questions or clarifications.

Respectfully,

Wade Creswell
Roane County Executive
(865)376-5578
[roanecountytn.gov](mailto:wade.creswell@roanecountytn.org)

Federal Register Notice: 87FR59124
Comment Number: 4

Mail Envelope Properties (019001d8e93a\$80d77b10\$82867130\$)

Subject: [External_Sender] Roane County TN- Comment Submission Letter NUREG-2263
Sent Date: 10/26/2022 8:57:28 AM
Received Date: 10/26/2022 8:58:04 AM
From: Wade Creswell

Created By: wade.creswell@roanecountytn.org

Recipients:
"KairosHermes-CPEIS Resource" <KairosHermes-CPEIS.Resource@nrc.gov>
Tracking Status: None

Post Office: roanecountytn.org

Files	Size	Date & Time
MESSAGE	329	10/26/2022 8:58:04 AM
Comment Submission Letter for NRC EIS Kairos Hermes Reactor Construction Permit 10.26.22.pdf		
630112		
Comment_Submission Letter-FINAL-Kairos_Hermes_Reactor-EIS-20221025RA.pdf		
248046		

Options
Priority: Normal
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:



Office of the County Executive Roane County Courthouse

October 26, 2022

U.S. Nuclear Regulatory Commission
Office of Administration
Mail Stop: TWFN-7-A60M
Attn: Program Management, Announcements and Editing Staff
Washington, DC 20555-0001

Please accept this communication as a Comment Submission Letter regarding the Draft NUREG-2263, Environmental Impact Statement for the Construction Permit for the Kairos Hermes Test Reactor on the Oak Ridge Reservation. This letter serves as the official comment for Roane County Government regarding this matter.

I look forward to a response regarding the items noted in our review.

Respectfully,

Wade Creswell
Roane County Executive

Date: October 25, 2022

To: Roane County Executive and Roane County Commission

From: Roane County Environmental Review Board

Subject: *NUREG-2263, Environmental Impact Statement for the Construction Permit for Kairos Hermes Test Reactor, Draft Report for Comment* issued by the Office of Nuclear Material Safety and Safeguards for the United States Nuclear Regulatory Commission

The Roane County Environmental Review Board (ERB) was requested by Wade Creswell, Roane County Executive, to review *NUREG-2263, Environmental Impact Statement for the Construction Permit for Kairos Hermes Test Reactor, Draft Report for Comment*. This draft environmental impact statement (EIS) was prepared by the United States Nuclear Regulatory Commission (NRC) in response to an application submitted by Kairos Power, LLC (Kairos) for a construction permit for a non-power test reactor termed Hermes at a site in Oak Ridge, Tennessee. Kairos plans to build and operate Hermes to demonstrate key elements of the Kairos Power Fluoride Salt-Cooled, High Temperature Reactor technology for possible future commercial deployment. This draft EIS includes the analysis that evaluates the environmental impacts of the proposed action and considers the following two alternatives to the proposed action: (1) the no-action alternative (i.e., the CP is denied) and (2) building the proposed Hermes non-power test reactor at a site near Idaho Falls, Idaho.

This NRC draft EIS addresses the potential environmental impacts from the full life cycle of the Hermes reactor, including its construction, operation, and decommissioning. Current project construction schedule identifies construction to start in 2023 and have the reactor operational in 2026. The proposed Hermes reactor has a planned four-year operational lifespan. During this planned lifespan, the reactor will utilize approximately 155,200 TRISO fuel pebbles to power the reactor. TRISO fuel pebble construction consists of fuel kernels which are then encapsulated by layers of carbon- and ceramic-based materials. This encapsulated construction is stated to increase the durability of the fuel, reduce chances of fission product releases, and increase resistance to high temperature impacts. Spent TRISO fuel pebbles will be stored in 74-82 sealed storage canisters held on-site at the Hermes reactor in a water-cooled storage pool, with an air-cooled storage bay, that has a capacity of 192 canisters. If needed, plans are to store these same canisters in dry storage casks at an exterior location on-site after decommissioning. Only at decommissioning will the final disposition of the spent fuel be determined – storage on-site (supposedly temporary), spent fuel repository, or regional spent fuel storage facility.

On September 9, 2022, the NRC issued a request for comments on draft NUREG-2263 in the Federal Register (87 FR 59124) notifying the public of NRC's issuance for public comment draft NUREG-2263, *Environmental Impact Statement (EIS) for the Construction Permit for the Kairos*

Hermes Test Reactor. The Roane County ERB has performed a review of the draft NUREG-2263 at the County Executive's request with the following comments being generated:

