From:	Cuadrado de Jesus, Samuel
To:	Drew Peebles; Darrell Gardner
Cc:	Beasley, Benjamin; Magruder, Stewart; Kavanagh, Kerri; Ortega-Luciano, Jonathan; Prescott, Paul; Rivera, Richard
Subject:	NRC staff preliminary clarification questions for the Kairos Quality Assurance Program Topical Report
Date:	Friday, September 18, 2020 2:30:00 PM
Attachments:	NRC Staff Set 1 Questions for App. B Criterion I Kairos QA Program TR.pdf

Mr. Peebles

The NRC staff has completed an initial review of Kairos' Quality Assurance Topical Report and developed a set of preliminary questions (attached) to improve its understanding of the information presented in the report. The questions are intended to:

- Obtain clarification regarding material in the topical report
- Promptly identify areas where additional information may be needed
- Facilitate discussions and continue effective communication

The NRC staff requests that Kairos propose times to discuss the attached preliminary questions in a public meeting.

Please let me know if you have any questions.

Regards,

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U.S. Nuclear Regulatory Commission Preliminary Questions on Kairos Power LLC Quality Assurance Program Topical Report (KP-TR-007-NP)

By letter dated May 15, 2020, Kairos Power LLC (Kairos) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review KP-TR-007-NP, "Quality Assurance Program for the Kairos Power Fluoride Salt-Cooled High Temperature Reactor" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20136A414). In this letter, Kairos requested NRC staff approval of the topical report to be used to satisfy quality assurance requirements for use by applications submitted in accordance with 10 CFR 50 and 10 CFR 52:

- Limited Work Authorizations (LWA) pursuant to 10 CFR 50.10(d)(3)(i)
- Construction Permit (CP) Applications pursuant to 10 CFR 50.34(a)(7)
- Operating License (OL) Applications pursuant to 10 CFR 50.34(b)(6)(ii)
- Early Site Permit (ESP) Applications pursuant to 10 CFR 52.17(a)(1)(xi)
- Design Certification (DC) Applications pursuant to 10 CFR 52.47(a)(19)
- Combined License (COL) Applications pursuant to 10 CFR 52.79(a)(25)
- Standard Design Approval (SDA) Applications pursuant to 10 CFR 52.137(a)(19)

By letter dated August 5, 2020 (ADAMS Accession No. ML20213C698) the NRC staff found that the material presented provides the technical information in sufficient detail to enable the staff to complete a detailed technical review.

The NRC staff has completed an initial review of the topical report and developed a set of preliminary questions to improve its understanding of the information presented in the report. The questions are intended to:

- Obtain clarification regarding material in the topical report
- Promptly identify areas where additional information may be needed
- Facilitate discussions and continue effective communication

The NRC staff requests that Kairos propose times to discuss the attached preliminary questions in a public meeting. Based on the outcome of its discussions with Kairos on the topics identified below, the NRC staff may develop formal requests for additional information to complete its review of the topical report.

Set 1 Questions:

1. Appendix B to 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," in the "Introduction," states that, "Every applicant for a combined license under part 52 of this chapter is required by the provisions of § 52.79 of this chapter to include in its final safety analysis report a description of the quality assurance applied to the design, and to be applied to the fabrication, construction, and testing of the structures, systems, and components of the facility and to the managerial and administrative controls to be used to assure safe operation."

    i. Clarify how the staff should identify the Appendix B Criteria applicable to each licensing activity.

    ii. Clarify if the QA program will be applicable to Manufacturing License activities pursuant to 10 CFR 52.157(f)(17).

    iii. Paragraph 1.2.3, "Fabrication." states that "Reports to the CEO and is responsible for fabrication of components." However, it is the staff's

understanding that Kairos is not pursuing a Manufacturing License. Clarify if the fabrication organization continues to exist.

