



Neutron and Radiation Monitoring

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Agenda

- TerraPower Mission
- What is the Natrium[®] Reactor?
 - Why the Natrium[®] Reactor
 - ARDP
- Mirion's Role
 - Scope
 - Support
 - Solutions

The Natrium Reactor is a TerraPower & GE Vernova Hitachi Nuclear Energy technology

TerraPower Company Overview



- Founded in 2006
- Headquartered in Bellevue, WA
- Employees: ~1,000
- Current Major Projects:
 - Sodium
 - TerraPower Isotopes (TPI)
- Founder & Chairman of the Board: Bill Gates

TerraPower Mission

Develop Advanced Nuclear Energy to meet growing electricity needs, mitigate climate change and lift billions out of poverty.

Natrium Mission

Provide flexible clean energy at a competitive cost



- Nuclear Innovation to Advance New Cancer Treatments
- TerraPower Isotopes (TPI®) is transforming the fight against cancer by advancing the next generation of isotopes. The TPI team is utilizing proven methods to extract research grade actinium-225, free of the isotopic impurities of actinium, which may be applied to new medical applications that potentially target and treat cancer
- TPI is increasing the scarce global supply of actinium-225, an isotopic starting material, to support pharmaceutical companies' cancer research and development efforts.
- The TPI team has developed a process to extract research grade actinium-225 through a natural decay method from Thorium-229. TPI is working with Isotek to recover Thorium-229 from Uranium-233 stockpiles that are managed by the US DOE



HEALTHY CELL



Ac-225 BOUND TO AN ANTIBODY

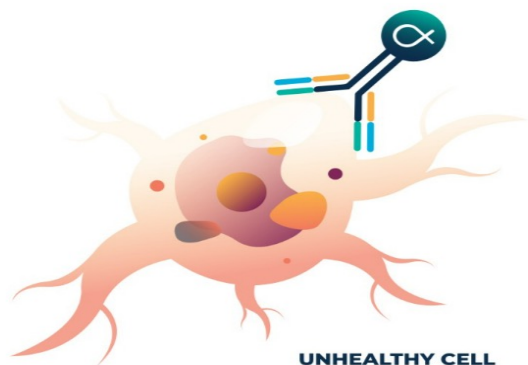


Producing Actinium-225

Since 2018, TerraPower Isotopes has been working to increase the supply of Actinium-225. Actinium-225 is an alpha-emitting radionuclide that may have application in the area of oncology targeted alpha therapy research and development.



TerraPower Isotopes' Actinium-225 is Currently Being Used in Human Clinical Trials Worldwide.



UNHEALTHY CELL



In Support of Treatment Options

The isotope can be attached to a molecule, which can then selectively target and deliver the Actinium-225 to the cancer site. The Actinium-225 labeled drug products, once developed and approved, can destroy the cancerous tissue with minimum damage to nearby healthy cells.



TerraPower Isotopes (TPI)

- TerraPower Isotopes celebrated the start of construction on its flagship cGMP manufacturing facility in Philadelphia
- Broke ground on world's largest Actinium-225 manufacturing facility in Philadelphia, PA on May 6, 2026
- Bellwether Laboratory 250,000 sq ft manufacturing facility
- This laboratory combined with the facility in Everett, WA will increase the global Ac-225 production capacity twentyfold



What is Natrium Technology?

