

A regular update on DSA projects and people

Blow £7.8m on the blower houses? Not with the DSA

More than £7.5m of cost has been avoided after the DSA came up with a cost-effective solution to a problem at the very birthplace of the UK's civil nuclear industry.

Calder Hall, the world's first commercial-scale nuclear power station, ceased generating in 2003 and is now in interim care and maintenance. It has four Magnox reactors, each of which has two blower houses.

The long blower house had the dual function of cooling of the reactor and housing the emergency power supply – diesel generators. The short blower house had the same machinery but without the diesel engines.

All the blower houses contain large diameter primary circuit pipework which is contaminated internally. Unfortunately, the blower houses are also in poor condition and are no longer weatherproof.

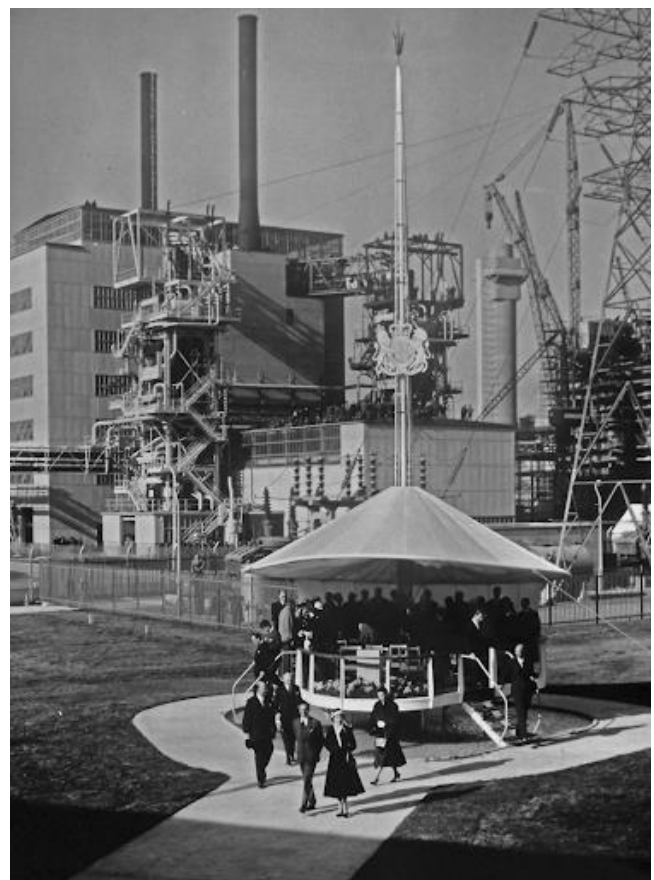
An assessment concluded that weathering would cause the pipework to fail before its planned removal in five years' time. Therefore, measures needed to be taken to prevent any loss of containment in the meantime.

A design solution was proposed which would have involved erecting Layher scaffold enclosures over each of the blower houses. This would involve spending £946,250 per blower house and the overall project cost was estimated at £7.8m.

Sellafield Ltd approached the DSA to see whether it could propose a more cost-effective solution.

AECOM looked at two options: painting the pipework with a high-specification, radiation resistant coating; or building waterproof enclosures over the pipework to protect it.

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Calder Hall on the day it was opened by the Queen in 1956

Financial update

At end of period 11

DSA spend during 2020/21	£98.1m
Cashable benefits*	£2,973,979
Non-cashable benefits*	£5,341,526
Schedule benefits*	76.3 months

Health and safety

Hours without a lost-time incident

AXIOM	7,035,999
Progressive	5,944,583
Total	12,980,582

*Approved and draft

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The DSA now has a home on the NDA Hub. It can be found here: <https://ecosystem.org.uk/groups/dsa-hub-sl>, but to get access, please email janine.bell@sellafieldsites.com who will invite you. Lots of useful information will be uploaded in the next few weeks.

Three-year task order takes the strain off projects

An “incredible strain” has been eased by the introduction of three-year task orders for DSA work with the Plant Facing Design Office.

As reported last month, Cavendish Nuclear has moved away from the traditional approach of annual task orders which start and finish with the financial year.

AXIOM has done the same and the change will save £16,000 in administrative costs.

Assystem’s Amanda Tall said: “Due to the number of task orders (across site) which need to be created in time for the new financial year, in the months leading up to March, this puts incredible strain on the project management, commercial and

back office community both in SL and Axiom. If the task orders are not created in time for April 1st there is a risk that resources may be instructed to stand down and not go to work until the purchase orders can be issued or, that suppliers decide to work at risk which can void insurances and are not guaranteed to be paid for this work.”

The new task orders mirror the PFDO’s three-year, medium-term plan and will run from April 1, 2020 to March 31, 2023.

