



NRIC

National Reactor  
Innovation Center

# NRIC-DOME Ecosystem

## Overview and Status

Adrian Collins

4/1/2025

MIS-25-83749

# Ecosystem Overview

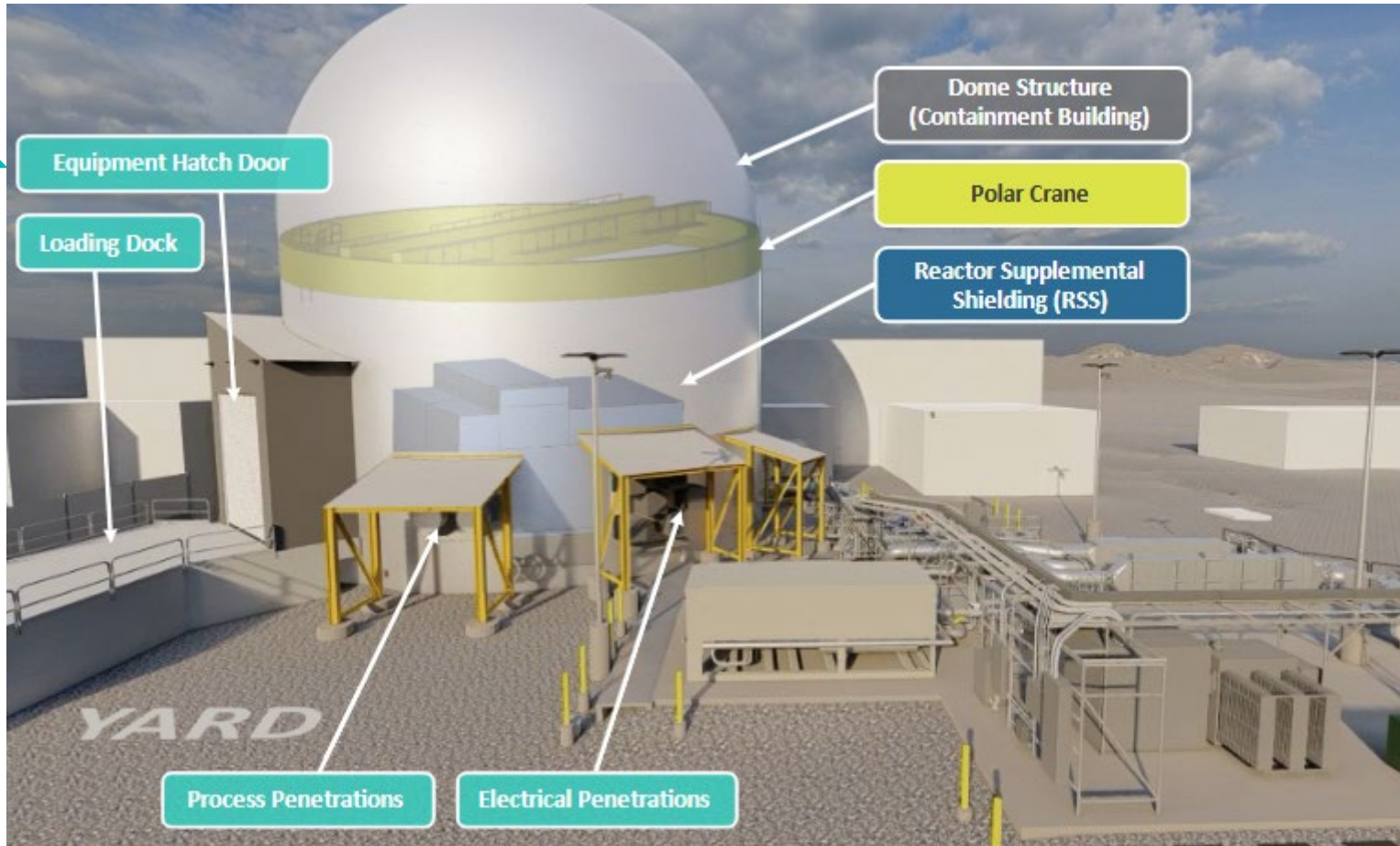
The National Reactor Innovation Center – Demonstration of Microreactor Experiments (NRIC-DOME) is more than just a test bed – a start to finish platform to bring the laboratory together with industry for advanced reactor development.

