

NEXT

OAK RIDGE National Laboratory

HOME AGENDA LODGING PREVIOUS WORKSHOPS

2022 HYBRID MOLTEN SALT REACTOR WORKSHOP

"ENERGY THROUGH SAFE, SECURE, AND SUSTAINABLE TECHNOLOGY"

WHEN
October 11-12, 2022

WHERE
Oak Ridge National Laboratory
Bldg. 5200, Tennessee Rooms A-C

Status and Outlook

(What has changed and what hasn't changed)

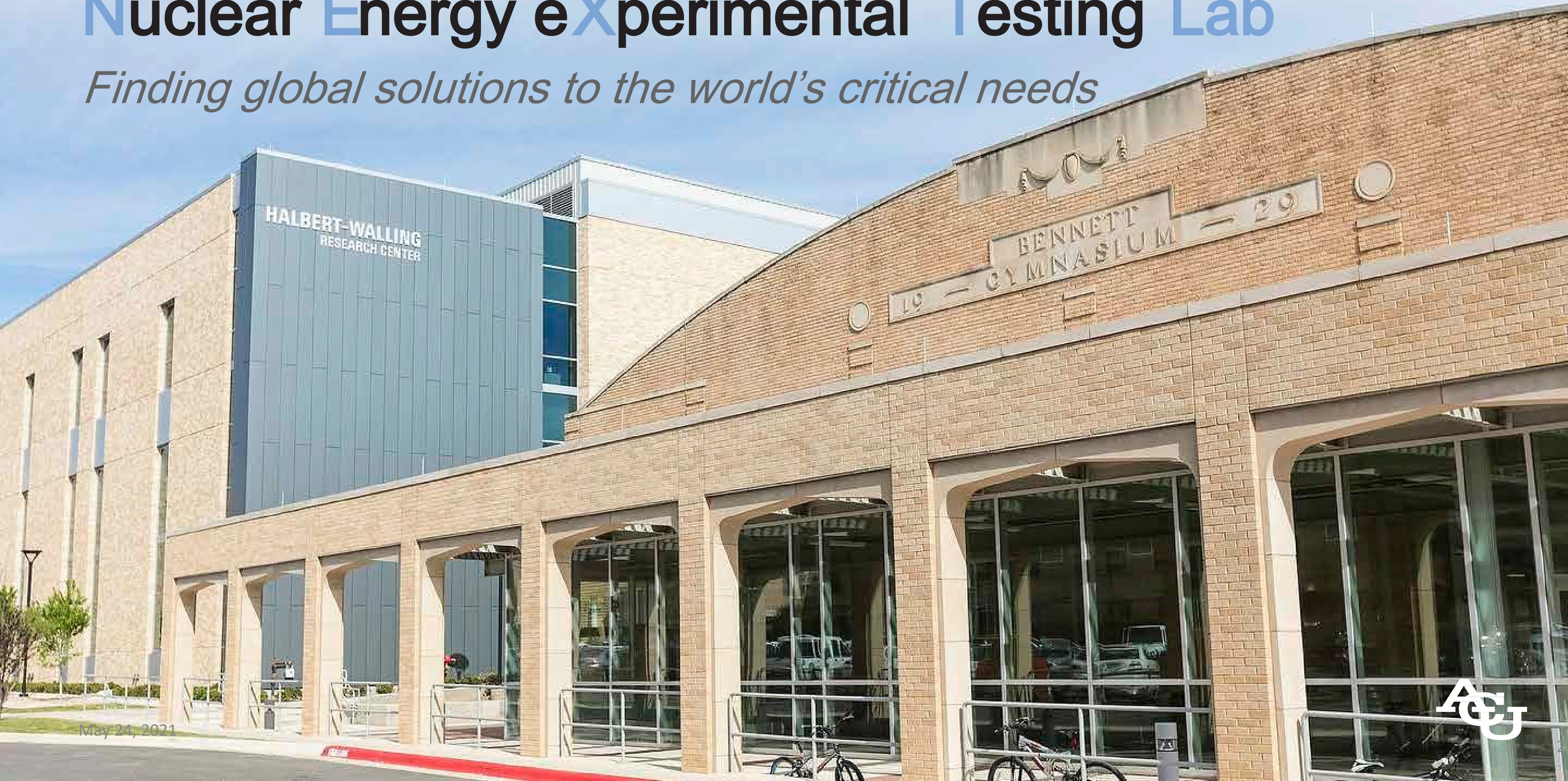
Dr. Rusty Towell NEXT Lab Director

October 12, 2022



Nuclear Energy eXperimental Testing Lab

Finding global solutions to the world's critical needs



May 24, 2021



Humanitarian Mission

1 in 2 do not have access to the **energy** needed to lift them out of poverty



1 in 2 will develop **cancer**



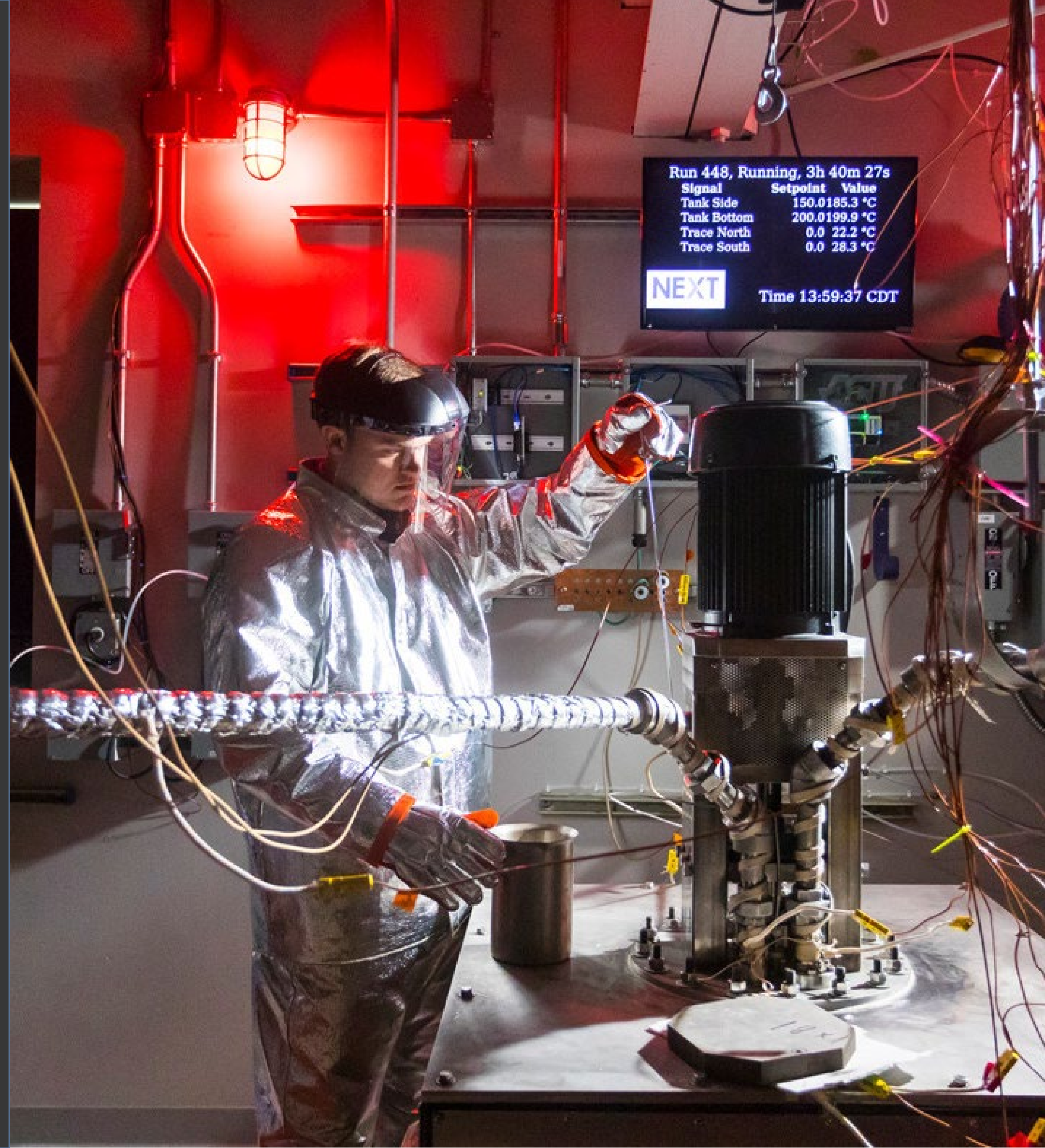
1 in 3 do not have access to clean drinking **water**



*"Nuclear energy is indispensable for achieving global sustainable development and has a crucial role in decarbonizing the energy sector, as well as **eliminating poverty, ending hunger, providing clean water, affordable energy, economic growth, and industry innovation.**" - United Nations Economic Commission for Europe (UNECE) Expert Group on Resource Management (EGRM)*

Molten Salt Reactors (MSRs) provide answers to critical global needs

The mission of ACU's NEXT Lab is to provide global solutions to the world's need for energy, water and medical isotopes by advancing the technology of molten salt reactors while educating future leaders in nuclear science and engineering.





Natura Resources, LLC is committed to answering the world's increased demand for **reliable energy**, **medical isotopes**, and **clean water**, by developing commercially deployable molten salt reactors (MSRs)

NEXTRA

Nuclear Energy eXperimental Testing Research Alliance

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Nuclear Energy eXperimental Testing



