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

KAIROS POWER, LLC – HERMES ENVIRONMENTAL REPORT AUDIT PLAN (CAC NO. 000955, 05007513; EPID NO. L-2021-NEW-0012)

APPLICANT INFORMATION

Applicant:	Kairos Power LLC
Applicant Address:	707 W. Tower Ave, Alameda, CA 94501
Plant Name(s) and Unit(s):	Kairos – Hermes Test Reactor
Project No(s).:	05007513

Background:

By letter dated October 31, 2021 ((Agencywide Documents Access and Management System Accession No. ML21306A131), Kairos Power LLC (Kairos) submitted an Environmental Report (ER) in support of a construction permit (CP) application for its Hermes test reactor. This was the second part of its CP application, the first part having been submitted by letter dated September 29, 2021 (ML21272A376). By letter dated November 29, 2021, the Nuclear Regulatory Commission (NRC) notified Kairos of its acceptance of the Hermes construction permit application for detailed review (ML21319A354). The staff is reviewing the information in the ER (ML21306A132) per Title 10 of the *Code of Federal Regulations* (10 CFR) Part 51. In accordance with 10 CFR 51.20 the staff is preparing an Environmental Impact Statement (EIS) to evaluate the environmental impacts from the proposed action.

In its initial review of data and information within the corresponding context of the ER, the staff has identified information needs (Attachment 1) that would promote a better understanding of the detailed analysis and bases underlying the construction permit application. This environmental audit will provide the NRC staff an opportunity to discuss these items with the applicant subject matter experts (SMEs), staff and contractors. During the audit, the staff will discuss a wide range of environmental matters related to land use, ground and surface water, terrestrial and aquatic ecology, human health, postulated accidents, radiological and non-radiological waste, cultural resources, , fuel cycle, transportation of radioactive material, alternatives to the proposed action, air quality and noise. The audit will allow the staff to better understand the site, environmental interfaces of the project, and modeling results, in order to draw appropriate environmental findings.

Purpose:

The NRC staff is conducting an environmental audit of the Kairos ER to seek clarification, improve understanding, and to verify information provided in the ER and supporting documentation.

Regulatory Audit Basis:

Requirements for environmental reports supporting construction permits are specified in 10 CFR 51.50, "Environmental Reports – construction permit, early site permit or combined license stage." The ER for the Hermes construction permit application follows the guidance in Chapter 19 of the Final Interim Staff Guidance (ISG) Augmenting NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors, Format and Content" (ML12156A069).

Regulatory Audit Scope

Audit team members will review documents and other requested information outlined in the information needs list (Attachment 1). This list covers those environmental review areas outlined in the Background section of this audit plan. Attachment 2 lists those areas for which pre-arranged audit discussions will be worked out between the NRC and Kairos project managers to take place the first week of the audit (see discussion below for audit logistics.)

Environmental Review Team

Table 1 includes a list of the NRC's environmental review team assigned to the Kairos CP review and their role or review area coverage. Additional NRC staff will participate in some audit discussions based on coordination with related reviews (see Attachment 2).

Table 1. Review Areas with assigned team members

Team Member	Role / Review Area
Ken Erwin	Environmental Review Supervisor
Tami Dozier	Environmental Project Manager
Peyton Doub	Deputy Environmental Project Manager; Site and Technical Overview / Proposed Action / Land Use and Visual Resources; Ecological Resources / Non-Radiological Human Health; Noise; Alternatives
Don Palmrose	Radiological Human Health; Transportation of Radioactive Materials; Fuel Cycle and Radiological Waste Management; Postulated Accidents
Jennifer Davis	Historic and Cultural Resources
Joseph Giacinto	Water Resources and Hydrogeology; Climate Change
Laura Willingham	Air Quality
Daniel Mussatti	Socioeconomics; Environmental Justice; Non-radiological Waste Management; Cost-Benefit Discussion
Kevin Folk	Adjunct Team Member

Information and Other Material Necessary for the Regulatory Audit

The NRC staff requests that all the documents and other requested information identified in Attachment 1 be provided by Kairos on the online reference portal.

