

Post-closure Decommissioning Intermediate Decommissioning

Within two years of its closure, all uranium fuel and heavy water coolant was removed from the reactor (D1250). Work was carried out to make D1250 safe, and thereafter placed in a care and maintenance basis until 1996.

The ancillary buildings have been variously adapted and used for a variety of purposes over the years.

In 1996 contractors commenced work within D1250 to remove all redundant equipment and generally prepare D1250 for passive care and maintenance pending final demolition during a future phase of the Dounreay Site Restoration Plan.

Decommissioning work carried out during this phase included:

- Removal of drummed radiological waste and stored as LLW
- Removal of bulk waste
- Removal of redundant material and equipment
- Crane and Lift immobilised
- All remaining original services disconnected/isolated
- New lighting system installed which is controlled from the personnel airlock

This phase was completed in 2003



The team who carried out the 1996-2003 Decommissioning phase

Completion of 1996-2003 Decommissioning phase



Until final decommissioning is complete the facility will be inspected regularly for normal care and maintenance.

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Dounreay Materials Testing Reactor

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Background

Dounreay was the site chosen in 1954 to pioneer the development of the fast breeder reactor programme. In March 1955 construction commenced with the excavation for Dounreay's spherical dome, which has become the enduring symbol of the site. In June of the same year construction of the Dounreay Materials Testing Reactor (DMTR) commenced, along with associated back-up laboratories and other facilities. The project was completed in February 1958 and went critical in May of the same year, making it the first operational nuclear reactor on Scottish soil.

The reactor which had a thermal output of 25MWt, was housed in a steel pressure vessel, and because of its shape is known affectionately as the "upturned dustbin."

DMTR external view.



History

The role of DMTR was to test the effect irradiation had on metals. The metal, in element form some 26 feet long was fabricated in D1202 fuel fabrications plant from molten aluminium impregnated with uranium.

On completion of the irradiation process the elements were cropped and charged to a dissolver to form a uranium aluminium nitrate solution. An extraction system removed the uranium from the solution and transferred to the billet reproduction recovery plant with the waste products being put to the high active evaporation and storage plant.

The uranyl nitrate solution was put through an evaporation process, made into a powder, and then into a metal billet. These billets were then sent to the fuel fabrication plant to begin the cycle all over again.

As well as carrying out these tests, MTR fuel elements from the Pegase Reactor in France were off loaded and milled in the DMTR Pond before being dispatched to D1204 for reprocessing.

Technical problems were encountered in 1967 with the boiling water loop, the vertical control rods and the main "heavy water" circulating pumps. These problems together with Harwell's ability to carry out similar work cheaper cast doubt over the future of DMTR. In May 1969, DMTR closed for the last time.



Construction underway - c1955.



Fitting out of the Reactor Vault.



The reactor roof floor at closedown - 1969

Buildings which made up the DMTR Complex

D1250 – Dounreay Materials Testing Reactor (DMTR)

The reactor was contained within the vessel which measured 21.2m (70ft) in diameter and 22.7m (75ft) in height. It was fitted with a 25 ton capacity electric overhead crane and was designed to rotate within the structure.

D1251 – Offices and Active Handling Bay (AHB)

D1251 was the original DMTR office block. The AHB was added later to provide storage facilities

D8571 – DMTR Cave

Built to assist in the breakdown of irradiated rigs and later converted as a facility for PFR. This use ceased upon the closure of PFR.

D8570 – Rig Workshop

Constructed in 1958 comprising workshop and office facilities, later converted, firstly as an Apprentice Training Centre, thereafter to its current role as a store for Low Level Solid Waste.

D9814 – DMTR Pond

This facility was constructed in 1964 as an extension to D8571.

D9786 – Laboratory

A small Chemical Lab built mainly to handle AGR components and requirements.

D8776

A small building that housed the DMTR extract fan filters and iodine scrubber.

External view.



Above: Transfer of elements (c1967).



Left: DMTR Control Room (c1967).