- **Construction of Physical Systems:**
  - NRIC-DOME Facility Construction
  - NRIC-DOME Equipment and Infrastructure (E&I)
- **Interface with DOME Users:**
  - Front-End Engineering and Experiment Design (FEEED)
  - Detailed Engineering and Experiment Planning (DEEP)
  - User guides
  - Technical interface
  - Schedule application process
- **Operations:**
  - Readiness, NRIC operating crews and staff
  - Reactor Installation - fuel storage, reactor assembly, and fueling
  - Testing
  - Decommissioning – reactor cooling & defueling

## NRIC-DOME Ecosystem



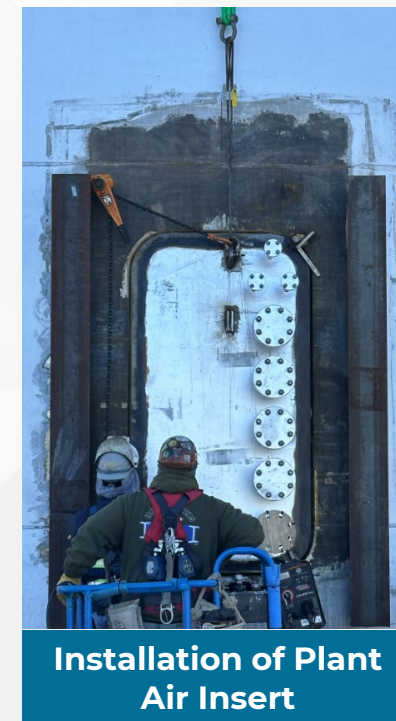
# Physical Systems



- NRIC-DOME is the re-established EBR-II structure
- Designed for Advanced Microreactors up to  $20\text{MW}_{\text{th}}$
- Designed for High-Assay Low-Enriched Uranium ((HALEU) enrichment  $< 20\%$ )
- Containment up to 10 psi
- Accommodates ISO 668 High-Cube Shipping Containers up to 40ft long
- 480V / 400Amp electrical service
- $\approx 78$  ft diameter floor space with an 80ft ceiling
- 300kW of environmental cooling

# Accomplishments

- Significant progress in construction, equipment and infrastructure activities, and safety basis development:
  - Penetrations being fabricated and installed
  - Factory acceptance testing completed for the equipment hatch
  - Substantial progress on all ancillary equipment and infrastructure
- Implemented robust FEEED and DEEP processes:
  - Completed FEEED process for two developers
  - Entered DEEP process for two developers
- Initiated staffing for operations phase:
  - Hired NRIC-DOME reactor manager
  - Posted for NRIC-DOME operations shift supervisor
  - Subcontracted commissioning agent
- Life cycle planning for new fuel storage, fueling, testing, cooling, and decommissioning and defueling:
  - Identifying locations for on-site reactor assembly and fueling
  - Identifying location for fresh fuel storage





# Risks and Challenges

## Supply Chain Delays:

- Several Government Furnished Equipment (GFE) delivery dates have slipped.
- Polar crane delivery is longer than planned and being challenged to ensure readiness of NRIC-DOME to receive reactors.
- Shielding design and fabrication longer than originally planned - complex design for modularity, temperature limits, and materials.

## Mitigations for procurements and supply chain:

- NRIC is working with vendors to improve delivery dates.
  - Site visits – staff and management
  - Active engagement with vendors
- Innovative contract mechanisms implemented to improve performance.
  - Schedule performance incentives incorporated in selected contracts.
  - Phasing and early engagement of fabrication subcontractors in design contracts.



**DOME Hatch: Prep for Factory Acceptance Testing**



# Opportunities for Efficiency

- Provide the capability to receive and store unirradiated fuel (potential location - CPP-651)
- Provide the capability to fuel reactors at Idaho National Laboratory (INL) but outside of NRIC-DOME - potential locations:
  - Sodium Component Maintenance Shop (SCMS) at the Materials and Fuels Complex (MFC)
  - Remote Handled Low-Level Waste (RHLLW) Facility
- Provide the capability to cool and defuel irradiated reactors (potential location – Radioactive Scrap and Waste Facility [RSWF]).
- Potential use of a gantry crane to provide alternate means of lifting and assembling first reactor.

**Providing additional front-end and back-end capabilities can accelerate developer schedules and reduce the time developers need inside the NRIC-DOME  
– Maximize NRIC-DOME availability.**



# Ecosystem Path Forward

- Complete construction and E&I activities through commissioning.
- Finish staffing for NRIC operations and finalize operational readiness plans.
- Work with Department of Energy (DOE) to finalize planning for fuel storage, fueling, testing and defueling/decommissioning.
- Release Notice of Opportunity for scheduling developers into NRIC-DOME.
- NRIC will be ready to receive advanced reactors for fueling in 2026.



Questions?



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