

NEWS BULLETIN

January 2021

A regular update on DSA projects and people

Taking the tubes cuts £1m from cost of radiometrics

An estimated £1m of spending has been avoided thanks to DSA involvement in assessing the radiometric measurement and assay options for the Sludge Handling and Export Plant (SH&EP). Cavendish Nuclear's team of specialists were tasked with undertaking an early Feasibility Assessment and Multi Attribute Decision Analysis (MADA) study to review, evaluate and underpin the potential radiometric measurement options for determination of the Special Nuclear Materials content of sludge within 500 litre drums, before they are exported from SH&EP. Each drum is expected to contain about 250 litres of water and 50 litres of sludge solids from the First Generation Magnox Storage Pond (pictured).

By working closely as a combined study Team Cavendish and Sellafield Ltd were able to:

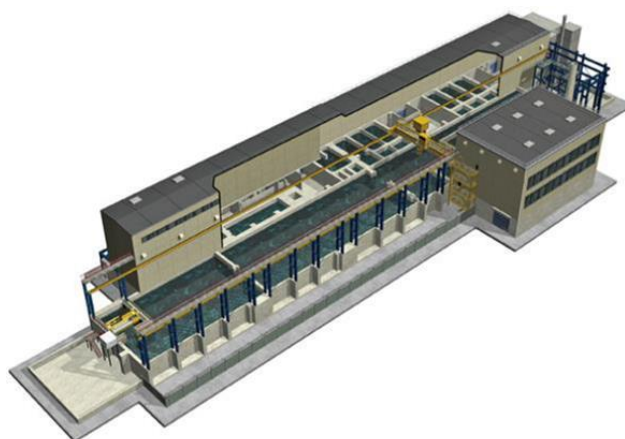
- Down-select to a COTS solution that is suitable for the majority of options reviewed as part of the study, which is significantly cheaper than the alternative of deploying and maintaining a complex, bespoke radiometric assay system;
- Identify an alternative, simpler measurement environment;
- Identify a front runner as well as suitably underpinned back-up options.

Design Manager Richard Greenwood said: "Bringing in Cavendish Nuclear's radiometrics expertise in optioneering, and especially carrying out the MADA workshop in the Studies/Project Planning stage as opposed to later in the project

lifecycle, enabled us to successfully down-select to a single underpinned option for radiometric measurement at an early stage of the project.

"This meant that designers of all disciplines would be aware that GM tubes would be the underpinned method, which avoided the need to design a whole plant with 2-3 different means of measurement."

Project Engineer Mandy Bell said: "Often, radiometric measurement is not considered until much later in the design. One of the issues this can lead to is designers being unsure how to mount and deploy the system or what the power and cabling requirements will be, which can delay Design Review sign off. Early underpinning and down selection of options can potentially save a significant amount of time and cost further on in the programme"



Financial update

At end of period 9

DSA spend during 2020/21	£82.4m
Cashable benefits*	£1,498,711
Non-cashable benefits*	£3,907,684
Schedule benefits*	56.4 months

Health and safety

Hours without a lost-time incident

AXIOM	6,849,572
Progressive	5,855,169
Total	12,704,741

*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.

DSA helps Copeland to plot a route to recovery after COVID

Copeland Borough Council in West Cumbria is battling with the impact of the COVID pandemic on its residents and the local economy.

ReBoot, Copeland's recovery programme, is designed to simultaneously address the social and economic impacts of COVID while making the borough a sustainable place for the future.

And the DSA is helping to turn these aspirations into reality. Phil Davies, from Assystem, has been providing best practice guidance on defining the programme and establishing the programme management office.

Rob Ward, Copeland's Nuclear Sector Lead, said: "This is not only essential for effective management of the ReBoot programme, but it also helps the council to build our programme management knowledge for the future.

"The programme will deliver outcomes which address the ongoing impacts of the COVID pandemic on Copeland's people and communities, in areas such as financial vulnerability, children and young people, health and wellbeing, while re-booting our economy across a wider spread of outcomes including economic diversification,

sector development, business support, employability, raising aspirations, digital skills and infrastructure, physical regeneration and sustainability. An important aspect of the programme is the partnership approach to collective impact – building capability and capacity for the future."

Phil said: "I have been able to offer a fresh-eyes approach to the newly formed team consisting of Copeland Council, Sellafield Ltd and Programme and Project Partners resources, and I have offered advice aligned to best practice principles contained within the Managing Successful Programmes methodology.

"The initial focus has been on the details of the programme mandate, what the desired outcomes of the ReBoot programme will be, and the detailed programme brief.

"The next step is to determine the appropriate candidate projects that will deliver the right output to support the programme objectives.

"If anyone within the DSA group would like to offer specialist support to ReBoot, I would be happy to hear from them."

SAFE BY DESIGN – "WHAT IS SAFE BY DESIGN ABOUT?"

WHAT?

