Sellafield

Issue 02
December 2015

The Magnox Swarf Storage Silos

How a revolutionary scientific breakthrough is helping us clean up Sellafield's legacy

Evaporating high level waste

How important are evaporators at Sellafield?

Defence in Depth

Keeping Sellafield safe and secure

What is POCO?

Find out more on page 6

Sellafield Ltd

Storm Desmond

How Cumbria has managed to stay open for business...

In Focus: PFSP

Decommissioning the fifty-year-old Pile Fuel Storage Pond isn't easy…

Sue Hayman Interview

What does the MP for Workington think about Sellafield?

Sellafield Ltd

Opening the door to opportunity at Sellafield

Are you an SME and interested in the opportunities available to you on the big construction projects at Sellafield?

The featured construction projects are:

- Box Encapsulation Plant
- Silos Maintenance Facility
- Interim Storage Facility
- Box Encapsulation Plant Product Store/Direct Import Facility

Discover the opportunities coming up at Sellafield at the 'Opening the door to opportunity' event on 23 February 2016, at Energus, Workington.

With a focus on four of our big construction projects, you will find out more about the opportunities that come from the Sellafield programme and how you can become part of our supply chain.

The event has been designed to help you:

- Meet with our major contractors and their subcontractors
- Pitch for work by booking 1 to 1 sessions to sell your expertise
- Understand the work packages available
- Understand the requirements to become a preferred supplier to our contractors
- Understand Sellafield site standards

For further information and to book your place, visit **www.bookwhen.com/sellafield**

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Editor's Letter

A Pioneering Approach page 20

Paul Dicks, ONR Interview page 46

Sue Hayman Interview page 62

We take great pride in our pioneering past at Sellafield. From our original mission of supporting the UK's nuclear deterrent, through to harnessing the power of the atom to generate electricity and developing the capabilities to recycle used fuel and safely manage all forms of nuclear waste.

That pioneering spirit is just as strong on the site today as our teams and supply chain face nuclear clean-up challenges for which there are no blueprints.

A scientific discovery that could save years and millions of pounds on one of our most hazardous legacy facilities; new thinking and approaches to removing canned fuel and dealing with radioactive sludge; and engineering solutions that have extended the life of our vital evaporators are just some of the breakthroughs that our teams have made recently. All of these are covered in this issue along with a summary of the projects awarded 'excellent' status at our recent Business Excellence Awards event.

Elsewhere in this issue we sit down with people for whom Sellafield takes up a significant part of their professional lives, despite not working for Sellafield Ltd or our supply chain.

The newly elected MP for Workington, Sue Hayman, explains her first impressions of the site and Cumbria's role in the Northern Powerhouse. Third-generation Sellafield neighbour, Councillor David Moore, recalls a time when there was a gulf between Sellafield and its communities, and how the West Cumbria Sites Stakeholder Group helps people to understand what is happening on the site. Finally, Paul Dicks who works for the Office for Nuclear Regulation explains the role of a regulator on the Sellafield site. ■

Don't forget that there are lots of ways that you can keep up to date with what is happening at Sellafield:

Visit **www.sellafieldsites.com** to learn more about Sellafield, our mission and progress, register for our newsletter at **www.sellafieldsites.com/newsletter-registration/** or follow us on Twitter **@SellafieldLtd**

#spiritofCumbria

Following the devastating effect of Storm Desmond on the Cumbrian community, the nuclear family has come together to show our support. You can read more about our contribution on page 14. You can show your support to Cumbria and those impacted by the floods by donating money via text from your mobile phone. Send a text to 70070 with the message 'FLUD15' and a monetary amount. For example, 'FLUD15 £10,' would donate £10.

Despite the ongoing recovery work, Cumbria is very much open for business so you can also show your support by visiting the area and shopping in our towns. A warm Cumbrian welcome awaits you.