TEXAS

The University of Texas at Austin



TEXAS A&M

UNIVERSITY®

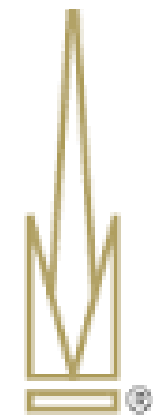


ABILENE CHRISTIAN

UNIVERSITY

Georgia

Tech





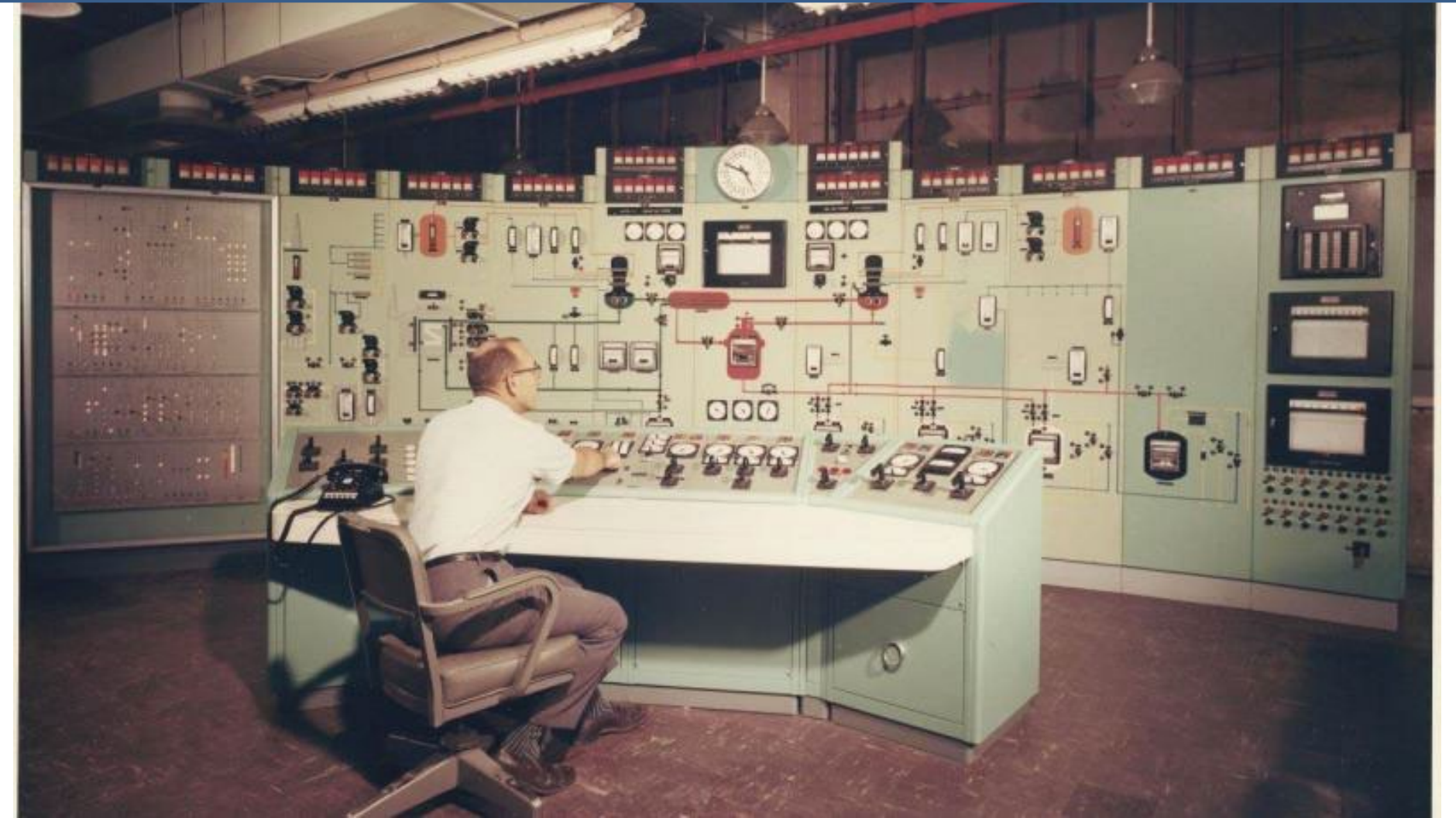
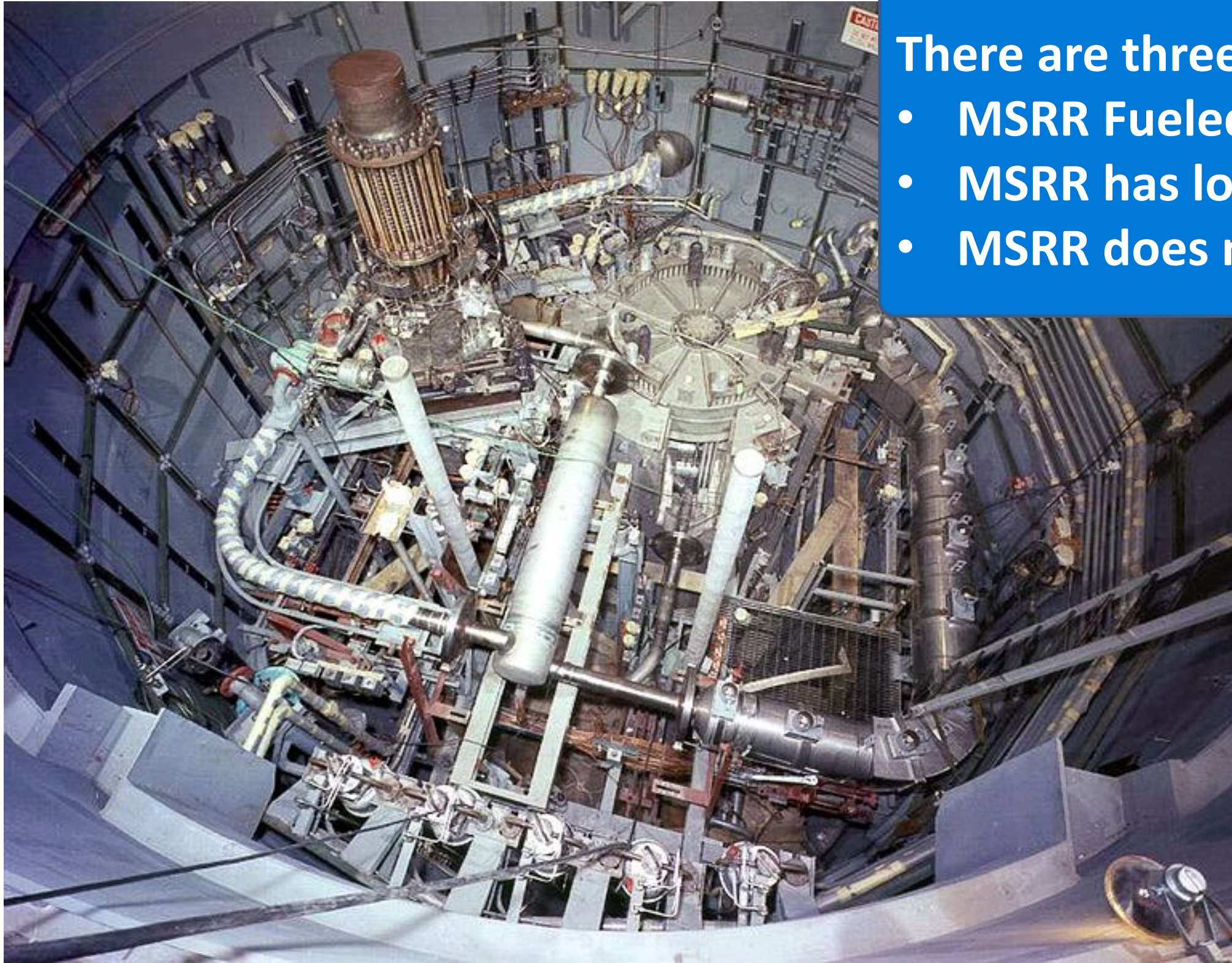
Molten Salt Research Reactor is Simplified MSRE