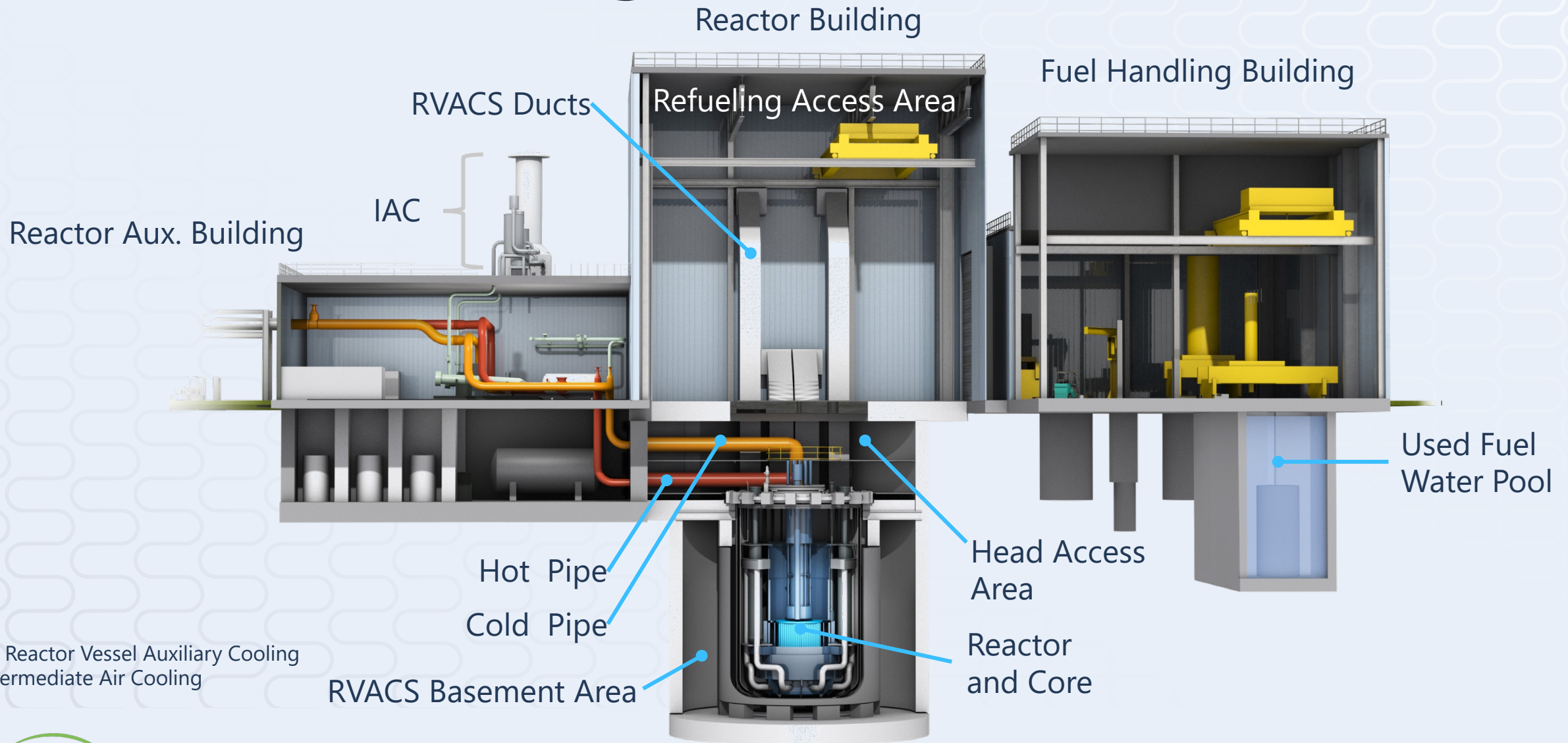
- A high readiness Sodium-cooled Fast Reactor (SFR) with the following benefits:
 - A ***new plant architecture*** that minimizes cost and construction time
 - ***Simpler, less costly safety systems*** compared to current generation reactors
 - Grid-scale ***energy storage*** to complement renewables
 - ***Fuel cycle flexibility*** that facilitates global export
 - Any size plant can be ***located anywhere***

NATRIUM

Single Unit Site



Reactor Building



RVACS: Reactor Vessel Auxiliary Cooling
IAC: Intermediate Air Cooling

Thermal-Storage Integration



- This is one of its most distinctive features: the reactor is paired with a **gigawatt-scale molten salt storage system**. Excess heat from off-peak generation is stored in molten salt, which can then be used to produce electricity during peak demand. This provides **built-in grid-scale storage**, helping balance variable renewable energy sources like wind and solar
- Molten salt tank stores excess heat
- Enables renewable grid support (load following)

Why the Sodium Reactor ?