Comment ID	Document Location	Comment Description
01	Page iii, Lines 34-35 and other locations in document	States "NRC staff's recommendation in this draft EIS is tentative. Before identifying a final recommendation in the final EIS, the NRC staff will also consider comments received on the draft EIS from Federal, State, local, and Tribal officials, and members of the public."; however, on Lines #24-25 on same page already states "NRC staff recommends, unless safety issues mandate otherwise that the NRC issue CP to Kairos". Statements in locations identified seemed to be contradictory. <u>ALL</u> recommendation statements should be identified as tentative within the draft EIS. Anything stated as a full recommendation should be reserved only for the final EIS.
02	Page xiii, Line 19	The identified virtual public outreach and EIS scoping meeting conducted on March 23, 2022 has not been made available to the general public. From the NRC Hermes – Kairos Application webpage (Hermes – Kairos Application NRC.gov) in the Public Involvement section, the link provided for access to the Public Outreach Meeting document (dated 03/23/2022) does not work. When clicked, persons receive the following error message: "The resource you are looking for has been removed, had its name changed, or is temporarily unavailable". The link takes you to the following internet address, where you receive this message: https://www.nrc.gov/docs/ML2206/ML22068A212.html The inability of the public to access this document, as well as the full unencumbered versions of most documents associated with the Hermes Project, has left the public in the dark as to the proposed project's specifics and at a great disadvantage in evaluating the project's configuration, operational, and safety aspects.
03	Page xiii, Line 29	As stated in Comment #2, inability to access Public Outreach Meeting documentation has left the public unable to identify previous public comments and evaluate how they may have been addressed by this draft EIS.
04	Page xiii, Lines 39-40	Draft EIS states "DOE has remediated the land environmentally and released it for industrial reuse". This statement is incomplete as it fails to identify that release is conditional based on requirements stipulated in DOE/OR/01-2893&D1/R1, <i>Remedial Investigation/Feasibility Study Report for the K-31/K-33 Area at the East Tennessee Technology Park, Oak Ridge, Tennessee</i> dated November 2021. In this document the entire K-31/K-33 Area is defined as a target management zone (TMZ). Included in this TMZ are multiple target treatment zones (TTZs). The timeframe to address this groundwater contamination is

Comment ID	Document Location	Comment Description
		<p>identified as over 25 years under Alternative 2 (natural attenuation). While Kairos does not plan to use groundwater, and the Quitclaim Deed in fact prohibits such action, the Remedial Study indicates need to prevent:</p> <ul style="list-style-type: none"> • Exposure of construction workers to contaminated groundwater during excavation within the TMZ until land use controls and monitored contaminant levels are reduced below protective levels. • Exposure to groundwater to protect human receptors (through dermal, ingestion, and inhalation pathways) until contaminant concentrations are reduced to maximum contaminant levels.
05	Page xv, Lines 29-39 and other locations in document	NRC staff again <i>“recommends issuance of the construction permit to Kairos”</i> in one sentence but conflict this statement by saying that the <i>“recommendation in this draft EIS is tentative”</i> a few sentences later. <u>ALL</u> recommendation statements should be identified as tentative within the draft EIS. Anything stated as a full recommendation should be reserved only for the final EIS.
06	Page xvii, Table ES-1, Human Health	States <i>“DOE has already razed the buildings and remediated the site for unrestricted industrial use”</i> . This statement is incorrect. See Comment 04 for specifics.
07	Page xviii, Table ES-1, Accidents	States <i>“NRC staff is conducting an independent review of the consequences of accidents and will document in its Safety Evaluation Report”</i> (SER). The last sentence for this resource Area states <i>“the nearest resident dose from accidents is also below the radiation dose limits for individual members of the public”</i> . Since the SER is still under development, then how can the last statement under this category be made so definitively?
08	Page 1-1, Lines 44-45	See Comments 01 and 05.
09	Page 1-3, Line 1 and Line 4	Line 1 states <i>“If Kairos were to apply for an OL”</i> (operating license) but Line 4 states <i>“Kairos proposes to build and operate the Hermes project”</i> . Which is it?
10	Page 2-2, Lines 1-3	The TRISO pellet design is described as able to <i>“prevent the release of radioactive fission products”</i> . Since nothing is 100% in all circumstance, this statement should be reworded to state reduces the potential for the release of radioactive fission products .
11	Page 3-15, Lines 21-22	The values used for greenhouse gas emissions were adjusted by a factor of 3 <i>“to account for the efficiency of the reactor”</i> . What was the reference basis for this efficiency adjustment?
12	Page 3-16, Lines 8-9	The Kingston Fossil Plant is scheduled for closure starting in 2025, should it be used as air quality impact example since Hermes reactor operations is not scheduled to start till 2026?

