



Facilities Overview

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Delivery*



- NNL Workington
 - ★ **Workington Laboratory**
 - ★ Encapsulation
 - ★ Remote engineering
 - ★ Robotics
 - ★ Waste management
- NNL Sellafield
 - ★ **Central Laboratory**
 - ★ **Windscale Laboratory**
 - ★ Spent fuel & graphite
 - ★ Actinide chemistry
 - ★ Nuclear physics
 - ★ Materials & inspection
- NNL Preston
 - ★ **Preston Laboratory**
 - ★ Fuel science (uranium)
 - ★ Environmental
 - ★ Safety



- **NNL Risley**
 - ★ Modelling & Simulation
 - ★ Environmental management
 - ★ Engineering
- **NNL Stonehouse**
 - ★ Station chemistry & corrosion
 - ★ Graphite technology
- **NNL Culham**
 - ★ Post irradiation examination analysis
 - ★ Fuel & graphite analysis
 - ★ Materials
 - ★ Radiation chemistry



Central Laboratory



- Non-radioactive labs
- Active rig hall
- Active labs
- Alpha active labs
- 5 highly active cells

Windscale Laboratory



- 13 highly active cells
- Mechanical testing
- Optical examination

Preston Laboratory



- Non-radioactive labs & rig hall
- Uranium active labs
- Uranium active fuel development labs

Workington Laboratory



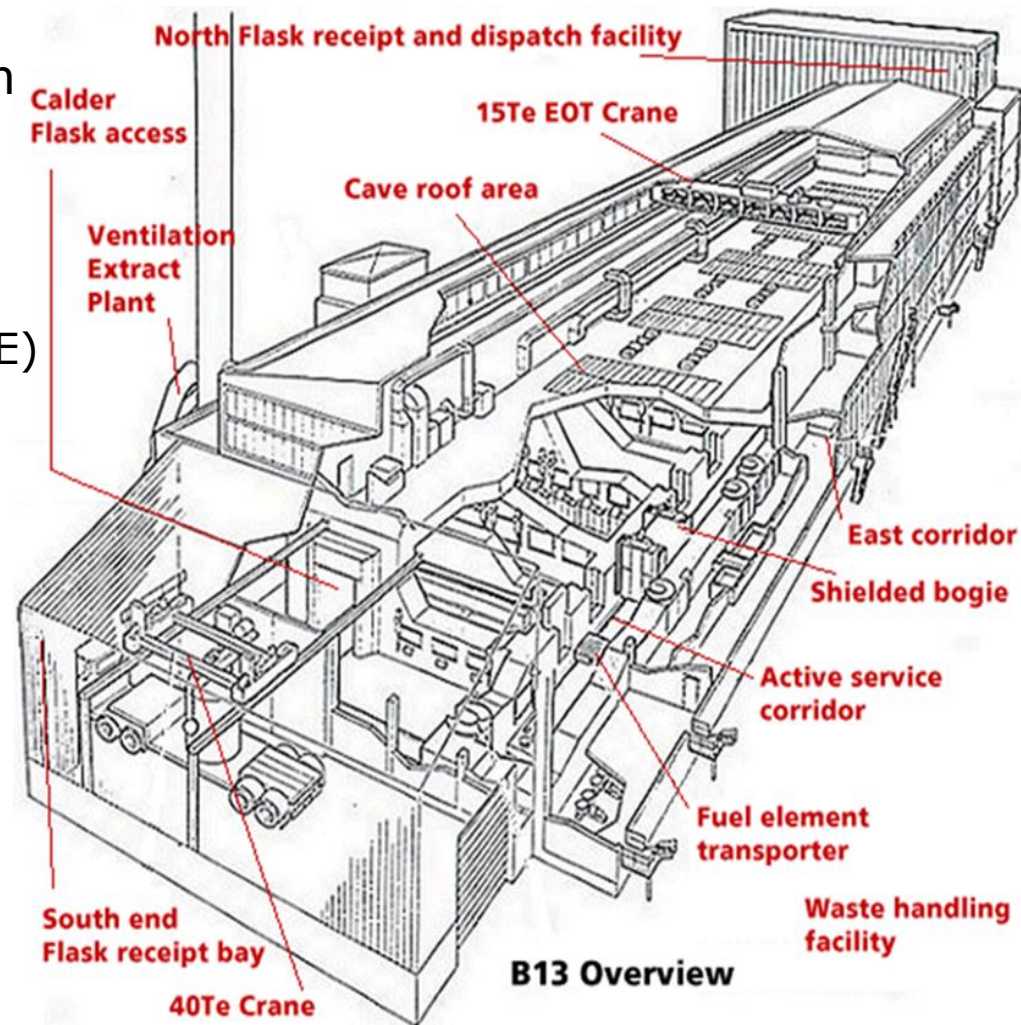
- Non-radioactive rig hall & engineering facility