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Nuclear Energy eXperimental Testing

There are three major differences between the MSRE and the MSRR

- MSRR Fueled with HALEU instead of HEU
- MSRR has lower power and power density
- MSRR does not require external cooling water



Summer 2022 NEXT Team

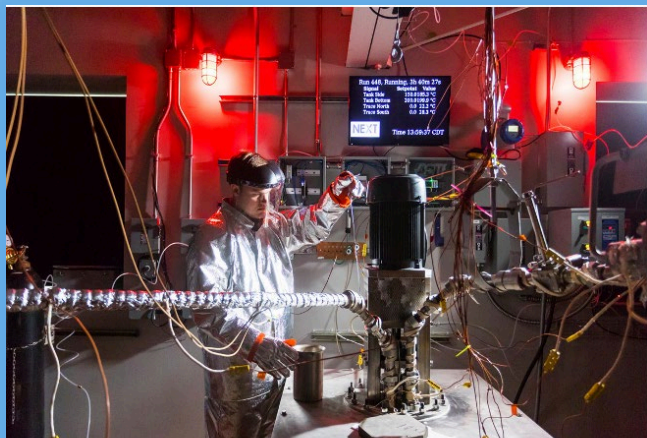
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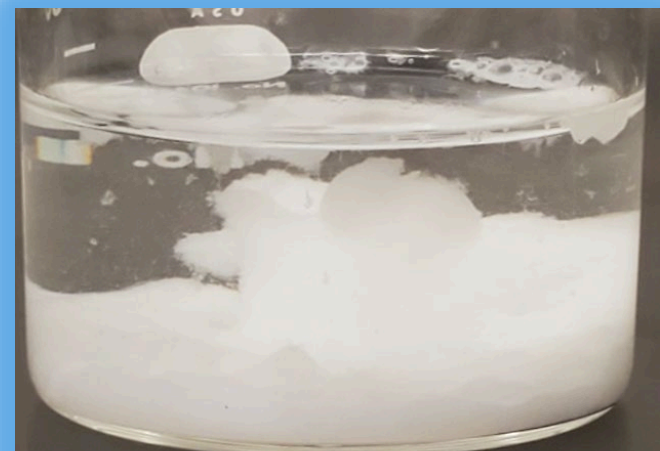
NEXT Lab Research Projects



