

NEWS BULLETIN

October 2020

A regular update on DSA projects and people

Fix found for broken shower that held up in-cell decom

A collaborative effort between Sellafield Ltd, the DSA and supply chain partners has cleared the way for work to fix a broken shower which has held up in-cell decommissioning on the SEP Purification Plant.

Work stopped after the decontamination shower suffered a leak in 2006, taking it out of service. This meant that workers could not decontaminate on their way in and out of the area and therefore could not safely undertake the work. Because of safety case considerations, this had the knock-on effect of halting in-cell decommissioning.

The repair method, specified by the DSA, requires operators to work in a highly contaminated C5 environment, wearing air-fed protective suits. They will need to lay up carbon fibre mats and then impregnate with epoxy resin, to seal the floor and joints in the cell entrance facility using specialist

methods that required additional training.

To support the work, Cavendish Nuclear designed a set of mock-up shower floors for Sellafield Ltd operators to practice the repair method on.

Training and testing were carried out at Forth Engineering in Flimby, where the units were built, and Underwater Solutions provided technical advice on materials application.

Testing concluded in early October and confirmed that the repair was fully waterproof. This included an adhesion test of the epoxy resin, carried out as a shear lap test in accordance with industry standards. Five samples were made up and tested by applying loads across tokens to impose the required shear forces. All the tests were successful.

The shower repair task is closely associated with the installation of a new shower unit, which has also been designed by Cavendish and is being constructed by WCEL and PPS.

Repair of the shower floor can now commence immediately and will be followed very quickly by installation of the new shower assembly by Sellafield Ltd operators.

Ben Whiteley, Project Engineering Manager, Cavendish Nuclear, said: "Having this shower operational again, for the first time in many years, will allow in-cell decommissioning of the cells to recommence. This will open up many work fronts which have previously been unavailable, potentially increasing operations team utilisation."



Repair trials on a mock-up of the shower were carried out at Forth Engineering in Flimby

Financial update

At end of period 4

DSA spend during 2020/21	£56m
Cashable benefits*	£643,760
Non-cashable benefits*	£889,145
Schedule benefits*	1 month

Health and safety

Hours without a lost-time incident

AXIOM	6,641,573
Progressive	5,699,509
Total	12,341,082

*Approved and draft

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Contact Steve Brauner, Design Services Alliance Communications Lead

Tel: 07875 877120

Email: stephen.brauner@sellafieldsites.com

DSA signs off after success in RAP's preliminary design MDDR

The DSA has rounded off its running of the Replacement Analytical Project (RAP) with a major success.

The project transitioned to Programme and Project Partners at the start of October, not long after completing the preliminary design phase of the Special Nuclear Materials (SNM) stream. After the Single-Discipline Design Reviews, Hazard Management Strategy Reviews and Operability Reviews, the combined Sellafield Ltd and AXIOM design team attained a green/two in the Multi-Discipline Design Review for SNM preliminary design. This also facilitated a Sellafield Ltd site operations milestone for the completion of SNM preliminary design.

The design reviews were held online, with the majority of attendees participating from home, and this proved effective for the process. The MDDR was chaired by Tom Lapworth from PPP Services, with independent assurance from across the design community, capability, technical authority, and specialist groups.

The review was further supported by positional statements provided by the respective design disciplines including informative and detailed presentations from each of the design leads supported by the responsible engineers and area project engineering managers.

This information provided valuable summaries of the work carried out and the status of the design within each discipline.

The DSA team members will continue their involvement with RAP either by transitioning into

PPP Lot 2 partner Jacobs or, in the case of Assystem, Mott MacDonald, Morson and Tenet, through design resource subcontracts.

Michael Gray, AXIOM SNM stream Project Manager, said: "In the past six months, the combined SL and DSA design teams have reconfigured the layout of the labs which has resulted in the number of labs being reduced from six to five.