Logistics

Entrance Meeting	February 28, 2022
Exit Meeting	March 21, 2022 (Tentative)

Audit meetings will take place in a virtual format, using Microsoft Teams, or via other, similar platform. The NRC and Kairos audit managers will schedule meetings as needed upon Kairos review of this audit plan. The audit duration is anticipated to be approximately 3 weeks with activities occurring regularly throughout the first week and intermittently thereafter. Attachment 2 describes sessions to be pre-arranged for the first week. Follow up sessions will be scheduled, if needed, until audit closure.

Special Requests

The NRC staff requests that Kairos Power ensure that their technical staff are available to answer questions during the audit.

Deliverables

At the completion of the audit, a publicly noticed exit meeting will be held at which time a summary of audit activities and discussions will be presented along with the status of staff information needs identified as part of the audit. In addition, the audit team will issue an audit summary within 90 days after the exit meeting. The audit summary will be declared and entered as an official agency record in ADAMS and be made available for public viewing through the publicly available records component of ADAMS.

References

Interim Staff Guidance Augmenting NUREG-1537, Part 1, “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Format and Content,” for Licensing Radioisotope Production Facilities and Aqueous Homogeneous Reactors (ML12156A069)

Interim Staff Guidance Augmenting NUREG-1537, Part 2, “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria,” for Licensing Radioisotope Production Facilities and Aqueous Homogeneous Reactors (ML12156A075)

Contacts

Please contact Tamsen Dozier at 301-415-2272 or by email at Tamsen.Dozier@nrc.gov or Peyton Doub at 301-415-6703 or by email at Peyton.Doub@nrc.gov about any issues related to the conduct of the audit.

Date: February 2, 2022

Tamsen Dozier

Digitally signed by Tamsen Dozier
Date: 2022.02.02 05:13:34 -05'00'

Tamsen Dozier, Environmental Project Manager
Environmental New Reactor Branch
Division of Rulemaking, Environmental and Financial Support
Office of Nuclear Materials Safety and Safeguards

KAIROS POWER, LLC – HERMES PRELIMINARY SAFETY ANALYSIS REPORT PRE-SUBMITTAL AUDIT PLAN (CAC NOS. 000955, 05007513; EPID NO. L-2021-NEW-0012) DATED FEBRUARY 2, 2022

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DATE	01/28/2022	2/1/2022	2/1/2022

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Kairos Hermes CP Application Environmental Audit Information Needs List

Information Need ID	ER Section	Information Needed
Site and Technical Overview (EIS Chapters 1 and 2)		
STO-1	1.2	Briefly outline the ownership history of the site, and indicate what if any easements or encumbrances exist on the site property
STO-2	2.2	Show estimated, approximate routes for any new utilities that would be constructed, such as sewer lines and incoming electric distribution lines. Note that Sec 6.2.1 states that construction would include "the installation of water and sewer lines that connect the facility to the City of Oak Ridge water supply system."
Cumulative Impacts (multiple review areas)		
CMLT-1	4.13	Please provide rough bounding information on the location and land and water needs for the Fuel Fabrication Facility.
CMLT-2	4.13	Please provide a bounding estimate on the years of operation of the Fuel Fabrication Facility.
Land Use and Visual Resources (EIS Section 3.1)		
LU-1	3.1.1	The ER does not provide information on the zoning of the site. Indicate the zoning established by the City of Oak Ridge for the site. The City zoning map indicates IND-2, but the zoning ordinance indicates that industrial facilities handling radioactive materials require IND-3 zoning. Clarification needed.
LU-2	3.1.1	Figure 3.7-3 on Page 3-145 shows an undeveloped right-of-way (ROW)-like extension of the site proceeding southwest from the site to the Clinch River arm of Watts Bar Reservoir. This extension of the site does not appear on other site maps. Clarification needed.
LU-3	3.1.1.2 4.1.1.4 4.13.1	Demonstrate that the proposed facilities would not penetrate the air spaces identified as having to be free of flight obstructions for the proposed City of Oak Ridge Airport to the south.
LU-4	3.1.1.2 3.4.1.1	Page 3-77, Figure 3.4-2: Should 2% Annual Chance Flood Hazard be 0.2% Annual Chance Flood Hazard?
Air Quality and Noise (EIS Section 3.2)		
AQN-1	3.2.6 4.2.2	Section 3.2.6, p.3-20 states that the nearest resident is approximately 0.7 mi north of the site; but Section 4.2.2, p. 4-18 states that the nearest residence is 1.25 mi away. Clarification needed.
AQN-2	4.2.2	Provide additional details as to how the noise attenuation data in Table 4.2-3 were calculated. Did the calculations assume