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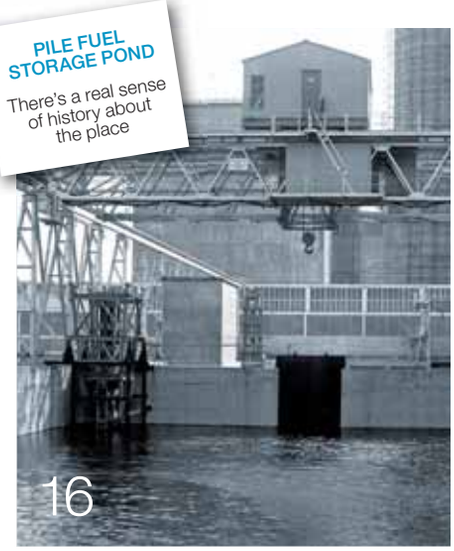

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EXCELLENCE DAY AWARDS

Recognising our asset

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"Sellafield is an amazing site"

WHAT IS… POCO?

Post Operational Clean Out (POCO) – What, Where, When and How

We hear a lot about the decommissioning activities at Sellafield, but what about the bit in between? The facilities don't stop operating one day and go straight into decommissioning the next, so what does happen when operations come to an end?

As 2018 fast approaches and spells the beginning of the end of reprocessing operations on the site, (Oxide reprocessing ends 2018 and Magnox reprocessing 2020), thoughts are turning to what is going to be happening in those plants that are nearing the end of their operating lives. The word POCO is becoming more popular, so what does it mean?

What is POCO?

POCO is the process that takes place when a nuclear plant has reached the end of its operating life. The aim of POCO is to reduce the risk and hazard in a facility by removing the nuclear inventory and reducing the lifetime costs of the redundant plants. In simple terms, it gets the plant as radiologically clean as it can be which reduces the risk and hazard and in turn makes the plant cheaper to care for.

At Sellafield there are many plants that have or will shortly reach the stage where POCO preparations begin, so there is a lot of work going into preparing the people working in those plants and planning how they will make the transition to the POCO stage of the plants' lifecycle.

Lifecycles

Everything has a lifecycle, humans have them, even buildings have stages of life, and for the facilities at Sellafield it's no different.

Take the Thermal Oxide Reprocessing Plant (Thorp) for example; from planning that started way back in the 1970s, to construction in the 1980s, to the operational and reprocessing activities that began in the 1990s and continue today, they are all phases of its life span. There is still the perception that it is a relatively new plant, in reality it's far from it, with over 8,000 tonnes of fuel reprocessed already and only around 1,300 tonnes remaining, operations will come to an end in 2018 when the Chemical Separation and Head end areas of the plant will transition into the POCO phase. In order to successfully get to that point there is a lot of work being carried out to prepare for it.

How are we preparing?

For the plants that are nearing POCO there is a team dedicated to supporting their preparation for transition from operations.

The POCO programme team is small and so work alongside the skilled and knowledgeable workforce in the plants to deliver the tasks required to carry out POCO preparations. Facility leads interface between the plant and the POCO team.

Characterising what is in the plant and looking at technical and engineering solutions, along with Knowledge Management is a huge and important part of what the POCO programme do.

Collating information that is available and speaking with experienced workers to record their knowledge of the plant is one of the most valuable tasks that is carried out, in order to record the plants' configuration and status.

The information that is produced from this data mining is vital for future generations when the time comes to decommission and demolish the plants.

Communicating with and engaging the workforce is vital to the success of the POCO phase. Helping the workforce to understand that this is their work to carry out and that life in Thorp doesn't end once reprocessing finishes.

This programme approach ensures consistency of POCO planning and delivery, and retains a clear view of the costs and benefits of POCO delivery, all in anticipation of handing over the POCO operations to the associated plant workforce to carry it out.

Colin Savage is the recently appointed POCO Facility Lead for Thorp, following his 32 years of being involved in Thorp his role is to ensure that the teams in Thorp are ready to make the transition in 2018, he explains: "Thorp Head End and Chemical plants are the first areas in the Operations Division that will undergo a managed POCO programme.