2. The organization as described in Section 1, “Organization,” is not in alignment with Figure II.1-1, “Kairos Power Functional Organization,” as noted below:
    a. Section 1.2, “Design Phase and Corporate Support,” describes the organization for the design phase. Figure II.1-1 depicts the QA organization reporting to the Chief Executive Officer (CEO). However, a description of the QA organization’s functions is not provided.
        i. Clarify the role of the QA organization during the design phase.
    b. Section 1.3.1, “Construction Management,” describes an organization that is responsible for construction activities, including construction, fabrication, engineering, supply chain, construction testing, and quality assurance/quality control (QA/QC).
        i. Roles and responsibilities are not included in Section 1.3.1 for construction testing or QA/QC. Clarify in Section 1.3.1 what are the roles and responsibilities of construction testing and QA/QC during the construction phase.
        ii. Figure II.1-1 does not appear to include an organization as described in Section 1.3.1 nor is it clear if organizations described in Section 1.2 are going to transition into the construction phase. Clarify how Figure II.1-1 adequately depicts an organization during the construction phase.
    c. Section 1.3.2, “Operations Management,” describes an organization that is responsible for plant operation activities, including operations, maintenance, site services, technical services, engineering, supply chain, startup/preop testing, and QA/QC.
        i. Roles and responsibilities are not included in Section 1.3.2 for maintenance, site services, technical services, or startup/preop testing. Clarify in Section 1.3.2 what are the roles and responsibilities of maintenance, site services, technical services, and startup/preop testing during the operation phase.
        ii. Figure II.1-1 does not appear to include an organization as described in Section 1.3.2, nor is it clear if organizations described in Section 1.2, or 1.3.1 are going to transition into the operation phase. Clarify how Figure II.1-1 adequately depicts an organization during the operation phase.
3. Appendix B to 10 CFR Part 50, Criterion I, “Organization,” states, in part, that “[t]he quality assurance functions are those of (1) assuring that an appropriate quality assurance program is established and effectively executed; and (2) verifying, such as by checking, auditing, and inspecting, that activities affecting the safety-related functions have been correctly performed.” Also, Criterion II, “Quality Assurance Program,” states that “[t]he applicant shall regularly review the status and adequacy of the quality assurance program. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the quality assurance program which they are executing.” Furthermore, Criterion XVIII, “Audits,” states that “[a] comprehensive system of planned and

periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program."

a. Section 2.4, "Periodic Review of the Quality Assurance Program," describes that management is responsible for assessing the adequacy of that part of the program for which they are responsible to assure its effective implementation at least once each year or at least once during the life of the activity, whichever is shorter. However, the period for assessing QA programs during the operational phase may be extended to once every two years. (This requirement does not apply to non-operations activities.)"

    i. Clarify, how are the requirements in NQA-1 Requirement 18 paragraph 201.2 and 201.3 are met to allow for a two-year extension.

4. Clarification is requested for the following Sections of the QA program topical report:

    a. The "Executive Summary," last sentence of the second paragraph states, "[i]t should be understood, however, that statements herein may describe activities and processes that may not yet be performed or implemented and will not be performed or implemented until it is reasonable and appropriate to do so consistent with a phased implementation."

        i. Clarify the process to be used for the phased implementation.

    b. In Part I, "Introduction," the second paragraph, last sentence states that "[t]he QAPD is based on the requirements and guidance of ASME NQA-1-2015, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, with specific reference to selected Part III sections, as identified in this document."

        i. Clarify if Kairos intends to use any section of Part IV. For example, Part IV, Subpart 4.2.3, provides guidance on control of Legacy Technical Information for safety-related structures, systems, and components (SSCs).

5. App B to 10 CFR Part 50, Organization, states that "[i]rrespective of the organizational structure, the individual(s) assigned the responsibility for assuring effective execution of any portion of the quality assurance program at any location where activities subject to this appendix are being performed, shall have direct access to the levels of management necessary to perform this function."

    a. Sections 1.2 and 1.3 of the topical report do not define a position similar to a QA manager in accordance with regulatory requirements stated above. The cover letter of Kairos' submittal provides the Vice President (VP) of Regulatory Affairs and Quality; however, is not clear what are the roles and responsibilities of the VP and other individuals within the Quality Assurance Organization. Furthermore, Section 2.5, "Issuance and Revision to Quality Assurance Program," states that "[c]hanges to the QAPD [quality assurance program description] are evaluated by Quality Assurance to ensure that such changes do not degrade safety for previously approved quality assurance controls specified in the QAPD. New revisions to the document will be reviewed, at a minimum, by Kairos Power Quality Assurance and approved by Regulatory Affairs and Quality."

        i. Clarify the position responsible for initial issuance of the QAPD.

ii. Clarify if the VP of Regulatory Affairs and Quality is the QA Manager for the Kairos Power Organization.

iii. Clarify the roles and responsibilities of the Regulatory Affairs and Quality position.

iv. Clarify how the Regulatory Affairs and Quality organization fit under Part II, Section 1, Organization, of the QAPD?

v. Clarify in Figure II1.1 where the Regulatory Affairs and Quality organization are depicted.