# NDA's Strategy for the Management of Spent Fuel and Nuclear Materials at Dounreay

## Presentation to DSG

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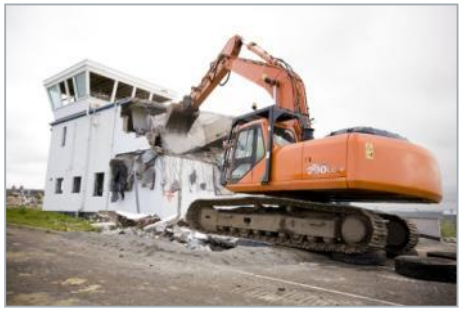
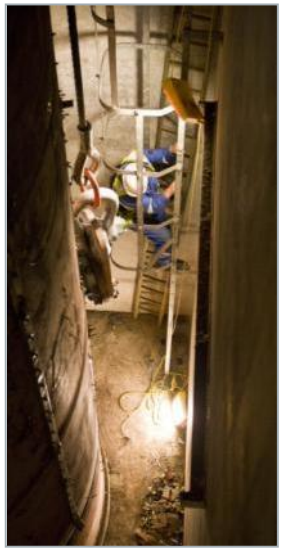
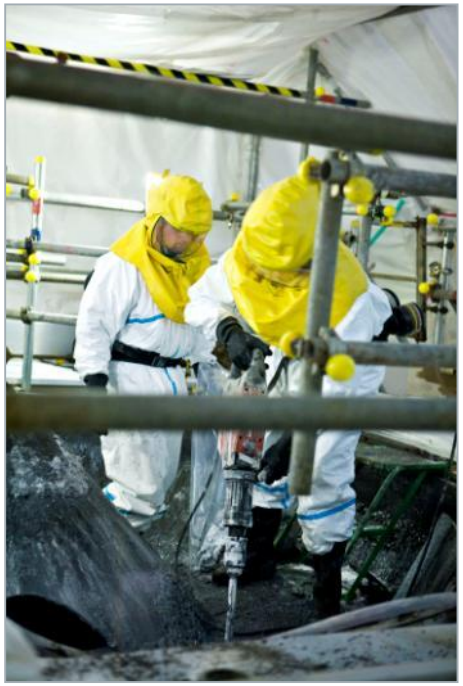
# Dounreay – UK centre of fast reactor research 1954 - 94

# Now Britain’s biggest nuclear site closure project








# Moving towards closure circa 2025

# Dounreay Spent Fuels & Nuclear Materials Management Objectives

- To reduce the long term storage and security requirements at the Dounreay Site.
- To support UK security objectives by placing the material in a long term storage facility and consolidation with other similar materials within the UK, where possible.
- To minimise the number of new facilities that are required and maximise the benefit of those that exist or are already necessary.
- To support the safe final disposition of the materials as the process will include the preparation of materials for long term storage together with high quality characterisation.
- To facilitate significant hazard reduction at Dounreay without significant impact on hazards at any other NDA site.

# Fuels and Nuclear Materials Inventory at Dounreay

| MATERIAL | MAIN FORM | Approx. Tonnes |
|---|---|---|
| Irradiated DFR Breeder Material | • Metallic fuel elements or slugs | 44 |
| Irradiated Spent Fuels | PFR Oxide Fuels<br>PFR Carbide Fuels | 15 |
| Unirradiated Fuels and Nuclear Materials | • MOX (pellets and powder)<br>• Nuclear Material Metal<br>• Oxide Fuel assemblies and pins<br>• Mixed U/Pu Carbide<br>• High Enriched Uranium Oxide | 13 |
| Unirradiated Uranium | Oxide (powder) | 30 |
| Unirradiated Uranium | Carbide (pellets and pins) | 5 |

# Stakeholder Engagement

- **NDA Strategy II**
  - Full consultation in 2010, published in 2011
- **NDA Business Plan 2011-14**
  - Full consultation in 2010/11, published in 2011
- **NDA DFR Credible & Preferred Options Paper**
  - Engagement July – September 2011
  -

# Options

- **DFR Breeder Material – CONFIRMED OPTION**
  - Will be sent to Sellafield in standard Magnox flasks, managed by Direct Rail Services.
  - There will be 94 flasks transported over a 5-6 year period.
  - First shipment expected in Summer 2012.

- **Dounreay Exotic Fuels and Nuclear Materials**
  - If “transfer to Sellafield” is chosen, a number of transportation options will need to have been considered.
  - Further discussions with specific stakeholders and in particular the Office for Nuclear Regulation (ONR) Security will need to take place.