"This phase of Thorp's life will begin immediately after the end of the reprocessing operations in November 2018 and there is a lot of work being done now to prepare us for that including housekeeping and co processing of materials already in the plant.

"It is the existing workforce that will carry out the operation and maintenance activities for POCO and they will also deliver the necessary work to maintain safety throughout the phase, so making sure they are ready is a vital part of our planning.

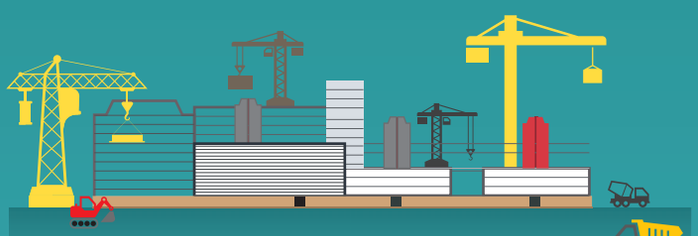
"Some of our workers have been here in Thorp since commissioning of the plant, they have worked on the plant from the start and will be here to see the finish of reprocessing and move it into the next chapter which is almost a reverse of commissioning.

"This is a huge change, not only due to the tasks that are carried out changing but culturally for our workforce, people are so used to working to production targets and reprocessing being their business, it is important that we get them ready for that change so they have the new mind-set that clean out becomes their business, they are key to the success of POCO and will ensure the legacy left behind for the decommissioning teams is minimised."

POCO will be carried out in a number of plants at Sellafield, a timeline for these activities and areas has already been created. ■

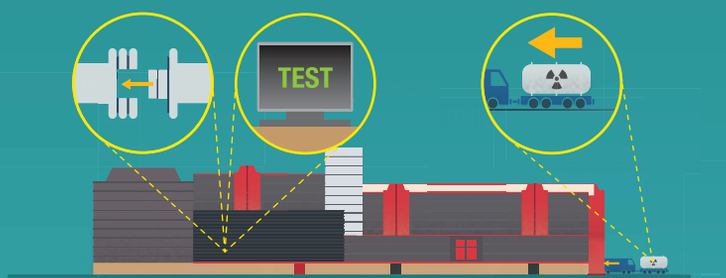
Sellafield is synonymous with nuclear power, reprocessing and decommissioning operations; many of the public still mistakenly believe that Sellafield produces electricity, something that hasn't been true since March 2003 when Calder Hall shut down and stopped providing electricity to the national grid.

1. CONSTRUCTION >>



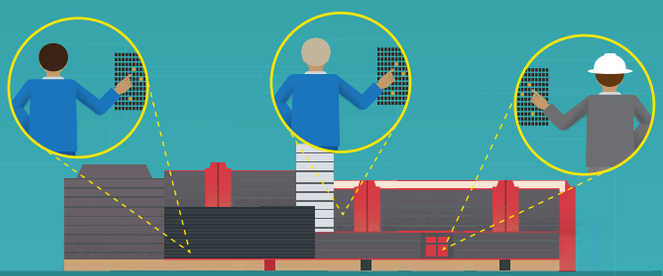
Plant is constructed

2. COMMISSIONING >>



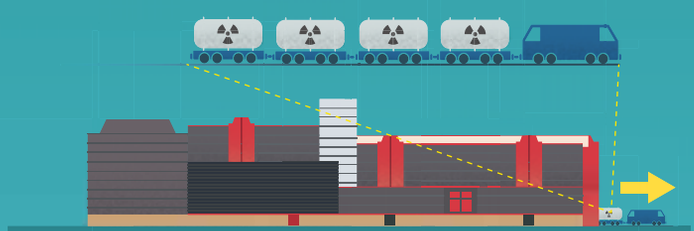
Civil: Parts of plant are connected and tested
Active: Nuclear materials are introduced into the building