National R&D Facilities



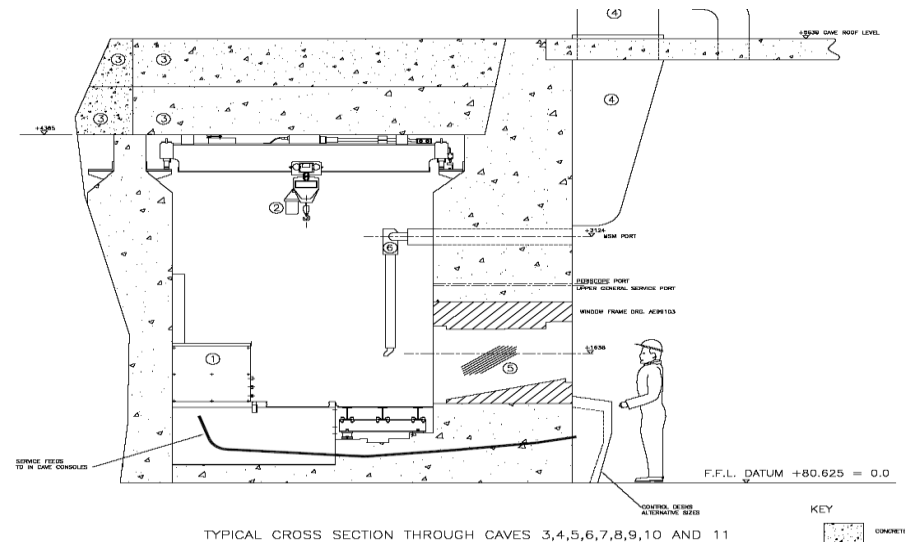
Active Handling Facility

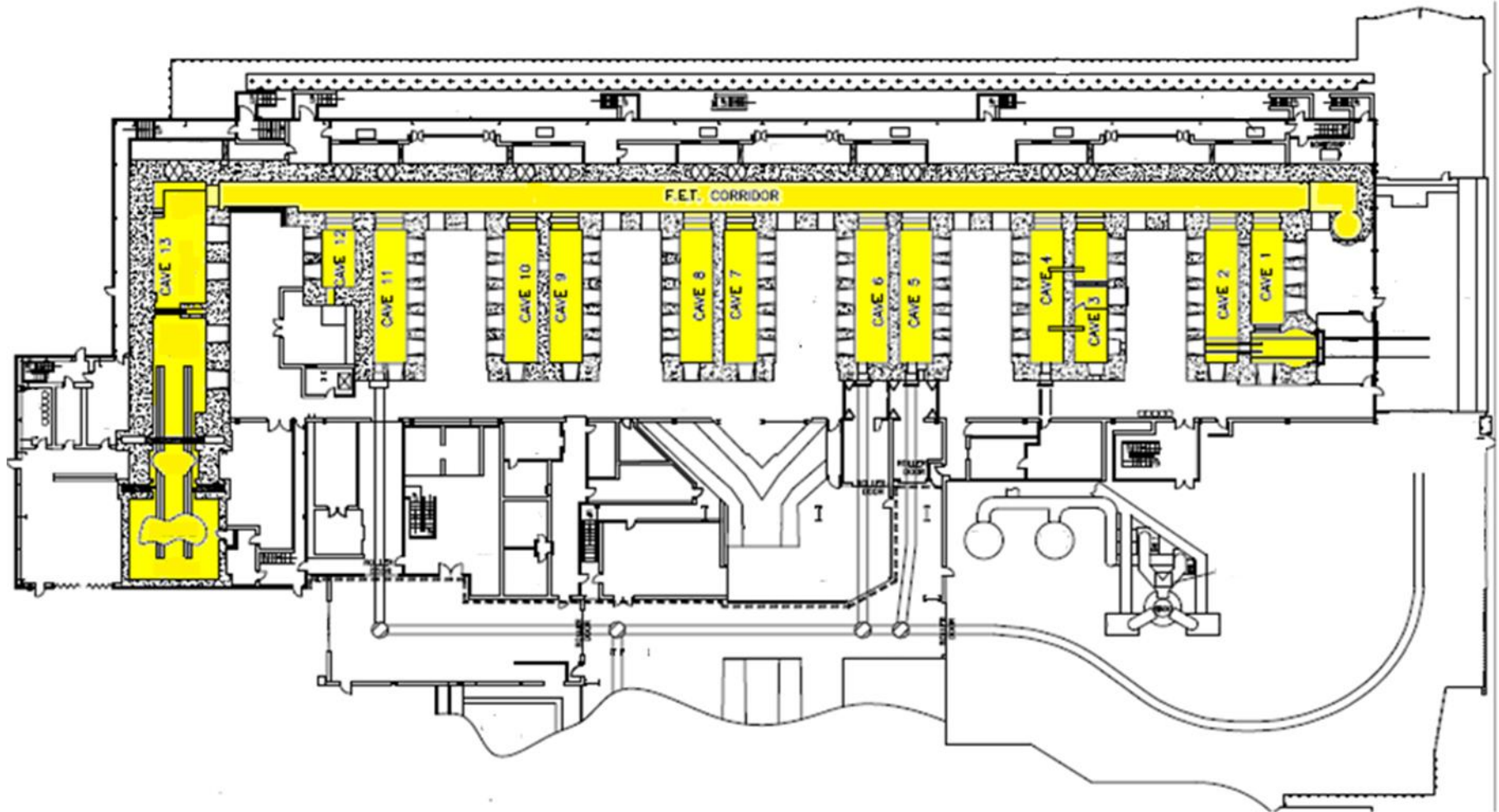
- Active Handling and Inspection
- Large Shielded Cells
- Remote Operations Capability
- Core Capability
 - ★ Post Irradiation Examination (PIE)
 - ★ Sample preparation
 - ★ X-radiography
 - ★ Source handling
 - ★ Waste segregation, packing and despatch



