

Decommissioning of A59 Active Handling and Decontamination Building



Background

A59, the active handling building was built at Winfrith between 1962 and 1964. It was used for the post-irradiation examination (PIE) of a wide range of reactor fuel assemblies and their structural components, from various reactors including the site's DRAGON and Steam Generating Heavy Water Reactors. In the 1970s, the Central Electricity Generating Board (CEGB) contracted the use of most of A59 for examination of fuel from the newly commissioned advanced gas-cooled reactors (AGRs).

A59 had two suites of cave lines, which were used to remotely examine the spent fuel. The north cave line originally had five caves, this was later increased to seven caves, the south cave line had three caves. Both cave lines had zinc bromide solution-filled windows and master-slave manipulators, with in-cave hoists and 1.52m (5ft) thick concrete walls.

Following the completion of fuel post-irradiation examination operations in 1992, A59 was used for a number of other active handling tasks, including the repackaging of DRAGON fuel and the treatment and packaging of wastes including historic intermediate and low level waste drums. Post operational clean out commenced in 1999.

The decommissioning of A59 forms part of the larger Winfrith Operations Maintenance and Decommissioning (WOMAD) programme which sees UKAEA working closely towards site restoration with RWE NUKEM.



Objective

To decommission A59 to a stage where the building can be conventionally demolished leaving a de-watered hole.

Key challenges

- Decontamination of highly contaminated areas to allow manual entry.
- Decontamination of the en-cast ventilation systems.
- Removal of seven sets of intercave wing walls and doors each weighing up to 33 tonnes.
- Decontamination of the floor storage holes.
- Demolition of the caveline and building structure.
- To maximise the decontamination of materials for free release.
- Achieving a positive spirit of partnering with the delivering contractor.

Solution

The decommissioning of A59 began with the development of the remotely operated cleaning tools and making use of the existing manipulators in the cells. These were used to reduce the radiation levels in the cave from 50 millisieverts to an average of 300 microsieverts, which enabled manual entry for further decontamination of the inside of the cells.

Water pressure washing techniques were developed to decontaminate the in-cast ventilation. This allowed the decommissioning team to reduce contamination to within low level waste (LLW) criteria.

Specialist lifting equipment was designed to remove the in-cell 'wing walls' each weighing up to 33 tonnes. Jacking and manoeuvring was first undertaken to position the walls and doors allowing final removal. This was achieved by utilising a heavy lifting vehicle, similar to a fork lift truck. Prior to the lift, purpose built lifting bracketing was fitted to the doors and walls to allow connection to the lifting vehicle.



Outcome

- The programme is ahead of schedule and within cost.
- All benches, in-cave equipment, manipulators, windows, and crane rails have been removed, leaving the basic cave structures.
- All cave lines have been decontaminated to free-breathing criteria.
- Clean and contaminated zinc bromide has been solidified in gel for transportation and removed for disposal.
- Cleaning and removal of floor storage holes will be carried out during 2004/5.
- Demolition is due to start in the latter part of 2005.
- Final decommissioning and demolition of the facility is scheduled for late 2006.

Key facts

Dimension of the cave lines:

North	W6.2m	L26m	H4.5m
South	W6.2m	L12m	H4.5m

Volume of waste despatched as of July 2003 as:

Free release

LLW

ILW

74% of all waste generated was Free Release Waste (FRW).

483 Tonnes
114m³ (170 Tonnes)
0.5m³

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