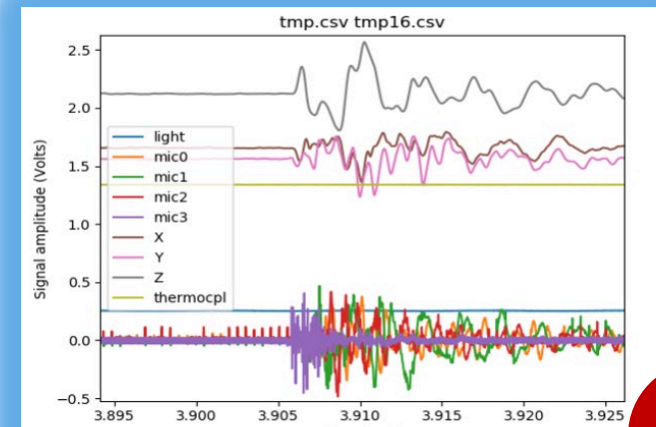
Nuclear Energy eXperimental Testing



Molten Salt Test Loop



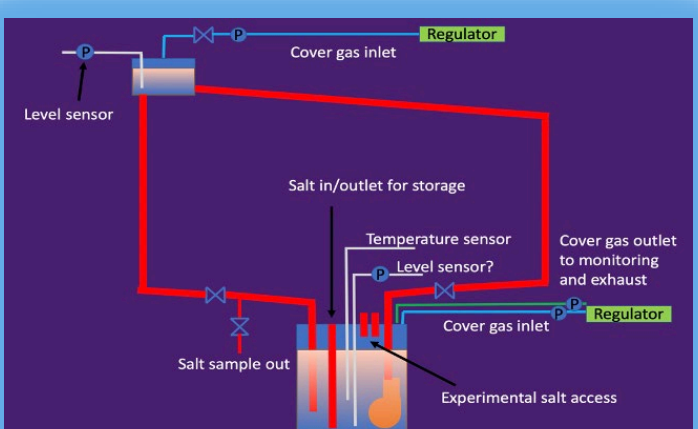
Isotope Extraction & Purification



Instrumentation



Component Test System



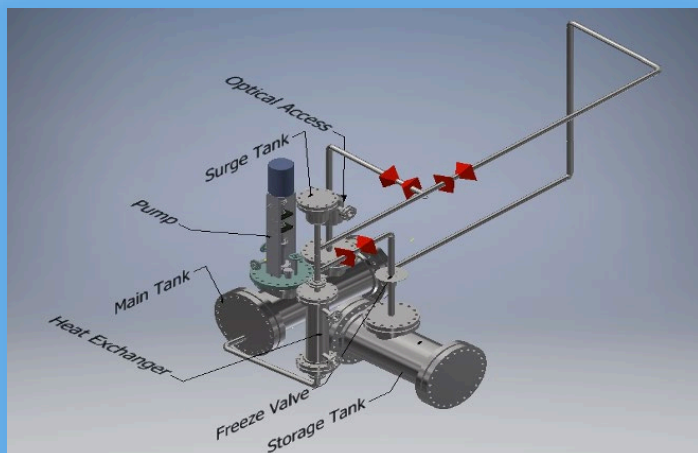
Fluoride Molten Salt Test Loop



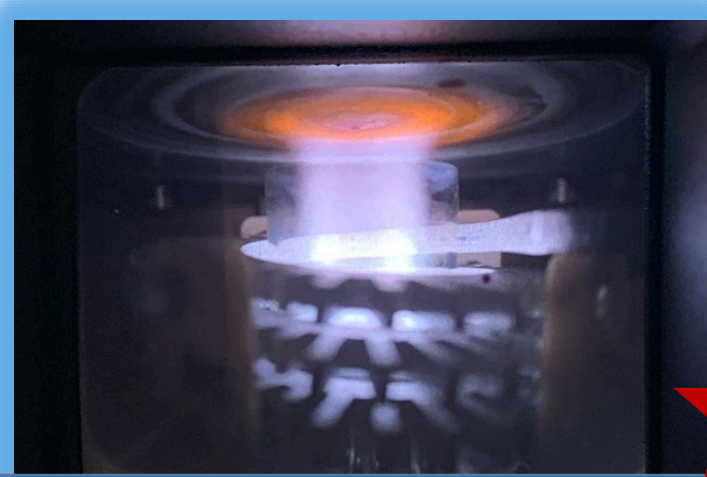
Salt Purification System



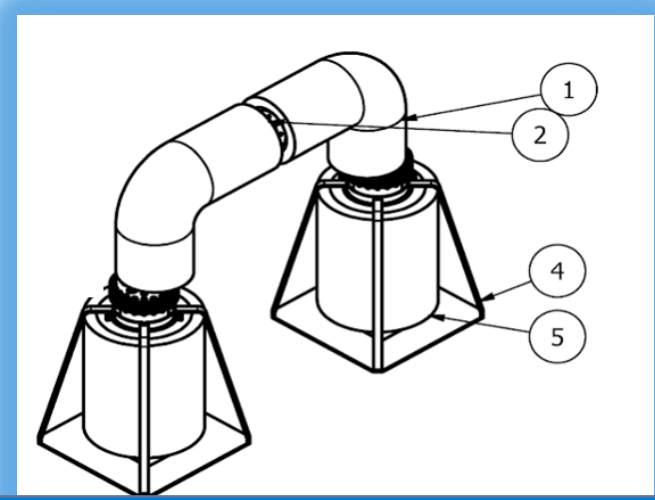
Data Acquisition



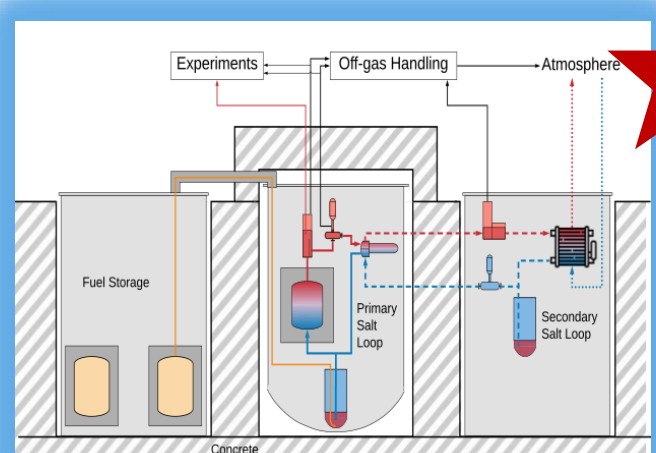
Molten Salt Test System



Chemical Analysis System



Molten Salt Filters



Molten Salt Research Reactor



University Research Reactors

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NuclearNews

April 2022

University Programs

Four universities team up to design molten salt research reactor

Fri, Aug 21, 2020, 12:11PM | Nuclear News

Abilene Christian University (ACU) is leading a consortium called NEXTRA—the Nuclear Energy Testing Research Alliance—with the Georgia Institute of Technology, Texas A&M University, and the University of Illinois at Urbana-Champaign.