As well as the time and cost saving, the change allows better forecasting by the DSA and supply chain because they have more confidence and visibility on their future workload.

‘Basically, we had to keep the pipework dry for five years’

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The presence of asbestos on the outside surfaces of the pipework meant that painting them had to be ruled out. The recommended solution was to construct timber framed enclosures built over each of the primary circuit pipework sections. The timber was painted internally and externally with a fire retardant coating and the roof was waterproofed with a tanking material.

The advantages of using timber were that no off-site fabrication or detailed site survey was needed, the construction process was simple, requiring only joiners, and the solution was fit for purpose to last five years.

The cost of doing it this way was only £230,000 for all eight blower houses – far cheaper than the original scaffolding proposal.

This produced an in-year cashable benefit of £2.27m in 2019/20 and a future, non-cashable cost avoidance benefit of £5.3m. There was also a schedule saving of 30 months.

Roger Clay, AECOM Nuclear Operations Director, said: “The success of this task was down to the DSA’s core mission, which is to find a fit-for-purpose solution capable of achieving the functional specification at minimum cost. Basically, we had to come up with a way to keep the pipework dry for five years without spending a fortune.

“The design raised a number of challenges, particularly on fire resistance, so there was a lot of

engagement with the SL Fire Assessor and some re-engineering to ensure that the design was ALARP.”

Kieron Davies, Remediation Design Manager, explained: “The scaffold enclosure proposal would have taken three years to deliver, which is not an acceptable timescale for risk reduction, and it would have cost nearly £7.8m, which had not been budgeted for. In contrast, the design developed by DSA has a total cost of £230,000 including design and construction and will be completed within the current financial year, thus reducing risk much more quickly at an affordable cost.”



Calder Hall on its 50th anniversary – the cooling towers were demolished a year later in 2007

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Rapid IT roll out saved Sellafield from £340,000 COVID bill

When the first lockdown took effect in March last year, Sellafield’s Plant Facing Design Office was faced with the prospect of paying out hundreds of thousands of pounds for DSA staff, even though they were unable to carry out any productive work.

This was because they were advised to work from home until further notice but did not have remote access to the SL network on laptops. A “COVID-19 Unable to Work” booking code was set up because Sellafield could not afford to lose the expertise and project knowledge of DSA partner employees who were temporarily unable to work.

Progressive Alliance, which provides the PFDO with multi-disciplinary design support, had employees embedded with Sellafield Ltd teams in their offices in West Cumbria and Warrington, where they were reliant on Sellafield Ltd hardware and software.

Richard Johnson, Cavendish Nuclear Project Manager, said: “Cavendish was fully aware that the cost of these resources booking to the project with no output would have a severe drain on the

Sellafield budget. So we could see an immediate need to get everyone set up and working efficiently from home as soon as possible.” Richard contacted all members of the engineering team individually, found out their hardware/software requirements, and took personal details including home addresses. Cavendish then set up IT accounts for every engineer that required this support and ordered the hardware to be delivered to their homes. Then they were given usernames/passwords and instructions on how to access the Cavendish network remotely – previously new laptops could only be setup with a wired connection within a Cavendish office. Engineers could then download software directly from the Cavendish catalogue and they were then equipped to start work. The remote IT equipment was set up so quickly and efficiently that none of the team had to book to the “COVID -19 Unable to Work” code. It is estimated that this avoided Sellafield paying out for £339,300 of non-productive hours.

SAFE BY DESIGN – ‘HIERARCHY OF RISK CONTROLS’

WHAT?

Hierarchy of [Risk or Hazard] Control is a well-defined industrial system to minimise or eliminate exposure to hazards[1]. Control methods at the top of the graphic (see inlay) are demonstrably more ‘protective’ than the lower methods. The hierarchy is a core component of Safety By Design [2].

- Eliminate** – Physically remove the hazard
- Substitute** – Replace with a lesser hazard
- Engineering Control** – Control the hazard
- Admin Control** – Change how people work
- PPE** – The last resort (Hats/Shoes/goggles)

THE REGULATIONS

We should apply the hierarchy because **it is the RIGHT THING TO DO!** We have a duty under the Health and Safety at Work Act 1974 to protect our colleagues from harm. By considering the hazards associated with delivery of projects at the earliest phase we are in the best position to protect each other.

WE VALUE EACH OTHER

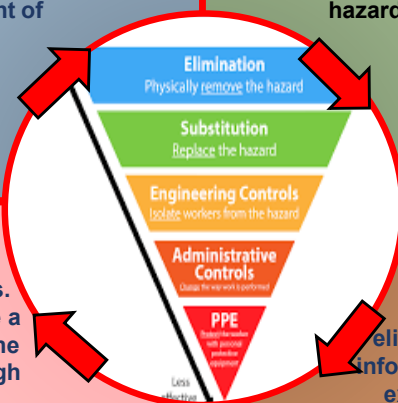
WE ARE ONE TEAM

WHY IS IT IMPORTANT TO US?

