

Decommissioning of Building 220



Background

The main part of Building 220 (B220) was built between 1948 and 1951 to carry out research and development work with radioactive materials. Chemists, engineers and physicists worked side by side to progress the UK's civil nuclear research programme, at the forefront of world technology. Work was undertaken on a wide range of nuclear materials including extensive work with plutonium.

Later additions to the building included a glovebox hall in the early 1950s and a purpose built remote handling facility in the mid 1980s.

In the mid 1990s many of the plutonium handling facilities were out of use and required decommissioning.

Objectives

To remove and reduce the redundant facilities from B220, leaving the building in care and maintenance until UKAEA can complete ultimate decommissioning to a green field site.



Key challenges

- B220 was constructed to be highly robust and without consideration to its ultimate decommissioning.
- Stage One decommissioning of the redundant areas in B220, required the first major project to decommission a large alpha active pressurised suit area.
- Some materials used in the construction of the building have since been found to be difficult to decontaminate/ decommission as contamination can become trapped in the fabric of the building.
- Cutting up 160 redundant alpha active gloveboxes used to support the plutonium research and development programme.



Solution

All of the decommissioning work undertaken in B220 between 1994 and 2001 was carried out by contract staff with UKAEA acting as project managers.

UKAEA used a remotely operated robot to size reduce 160 gloveboxes. As part of Stage One decommissioning of these redundant facilities, several active laboratories that had contained gloveboxes and fume cupboards were successfully decommissioned to 'clean' status and converted into unrestricted office space.

One of the redundant facilities in B220 was the 'shop window' complex. This consisted of 10 very large fixed glove boxes and an associated pressurised suit area which were heavily contaminated with plutonium. A second pressurised suit area had formerly been used for glovebox refurbishment and latterly to cut up redundant gloveboxes. These highly contaminated areas and associated ventilation ductwork were decommissioned using cold-cutting techniques, vacuum scabblers and the innovative use of spray fixatives to reduce airborne contamination. This work was carried out entirely by pressurised suit teams and was extremely challenging for both the contractor and UKAEA. Removal of all fixed structures and contamination was successfully achieved.

The areas have now been reinstated as free breathing areas.



Outcome

- The disused sections of the building have been decommissioned to Stage One and many have been reworked for alternative uses. Further areas of the building will be progressively decommissioned from March 2004 onwards.
- Several redundant alpha active laboratory suites were successfully converted into office space following the completion of Stage Two decommissioning.
- Through the decommissioning of B220, the UKAEA project team developed its philosophy for working with contractors. This evolved from a prescriptive 'this is how the job is done,' to tendering contracts which invited a consultative approach to the job and working in close partnership to complete the project.
- As one of the earliest major alpha decommissioning programmes within UKAEA, the B220 team was able to share its lessons learnt across the entire organisation, including the introduction of a contractor/client risk register.
- The entire programme was completed without serious event or physical injury.

Key facts

Gloveboxes decommissioned	160
20ft x 20ft x 8ft 'shop windows' decommissioned	10
Pressurised suit areas and supporting facilities decommissioned	2
Laboratories decommissioned	2
Length of grossly contaminated ducting disposed of	200 metres

Timescales

Initial operation	1949-1950
Current status	Part operational
	Part Stage One decommissioning

Contact:

Nick Hance
Harwell Public Relations Manager
Tel: 01235 436909
Email: nick.hance@ukaea.org.uk