Information Need ID	ER Section	Information Needed
		leaf-on or leaf-off conditions? *We can work with data whether leaf-on or leaf-off, but we just need to understand the data presented*.
Water Resources and Hydrogeology (EIS Section 3.3)		
HYD-01	4.3	As no offsite disposal is planned, please describe any change in the site grade, drainage or topography as a result of the onsite use of excess excavated soil that would have formerly occupied the space of subgrade building structures and foundations, measures or best practices to account for the potential exposure to contaminated soils and any anticipated coordination with DOE for soil excavation activities.
HYD-02	4.13.3	In Section 4.13.3, the ER indicates that "Table 4.13-1 identifies recent past, present, and reasonably foreseeable future actions within the geographic extent of analysis that can be assessed to determine cumulative effects on the geologic environment." Yet, the geologic environment is not listed as a "Potentially Affected Resource(s)" in this table. Please explain how the Geologic Environment in Section 4.13.3 was evaluated for recent, past, present and reasonably foreseeable future actions, including anticipated fuel fabrication facility that is planned to be built adjacent to the reactor given the lack of mention the Geologic Environment in Table 4.13-1.
HYD-03	3.3.3.1	Clarify the apparent variability of subsurface stratigraphy between ER Section 3.3.3.1, ER Figure 3.3-3 and PSAR Figure 2.5-3 in the area crossing the former K-33 site with respect to the clay profile, associated depths to bottom of clay and the position the Oma (Mascot Dolomite) stratigraphy.
HYD-04	3.4	Please define and clarify any implications of the "TVA Flowage Easements" shown in Figure 3.4-2 adjacent to the reactor facility to anticipated land use, hydrological resources and development.
HYD-05	3.4.1.2	Please explain what is meant by the "...final decision on the K-31/K-33 Area groundwater..." as described in Section 3.4.1.2.
HYD-06	3.5.5.3	Section 3.5.5.3 indicates that the K-901 Holding Pond is shown in Figure 2.2-1; however, there is no pond labeled as the K901 Holding Pond.
HYD-07	3.7.2.5 and 5.2	In Section 3.7.2.5, please clarify what constitutes "wet weather" and the frequency of these periods when Rarity Ridge WWTP operates at peak capacity and explain the ability of the Rarity Ridge WWTP to treat the estimated 0.02 MGD of facility wastewater during these periods and any associated potential indirect or direct impacts. Also, please provide a reference for the statement "...the plant is under evaluation for future growth."

Information Need ID	ER Section	Information Needed
		and, in Section 5.2, a reference for what measures that the "…city is currently working towards reducing inflow and infiltration coming into the plant." Describe any agreements with Rarity Ridge WWTP for accepting wastewater from the planned facility with respect to anticipated construction and operation dates of the proposed Kairos facility.
HYD-08	3.4.2.3	Clarify if the estimated facility water use is "44 gpm (0.06 MGD)" as described in ER Section 3.4.2.3 or "0.07 million gallons per day" as described in ER Section 4.4.2.
HYD-09	3.4.1.2	Describe the potential for new underground (wastewater, utility lines, etc.) utilities to act as groundwater sinks or sources as described in ER Section 3.4.1.2 and any anticipated monitoring plan provisions.
HYD-10	3.4.2.3	Based on the discussion in ER Section 3.4.2.3, please clarify the intended source of Fire Suppression System's water supply for infrequent use (3,170 gpm/4.56 MGD) including the make up supply (793 gpm/1.14 MDG) and the approximate periods between refills with respect to the capacity of the municipal system. Please confirm that the fire protection system (ER Section 2.4.1) and the fire suppression system (ER Section 3.4.2.3) are one in the same and clarify any discrepancies between the slightly different refill rates listed in Section 2.4.1 and Section 3.4.2.3.
HYD-11	3.4.1.2.1, 4.3.2 and 4.5.1.2	As described in ER Section 3.4.1.2.1, "Historically, building basement dewatering significantly altered the mapped potentiometric surface in the areas of the ETTP." and related to dewatering discussion in ER Section 4.3.2 and Section 4.5.1.2, provide an approximate bounding estimate of dewatering rates during the duration of construction, plant operation and decommissioning. If dewatering is planned, please describe the anticipating dispositioning of the any water volumes including any anticipated DOE consultations to manage the water and, anticipated alterations to the groundwater flow field due to dewatering during operations.
HYD-12	4.8.1.7	Section 4.8.1.7 states that specific environmental monitoring of nonradiological constituents would be determined through the permitting process. Section 4.4.4 indicates that"..., no nonradiological groundwater monitoring activities are planned for the site." Please clarify permitting requirements for monitoring nonradiological constituents and any apparent inconsistencies between the statements in Section 4.8.1.7 and Section 4.4.4 and the disposition of DOE's continuing monitoring program for the K-31/K-33 area.

