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July 9, 2024

2024-DF-NRC-002

Project No. 99902126

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Submittal of Deep Fission, Inc., White Paper Slides, "Conceptual Design Review of the Deep Borehole Pressurized Water Reactor (DB-PWR)"

The purpose of this letter is to submit the slides for the public meeting scheduled for July 10, 2024, regarding the subject white paper to the U.S. Nuclear Regulatory Commission (NRC) on behalf of Deep Fission, Inc. ("Deep Fission").

This letter contains no commitments. If you have any questions or require additional information, please contact Ingrid Nordby at ingrid.nordby@deepfission.com.

Sincerely,

Malcolm Thompson
Chief of Staff
Deep Fission, Inc.

Enclosure: Deep Fission, Inc., White Paper Slides, "Conceptual Design Review of the Deep Borehole Pressurized Water Reactor (DB-PWR)"

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cc:

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Enclosure

Deep Fission, Inc., White Paper Slides, “Conceptual Design Review of the Deep Borehole Pressurized Water Reactor (DB-PWR)”

DEEP FISSION

Conceptual Design Review of the Deep Borehole Pressurized Water Reactor (DB-PWR)

July 10, 2024

Agenda

- Introductions
- Purpose
- Company Information
- Design Overview
  - Standard Pressurized Water Reactor (PWR) Features
  - Novel Characteristics
- Regulatory Path

Deep Fission, Inc.

- Incorporated in 2023 by founders experienced in the nuclear industry
- Simplifying construction and licensing
  - PWR using existing supply chain and LEU fuel
  - Using natural geology for containment and pressure at ~1-mile depth
- Modular and scalable
  - Each reactor delivers from 1 to 15 MWe
  - Additional reactors can be added to a site to > 1 GWe
- Vision of low-cost nuclear power to address climate change, energy security, and access

Design Overview

- Standard Pressurized Water Reactor (PWR) Design Features
- Novel Characteristics

Standard PWR Design Features

- Standard Fuel Assemblies
- Standard Pressure (160 atm)
- Standard Temperature Range (275-315°C)
- Primary Loop Contained
- Standard Pressure for Secondary Loop (65 atm)
- Standard Temperature for Secondary Loop (steam at 185°C)
- Chemical, Volume, and Pressure Control System
- Hydrogen Injection