3. OPERATIONS >>



People operate the plant

4. POCO >>

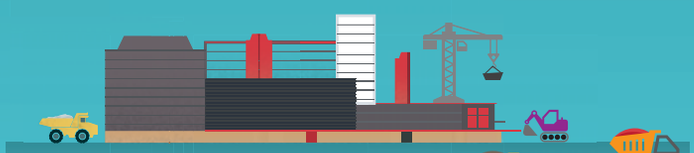


The reverse of active operations where as much of the radiative materials are removed as possible

5. DECOMMISSIONING >>

Any remaining radiation is removed

6. DEMOLITION



The fabric of the building is removed

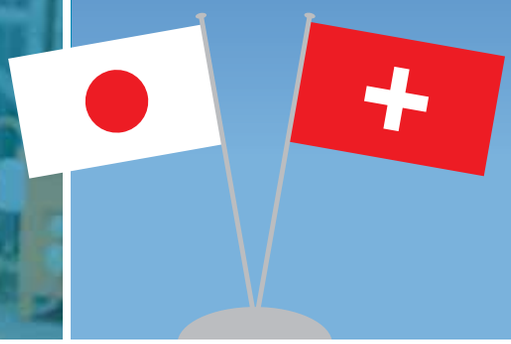
Since September we have...

WELCOMED...

the new Energy Minister, Andrea Leadsom, to the Sellafield site for her first visit. See page 65 for more details

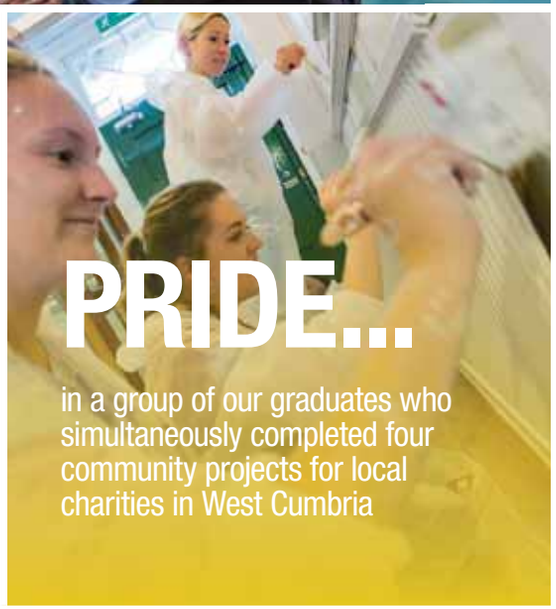
COMPLETED...

the return of vitrified high level waste to Japan and Switzerland



PUBLISHED...

our new Socio-Economic Strategy

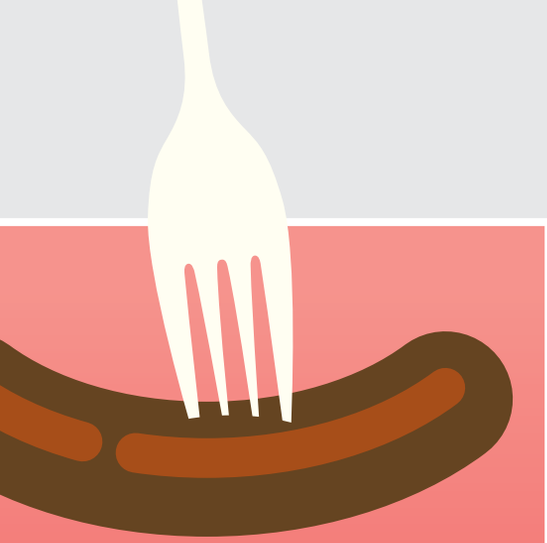


PRIDE...

in a group of our graduates who simultaneously completed four community projects for local charities in West Cumbria

STARTED...

technical dialogue as part of the process to establish a market enhanced Sellafield Ltd. See page 23 for more details