For Sellafield, managing a hazard is not only about safety but also about economics. By producing facilities (or assets) that have a high hazard inventory, we are committing the company, the NDA and the taxpayer to a high and long-standing commercial burden. The additional strain of engineering and administrative Controls (on operation & maintenance) as well as PPE costs for the lifecycle of the asset can also be significant. Controls and PPE are the lower end of the hazard control hierarchy and should NEVER be the ‘engineered’ solution.

WHAT CAN DESIGNERS DO?

Designers (and wider stakeholders) should use the hierarchy at the earliest phase of project delivery [3]. Think of what can be eliminated by considering the preconstruction information, having site walkdowns and use the experience of subject matter experts (System Engineers, Operators, Construction teams and the supply chain). Consider: Siting equipment at low levels, reduction or removal of hazards in the process, modular design to reduce complex transportation, selection of more robust materials to avoid lifetime inspections.



Links

- [1] [Hierarchy of Controls](#)
- [2] [HSE Guidance](#)
- [3] [Hierarchy of Controls 2](#)

Key Contacts & Information

Review SLMS for the SL Policies - [SLMS Link](#)
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 SMPro SbD Contact: rory.fisher@sellafieldsites.com

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Door monitoring project cuts costs and sets new site standard

A project to design a new integrated Door Post Monitoring (DPM) and turnstile has set a new site standard for similar systems. The integrated system controls access and egress to existing facilities within HSA2.

The original DPM needed to be replaced because it was obsolete and did not interlink with the existing turnstile.

The job of designing a new DPM linked to new turnstiles was given to the recently formed RE3 projects, which utilised AXIOM partners Jacobs and an onsite design team. This minimised travel time and costs as well as enabling relatively short notice deployment. It also provided greater flexibility as the team could be used at short notice during limited periods when access to the work face was available. 3D scanning of the area also took place to produce an accurate model for reference.

Learning was sought from similar projects which highlighted the critical need for early engagement with subject matter experts within infrastructure and radiometrics.

A new delivery model was utilised, involving a

design based sub-pm closely aligned to the Risley design team and AXIOM partner Jacobs. This resulted in much more accurate forecasting and early pre-empting of emergent design issues. The work cost £148,000 less than the sanction of £640,000 and the new site standard created for DPM and turnstile interlocks will benefit other projects going forward.

How's the DSA doing?

Work to supply chain	Work to SMEs
27%	11%
Hours in education	Customer feedback score
2089	98%

Supply Chain Forum 'breaks out' to pilot new format

The DSA Supply Chain Forum has piloted a new format using break out rooms on MS Teams to provide more opportunity for interaction.

Led by Stephen Davison, Progressive Programme Manager and Martin Lyons, Axiom Programme Director, some 33 supplier representatives attended the meeting in February.

The meeting began with the customary safety share and there was an update on expectations regarding the proposed third tranche of the DSA to take us up to 2028.

Then AXIOM and Progressive Business Managers briefed the audience on their areas, including a look ahead to 2021/22.

Frank Allison presented on 'Game Changers', outlining how a cross sector network is supporting ongoing improvement in the nuclear sector, using innovation from other sectors.

PaR Systems, TUV SUD (Nuclear Technologies) and Arcadis gave introductory presentations to outline their capabilities.

There will be more opportunities for other suppliers at the next meeting as this is a crucial part of developing a cohesive network among our supply chain.

Vikki Watt, Head of Procurement & Supply Chain (NDA & Defence) for Cavendish Nuclear, presented on new opportunities outside of the DSA for AXIOM and Progressive, giving suppliers sight of other interesting projects they may wish to get involved in.

Finally some time was allocated for the break-out rooms, allowing smaller groups to engage in a networking exercise, which worked well and gave everyone the chance to participate.

This will definitely be repeated if restrictions do not allow face-to-face contact at the next Supply Chain Forum in September 2021.

Feedback from the supply chain is always welcomed around how the Supplier Forum experience can be improved – please contact John.Price@cavendishnuclear.com

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DSA helps drive Copeland social impact programme

DSA partner employees Keenan Mumba (Graduate Electrical Engineer, Cavendish Nuclear) and Phil Davies (Principal Consultant, Assystem) have played a vital role in establishing a social impact programme for Copeland.

The support provided by Keenan and Phil has helped the Reboot programme move closer to realising its ambition to improve the lives of the people of Copeland, address inequality with high-impact solutions, and bring key organisations together to create lasting change.

