

Vitrified Residue Returns Overview



Canister removal

Spent nuclear fuel is reprocessed at Sellafield Site. The resulting Highly Active Waste (HAW) stream is processed into a solid glass form and encased in stainless steel canisters in the Waste Vitrification Plant (WVP). These canisters are then stored in the Vitrified Product Store (VPS). A number of these canisters will be designated for return to overseas customers in accordance with Government policy. The solid form of the waste is Internationally recognised as safe and suitable for return in transport flasks.



Residue Export Facility (REF)

The canisters are retrieved from VPS and placed in REF where a number of witnessed checks are carried out in conjunction with the customers and their regulators. The REF has been modified to carry out a number of additional requirements from the Japanese and European customers. The Residue Export Facility loads the solid HAW canisters into a flask for export back to the overseas customers.



Flasks

There are 2 types of flask used to transport solid HAW canisters:

- **Transport flasks** - These are used to transport the solid HAW canisters to storage facilities in the receipt country where the canisters are removed from the flask and re-stored in a facility similar to VPS.
- **Transport & Storage flasks** - These are used to transport and store the solid HAW canisters. The storage facilities in the receipt country house the flasks. All flasks are designed to strict design specifications and are in accordance with IAEA regulations.



Flask Marshalling Area

The flasks containing solid HAW canisters are transported via the Sellafield internal rail system to the Flask Marshalling Area. This facility is designed to accommodate laden and empty flasks. This area will be used to marshal the flasks ready for export and receive flasks ready for loading in REF.



UK flask movements

Transportation to overseas customers begins with a rail journey from Sellafield to the Port of Barrow. To enable this transport, a number of newly designed wagons are being manufactured to carry a laden flask that weighs approx 120te.



International flask movements

Starting from the Port of Barrow, International Nuclear Services (INS) will arrange for transport of the flasks to Japan and Europe. INS uses Pacific Nuclear Transport Limited (PNTL) and NDA owned shipping fleet. These ships have safely covered more than 5 million miles without a single incident resulting in the release of radioactivity. Over 2,000 flasks of nuclear material have been safely transported.



Receipt in Japan

In Japan the flasks are unloaded from the ship and then take a short journey by road on a purpose built transporter to the Rokkasho-Mura interim storage facility. The facility has been operational since 1995 and is specifically designed to handle the flasks, remove the canisters from the flask, check the canisters and then position them in the store. The empty flask is then inspected and returned to Sellafield ready for re-use.



Receipt in Europe

Interim storage facilities in Germany, Switzerland and Italy will receive flasks that will remain in the facilities for up to 100 years. The Netherlands has a store similar to the VPS and will receive canisters in a 'transport only' flask - the same as the Japanese customers.