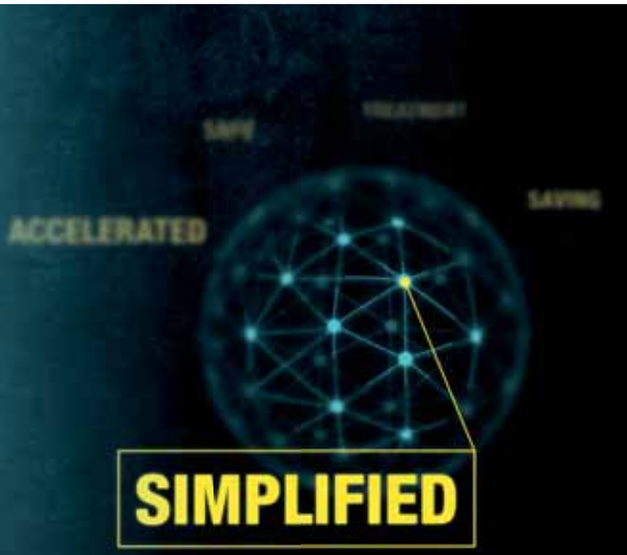


COLLECTED...

thousands of meals for the local foodbank. See page 24 for more details

DISCOVERED...

a way to significantly reduce the timescale and cost associated with cleaning up one of our most hazardous facilities. See page 20 for more details



CELEBRATED...

being named the North-West's top apprentice employer

HIRED...

one hundred nuclear apprentices

COMPLETED...

Sellafield Ltd has successfully received into safe storage the first consignment of 'exotic' fuels from the Dounreay facility in Scotland. The programme to transfer the material to Sellafield is expected to take a number of years to complete

RECOGNISED...

Excellence in our Supply Chain

The importance of evaporation

As far as nuclear plants go – the Highly Active Liquor Evaporation and Storage Plant (HALES) is one of the more simple to explain, because it does exactly what it says on the tin – evaporates and stores highly active liquor from our reprocessing plants, before it is sent for vitrification.

Whilst the process might be simple, the complexity of keeping three ageing evaporators running cannot be understated, and nor can the importance of the plant to operations at Sellafield.

In one of the largest construction projects in our recent history, we are currently building a new evaporator, to increase our evaporation capacity, to cover the end of reprocessing operations and to support the post operational clean out of these facilities.

50-150
times volume reduction

The new evaporator is due to be operational during 2017, but until that point, we need to ensure that we continue to operate our current three evaporators, known as A, B and C.

Evaporation allows us to reduce the volume of our most hazardous waste product, highly active liquid waste, to a level as low as reasonably practicable – this can be a reduction of a factor of fifty times (for oxide wastes) or 100-150 times (for Magnox wastes). There are clear safety and financial reasons for reducing the amount of this highly active waste we store, prior to eventual disposal.