Active Handling Facility

- 13 large, heavily shielded lead impregnated concrete cells
- Shield walls 1.4m thick
- Typically 10.5m long, 2.6m wide, 3.5m high (capable of handling full length LWR rods)
- Interconnected by shielded service corridor
- Upper maintenance level with access via shielded roof blocks
- Typically 5 workstations at a cave operating face
- Viewing window and master slave manipulators
- Services fed through shielded wall plugs
- Dedicated cells for waste handling and decontamination





- Integrated facilities:
 - ★ Highly active alpha / beta / gamma cells
 - ★ Plutonium active laboratories
 - ★ Low active and inactive laboratories
 - ★ Uranium-active rig hall
 - ★ Supporting infrastructure to meet the requirements of 300 technologists
 - ★ Flexible operating envelope



- 5 heavily shielded alpha / beta / gamma / neutron cells.
- Reusable containment boxes
- 2.4m wide x 1.8m deep x 2.5m high
- Automatic connections for manipulators & services
- Set up prior to introducing active materials
- Decontamination offline



- Product Can Processing Gloveboxes
- Residue Can Opening Glovebox
- Ceramography
- Residues recovery
- X-ray diffraction (XRD)
- Thermogravimetric Analyses (TGA)
- Scanning Electron Microscope (SEM)
- BET Specific Surface Area (SSA) analysis



- Gas Chromatography
- High Special Nuclear Materials Store
- Fume Cupboards
- General Purpose Gloveboxes
- Plutonium Contaminated Material drum monitor

- **Active Laboratories**
- 8 Laboratories:
 - ★ 50 fumehoods
 - ★ 2 walk-in fumehoods
 - ★ 4 medium active gloveboxes
 - ★ 4 medium active inert gloveboxes



- **Non-active Laboratories**
- 31 fumehood bays
- Bench and open floor bays
- Wet chemistry, corrosion and materials capabilities
- Furnace room
- Optics laboratory

Uranium Rig Hall

- 6 rig bays
- 1 full height high bay
- Connections to reagents
- Flexible skid mounting



- Crane facility
- Electrical / Instrumentation and Mechanical workshops

- Flexible
 - ★ Fuel, cladding, graphite, plutonium, uranium, other irradiated materials
- Wide range of facilities
 - ★ Large hot cells -> specialised analytical laboratories -> rig hall
- Full fuel assemblies to nano-scale characterisations
- Focused on customer requirements

