

Waste contamination monitoring

Rutherford Building 2.62 & 2.63 Ceiling and Joist Removal



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Executive Summary

The ceilings below rooms 2.62 and 2.63 were removed. Using a Mini 900/EP15 Serco conducted radiation contamination monitoring of the surface of all ceiling material removed and the wall surfaces revealed as a result of the ceiling removal.

A number of localised spots of contamination were identified. These were primarily associated with the underside of the joists and the plaster that was in close proximity to these joists. The location of any identified contamination was noted and radioactively contaminated material was retained for further assessment.

At the instruction of Manchester University all items with a count rate greater than 10cps (11 bags) were retained with the maximum reading on any single item being 400cps. All other material was released without further radiological control.

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History Sheet

Revision	Date	Description of Modification
Issue 1	18.08.2010	First Issue
Issue 1	13.10.2010	Serco security classification removed.

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I Introduction

1.1 Scope of Work

The ceilings below Rooms 2.62 and 2.63 of the Rutherford building were removed. This report details the results of radiation contamination monitoring that was conducted on the plaster ceiling during the removal process.

1.2 Site Location

The ceilings below rooms 2.62 and 2.63 were supported by wooden joists running across the width of the rooms. These joists were supported within notches within the brickwork on one side, with the other fitted into a steel joist running below the dividing wall.

The ceiling itself was a wire mesh secured to the underside of the wooden joists and rendered with plaster.

2 Method

Using a scaffold, sections of ceiling between joists were cut in approximately square sections from below and removed as a whole segment. The ceiling material directly secured to the joists was removed by force and the resulting rubble placed in bags.

Once the ceiling had been removed the supporting beams were removed and cut up.

The surface of the ceiling segments on both sides were monitored using a Mini 900 with EP15 probe before being placed in bags to await disposal. Rubble material removed from the joists and any sections which broke up during removal were spread out on trays to reduce self shielding and monitored using a Mini900 with EP15 probe.

Once the ceiling material had been removed further monitoring of the underside of the joists was conducted, prior to their removal. Once the joists were removed any areas of the walls at the ceiling level which were found to result in greater than 5cps were removed.

All material removed was bagged and labelled to allow later identification of the material and where it came from on the ceiling.

Any count rates above 5 cps were recorded along with their position for the contaminated material within the ceiling. For a point source this corresponds to ~10Bq Pb-210 (and short lived daughter products).

Throughout the work, Serco provided personal contamination monitoring for those working on the project and performed personal contamination monitoring

3 Results

A copy of the annotated drawings of the ceilings, noting the location of identified contamination, is contained within Appendix 1. A number of spots of elevated count rate were identified, with the maximum item (NO 2.62/147) resulting in a count rate of 400cps. Item NO 2.62/147 was identified as a small piece of loose plaster.

Table 1 lists the items which when measured with an EP15 probe resulted in greater than or equal to 5cps along with the observed count rate. All of these items were placed in bags and at the instruction of Manchester University any item with less than or equal to 10cps was released as waste without radiological control. Items with a count rate greater than 10cps have been retained for further assessment.

Table 1. Bagged Waste Monitoring Results

Label	Maximum surface count rate (cps)	Notes	Action Taken
AB 2.62/1	30	Piece of plaster co cps, wrapped Loose material, wrapped	Held in Storage
AB 2.62/4	5	Loose Material, wrapped	Disposed
AB 2.62/5	15	Piece of plaster, wrapped	Held in Storage
AB 2.62/6	5	Piece of plaster, wrapped	Disposed
AB 2.62/8	8	Piece of plaster, wrapped	Disposed
AB 2.62/9	10	Piece of plaster, wrapped	Disposed
AB 2.62/10	10	Piece of plaster, wrapped	Disposed
BC 2.62/12	6	Small piece of plaster, wrapped, Bagged with BC 2.62/13 & BC 2.62/14	Held in Storage
BC 2.62/13	20	Piece of plaster, wrapped Bagged with BC 2.62/12 & BC 2.62/14	Held in Storage
BC 2.62/14	5	Piece of plaster, wrapped Bagged with BC 2.62/12 & BC 2.62/13	Held in Storage
AB 2.62/16	25	Piece of plaster, wrapped	Held in Storage
AB 2.62/17	5	Piece of plaster, wrapped	Disposed
BC 2.62/22	8	Piece of plaster, wrapped	Disposed
CD 2.62/28	5	Piece of plaster, wrapped	Disposed
CD 2.62/33	5	Piece of plaster, wrapped	Disposed
FG 2.62/62	10	Piece of plaster, wrapped	Disposed
IJ 2.62/89	5	Piece of plaster, wrapped Bagged with JK 2.62/110	Disposed
JK 2.62/110	8	Piece of plaster, wrapped Bagged with IJ 2.62/89	Disposed
NO 2.62/147	400	Small piece of plaster Bagged with OP 2.62/161& NO 2.62/149	Held in Storage
NO 2.62/149	5	Plaster, wrapped Bagged with OP 2.62/161& NO 2.62/147	Held in Storage
OP 2.62/161	10	Brick, wrapped Bagged with NO 2.62/149 & NO 2.62/147	Held in Storage
OP 2.62/157	15	Plaster and coving, wrapped	Held in Storage
AB 2.63/6	10	Loose Material, wrapped Bagged with OP 2.63/146	Disposed
OP 2.63/146	5	Piece of coving, wrapped Bagged with AB 2.63/6	Disposed
Joist 'I' 2.62	15	End of joist, wrapped	Held in Storage
Joist 'D' 2.62	5	End of joist, wrapped	Disposed
Joist 'A' 2.62	10	Joist, wrapped Three discrete locations of contamination	Disposed

Label	Maximum surface count rate (cps)	Notes	Action Taken
2.63 Beam P	13	Beam, wrapped	Held in Storage
2.63 Beam P	40	Beam, wrapped	Held in Storage
2.63 Door Strip	15	Door Strip, wrapped	Held in Storage
Empty Vac Bag	20	Empty bag, wrapped (Contents of bag were monitored and cleared)	Held in Storage

A total of 11 bags were retained for further assessment.

4 Conclusions

The ceilings below rooms 2.62 and 2.63 were removed. During this removal Serco conducted radiation contamination monitoring of the surface of all ceiling material removed and the wall surfaces revealed as a result of the ceiling removal.

A number of localised spots of contamination were identified. These were primarily associated with the underside of the joists and the plaster that was in close proximity to these joists. The location of any identified contamination was noted and radioactively contaminated material with a count rate greater than 10cps was retained for further assessment.

At the instruction of Manchester University all items with a count rate greater than 10cps (11 bags) were retained. All other material was released without further radiological control.

Appendix I

Health Physics Survey Forms

Contents

Ceiling Survey Records

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