U of Illinois plans to integrate research microreactor

W...



Abilene Christian's NEXT Lab applies for MSRR construction permit

Thu, Aug 18, 2022, 3:04PM

ANS Nuclear Cafe

The Nuclear Energy eXperimental Testing (NEXT) Laboratory at Abilene Christian University in Texas submitted a construction permit application to the Nuclear Regulatory Commission for its...

University may host the second USNC microreactor in

Canada

Tue, May 24, 2022, 10:30AM | Nuclear News

McMaster University, Ultra Safe Nuclear Corporation (USNC), and Global First Power (GFP) have embarked on a new partnership to study the feasibility of deploying a USNC Micro Modular Reactor...





Science and Engineering Research Center

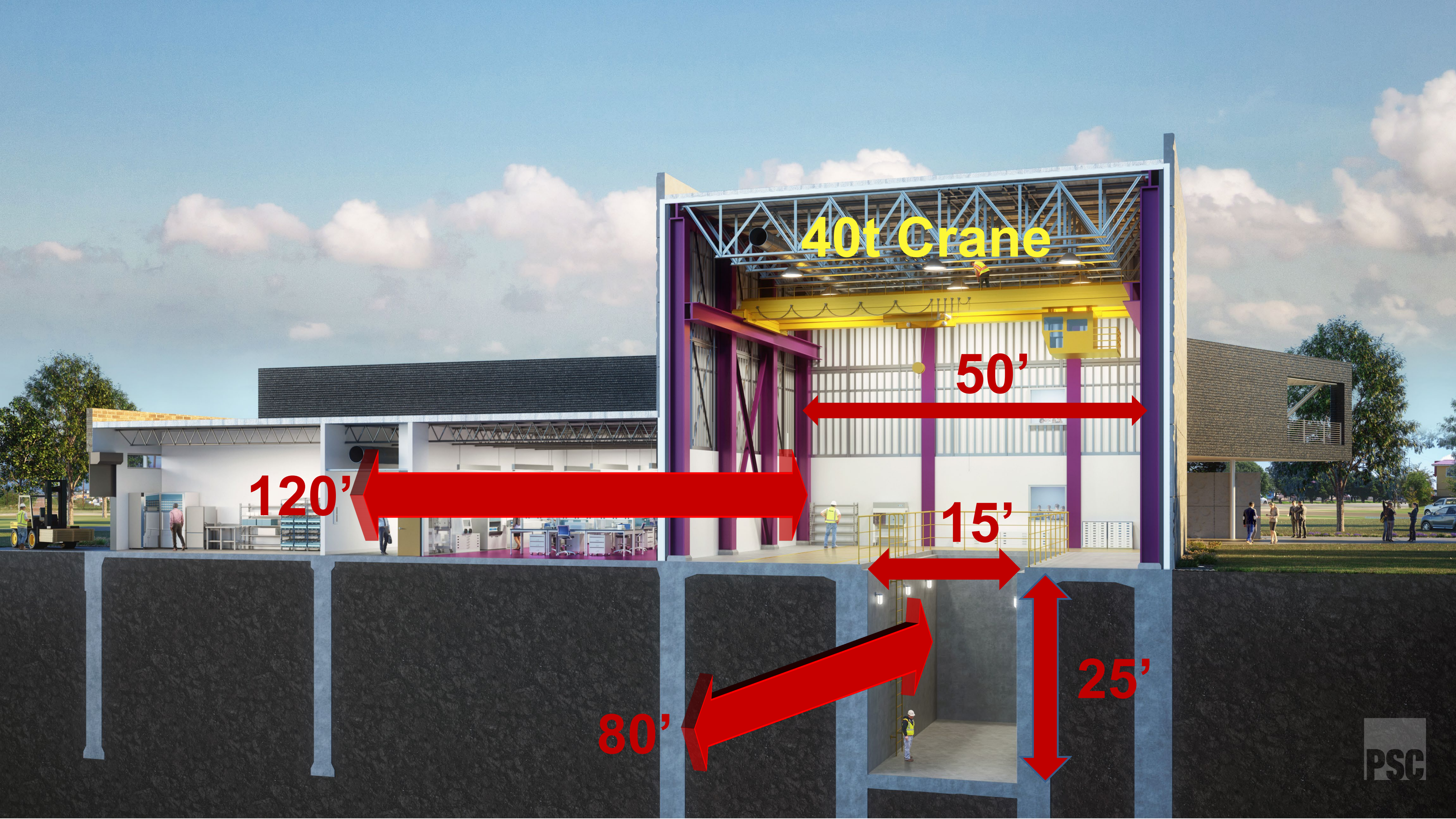
- 28,000 ft² facility
 - 6,000 ft² Research Bay
 - Specialty Research Labs
 - Offices
- Design completed by Parkhill
- Linbeck construction company
- Design Completed: 2021
- Begin Construction: 2022
- Completed: 2023



