



**Dounreay Site
Restoration Ltd**

DOUNREAY DFR BREEDER FUEL STRATEGIES

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Background

- DSRL stores some 100 tones of fuel in various stores and reactors on site.
- Discussions have been ongoing in support of the NDA's policy to consider the options for DSRL stored fuel, including co-locating to other NDA sites.
- Business cases are being developed exploring all credible options.
- DFR Breeder makes up some 45% of Dounreay's fuel inventory

NDA Public Engagement

- Technical discussions have been moving forward within the SLCs in support of credible options.
- Now reached the point where informed public engagement should take place.
- NDA want to engage key stakeholders on credible options and the preferred option.
- Options paper is due to be published by the end of June 2011
- Further business case work is taking place on the remainder of the Dounreay fuels – this should move forward to stakeholder engagement over the next few years.

Credible Options for DFR Breeder Fuel

- Three credible options:
 - 1 Store the material in a new fuel store at Dounreay
 - 2 Transfer the DFR material to the appropriate waste stream and store at Dounreay
 - 3 Transfer the DFR material to Sellafield and treat through the Magnox reprocessing facility.

Option 1 Construct New Fuels Store at Dounreay

- Option is feasible but the most expensive.
- Funding constraints lead to elongated build programme.
- Concept design work is underway.
- If pursued would delay the decommissioning programme for DFR.
- Facility would be constructed to store all Dounreay current fuel inventory.
- Fuel hazard remains stored on site.
- No non proliferation benefit – UK Government strategic aim

Option 2 Transfer to Waste Stream and Store at Dounreay

- Discussions ongoing with Radioactive Waste Management Directorate (RWMD) of the NDA.
- Technical development of the type of waste encapsulant ongoing (grout or polymer).
- Large number of waste drums required.
- New waste store would have to be constructed as insufficient storage space available at present.
- Second most expensive option and hazard remains on site.

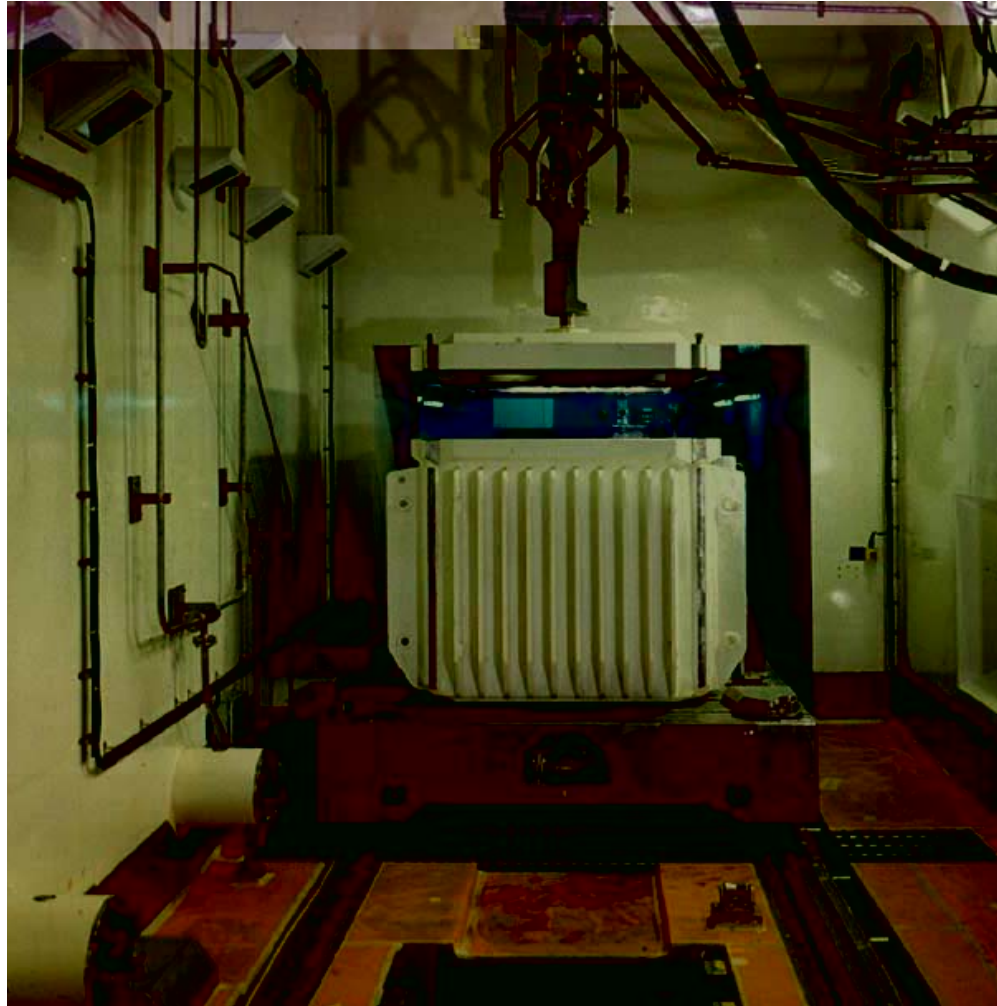
Option 3 Transportation to Sellafield

- Normal shipment of Magnox fuel is by rail to Sellafield using Direct Rail Services as the rail freight company. They have already carried out thousands of Magnox flask shipments without incident.
- DFR Breeder fuel would be transported in a Magnox Flask to minimise flask handling changes.
- Proposed transport would be by road to a Caithness railhead then ship by rail to Sellafield.
- There would be some 94 flasks to be shipped over a 5 to 6 year period.
- Least expensive of the three options and removes hazard from the Site.
- Treatment would recover fissile material giving a non proliferation benefit.

Probable Preferred Option for DFR Breeder Fuel

- Treatment of the DFR Breeder fuel at a Sellafield facility (Option 3) is the proposed preferred option.
- Can be accommodated within the Magnox Operating Plan.
- DFR Breeder fuel makes up some 1% of the Magnox fuel to be processed in this decade.
- Shipments would be business as usual for Magnox teams.
- A final decision will be taken by the NDA Executive and Board in September/October 2011.

DFR Breeder Fuel – Magnox flask



Conclusions

- NDA about to move into public engagement on credible options, with a preferred option for Dounreay's DFR Breeder fuel.
- Publication will be on the NDA website by the end of June 2011.
- Proposed preferred option sees rail as the main transportation medium using Magnox flasks to carry the fuel to Sellafields via the leading rail freight operator.
- Preferred Option would remove the hazard and deal with some 45% of Dounreay's fuel inventory.
- Final decision on the preferred option will be taken by the NDA Board in September/October 2011.