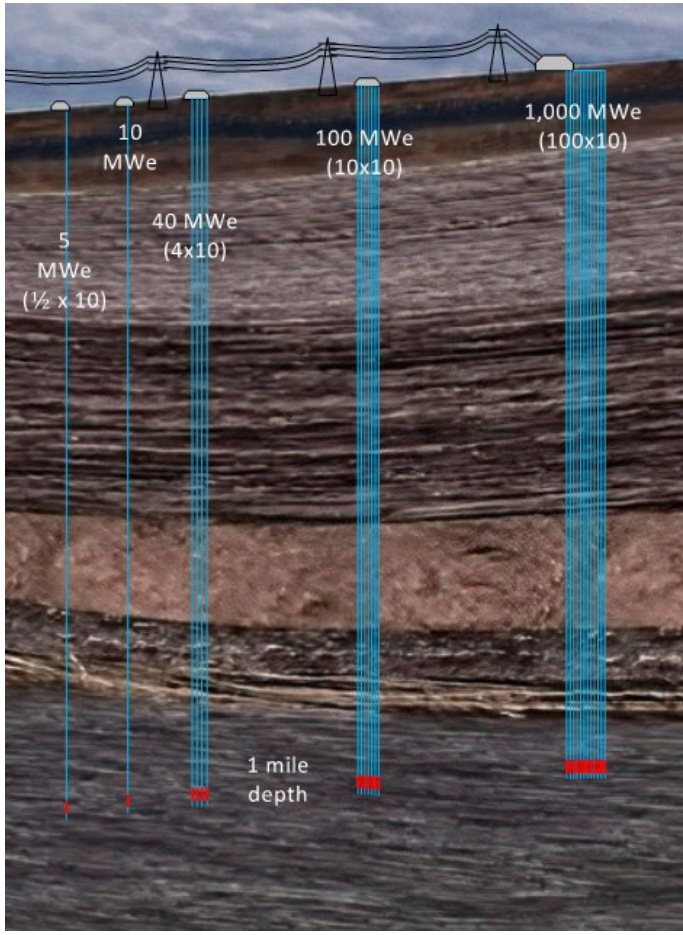
Novel Characteristics

Configuration

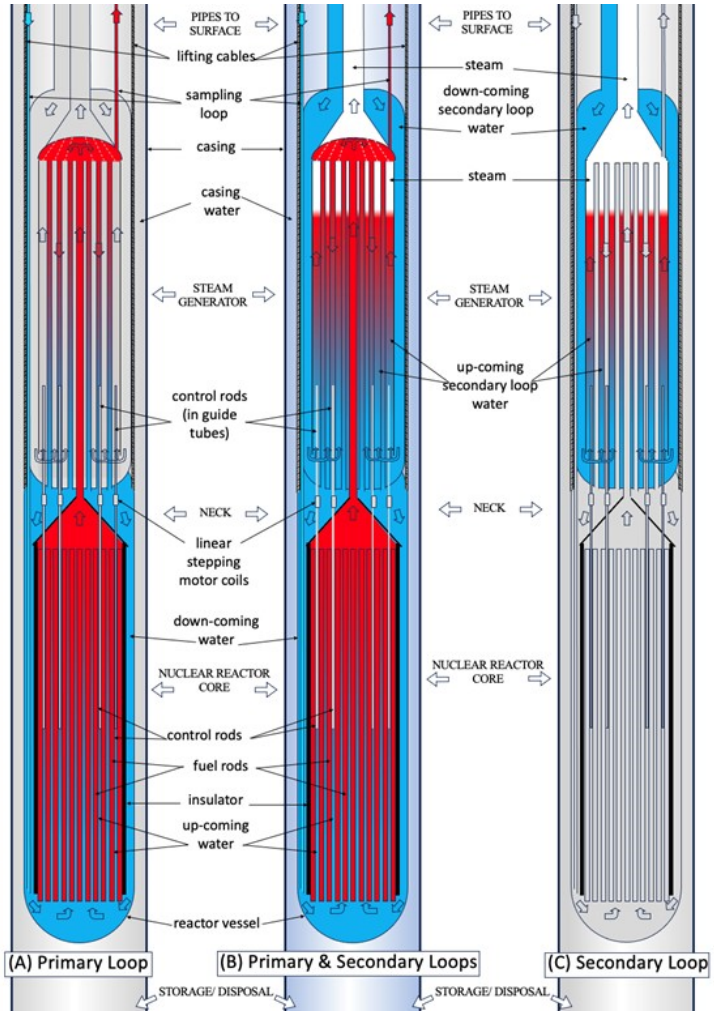
- Uses only 4 fuel assemblies
- Tall and narrow steam generator
- Pressurizer based on hydrostatics

Emplacement

- Reactor core 1 mile below earth surface
- No high-level radiation at surface during normal operations
- Primary containment based on geology
- Pressurization based on depth
- Ultimate Heat Sink is host geological formation