SERC

PSG





40t Crane

50'

120'

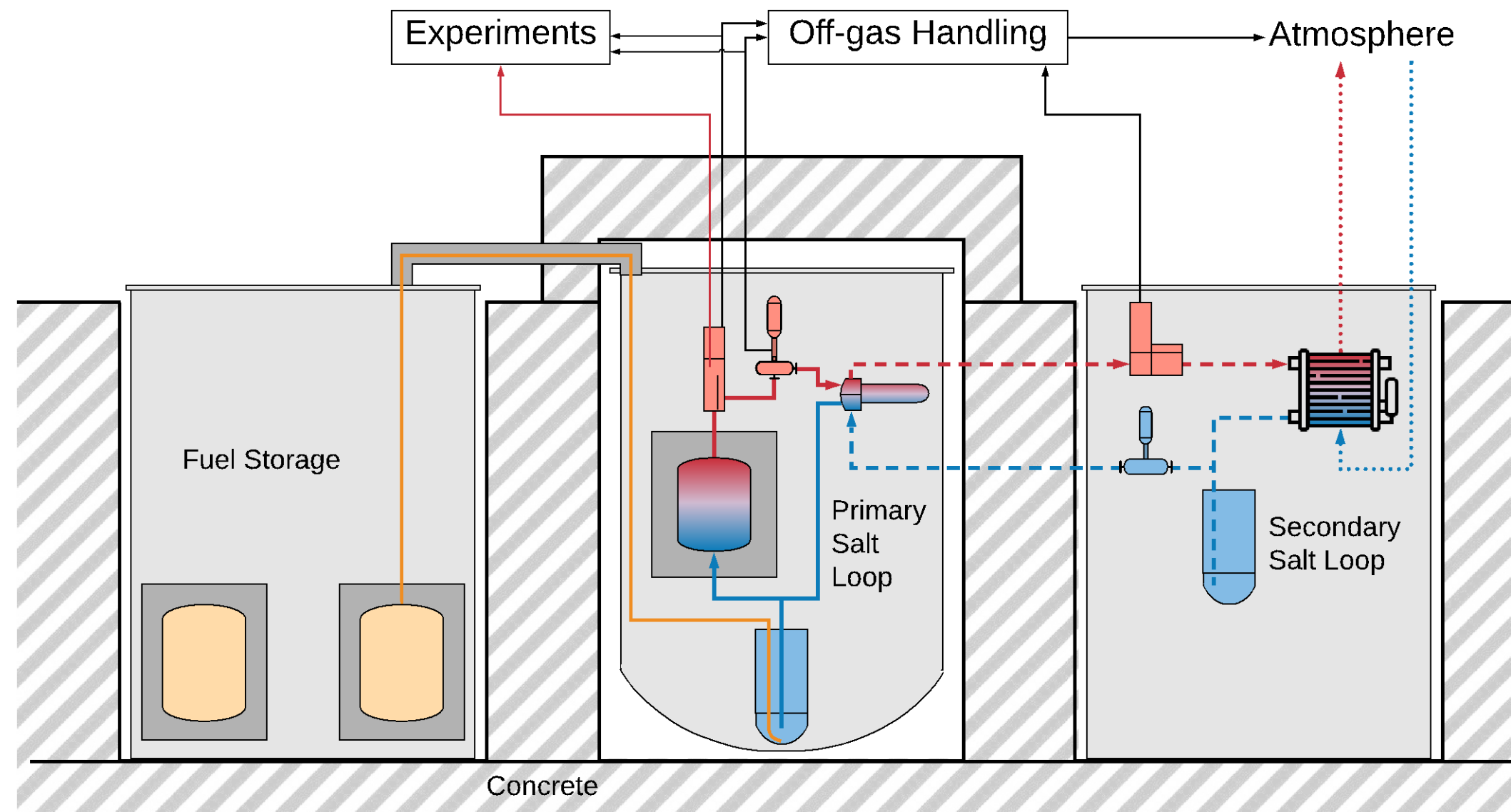
15'

