

KP-NRC-2105-001

**Enclosure 1**

**Presentation Materials for NRC Public Meeting on Kairos Power Regulatory Analysis Topical Report  
Revision 2 Questions (Non-Proprietary)**




# Kairos Power

NRC Meeting On Kairos Power Regulatory Analysis Topical Report

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MAY 10, 2021



Kairos Power's mission is to enable the world's transition to clean energy, with the ultimate goal of dramatically improving people's quality of life while protecting the environment.

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In order to achieve this mission, we must prioritize our efforts to focus on a clean energy technology that is *affordable* and *safe*.

# Introduction

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- This topical report identifies the applicable regulations that Kairos Power believes apply to the Hermes test reactor and to the KP-FHR power reactor.
- NRC provided comments in April 12, 2021 email from Stewart Magruder to James Tomkins , “US Nuclear Regulatory Commission Preliminary Questions on Kairos Power Regulatory Analysis Topical Report (KP-TR-004)”
- Kairos Power generally agrees with the comments and intends to submit a revision to the topical report
- The following slides present NRC comments Kairos would like additional clarification and discussion on.

# Comments on Regulatory Analysis Topical Report

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- NRC General Comment Number 1
  - As an observation on the text portion of the TR, we'd expect additional future discussion on some topics beyond what's presented in the TR, like reactor coolant pressure boundary (to flesh out what an exemption looks like), emergency planning zone (just a discussion on specifics to be considered as part of future submittals), and material control and accounting.
- Kairos Response:
  - Agrees specific exemption requests will be submitted as part of the FSAR.
  - Would like to confirm no updates to the TR are being requested.

# Comments on Regulatory Analysis Topical Report

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- NRC General Comment Number 7
  - Is there any import to the distinction between “design” and “non-design” in the TR? We ask because making this distinction have meaning would involve additional review.
- Kairos Power Response:
  - No. From a compliance perspective there is no difference. The distinction was used to develop our systems design requirements and design bases.

# Comments on Regulatory Analysis Topical Report

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- NRC General Comment Number 9
  - Kairos should re-check the general listings in Table 1. For example, the applicability statement for Part 72 for the test reactor is inconsistent with the applicability tables later in the document
- Kairos Power Response:
  - We agree that Table 1 and Table E-2 are inconsistent and will be corrected.
  - Kairos Power wants to confirm 10 CFR 72 is applicable to non-power reactors

# Comments on Regulatory Analysis Topical Report

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- NRC Specific Comment on 10 CFR 50.47
  - The exemptions table for the power reactor lists 10 CFR 50.47 and then states: “Emergency Plans Kairos Power intends to implement alternate 50.160 rule for EP when approved through rulemaking OR will take exemption from Appendix E, similar to Tennessee Valley Authority Clinch River.” In the second scenario, would Kairos also be requesting an exemption from 10 CFR 50.47?
- Kairos Power Response:
  - A future Kairos Power exemption will be dependent on an alternate 10 CFR 50.160 rule for Emergency Planning.
  - If Kairos Power were to use the Clinch River approach, we would submit an exemption.
  - If rulemaking is finalized, then Kairos Power would use the new rule.

# Comments on Regulatory Analysis Topical Report

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- NRC Specific Comment on 10 CFR 50.54
  - 10 CFR 50.54(y), (aa)-(cc), and (ee) appear to be applicable to nonpower reactors on their face, would be applicable in accordance with the appendix of applicable regulations in NUREG-1537, Part 1, and there is no apparent reason not to apply them to a test reactor. But the TR states that these regulations are inapplicable to the test reactor.
- Kairos Power Response:
  - We agree that 10 CFR 50.54(y), (aa), (cc) and (ee) are applicable to test reactors. The TR has been updated to reflect these changes.
  - Kairos Power believes 10 CFR 50.54(bb) is applicable to power reactors only, should the dash between (aa) and (cc) have been a comma?

# Comments on Regulatory Analysis Topical Report

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- NRC Specific Comment on 10 CFR 50.109
  - 10 CFR 50.109 does not [apply] to nonpower reactors in accordance with a long-established Commission position. For example, in SRM-SECY-86-17, dated February 14, 1986, the Commission declined to apply the Backfit Rule in that rulemaking, stating, “[T]he backfit rule should not be applied to this amendment of the regulations which relates only to non-power reactors.
- Kairos Power Response:
  - We would like to discuss this further; Kairos Power notes that SECY-86-17 seems to apply narrowly.
  - The regulation wording does not explicitly exclude test reactors. What backfit protections are provided for non-power reactors?

# Comments on Regulatory Analysis Topical Report

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- NRC General Comment on 10 CFR 50 Appendix S
  - What, if any, portions of 10 CFR Part 50 Appendix S does Kairos believe applies to the test reactor?
- Kairos Power Response:
  - There is no part of 10 CFR 50 Appendix S that is applicable to a test reactor as denoted in the Kairos Power TR.
  - Does the staff concur?

# Comments on Regulatory Analysis Topical Report

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- NRC Specific Comment on 10 CFR 51.23
  - The continued storage rule does not apply to non-power reactors (79 FR at 56243).
- Kairos Power Response:
  - Kairos Power believes that the rule applies; but agrees the Generic Environmental Impact Statement (GEIS) did not address non-LWRs.

# Comments on Regulatory Analysis Topical Report

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- NRC Specific Comment on 10 CFR 70.24
  - Table A-2 says that 10 CFR 70.24 does not apply to the power reactor because the regulation does not apply to reactor licensees meeting 10 CFR 50.68(b), but Kairos intends to request an exemption from 10 CFR 50.68(b).
- Kairos Power Response:
  - An exemption to the requirements in 10 CFR 50.68(b) does not negate the applicability of the rule.
  - Exemption to 10 CFR 50.68(b) will be application specific.
  - Does the staff believe a change is required to the topical report?