ML24087A203

# LICENSEE PERFORMANCE REVIEW

## Framatome Richland Site
## Nuclear Regulatory Commission
## April 16, 2024

U.S.NRC
United States Nuclear Regulatory Commission
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# LICENSEE PERFORMANCE REVIEW

**Discuss Licensee Performance**

**Address Findings and Performance**

**Meet with NRC Inspectors**

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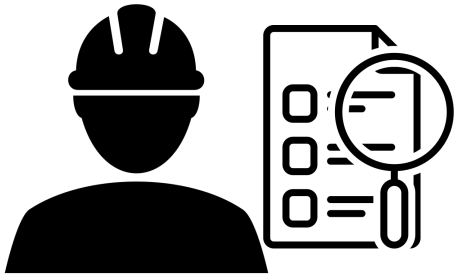
# LICENSED ACTIVITIES

## Framatome: Richland Site

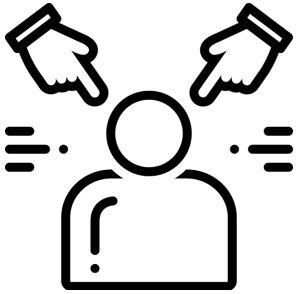
- Process and develop uranium products
- Fabricate low-enriched fuel assemblies used in commercial light water reactors
- Operate on-site test laboratories
- Treat and discharge plant effluents

# NRC FUEL CYCLE OVERSIGHT

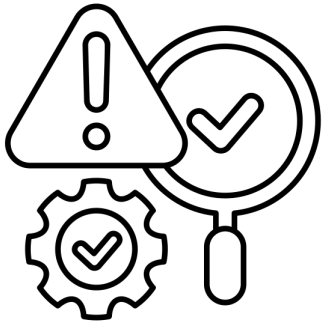


Inspections


Investigations

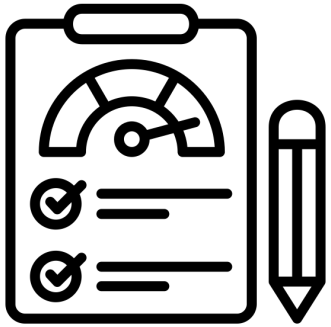


Allegations



Incident Response

Enforcement



Performance Assessment

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# REGULATING NUCLEAR FUEL

**Fuel Fabrication Process:**

- Enriched uranium hexafluoride (UF6) is heated into gas, then converted to uranium dioxide (UO2) powder.
- UO2 powder is compressed into ceramic pellets, the actual nuclear fuel, each about the size of a fingertip.
- Pellets are loaded into metal rods (cladding), bundled into fuel assemblies, ready for reactor use.

**Safety and Cladding:**

- Cladding, made from zirconium alloys, contains radioactive fission products, acting as a barrier during the nuclear reaction.
- Fuel assemblies can hold up to 264 rods, with dimensions of 5 to 9 inches (13 to 23 centimeters) square by about 12 to 14 feet (3.7 to 4.3 meters) long.