Information Need ID	ER Section	Information Needed
Ecological Resources (EIS Section 3.4)		
ECO-1	1.4 3.5.6	Page 1-3 of ER states that an onsite field delineation of wetlands and other waters of the United States was conducted on the site. But the information presented in Section 3.5.6 is referenced to a 1994 DOE study. Clarification needed.
ECO-2	3.5.7.1 3.5.7.2	Indicate the references(s) for the unreferenced descriptive information in Sections 3.5.7.1 and 3.5.7.2.
ECO-3	3.5.7.2.2	Page 3-92, Sec 3.5.7.2.2 (Birds) states that a field survey was conducted of the site in June 2021. Provide a brief explanation of the procedures and observations of that survey.
ECO-4	3.5.7.2.2	Page 3-92, Sec 3.5.7.2.2 (Birds) states that a field survey was conducted of the site in June 2021. Also, Table 1.4-2 states that a field survey identified no eagle nests in the vicinity of the site. Provide a copy of that survey.
ECO-5	3.5.11 1.4	Provide a copy of the IPaC search results forming the basis of Section 3.5.11. Also, Table 1.4-2 on Page 1-8 states that the applicant has developed a biological assessment. If so, provide a copy of that biological assessment.
ECO-6	3.5.11.4	Page 3-101 Sec 3.5.11.4 states that bald eagles are not known to nest or forage on or adjacent to the site. Provide the basis for this statement. How can we know that bald eagles are not present in forests around perimeter of site?
ECO-7	4.5.1.5	Page 4-35, Sec 4.5.1.5 (Protected Species) states that no suitable [Indiana] bat trees … were observed in the undisturbed riparian corridor adjacent to the site. Indicate the basis for this statement.
ECO-8	4.5.2.5	Page 4-37, Sec 4.5.2.5 states that no federal or state-listed threatened, endangered or special status plant species have been observed on or in the immediate vicinity of the site. Povide the basis for this statement. Can you quantify what constitutes the "immediate area?"
ECO-9	4.5.1.3	Please explain why the temporary and permanent impact acreages for herbaceous/grassland impacts in Table 4.5-1 total 88 ac when the table states that the total acreage of that habitat is only 72 ac.
ECO-10	4.5.1.2	Page 4-33, Sec 4.5.1.2 states that "Groundwater removed during construction for dewatering [of the reactor building excavation] will be properly managed as discussed in Section 4.4.1.1.1, That section just states that Kairos would would consult with DOE and follow DOE's recommendations. Please provide more details on how that water would be managed.
ECO-11	4.5.1.2	Roughly bound the quantity of groundwater that might have to be dewatered to excavate for construction of the reactor.