Comment ID	Document Location	Comment Description
13	Page 3-16, Line 36	The Michael Dunn Center has relocated. If you maintain this reference, the distance to its new facility should be adjusted.
14	Page 3-17, Line 18	Projected noise levels at nearest residential level are projected to increase 3 dBA over baseline noise levels measured by applicant. Will noise levels be monitored at the nearest residential area identified in the EIS during construction? If actual noise levels increase and are found to be considerably above the projected levels during construction, will the applicant address this issue at that time?
15	Page 3-23, Line 25	The current water treatment plant is identified as “currently at capacity and beyond its useful life”. A new drinking water treatment plant is planned and scheduled to be operational by 2025 (roughly two years after construction starts). How firm is this replacement schedule? Can the estimated water treatment need for not only the Hermes reactor project but also all the other new projects planned for the Horizon Center and Heritage Center be handled by the increased capacity planned?
16	Page 3-120, Line 2	Deepest excavation depth is identified as 30 feet below 765-foot grade level. This excavation depth will reach bedrock (limestone) thus ensure resulting in contact with existing groundwater during construction. See Comment 04 for safety issues with regard to groundwater contact restrictions for this TMZ designated site.
17	Page 3-24, Line 11	Since potential for dewatering activities is almost guaranteed, is planned waste water treatment path configured/licensed to handle previously identified groundwater contaminants?
18	Page 3-25, Lines 31-32	States “minor impacts could be associated with discharges of the extracted groundwater to Poplar Creek”. DOE/OR/01-2893&D1/R1, <i>Remedial Investigation/Feasibility Study Report for the K-31/K-33 Area at the East Tennessee Technology Park, Oak Ridge, Tennessee</i> dated November 2021 stipulates that any groundwater extracted must be treated with filtration and ion-exchange prior to discharge. Contaminants recovered through this physiochemical treatment is stipulated to require management at an appropriate treatment, storage, and disposal facility.
19	Page 3-27, Line 40	One Federal candidate species was noted in the discussion on Federally listed endangered species. However, no further identification of this Federal candidate species is mentioned. Information for this Federal endangered species candidate should be included.
20	Page 3-28, Lines 14-17	The EIS states “ <i>The 135 ac of land potentially subject to temporary or permanent disturbance for building, operating, and decommissioning the Hermes facilities contains trees and thus lacks any potential roost or maternity trees.</i> ” However, the

Comment ID	Document Location	Comment Description
		previous Line 12-14 states <i>"However, the absence of trees or vegetation other than ruderal vegetation in the area where the Hermes facilities would be sited suggests that even transient presence in the affected area is unlikely."</i> This would seem to indicate that the statement in Lines 14-17 needs to be reworded to state "The 135 ac of land potentially subject to temporary or permanent disturbance for building, operating, and decommissioning the Hermes facilities contains only immature trees and thus lacks any potential roost or maternity trees".
21	Page 3-28, Lines 37-38	Disturbed soils and further establishment of invasive species is address in a generalized statement. Was the invasive species <i>Solenopsis invicta</i> , Red Imported Fire Ant, considered due to their prevalence in the area and preference for freshly disturbed soils for colony establishment?
22	Page 3-29, Line 10	Mention is made of cooling towers not being part of the Hermes project. However, mention has been made of 100-foot stacks. Were these considered for potential impacts on wildlife during construction (Section 3.4.2), as well as during operation (Section 3.4.3)?
23	Page 3-45, Lines 40-41	States <i>"largest city in Morgan County is Harriman"</i> . Since only a very small portion of Harriman extends into Morgan County, it should not be considered as a whole to make the statement as the largest city in Morgan County. If the same rational was applied to Oak Ridge, it would be considered the largest city in Roane County. We are not aware of hearing this reference ever previously being made.
24	Page 3-59, Lines 32-34	States <i>"expected exposure pathways to members of the public would principally be from radiological gaseous effluent release because a small volume of radioactive liquid effluent releases would be discharged to the sewer lines"</i> . Does the planned wastewater treatment plant, Rarity Ridge Wastewater Treatment Plant, have the necessary equipment/licensure to handle this planned radiological gaseous effluent discharge?
25	Page 3-71, Lines 30-31	Its stated Kairos has no current plans to sell the tritium captured. Since it says <i>"no current plans"</i> , would this be considered in the future?
26	Page 3-72, Lines 2-3	Spent fuel storage is identified to involve a <i>"cooling pool supplemented with dry storage using air cooling"</i> . What backup system is provided for this arrangement?
27	Page 3-72, Lines 21-23	Radioactive gases are identified as released through <i>"high-efficiency particulate air filters"</i> before discharge. Radioactive gases are not removed by high-efficiency particulate air filters alone, but also require addition of carbon filters to be effective. Will carbon filters also be utilized to properly capture radioactive

Comment ID	Document Location	Comment Description
		gas releases? If so, this needs to be added to the description/requirements.
28	Page 4-3, Line 31	EDITORIAL: There is a missing parenthesis. Sentence portion should read "(Kairos 2022-TN7902)".
29	Page 4-9, Line 27	What portion of estimated overall funding for the Hermes Reactor construction, operation, and decommissioning is provided by the \$303 million awarded by the DOE Advanced Reactor Demonstration Program?

In support of the Roane County Executive's request, the ERB recommends that the Roane County Commission submit the identified comments to *Office of Administration, Mail Stop: TWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Program Management, Announcements and Editing Staff* or may be submitted electronically via email to KairosHermes-CPEIS@nrc.gov. If submitting by email, please be sure to note comments are for NUREG-2263. The public comment period ends December 6, 2022.

Please let the ERB know if you have any questions concerning the submitted review.



John Shaw
Roane County ERB Chair
jwshawjr@comcast.net