

Case Study



B215 OSVD Phase 2 – Lead Removal

Located within the Sellafield Site's primary separation area, B215 and its ancillary plant provide evaporation and storage facilities for highly radioactive raffinate produced from the radioactive fuel reprocessing activities undertaken from Magnox and THORP oxide fuel reprocessing.

The storage and processing of such highly active liquors requires a complex chemical ventilation system. The ventilation systems ensure that any radioactive contaminated particles produced from the stored media cannot migrate to the outside environment.

A non-intrusive survey undertaken by Nuvia of the B215 External Old Side Ventilation Ductwork (OSVD) identified that at various locations the stability and structural integrity of the supports for the external ductwork and lead shielding, had significantly deteriorated and were showing visible signs of corrosion.

Nuvia was contracted to undertake remedial works on the OSVD to remove the lead shielding and ascertain the current condition of the stainless steel ventilation ducting and the integrity of the structural supports.

Lead Removal Methodology

A structured methodology was developed by Nuvia engineers based at Sellafield, who were able to use their experience of working in the Sellafield Separation area and their knowledge of the B215 complex, to identify a suitable approach to safely remove the lead shielding from the ventilation duct.

The chosen methodology allowed Nuvia to address the areas of most concern first. This enabled areas of exposed ductwork to be assessed and any remedial repair work to be undertaken, as the work progressed to completion.

The chosen approach to the removal of the lead allowed the inclined section of the ductwork to be dealt with first; allowing approximately 50% of the total lead shielding to be removed. This enabled the site team to quickly assess the unknown condition of the exposed ductwork, which ultimately proved to be in a good condition. Subsequently the lead was removed from the box

section and finally the vertical section; both revealed that the ductwork in these areas was also in a good overall condition.

Project Challenges

Throughout the duration of the project there were a number of challenging issues that were addressed successfully enabling the project to be completed in a safe and efficient manner within the time constraints dictated by the ALFA milestone:

- Development of a suitable methodology to remove the lead in a controlled area with limited access to the workforce that also considered for changing or unforeseen conditions arising as a direct result of the lead removal operations.
- Radiological risks inherent with working on active ventilation ducting required careful planning of the work to maintain ALARP principles.
- Provision of a supplementary support system for the ductwork; to prevent a collapse of the duct from a failure of the structural supports.
- Undertaking work on an active ventilation system required excellent communication with plant operations personnel during the on-site work.
- Discovery and subsequent supervision for the removal of asbestos-impregnated cladding from certain areas of the ductwork prior to lead removal.
- Cutting and handling contaminated lead shielding within the Sellafield separation area.

With a combination of Nuvia site operatives and supporting sub-contractors, Nuvia was successful in removing the lead shielding from Section 1 of the OSVD in a safe and controlled manner. As a direct result of this work Nuvia allowed its client to achieve an important ALFA target milestone.

Upon completion of the lead removal operations, Nuvia undertook a comprehensive engineering and structural survey of the ventilation ductwork and supporting structure to establish the current condition of the steelwork. The report generated as a result of this survey highlighted a number of recommendations to provide additional structural support to the duct and to remove some of the now redundant existing supports that are showing significant signs of corrosion.

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CS-688 – July 2008