Information Need ID	ER Section	Information Needed
ECO-12	4.5.1.2	Page 4-33 Sec 4.5.1.2 states that stormwater would flow to a stormwater pond and then be discharged to Poplar Creek. Indicate the location of the proposed discharge. Page 2-15 states that Kairos assumes that the stormwater discharge would use an existing outfall.
Cultural and Historical Resources (EIS Section 3.5)		
HCUL-1	3.6, 3.6.2, 3.6.3, 4.6, and 4.6.1	Provide a knowledgeable expert to discuss the historic and cultural resource investigations conducted on or near the proposed project site, and historic and cultural resources described in Section 3.6.2. Staff would also like to discuss potential impacts to historic and cultural resources from the proposed action as they are currently understood and as described in the ER.
HCUL-2	1.4	In ER Table 1.4-1, there is a table entry for Tennessee DOT that states that there would be construction of a driveway connection to Hwy 58. Is this land previously disturbed and has it been surveyed for historic and cultural resources?
HCUL-3	1.4	ER Section 1.4, states that Kairos (in addition to the formal consultations listed in Table 1.4-2), made informal contacts with the National Nuclear Security Administration, the Bureau of Indian Affairs, the Tennessee Department of Environment and Conservation (TDEC), the Tennessee Department of Transportation (TDOT), and the City of Oak Ridge. The stated purpose was to inform the agencies about the project and to coordinate project planning. Provide a summary of any interactions related to historic and cultural resources as well as any applicable correspondence.
HCUL-4	1.4 and 3.6.4	ER Table 1.4-2 Consultations Required for Construction and Operation and ER Section 3.6.4 - Did Kairos engage the Tennessee Historical Commission, Tennessee Division of Archaeology, Native American Nations, U.S. Department of Energy, or the National Park Service while developing its application for this proposed action? If so, provide a summary of any interactions as well as any applicable correspondence.
HCUL-5	1.4 and 4.6.1	Provide a knowledgeable expert to discuss DOE-OREM's NEPA and NHPA Section 106 consultation and review activities associated with the land transfer to Community Reuse Organization of East Tennessee (CROET). ER Table 1.4-2 provides a list of statutes that guide required consultations. With respect to Native American Nations, the table lists the Native American Grave Protection and Repatriation Act as one of the applicable statutes. Additionally, in ER Section 4.6.1, it states to minimize impacts to historic and cultural resources,

Information Need ID	ER Section	Information Needed
		Kairos would develop an Archaeological Monitoring and Discovery plan that would specify procedures for addressing and handling the unexpected discovery of human remains or archaeological material during construction. It states that if human remains are discovered, construction personnel will notify a representative of Kairos, and that representative will contact appropriate local law enforcement and the DOE historic preservation officer. DOE's 2011 EA (DOE/EA-1640), Section 3.6.2.1, states that inadvertent discovery and notification provisions would be contained within lease and/or deed restrictions. Similarly, the 2017 Quitclaim Deed for the Former K-33 Site includes lease and/or deed restrictions regarding the protection of historic and/or archaeological resources. Since the lands are no longer considered Federal property, provide a summary response to confirm if federal land management requirements still apply as part of any existing lease and/or deed restrictions with respect to the inadvertent discovery and protection of historic and cultural resources (such as ARPA and NAGPRA). Provide a summary response to describe any stipulations that Kairos Power must abide with.
HCUL-6	4.6.1	ER Section 4.6.1 - Provide a status update on the development of the Archaeological Monitoring and Discovery plan along with any training material that will be used with construction personnel regarding the identification of historic and cultural resources. Will this procedure be developed with input from the Tennessee Historical Commission, Tennessee Division of Archaeology, or DOE? Would the plant incorporate any existing DOE-OREM guidance?
HCUL-7	3.6.4 and 4.6.1	ER Section 3.6: DOE-OREM executed several MOAs with respect to the decontamination and decommissioning activities and mitigation of adverse effects to historic properties associated with the K-25 site and ETTP. In reviewing the 2012 Final Memorandum of Agreement (MOA), Execution Plan, and Final Mitigation Plan for the interpretation of historical properties at East Tennessee Technology Park (ETTP) (2012 MOA), and the July 31, 2019 amendment, is the Kairos Hermes project located outside the bounds of the K-25 Preservation Footprint Viewshed (see Stipulation 3 of 2019 Amendment)?
HCUL-8	3.6.2 and 3.6.3	ER Section 3.6.2 summarizes previous cultural resource investigations (archaeological and architectural) conducted on and in the vicinity of the ORR since the 1970. Did any of the referenced surveys occur within or overlap with the 185-acre proposed project area? Additionally, in DOE's Environmental Assessment prepared for the Transfer of Land and Facilities within the East Tennessee Technology Park and Surrounding