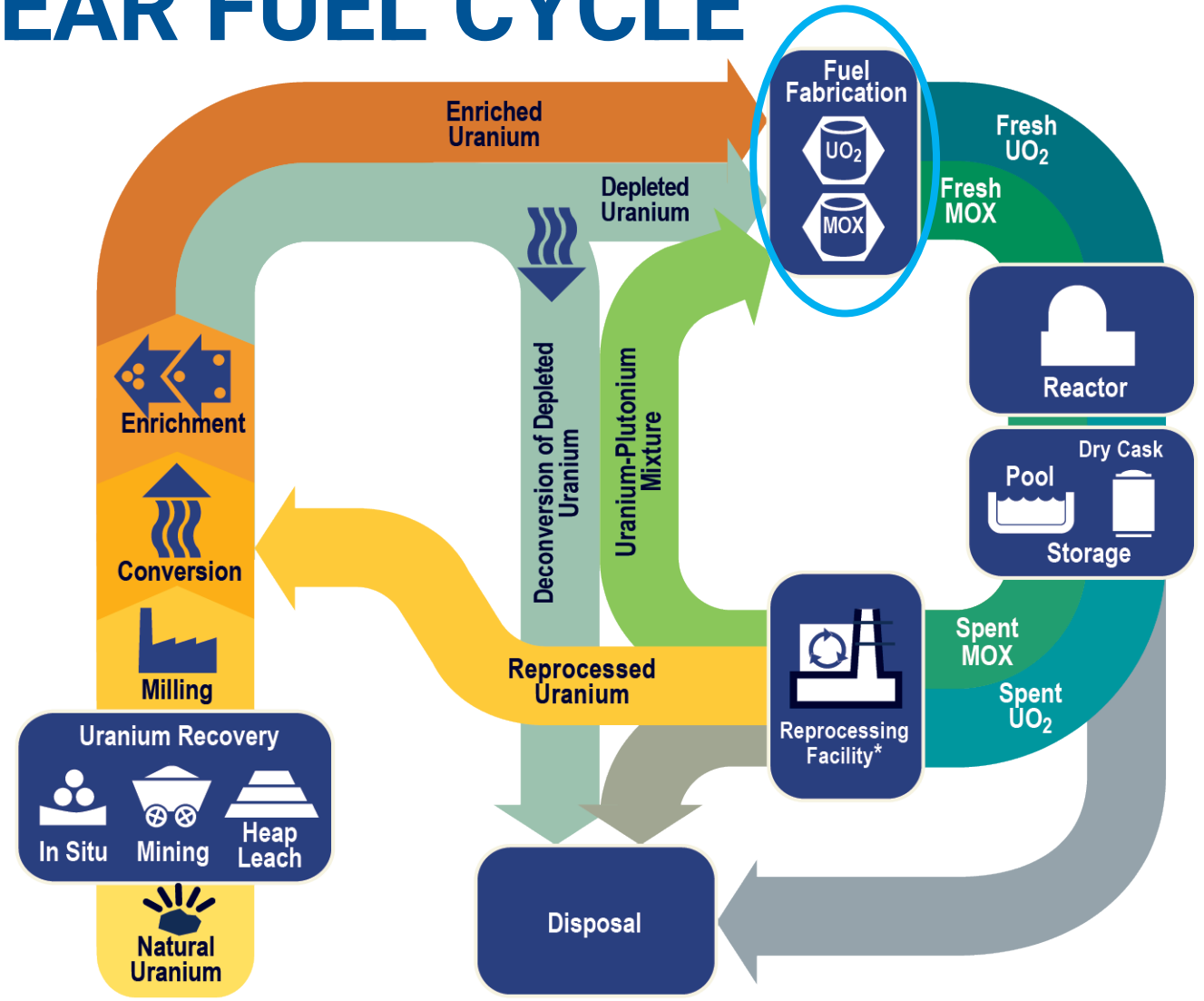
**Regulatory Oversight:**

- NRC categorizes fuel fabrication facilities by uranium enrichment level, ensuring high safety and security standards.
- Category 1 facilities handle highly enriched uranium, including for U.S. Naval Reactors and produce low-enriched reactor fuel.
- Categories 2 and 3 handle lower enrichment levels for other facilities across the world.

**Safety Measures and Risks:**

- Fuel fabrication poses low safety risk to the public, with comprehensive NRC regulations in place.
- Workers are protected against chemical, radiological, and criticality hazards through stringent safety protocols.

# THE NUCLEAR FUEL CYCLE




* Reprocessing of spent nuclear fuel, including mixed-oxide (MOX) fuel, is not practiced in the United States.
Note: The NRC has no regulatory role in mining uranium.

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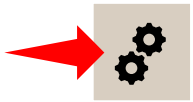
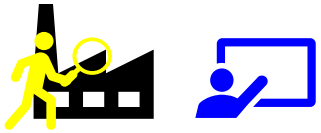
# LICENSEE PERFORMANCE REVIEW PROCESS





**Inputs** → **NRC Review** → **Results** → **NRC Response**

- Inputs
  - Inspection Results
  - Previous Performance

- NRC Review
  - Performance Areas
    - Safety Significance
    - Trends
    - Cross Cutting Issues
    - Corrective Actions

- Results
  - No Performance Issues → NRC Response
    - Core Insp. Program
    - Inform the Public
  - **Or**
  - Area Needing Improvement (ANI) → NRC Response
    - More Inspections
    - LPR Frequency
    - Inform the Public

Other NRC Actions → Emergent Performance or Generic Safety Issues → Assessment → Inspection Program Adjustment

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# LICENSEE PERFORMANCE AREAS

## Safety Operations

| | |
|---|---|
| Operational Safety | • Safety Controls<br>• Supporting Safety Programs |
| Criticality Safety | • Criticality Controls<br>• Program Oversight<br>• Criticality Incident Response |
| Fire Protection | • Prevention, Detection, & Mitigation<br>• Supporting Fire Safety Programs |

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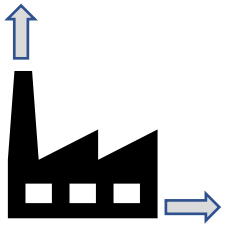
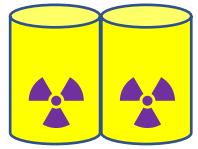
# LICENSEE PERFORMANCE AREAS

## Radiological Controls

| | |
|---|---|
| Radiation Protection | • Members of the Public<br>• Plant Workers |
| Effluent Control & Environmental Protection | • Program Implementation<br>• Liquid and Gaseous Effluents |
| Waste Management | • Processing, Handling, Storage & Transportation of Waste |
| Transportation | • Receipt, Packaging & Delivery of Radioactive Materials |





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# LICENSEE PERFORMANCE AREAS

## Facility Support & Other Areas

| | |
|---|---|
| Emergency Preparedness | • Emergency Plan Implementation<br>• Evaluation of Emergency Drills |
| Plant Modifications | • Configuration Management Program<br>• Request for NRC Approval |
| Plant Events | • Safety Assessment, Follow-up and Reactive Inspections |
| Safeguards | • Material Control and Physical Protection |

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