Safe[ty] by Design came out of a 2018 initiative from the overarching SMPRO Safety Improvement Plan. The intent is to deliver a plan to improve understanding of **how engineering design critically affects through lifecycle safety**. Key focus points: 1. To empower key project engineering role holders with good practice, tools and knowledge to deliver safe engineering outcomes. 2. To communicate and collaborate on safety learning and best practices of hazard management.

KEEP A LOOK OUT FOR MORE COMMS LIKE THIS

THE REGULATIONS

Some of the key regulations, acts and codes of practise which govern how we operate as a nuclear facility and as leaders/co-workers are key in the delivery of safe designs:

The Construction Design and Management Regulations 2015
The Health and Safety at Work Act 1974
Sellafield Conduct of Engineering Manual
Sellafield Ltd Health and Safety Policy
Nuclear Safety Policy
....And more recently and no less important:
Our Manifesto

IT CAN HAPPEN HERE

Sellafield has a very strong mandate on management of safety and is conscious of the detrimental effect that delivering unsafe acts and poor management of hazards has on its reputation and on its ability to deliver projects, manage assets and generally 'do business'. Everybody deserves to go home safely from work. Safe by Design, as an initiative, intends to effect a **cultural change** with its promotion of better tools, sharing good hazard management practices in design delivery and encouraging good behaviours in approaching key safety meetings.

**NOBODY
GETS HURT
TODAY !**

WHAT CAN DESIGNERS DO?

Designers (and wider stakeholders) can make considerations in project phases for delivering more effective risk capture and risk assessment. Additionally, use existing tools to deliver effective hazard management strategies. Use the T- approach to key meetings (planning for success) and communicate/convey hazards using clear and concise imagery / hazard symbology and stakeholder walkdowns. We are **one team** and we can deliver safer outcomes if we collaborate and communicate as **one team**.

Key Contacts & Information

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Laptop splurge saved Sellafield from £1.5m COVID bill

The COVID-19 pandemic has imposed huge unexpected costs on large swathes of the UK economy, but the ability of the DSA and Sellafield Ltd to respond promptly in a joined up fashion has mitigated the impact considerably.

In fact, calculations show that £1.5m of additional costs were avoided in the Magnox Swarf Storage Silo thanks to the speed at which alternative IT systems were made available.

At the start of the first national lockdown in March, people working in MSSS were asked to work from home where possible.

This could have held up progress on projects because some of the affected individuals usually did their work on Sellafield Ltd desktop computers and did not have laptops or remote access to the network.

If they had been unable to connect and undertake project work as normal, they would have booked their time to a COVID code.

However, within a matter of days of the pandemic all individuals who required IT were identified and a large amount of IT hardware and software was ordered including high-spec CAD laptops; monitors, keyboards and peripherals; software licences; VPN network bandwidth upgrades.

To keep people safe, deliveries were arranged to their homes so they did not have to travel to the office to retrieve equipment. And display screen equipment was available so that home use could be as ergonomic as possible.

Babcock International, Cavendish Nuclear's parent company, upgraded the VPN network bandwidth so that more people could use the VPN service simultaneously.



Working from home has kept projects on track in MSSS

Ron Johnson, Cavendish Nuclear Business Manager, said: "This investment resulted in minimal delay to projects as most individuals were able to work effectively and efficiently within two weeks. "These resources would have booked to a COVID code if they could not undertake their project work.

"Additionally, safety of the whole workforce was maintained by having deliveries made to their home address where possible.

"We estimate that putting these measures in place has meant a saving of £1.5m compared with what would have been spent and, just as importantly, we have ensured that all resources can progress the project programme in MSSS."

"The LFE from this has enabled the team across MSSS and all suppliers to work from home from the second lockdown in November onwards

"This ability will ensure the project can move forward against the programme timeline with little or no impact from COVID-19."

Specialist knowledge helps BEPPS-DIF to avoid rework

Specialist fire protection knowledge from the DSA has helped the BEPPS-DIF project to avoid a delay. The BEPPS-DIF facility includes several support arrangements that pass through a designated 'high fire load' room and need to be substantiated for fire loading or wrapped in fire retardant material. The project HVAC design team had no experience of carrying out this type of calculation, so a civil, structural and architectural team from the DSA was asked to design the supports.

This avoided rework and prevented any

installation delays or the need to rectify works on-site.

The estimated cashable cost benefit was £60,000 and this was realised in the current financial year. Chris Booth, CSA Responsible Engineer, said: "This showed the need for design disciplines to ensure adequate resource is employed at the commencement of the project or to seek assistance at an early stage. In this case, good team collaboration has avoided potential delays to design and substantiation."

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Task order reduction shows potential for cutting admin costs

An exercise undertaken by the DSA Central Team and Cavendish Nuclear has underlined the potential savings to be made from consolidating task orders.

In 2019/20, a total of five task orders were placed for various types of support to the central capability team.

However, in 2020/21, there was a concerted effort to reduce administrative burdens and it was recognised that the five task orders could be reduced to one, with a single purchase order.

Ryan Campbell, from the DSA Central Team and Karen Allen, Cavendish Nuclear Business Manager met commercial and cost engineers to review requirements and work out how the consolidation could work in practice.