Information Need ID	ER Section	Information Needed
		Area, Oak Ridge, Tennessee (DOE/EA-1640), it discusses the location of four NRHP-eligible prehistoric archaeological sites in the EA study area. Staff would like to discuss where these sites are in relation to the proposed Kairos site.
HCUL-9	3.6.5	Please make available copies of references listed in Section 3.6.5 of the ER in the reading room.
HCUL-10	4.6.1	In ER Section 4.6.1, it states that the nearest listed National Register of Historic Places property is the K-25 Gaseous Diffusion Plant which is part of the Manhattan Project National Park. The ER states that "…given the intervening structures between the site and the K-25 Plant as well as the low profile of the proposed structures on the site, no visual or other indirect impacts occur." Please describe or discuss any architectural surveys conducted for the proposed project to assess indirect (i.e., visual) effects to other historic and cultural resources (i.e., historic properties) within the viewshed/indirect effects APE?
Human Health: Non-Radiological (EIS Section 3.7.1)		
HHN-1	4.8.1.2.1	Provide a quantitative bound on what constitutes the "insignificant volumes" of nonradioactive liquid chemical wastes to be generated, as stated on Page 4-51.
HHN-2	4.8.1.5	Provide information on the type and height of perimeter fencing and signage to be built around the proposed facilities.
HHN-3	4.8.1.6	Provide subject matter expert(s) to discuss chemical hazards regarding the FLiBe salt to be used in the Hermes test reactor. Due to the hazardous nature of beryllium, especially concerning airborne particulates, the staff needs to understand how this beryllium-bearing material will be controlled and monitored for potential beryllium exposure. PSAR Section 1.2.1 states "Flibe coolant, while chemically stable, contains potentially toxic constituents including beryllium. The reactor building and ventilation system function as a confinement to manage and control beryllium hazards..." PSAR Section 4.4.1 states "In addition, the biological shield reduces radiation damage to plant equipment and also reduces the potential for Beryllium exposure to reactor personnel." PSAR Section 9.2.2 states "In addition, the RBHVAC system ensures that chemical hazards (such as Beryllium) are within applicable limits." However, the ER has no similar discussion regarding occupational and public safety with respect to beryllium.
HHN-4	4.8.1.6	Provide the basis for the statement in Section 4.8.1.6 that "the facility design and practices would ensure compliance with storage requirements and limit exposures." What practices would be taken to "limit exposures"?

Information Need ID	ER Section	Information Needed
HHN-5	4.8.1.7	Section 4.8.1.7 states that specific environmental monitoring of nonradiological constituents would be determined through the permitting process. Please provide a brief description of what monitoring activities (if any) might be required in the permits.
Human Health - Radiological (EIS Section 3.7.2)		
HHR-1	4.8.2.4	Provide a list of the specific radionuclides and annual radiological effluents amounts / concentrations applied as input parameter values in the NRCDose calculations.
HHR-2	4.8.2.4	Provide in a location accessible by the staff for audit review the NRCDose input and output files (i.e., for both XOQDOQ and GASPAR II) for staff inspection.
HHR-3	4.8.2.4	Provide subject matter expert(s) to discuss the details of the NRCDose calculations and results presented in Section 4.8 of the ER and to explain why Table 4.8-3 TEDE values do not include contributions from tritium.
HHR-4		Provide subject matter expert(s) to discuss the use of ORR Tower L meteorological data for NRCDOSE calculations.
HHR-5	2.6.1.1, 4.8.2.4.2, 4.3.1.2, & 4.3.2	Provide a subject matter expert(s) to discuss radiological liquid discharges, such as its sources, collection, and disposal.
HHR-6	4.8.3	Provide a subject matter expert(s) to discuss the radiological environmental monitoring of ER Section 4.8.3, Radiological Monitoring.
HHR-7	3.8	Make available for staff review the following ER Section 3.8 references (Note: if not listed below, then the references were accessible): 1) Ref # 12 - U.S. Department of Energy, "Environmental Baseline Survey Report for the Proposed Title Transfer of the Former K-33 Area at the East Tennessee Technology Park, Oak Ridge, Tennessee." DOE/OR/01-2658. September 2015. 2) Ref # 13 - U.S. Department of Energy, "Environmental Baseline Survey Report for the Proposed Title Transfer of the Former K-31 Area at the East Tennessee Technology Park, Oak Ridge, Tennessee." DOE/OR/01-2677. July 2015. 3) Ref # 16 - 16. Bureau of Labor and Statistics, Hours-based fatal injury rates by industry, occupation, and selected demographic characteristics, Website: [missing hyperlink to website]
HHR-8		Provide information and subject matter expert(s) to discuss the text in ER Section 4.13.8 where the Kairos Power Nuclear Fuel Fabrication Facility is mentioned as a future project.