The Reboot programme aims to deliver social impact better, faster and cheaper to meet the urgent needs of Copeland's people and communities. This includes researching available grants and developing business cases for funding to help the local community.

Keenan, who has provided fundamental resources and an important graduate perspective for the programme, said: "Working closely alongside project managers from the likes of Sellafield Ltd, Assystem and Morgan Sindall has been extremely beneficial for my continued professional development. It has allowed me to develop new skills that will no doubt be of help in the future. Being part of the programme has been a great experience, especially knowing that the outcome of the work will directly impact the local Copeland community."

Cat Davies-McChesney, Reboot Programme Manager, stated that: "Reboot is founded on organisations coming together to deliver change collaboratively. It is great to see major companies recognising the need to give back and dedicating resource to enable us to forge ahead."

DSA has helped the Reboot team set out its ambition: becoming the borough's "go-to" for businesses who want to achieve social value, so creating an unrivalled pool of resources to make the borough a better place to live, work and visit.

Any organisations in the DSA that want to deliver more social value, be part of something bigger, and tackle Covid-19 recover together, are invited to contact Cat Davies-McChesney at Cat.Davies-McChesney@morgansindall.com.



Copeland beauty spot St Bees Head



HALES is where the heart is, as Graham returns for a third time

Graham Ingham has joined AXIOM as Sub Project Manager in Highly Active Liquor Evaporation and Storage (HALES).

Graham, who works for Mott MacDonald, was previously Project Manager of National Nuclear Laboratory's Project Management Authority

Capex team based at the Windscale lab.

This new role is his third stint at HALES and Graham says it feels like coming home.

His hobbies include restoring classic cars – in his youth he used to sell that vanished British classic, the Blackpool-built TVR.

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Design challenge fosters EC&I skills and collaboration

Sellafield Ltd's Remediation EC&I Design team have piloted a number of sessions to support development of more junior team members.

They have set up a regular bi-weekly slot to tackle challenging scenarios, creating opportunities for team members to practice their problem solving skills and continue their technical development. These sessions were originally aimed at the Sellafield graduates and apprentices. However, through the DSA connection to Chris Walmsley, Cavendish Nuclear's Principal EC&I Engineer, this has since expanded to incorporate those at Cavendish Nuclear as well.

The challenges vary from week to week, covering tasks such as reviewing installation works that were previously completed as part of a plant electrical overlay project, where the electrical installation team found degraded conditions of the electrical system supplying a 35Te crane; to trying to identify potential solutions for communicating the input and output signals from an operator room to a new control room.

The design challenges outline a scenario – usually a project that has already been completed – which is then pitched to the group to open up debate and encourage members to use problem solving skills to

answer the questions posed. This ultimately improves the communication skills of the team, along with the all the essential skills needed to work in a design environment, as well as building an awareness of some of the practical problems encountered during design.

These sessions not only help the junior team with their competencies, they provide a good way to share learning across the various projects. With small teams covering lots of projects in the DSA, it's not always possible to have sight of what others within the EC&I discipline are doing, so there is the added bonus of sharing this learning more widely. Shared LFE from various tasks has been useful as it will no doubt be applicable to future projects. As time passes the sessions will help to foster greater collaboration and dialogue between the DSA and Sellafield Ltd EC&I Design teams.

Graduate EC&I Engineer Keenan Mumba said: "Taking part in these sessions has been a crucial part of my development as an EC&I graduate, as it has helped me understand how best to approach new tasks. These sessions have also provided me with a better understanding as to why good teamwork and collaboration on tasks is paramount to the success of projects."

Monitoring costs avoided

Costs of more than £130,000 were avoided following a review of the radiological monitoring system in the Fuel Handling Plant and Stainless Steel Drum Store.

A DSA team looked at the initial proposal to replace more than 140 activity-in-air monitors in the two facilities and found that 15 of them are no longer required. This was enabled by early and pro-active engagement with the system engineer and other plant representatives, which produced a better understanding of the issues and high-level requirements for a new system.

The result was an opportunity to rationalise the project, reduce complexity and simplify the optioneering process. The categorised projects approach also played a part because the study was done by a core team which had just been completed a similar exercise in another facility.

Categorised approach pays off

Using the categorised projects approach has helped to cut the cost of improvement work at the legacy Fuel Fabrication Plant.

The initial design proposal was to install new triple bank louvres leading to the plenum fan which delivers air into the building.

However, based on learning from a previous air conditioning project, the DSA team realised that it would be better to install a combined vane separator and filter coalescer, downstream of the existing single bank louvres. These would remove moisture from the air before passing through the heater batteries and to the plenum fans for distribution around the building.

Not removing the louvres also enabled the team to dispense with the requirement for a design scaffold and associated lifting arrangement, which would have cost approximately £43,000.

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