Consolidating the five task orders into one saved

40 hours of work at the full-year, 40 hours in CEMAR administration, and another 14 hours per month throughout the year on routine administration. The resulting annual cost reduction was estimated at £68,000.

Ryan said: "We have recognised that we have too many task orders in place and that this creates a disproportionate administrative burden. Reducing the number of task orders means less time has to be spent on estimate preparation, timesheets, supplier management, governance and other associated tasks.

"The level of cost benefit achieved by reducing just five task orders down to one is a clear indication that there is potential to make significant efficiency gains if this streamlining can be replicated throughout the DSA."

Costs cut on distribution boards, pipes and cables

The DSA's involvement in updating of equipment in the Analytical and Active Area has resulted in cost benefits amounting to more than £100,000.

The bulk of the cost reduction - £80,000 – was achieved by scope reduction in a project to replace distribution boards. Originally, it was assessed that 13 boards needed to be replaced but the integrated DSA team was able to reduce this to five. Rationalising distribution and a review of compliance with electrical regulations showed that 60% of the new boards would not be needed.

This meant fewer drawings, surveys and requirements for checking and approval, as well as less installation work, manual handling, removal of redundant equipment and ongoing maintenance.

Also in the Analytical and Active Area, DSA engineers working on pipework replacement in the Treated Water/Wastewater (TWW) system found that the TWW pipelines were not earth-bonded at the entry point to the building, so new earth cabling had to be installed.

The Project Engineering Manager challenged the intended cable route around the outside of the building due to the amount of working at height required. A new survey identified a shorter, safer means of installing the earth bonding cable, using existing containment for 80% of the cable run. This produced a cost benefit of £14,000 and cut one

month from the project schedule. In a separate instance, a new and safer way of routing spectrophotometer instrument cables proved to be more cost-effective to the tune of £21,000. Instead of routing them through the glovebox wall via a cable gland arrangement, they were routed into the glovebox via a COTS hermetically sealed SMA905 fibre bulkhead. This is the preferred approach by CE&I Alpha group and is deemed less likely to risk any breach of containment. The other advantage of this method is that the cables are easier to maintain and to move if required.

Year-to-date KPI stats

Work to supply chain	Work to SMEs
27%	11%
Hours in education	Customer feedback score
1778	98%

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Design coordination strategy enables great leap forward in PFSP

Managing a lot of computer-aided engineering (CAE) design information is a challenge on any large scale design project and the Pile Fuel Storage Pond (PFSP) is no exception.

This multi-disciplinary project produces design outputs across mechanical, CS&A, process and electrical, from concept to detailed design phases, using a variety of 2D and 3D schematics, engineering flow diagrams and associated documentation.

The project has to ensure that it can:

- Manage updates and version control when more than one person is working on the same file;
 - Manage clashes between existing and new plant, especially when it effects multiple drawings across disciplines;
 - Ensure speed and ease of access to files held on the local IT system;
 - Provide designers and engineers with holistic guidance and a robust process for management of design data that is specific to the project.
- With the assistance of the DSA, PFSP has successfully reduced the cost of managing design data by taking a new approach.

Carl Hamilton (Mechanical Engineer) and Ryan Benjamin (CS&A Technician) promoted and trialled the implementation of Vault, a drawing and documentation management system. Vault's two main advantages are that it provides a facility for checking documents out and in, read only, and mark as reviewed, which prevents multiple versions of the same document being circulated.

So the designer can work effectively offline, copying the file into their computer until it is checked in again. This requires less server capacity than working within network folders, which puts less strain on network servers, providing faster processing speeds.

Carl and Ryan worked alongside Sellafield Ltd Capability, lobbying for a roll-out of the system and acting as part of a wider trial.

PFSP also developed a CAE Design Coordination Strategy in conjunction with Sellafield Ltd's Responsible Engineers.

This covers file naming conventions, file structures, a coordination and clash detection strategy using a federated model, and defining



The Pile Fuel Storage Pond

responsible party and frequency of checking. Utilising existing drawing information from Revit and Inventor, exported files can be used to generate a 3D model of PFSP, which can be viewed in virtual reality.

Initially, the model was too big for the server network, but Carl and Ryan worked around this by implementing "containerisation", effectively splitting the model into parts to allow it to run successfully.

Karen Allen, Cavendish Nuclear Business Manager, said: "The key benefits achieved as a result are that the system works faster and crashes less frequently, there is less rework as a result of people working on different versions, design changes are much more traceable, and there is far greater consistency. It's also easier to find specific files thanks to defined naming conventions.

"The changes have led to increased collaboration across the disciplines and although the federated model will never be a substitute for walking the site, it does provide an alternative option to promote greater understanding of constraints and to aid the design process.

"Taking account of the time that used to be spent trying to find documents or lost to server crashes, the reduction in rework and the requirement to visit the site, we estimate that these improvements have saved us 2,000 hours per year in each of 2020/1, 2021/2 and 2022/3. This is equivalent to £300,000 in total across all three years."

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