Information Need ID	ER Section	Information Needed
Fuel Cycle and Radiological Waste Management (EIS Section 3.9)		
FCRW-1	2.7	Provide subject matter expert(s) to discuss Kairos's source for HALEU material and the related front end fuel cycle process with respect to Table S-3.
FCRW-2	2.71	Provide subject matter expert(s) to discuss the statement in Section 2.7.1: "A manufacturer has not been decided for the Hermes reactor" and the status of developing a Kairos-specific TRISO fuel fabrication process including sources of HALEU material.
FCRW-3	4.9.1.2	Provide subject matter expert(s) to discuss the use of the Continued Storage GEIS, NUREG-2157 and, as presented in ER Section 4.9.1.2, on the expected long-term storage performance of the TRISO coatings (e.g., "degradation rates for storage systems associated with continued storage of TRISO fuel") based on available supporting data of prior TRISO fuels (e.g., Fort St Vrain reactor and the German pebble bed research reactor).
FCRW-4	2.7.1	Provide information and subject matter expert(s) to discuss what is to be done with the spent TRISO fuel once the facility is decommissioned, such as to whether the facility footprint includes a place for a dry storage facility during or after the cessation of operations.
FCRW-5	2.6 and 2.7	Provide information and subject matter expert(s) to discuss the disposal of nitrate salt during decommissioning to include the quantity of material and the rational for disposing as either Class A or B LLRW.
FCRW-6	2.6.1.2.3 and 4.9	Provide information and subject matter expert(s) to discuss the disposal of tritium-bearing material used to capture tritium gas by the Tritium Management System (ER Section 2.6.1.2.3).
FCRW-7	2.6.1.1 and 4.9	Provide information and subject matter expert(s) to discuss the storage and disposal of solidified FLiBe salt with respect to: 1) possible off-gassing of florine (due to radiation decomposition) or the release of tritium during long-term storage, 2) the quantity to be disposed of during decommissioning, 3) how this waste could be Class C LLRW per 10 CFR 61.55 since there is no limits established for tritium in Class B or C wastes under Table 2 of 10 CFR 61.55(a)(4), and 4) to confirm that the chemical form of this waste, outside of its radiological content, would meet all acceptance criteria for disposal at WCS (i.e., WCS would accept this waste stream).
FCRW-8	2.6.1.3 and 4.8.2.2.1	Provide subject matter expert(s) to discuss the justification for the statement in ER Section 2.6.1.3 that "[t]he facility is not expected to need a gaseous radioactive waste system." given that is later noted releases will be controlled and a detailed