80'

25'



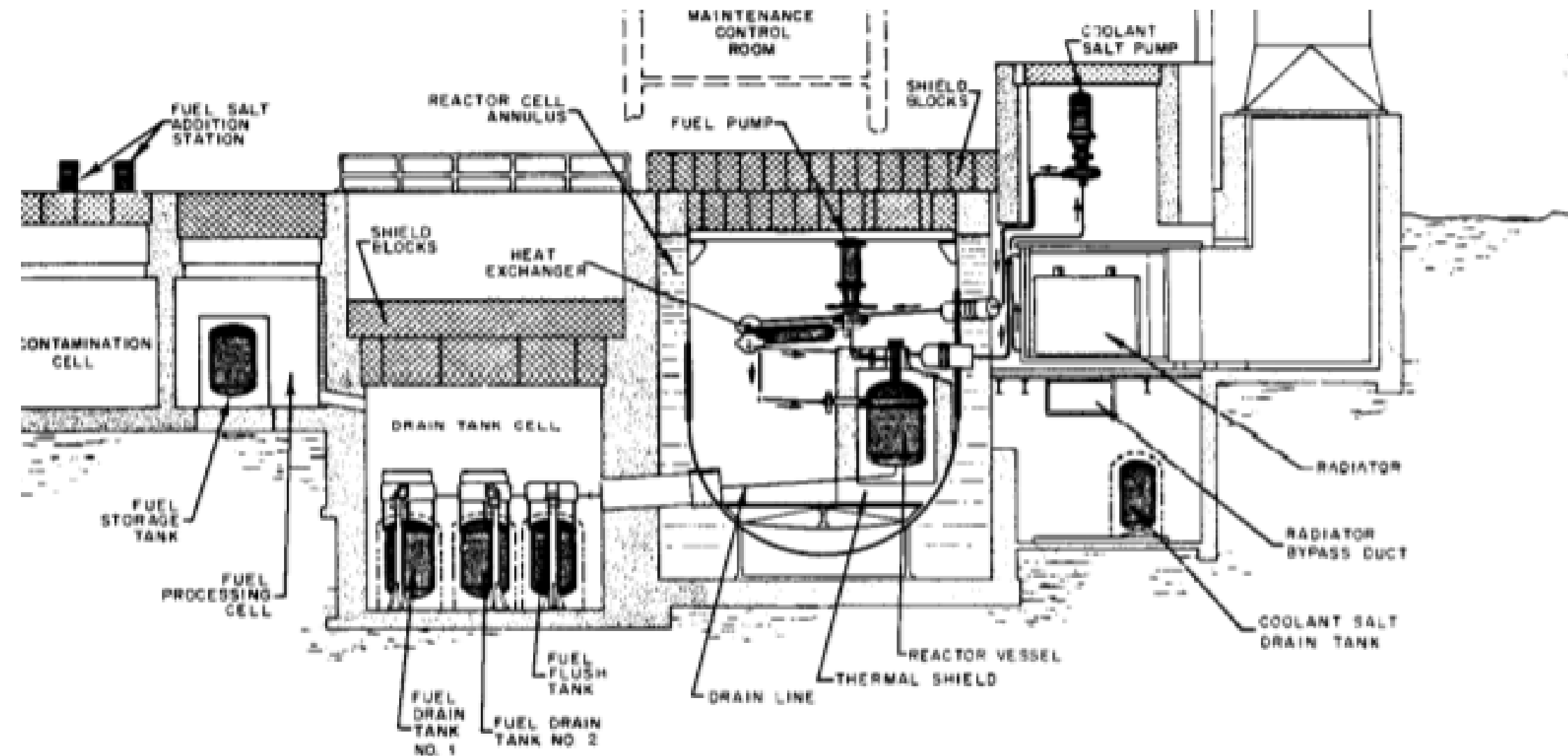
MSRR



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Nuclear Energy eXperimental Testing

MSRE











The Natura Resources Alliance is leading research and development and deployment of the MSRR. ACU is... ACU has... to the NR... permit

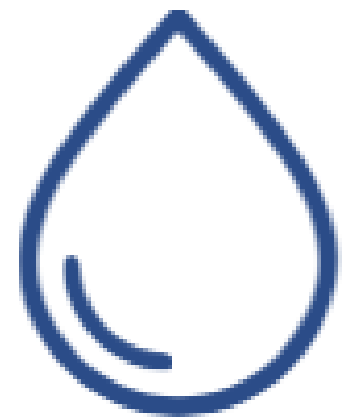
WE'RE HIRING!



Nuclear Energy eXperimental Testing Research Alliance



Commercial Power and Desal Facility





THANK YOU

acunextlab.org