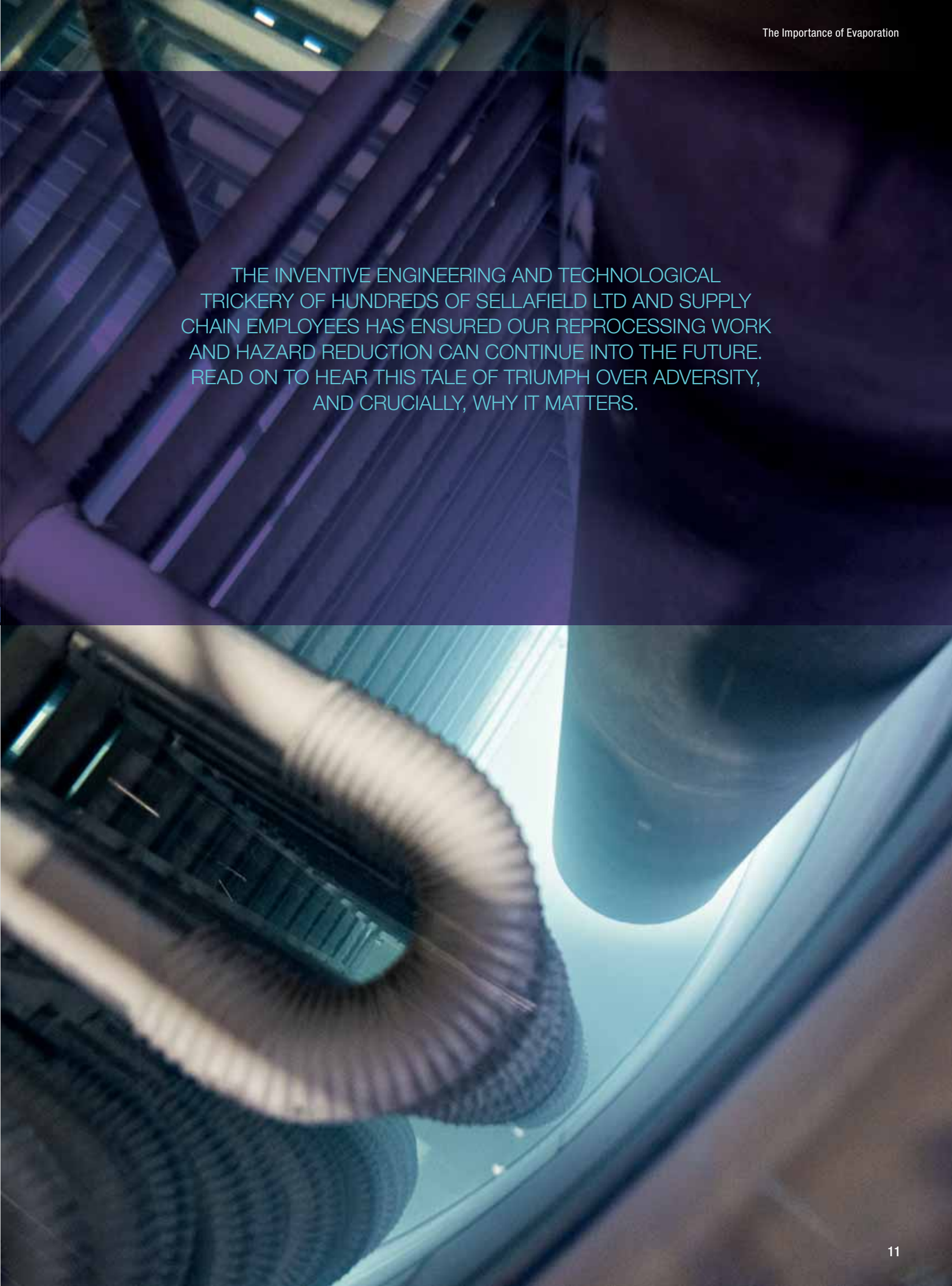
Our initial series of six evaporators quickly became obsolete many years ago, as they were not designed for reprocessing. This led to the development of evaporator A (which started operations in 1970), evaporator B (in 1984) and evaporator C (in 1990).

Each of these three evaporators was designed to increase our evaporative capacity, with a specific purpose in mind. As the liquids (known as raffinate) we evaporate have different properties – looking and acting differently depending on the source – they cannot all be evaporated in the same way. This means that we have only one evaporator, C, that can handle raffinate from Thorp reprocessing.

The simplest explanation of an evaporator is that it acts like a giant jacketed kettle for liquid waste, with heat provided through steam coils and jacket. The pressure in these is controlled, along with the pressure in the evaporator, so as to reduce corrosion of the coils.

However, this description downplays the complexities involved when the liquid is highly active. As a result of the nature of this liquid, over time corrosion does occur, and this means that each evaporator has a limited life.

So for the less technologically minded, this is likely to be the most inhospitable working environment imaginable – due to both the temperature, and the acidic, corrosive and highly radioactive nature of the liquid.



THE INVENTIVE ENGINEERING AND TECHNOLOGICAL TRICKERY OF HUNDREDS OF SELLAFIELD LTD AND SUPPLY CHAIN EMPLOYEES HAS ENSURED OUR REPROCESSING WORK AND HAZARD REDUCTION CAN CONTINUE INTO THE FUTURE. READ ON TO HEAR THIS TALE OF TRIUMPH OVER ADVERSITY, AND CRUCIALLY, WHY IT MATTERS.