Information Need ID	ER Section	Information Needed
		radiological effluent release dose analysis is provided in ER Section 4.8.
FCRW-9	2.6	Provide a subject matter expert(s) to discuss the estimated Table 2.6-1 volume of dry active waste (i.e., LLRW) in comparison to the typical annual amount produced by a PWR as described in Rev 1 of NUREG-1437 Section 3.11.1.1 on page 3-154 and to confirm how the approximately 8,800 ft3 per year was determined.
Transportation of Radioactive Material (EIS Section 3.10)		
TR-1	4.10.2.2, 4.10.2.5, & 4.10.3.1	Provide information and subject matter expert(s) to discuss the transportation of spent TRISO fuel including how TRISO fuel may or may not be bounded by previously analyzed scenarios related to LLWR fuel.
TR-2	4.10.3.1	Provide subject matter expert(s) to discuss non-radiological impacts that would result from an accident involving the shipment of radioactive material including if or how the scenario would be bounded by previously analyzed scenarios for LLWR fuel.
TR-3	4.10.2.3, 4.10.2.5 & 4.10.3.2	Provide expected radionuclide activity levels (especially for tritium) and disposal acceptance levels and subject matter expert(s) to discuss the shipment and disposal of this material at the various commercial LLRW disposal sites.
TR-4	4.10.4	Provide for staff review the following ER Section 4.10.4 references: 1) Ref # 9 - Kairos Power LLC, 2021. Flibe Safety Data Sheet. Issued April 2, 2021. 2) Ref # 10 - SQM, 2014. Sodium Nitrate Safety Data Sheet. Issued January 2014. 3) Ref # 11 - SQM, 2015. Potassium Nitrate Safety Data Sheet. Issued March 2015
Accidents (Section 3.11)		
ACC-1		Provide subject matter expert(s) to discuss the information and the results presented in Section 4.11 of the ER, the related offsite accident consequences concerning the MHA, and the potential for mitigation.
ACC-2		Provide the MHA release source term that resulted in the dose consequences presented in ER Table 4.11-1.
Alternatives (Chapter 4)		
ALT-1	5.3	Provide a map (or a description) showing the locations of Potential Sites 1.1 and 1.3

Information Need ID	ER Section	Information Needed
ALT-2	5.4.1.3	Provide maps (preferably as overlays on aerial photographs or topographic maps) clearly indicating the shapes and sizes of the Proposed Eagle Rock Site and Proposed Eagle Rock Property (as shown on Figure 5.4-3 on Page 5-48). Indicate the approximate size of each. Can you indicate where in the Proposed Eagle Rock Site where the proposed test reactors would be built under this alternative, or can you indicate that they could be built anywhere within the site.
ALT-3	5.4.1.4	Sec 5.4.1.4. Indicate how the water needs of the proposed test reactor would be met, and how the wastewater would be treated, if the proposed test reactor were to be built at the Eagle Rock Site.
ALT-4	5.4.1.5.2	Provide a copy of the IPaC search results for the Eagle Rock site..
ALT-5	5.4.1.5	Referring to Figure 5.4-5 "Vegetation Types of the Proposed Eagle Rock Site" - explain what is meant by the "Bird Point Survey Locations" and the "Vegetation Transect Locations". What surveys are these a part of?

Kairos Hermes CP Application Environmental Audit Sessions for Week 1

Audit Sessions Anticipated	NRC staff to attend	Information Needs to Be Covered
Introductory Meeting (Audit Kickoff)	All audit participants	
Site and Technical Overview / Proposed Action	All NRC environmental team	STO-1; STO-2
Historic and Cultural Resources	Jennifer Davis	HCUL-1 through HCUL-10
Water Resources and Hydrogeology	Joe Giacinto	HYD-1 through HYD-3, HYD-5, HYD-7 through HYD-10, HYD-11 and HYD-12
Ecological Resources	Peyton Doub	ECO-1 through ECO-9
Land Use and Visual Resources	Peyton Doub	LU-1 through LU-4
Radiological Human Health	Donald Palmrose; Jeff Schmidt; Michelle Hart	HHR-1 through HHR-7
Transportation	Donald Palmrose; Ed Helvenston	TR-1 through TR-4
Fuel Cycle and Radiological Waste Management	Donald Palmrose; Ed Helvenston	FCRW-1 through FCRW-9
Joint Session on Water Resources, Land Use and Ecological Resources	Peyton Doub and Joe Giacinto	ECO-10 through ECO-12 HYD-4, HYD-6, HYD-11
Non-radiological Human Health	Peyton Doub	HHN-1 through HHN-5
Postulated Accidents	Donald Palmrose; Jeff Schmidt; Michelle Hart	ACC-1 and ACC-2
Alternatives / Process	Peyton Doub	ALT-1
Alternatives Comparisons	All NRC environmental review team	ALT-2 through ALT-5
Air Quality and Noise	Laura Willingham, Tami Dozier; Peyton Doub	AQN-1 and AQN-2
Cumulative Impacts	All NRC environmental review team	CMLT-1; CMLT-2; HHR-8; HYD-2