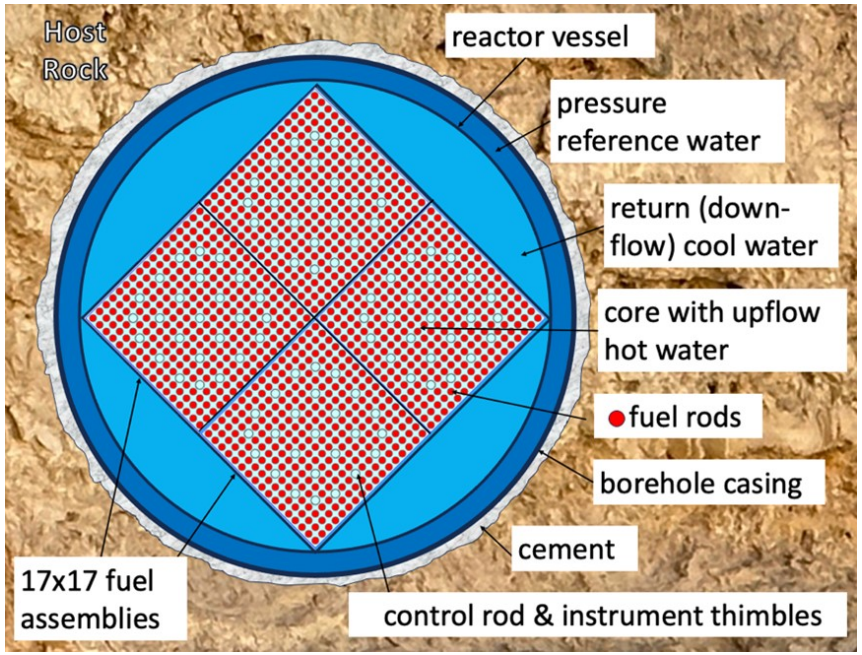


Reactor Components

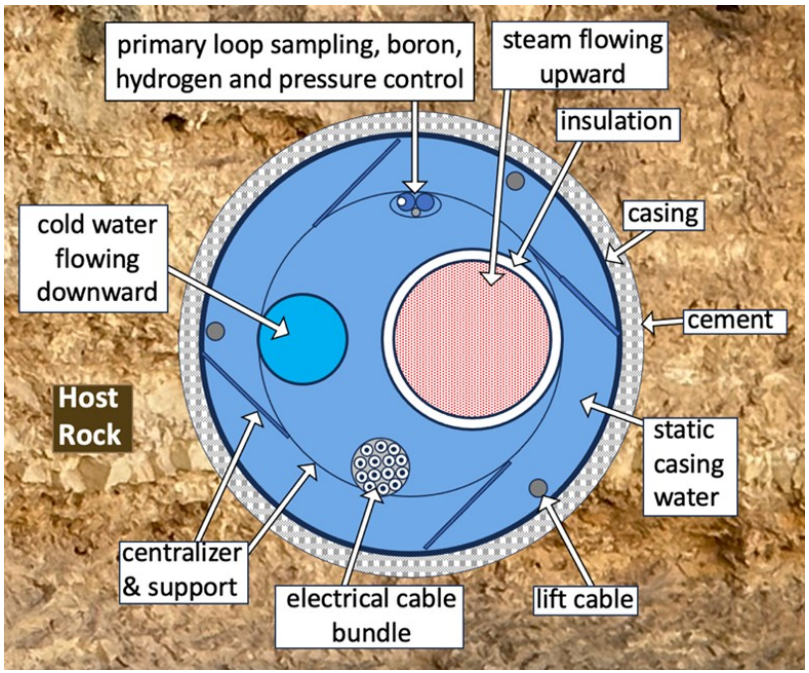


Cross Sections

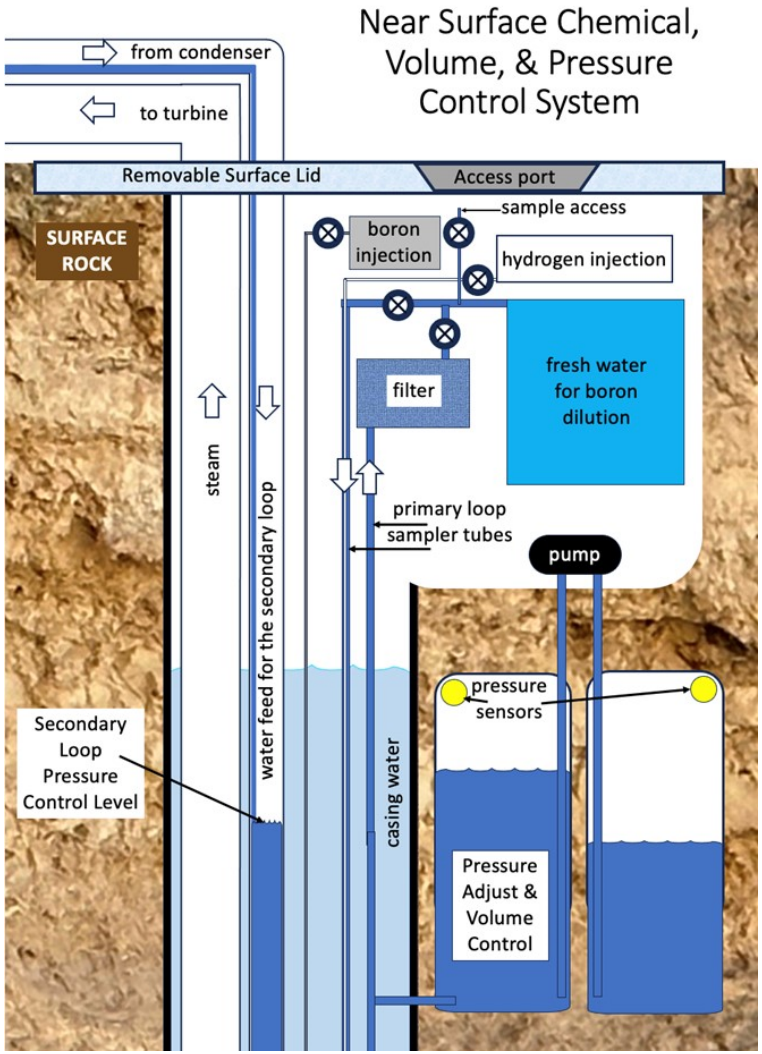
At Reactor Core



Above Reactor and Steam Generator



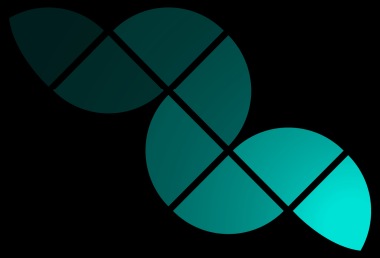
Chemical, Volume, and Pressure Control System



Regulatory Path

- Response to Regulatory Issue Summary 2020-02, dated March 12, 2024
- Regulatory Engagement Plan for Deep Fission, Inc., dated March 22, 2024
- Pursuing a Standard Design Approval under 10 CFR 52

Questions?



DEEP FISSION