"This in turn has provided additional design contingency including additional space and contingency for future requirements around glove box orientation and associated instrumentation requirements including general operations and maintenance activities within the improved lab layout."

The RAP project will give Sellafield Ltd a new facility to analyse samples of materials from across the site, by adapting the existing capability within the National Nuclear Laboratory Central Laboratory (NNLCL).

It will replace the 60-year-old existing analytical facility, which supports around 200 internal customers with sample analysis.

The new facility will be used to support site operations for the next 30 years by analysing low, medium and high active material for a range of chemical and radiochemical parameters.

This requires complex high-precision analytical equipment to be nuclearised; enclosing it within gloveboxes and shielded cells whilst ensuring that its analytical performance, reliability and maintenance is not compromised.

ASTOP programme shows how placement students add value

Industrial placement students from DSA partners can make a valuable contribution to projects while developing their own skills and knowledge.

This was demonstrated by the Process team in Site Management, which made use of an undergraduate to work on the ASTOP programme. The work presented some interesting challenges as it involved wide-ranging modifications and changes to allow AGR fuel to be stored until circa 2086, pending development of a geological disposal facility.

The undergraduate played an important role in

enabling the project to take on increased scope to cover some complex hydrogen issues which took time and effort to deal with.

The placement student was able to contribute to this work at a level equivalent to a good graduate engineer. If this work had been done by a Sellafield Ltd process engineer, it would have cost £15,000 more.

The placement was of mutual benefit because of the valuable design experience that the undergraduate gained before returning to university.

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My Perspective – Kieron Davies

As Sellafield Ltd's Design Manager for Remediation, Kieron Davies has several routes for procuring engineering design support within the Value Stream. The DSA and the Decommissioning Delivery Partnership (DDP) provide the vast majority of support required in this growing, £200m annual turnover segment of the Sellafield business. For most of what Remediation does, the DDP will always be first choice for decommissioning solutions. As Kieron explains: "We do post-operational clean out (POCO), decommissioning and demolition, and their skills are very much aligned to that. The DDP also offers a 'cradle to grave' delivery service, where appropriate risk can be allocated and managed more effectively under a Design & Construct arrangement. That's a gap that the DSA is now taking steps to fill.

"The DSA spend in Remediation has decreased over the years while the spend with DDP has increased. This is due entirely to the type of work that Remediation delivers. The approximate split of design services spending is now 15% DSA, 80% DDP, and 5% other (Plant Facing Design Office), and this is the chosen strategy for the future."

Having said that, Kieron sees many benefits from the DSA's ability to deliver suitably qualified and experienced people across a range of design and safety case disciplines. Secondments to DSA partners enables Sellafield Ltd engineers to learn new skills, obtain charterships and receive training that cannot be delivered in-house. The DSA is also a good source for Sellafield Ltd roles such as Project Engineering Managers and Responsible Engineers. "There are many specialist areas where the DSA provides experience which is hard to find, particularly in nuclear skills and design oversight, leadership in areas such as front end design, and niche capabilities such as nuclear shielding, seismic analysis and extreme event design."

However, Kieron recently enabled a win-win by putting DSA and DDP into a combined team to work on the early stages of the Pile 1 Barrel Demolition project and the design for the 'SPIDA', a mobile demolition platform (pictured), which was designed by ADAPT (part of DDP).

"AECOM did a brilliant job on the tower crane so we decided to place a few capable individuals from their team into ADAPT to assist with an integrated



solution for the barrel design. This was a great example of both the DSA and the DDP putting commercial competition to one side and working together for mutual benefit of Sellafield Ltd.

"I hope to see this partnering mentality develop in future and look forward to using both organisations to support Remediation in delivering its mission 'Safer, Faster, Cheaper'."



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Rig rethink speeds up package retrieval testing for store project

A safety-critical project is likely to deliver a three month schedule saving after a DSA integrated team found ways of speeding up the testing process for new systems.

Originally, it was thought that three rigs would be required to train operators to use equipment for retrieving and handling packages from one of the stores in Special Nuclear Materials.