# Further Information

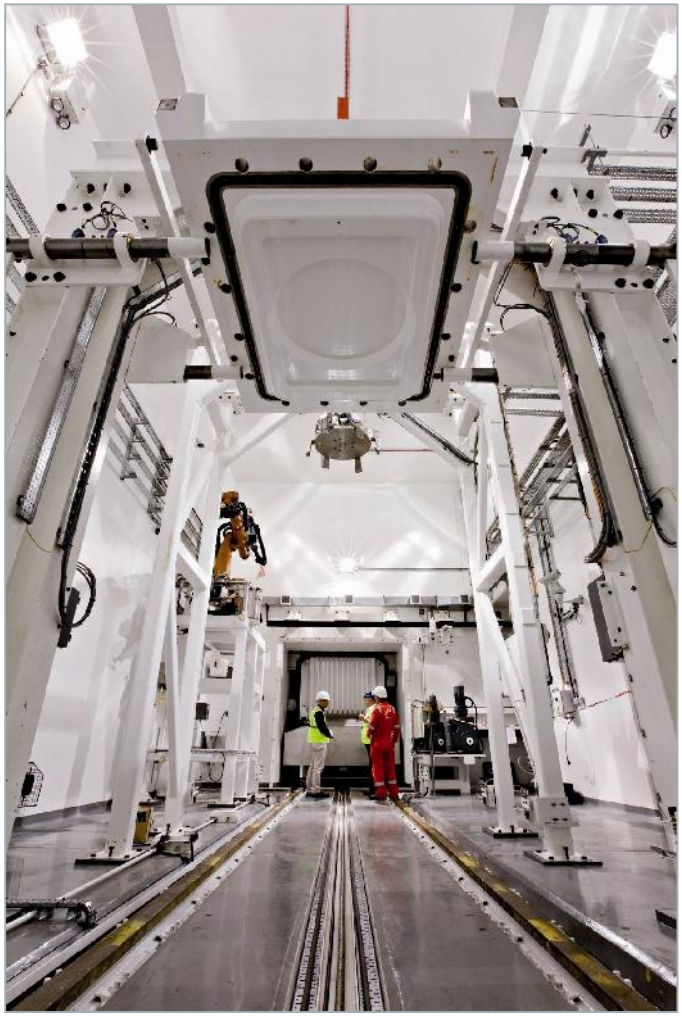
www.nda.gov.uk

www.dounreay.com

www.hse.gov.uk/nuclear

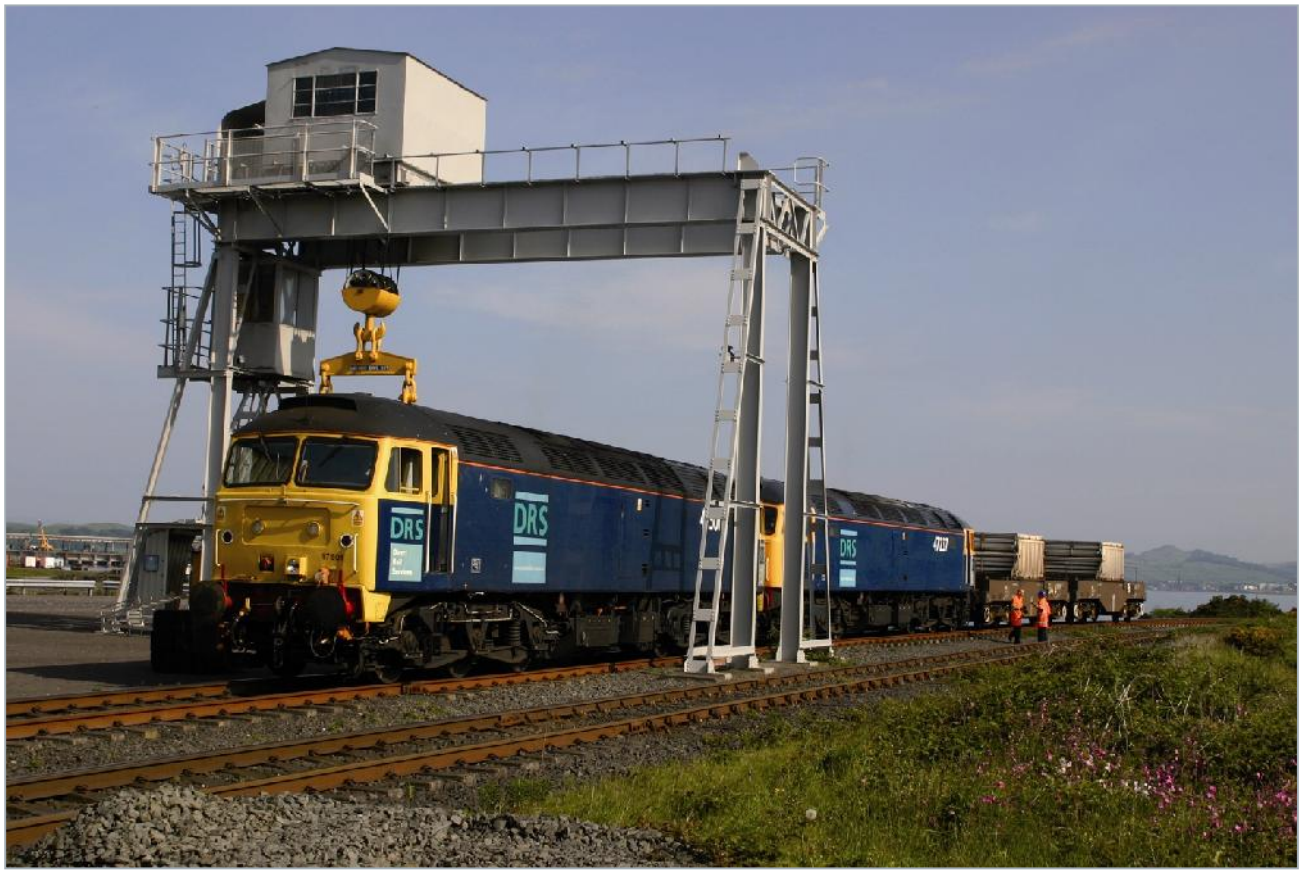
www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/AtAGlance/Flash_TransportOfRadioactiveMaterials/

# DFR Breeder Fuel – Magnox flask



Inside the Breeder Removal Facility
at the Dounreay Fast Reactor

# DFR Breeder Fuel – Magnox flask




One of the fleet of DRS trains transporting spent fuel flasks