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**Sent:** Monday, July 15, 2024 2:39 PM  
**To:** Martin Bryan  
**Cc:** Michael Orenak; Matthew Hiser; Barbara Hayes; Ian Tseng; Jenise Thompson; Sarah Tabatabai; Amitava Ghosh; Josh Borromeo  
**Subject:** NRC staff Slides for public meeting with Kairos on geologic mapping condition and foundation design for Hermes  
**Attachments:** NRC slides Public Meeting with Kairos regarding Geologic Mapping Permit.pdf

Marty,

Attached are the NRC staff's slides for the 7/18/24 public meeting with Kairos.

Cayetano (Tanny) Santos

**Hearing Identifier:** KairosPower\_PreApp\_Public  
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# Public Meeting with Kairos regarding Geologic Mapping Permit Condition for Hermes 1 site

July 18, 2024

# Hermes 1 Review Overview

- PSAR submitted in support of CP application described a mat foundation design
- Karst is present in the subsurface at the site
- Limited boring information was available to the staff
  - 6 borings to a max depth of 69.6 ft in the site area and 48.4 ft nearer the footprint
- Geologic mapping permit condition will confirm subsurface conditions at the foundation level

# Geologic Mapping Permit Condition

Kairos shall perform detailed geologic mapping of excavations for safety related engineered structures; examine and evaluate geologic features discovered in those excavations; and notify the Director of the Office of Nuclear Reactor Regulation, or the Director's designee, as specified in 10 CFR 50.4, "Written communications," once excavations for safety related structures are open for examination by the NRC.

# Change in Foundation Design

- CP application described a mat foundation but subsequent interactions with the permit holder and potential OL applicant indicate a pier foundation is the new design plan
- Staff needs to clarify their expectations to Kairos on the information necessary and actions to meet the permit condition given the pier foundation design

# Considerations for Pier Foundation

- Applicant plans to map the foundation interface (socket and base of pier) for each pier
- Pier design assumes at least 10 ft of sound rock (i.e. no evidence of karst or other geologic structures) in the pier socket
- Margin may be available for piers that cannot be constructed in socket of at least 10 ft

# How to meet the permit condition

- Mapping of socket walls and base of pier can meet the intention of the geologic mapping permit condition
  - Pier socket and foundation mapping should be made available to the NRC staff as soon as available for the sake of efficiency
- If minimum 10 ft sound rock socket cannot be accomplished applicant should evaluate why the less than 10 ft depth is acceptable.
  - Evaluation for how to apply margin and how many piers can be under the minimum depth without impacting structural stability
- Fence diagram or other correlation of geologic units and features in the subsurface and available geophysical information should be provided to identify subsurface features between adjacent piers