Hundreds of cans need to be placed in new overpacks and transferred to a more modern storage facility. To manage the potential risk of hydrogen generation while the move is carried out, the repackaging work needs to be undertaken in an inert environment.

The team designed a box with glove ports which is continuously inerted using nitrogen. Operators will move the box on a frame and rail system, so that it can be accurately positioned next to the storage channels, before retrieving the cans and placing them into an overpack within the box.

Initially, the plan was to build an ergonomic rig, a process rig and a third rig combining the previous two, to fully trial the equipment.

However, the design team decided to remove the combined rig in order to develop the detailed design sooner and deliver the project earlier. The first two rigs would provide the key information necessary for substantiation and development of an operable design, as well as delivering most of the benefits from the third.

Potential engineering risks from removing the third rig were mitigated by showing operators the room layout using a 3D model, more use of the ergonomic rig to test for specific risks, and the use of representative scale instrumentation.

Also, a training facility will be built to verify that the equipment meets its requirements before first use on plant.

The box was tested on a full mock-up of the store which was built by Tier 3 supplier Lyndhurst Precision Engineering Ltd. For the trial, Lyndhurst assembled the equipment and set up a works test to demonstrate various operational scenarios. The system passed preliminary testing with flying colours, an important step in support of ongoing dialogue with the Office for Nuclear Regulation to

secure ultimate approval to carry out the repackaging and transfer of the cans.

Frank Gladman, Project Engineering Manager, said: "This project is time-critical because of the need to remove the material as soon as reasonably practicable. The revised rig strategy speeds up delivery significantly while ensuring that specific risks to equipment manufacture have been identified and mitigated."

The changes also saved £48,960 that would have been spent on planning and building the third rig and carrying out operator trials.



Pictured: An operator using the specially designed inerting box on a test rig

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Reducing number of transactions is key to cutting admin burden

Reducing the number of commercial transactions between Sellafield Ltd and the DSA supply chain partners will help to drive improved efficiency in overhead costs. There is unanimous support for the need to grasp this opportunity across Sellafield Ltd, including from Project Management, Project Controls, Finance and the Supply Chain Directorate as well as from the DSA partners.

The way Sellafield Ltd is engaging the DSA Supply Chain Partners is highly transactional. Work is ongoing between functional representatives across Sellafield Ltd and the DSA Partners to understand ways to work differently and to support a reduction in commercial transactions. However, a key opportunity is for project teams to bundle up scope where appropriate.

Andy Tyson, Head of Project Management Capability at Sellafield Ltd, said: "We would like the Project Management community to look at bundling up the scope of work packages if it is possible and appropriate to do so. I would like to see managers looking at their own worklist and also considering broader worklists across the

relevant Value Stream or Critical Enabler, so that they can consider similarities and synergies to understand where it may be possible to bundle up scope prior to engaging with the supply chain.

"Not only will a reduction in commercial transactions reduce the administrative burden and support efficiency, but it will also allow us to use our time to support more value adding activity".

Typically, there are about 1,000 live task orders with scope instructions, delivering a spend of around £100m. This means that each package of scope is on average worth only £100,000. Each time a task order is issued, a separate purchase order and payment application process is required, all of which creates additional administrative activity. Instructing scope through task orders and purchase orders is currently costing Sellafield Ltd and the DSA partners an estimated £1.7m a year.

Any improvements made will be shared across the broader Sellafield Ltd organisation and support improvements in transactional activity with other delivery contracts in the broader supply chain.

Step up and Engage week hailed a major success

The Step up and Engage week of safety and wellbeing events organised by AXIOM attracted 470 people to 23 online sessions.

They came from the DSA partners, Sellafield Ltd and the NDA and there was very good feedback for the way in which presenters prompted discussion, debate and added to knowledge and understanding across a broad range of subjects. Jackie Wilkinson opened up the conference with her presentation on Eat Yourself Happy, explaining how the right foods feed the brain and help our body to perform at its best.