It is the best option for deploying advanced nuclear power given increasing demand for carbon-free energy and a growing mix of renewable sources because it:

- Simplifies construction and architecture compared to previous reactor types
- Offers a cost-competitive, flexible technology that supports load following, energy storage and industrial process heat applications
- Brings step-change improvements in capital and operational costs
- Provides a utility-scale decarbonization solution that can make a meaningful impact on efforts to mitigate climate change

Sodium Timeline & Status



- **Oct 2020: TP is awarded ARDP funding**
- 2021: Site Selection: Kemmerer, WY (KU1)
- March 2024: Construction Permit Application submitted
- **June 2024: Groundbreaking Test and Fill Facility (TFF)**
- August 2025: Construction started on Kemmerer Training Center (KTC)
- October 2025: TP received notification from NRC that they have successfully completed the Environment Impact Statement (EIS)
- **March 2026: NRC issues Construction Permit**
- **April 2026: Groundbreaking for construction on KU1**
- 2030s: Commercial operation

Natrium in Wyoming



- Evaluated four sites with retiring coal plants in Wyoming
- Announced final site choice in Kemmerer, WY Nov 2021

- Kemmerer Population 2,700
- Coal Plant (Naughton Coal) closed Dec 2025
- Coal plant built in 1963 – 109 employees
- Kemmerer Mine – 1897 largest open pit coal mine in the US – 293 employees

KU1: Kemmerer, Wyoming

- 2,000+ construction jobs
- 250 permanent positions



Mirion Scope

- Mirion Selected for:
 - Design of XIS system for Neutron Monitoring
 - WRGFC (Partnered with Photonis) (4 channels) to cover the entire operating ranges
 - Additional capability for special circumstances (initial fuel load).
 - Design of RMS system for Radiation monitoring including
 - Area Monitors
 - Adjacent To Line Monitors
 - In Process Monitors
 - Centralized Processing & Communication

Mirion Status

- Completed Preliminary Design
- Leading systems for final quality level
- Supporting scope and design finalization
- Supporting final model selection.

Mirion Support and Expertise

- Ability to address wide range of issues
 - Unique monitoring requirements (materials & sources, ranges, response times)
 - Penetration seals for unique environments (materials, temperatures, functions)
- Mature and responsive project management history and capabilities
 - Multiple design stages
 - First of a kind solutions
 - Concurrent design support
 - Design and logistics changes
 - Excellent communication and collaboration.

Mirion Specific Solutions

- Technical
 - Sodium & Salts as a system fluid
 - Uniquely high temperatures
 - Fast neutron monitoring
 - Penetration seals for unique environments
- Programmatic
 - Multiple design stages
 - First of a kind solutions and technology development
 - Concurrent design support
 - Design and logistics changes
 - Excellent communication and collaboration

Collaboration Approach / Project Challenges

- Collaboration Approach

- Weekly Meetings
- Face to Face Interactions
- Design Reviews
- Collaboration Pages

- Project Challenges

- Schedule Pressure
- Continuous Design Changes
- Controlling Cost



TerraPower / Mirion Collaboration

Mirion hosted TP at Farley
Nuclear Plant to walk down
their RMS equipment



TerraPower / Mirion Collaboration

Mirion hosted TP at their facilities in Lamanon, France and Munich, Germany

Credits:

- Mirion Team

- Carl Prather – VP Nuclear
- Jürgen Hingerl – PM
- Markus Terker - PM
- Mehran Mohammadian – RMS Lead
- Nuri Sinha - RMS Engineer
- Ewald Liebhart – XIS Lead
- Pablo Dominguez - XIS Engineer
- Marcus Ledford - Quality

Thank you

To learn more, visit www.terrapower.com