Other highlights included Nik O'Dwyer and Colin Weir from Jacobs, who spoke about the company's Mental Health Matters programme and its origins in Jacobs' 'Beyond Zero' approach; and a talk on resilience from Joanne Chambers of Lakeland Capabilities.

Phil Hickson's session on moving more during lockdown prompted discussion about exercise and what we should be doing to help our wellbeing and general health during these unusual times.

Chris Ward's session on Safe by Design sparked some great conversation and debate, while Kevin Edwards delivered a thought provoking session on safety intelligence and organisational drift, looking at past disasters and identifying the red flags to watch out for.

Year-to-date KPI stats

Work to supply chain	Work to SMEs
26%	11%
Hours in education	Customer feedback score
1270	99%

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Design team shows emergency system was not value for money

An integrated DSA design team in Site Management has successfully shown that installing a new main emergency lighting charger in Special Nuclear Materials would not be good value for money.

This has enabled a reduction in spending of more than £230,000 and will mean that other SNM improvement projects can be accelerated.

The replacement of the charger and batteries was first proposed in 2016, when they were already 17 years old, compared with the 15-year anticipated working life cycle of the uninterruptible power supply system.

However, the DSA team was aware that scheduled improvements to the building's electrical distribution system (EDS) would install a new building wide emergency lighting inverter charger.

This would bring the system up to British Standards, reduce maintenance costs thanks to better diagnostics, and take care of emergency lighting for the next 25 years.

The design team concluded that replacing the main emergency lighting charger offered limited value for money as it would become redundant

when superseded by the EDS improvements. The replacement work would have cost £232,700, nearly all of it in 2021/22.

A case was made to the System Engineer and plant health committee that no action should be taken to replace the emergency charger and this was eventually accepted.

Phil Holden, Site Management Project Office Design Manager, said: "This was a good example of how designers can take a holistic view of the cumulative risk reduction delivered by separate asset care tasks. This enables them to identify duplication of scope – and opportunities for savings or schedule acceleration – which might not be immediately obvious."

New starters at AXIOM

Ricky Graham, who began his working life as a YTS footballer with Carlisle United, has joined the SCP project as Senior Piping Engineer.

Paul Brabin, Senior Process Engineer, has joined the Site Management Project Office. Paul has been in the nuclear industry for 12 years, working on the BEP project and before that at Hinkley Point C.

Lights, (fewer) cameras and action to cut DPaCC facility costs

More than £70,000 has been shaved off the cost of camera surveillance in the Dounreay Package Contingency Capability (DPaCC).

This new facility will carry out the removal of PVC from packages of special nuclear material relocated from Dounreay to Sellafield, reducing the risk of heat-accelerated degradation.

Due to the nature of the materials to be processed in DPaCC, enhanced detection and observation security systems are required.

Sellafield Ltd's protective security managers (PSMs) drew up a specification for 100% camera coverage of the new facility with a specified number of cameras, which cost £1,000 each.

This requirement was challenged verbally by the engineering design team, based on their prior knowledge of camera surveillance systems.

The team was able to show that coverage of the DPaCC unit could be provided with almost 60% fewer cameras. This assertion was verified using the PSMs' favoured software modelling tool.

As the design work was done in-house, as opposed to engaging a sub-contract designer, the DSA engineers were able to challenge the stated requirements at a relatively early stage, thus avoiding the cost of rework.

The team was also able to postpone plans for the early purchase of cameras, which could have resulted in overspending. Reducing the number of cameras had knock-on cost benefits because less equipment was needed to connect them to the network. There were also savings on installation costs, including cabling, cable management and containment, equipment installation, fixings, testing, and system commissioning. The cost of lifetime maintenance will also be lower and there will be a reduced demand for electrical and HVAC loading in the facility, where capacity is limited. The total time and materials savings from reducing the number of cameras came to £74,250 and there was also a schedule saving of 3.5 months.

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