Evaporator A

- Operated 1970 – 1986
- For Magnox waste
- Not currently in use

Evaporator B

- Operated 1984 – 2009, 2014 –
- For Magnox waste
- Throughput of 25-30m^3 per day

Evaporator C

- Operated 1990 –
- For Magnox and Thorp wastes
- Throughput of 25m^3 per day

Evaporator D

- Set to operate from 2017
- For Magnox and Thorp wastes, Magnox and Thorp clean out and HALES evaporator and storage tanks clean out
- The only evaporator that can handle solids
- Maximum throughput of 90m^3 per day

Output of an evaporator to a HAST is approximately 18m^3/batch

Evaporator B – delivering the seemingly impossible

In fact, it was corrosion of a different kind that led to evaporator B being taken out of service in December 2009 – from an acid leak to the support steelwork. This corrosion caused serious damage, and at the time it looked highly unlikely that the evaporator would be used again.

As you might imagine, it's very difficult to make repairs to a large, specialist piece of dated equipment, on a congested industrial site. It's even more challenging when the kit in question handles highly radioactive liquid, is shielded behind concrete and other barriers, and the plant in question is Europe's most complex industrial site. Human access is impossible, and this means that any access is via the originally installed kit or remotely operated equipment.

However, the need for ongoing evaporative capacity meant we needed to look again at whether evaporator B could be brought back into operation. This was a significant decision which weighed the costs of the remediation work required against the benefits the additional capacity would bring.

As a consequence, a complex and challenging project to return this evaporator to service was instigated. Preparatory work included CCTV investigations of the evaporator and the creation of a full scale replica of the damaged area. This allowed us to develop the design, and trial deployment techniques away from the plant.

Thanks to work like this, and the dedication of the project team – which included both Sellafield Ltd employees and our partners from James Fisher Nuclear and Shepley Engineers – the once-thought-impossible was achieved, and evaporator B was brought back in to service in April 2014. It is now used as the duty evaporator for Magnox reprocessing waste, with evaporator A remaining on stand-by.

Tom Gardner, the head of HALES explains: "Evaporator B is a 45 year old facility, operating safely well beyond its original design life. This is a reflection of the hard work of the engineering and maintenance teams that have made this happen, who have adapted so professionally to the challenges that the evaporator has posed to us."

Europe's most complex site

Evaporator C – life expectancy on the rise

As our most modern evaporator, with the largest capacity, evaporator C is important to reprocessing and hazard reduction. As our only evaporator that can handle Thorp liquids, it is a single point of failure – that is, if we lose evaporator C, we lose the ability to reprocess waste from Thorp.

Despite its relative youth, it's still a dated facility, and one that has been pushed hard over the years. The oxide waste that comes from Thorp is far more corrosive than that from Magnox reprocessing. This means that the lifespan of the facility reduces much more quickly than the other evaporators.

We assess the remnant life of an evaporator based on the level of corrosion that the metalwork (namely the coils and jacket) has received. Once the corrosion in one of the coils reaches an agreed limit, this coil is taken out of action. Once the corrosion in the jacket reaches its limit, we have to stop using the evaporator.

Assessing the corrosion is a straightforward idea, but the challenge again comes from the shielding and protective barriers that encase the evaporator. These mean that it's incredibly difficult to ascertain and evidence the levels of corrosion. In fact, we don't think that there is a similar system anywhere else in the world – nuclear or otherwise.

Based on the worst corrosion we'd found to the coils, our conservative predictions for corrosion to the jacket and base were that evaporator C might be reaching the end of its usable life. As the prediction was conservative, we believed the evaporator actually had a far longer remaining life, but this had to be proven.

To address this, we worked to better understand the corrosion levels in the evaporator. Advances in technology have allowed us to work with our partners at the National Nuclear Laboratory to develop a new

Fit for the future

As we've outlined, evaporation is crucial to Sellafield Ltd's reprocessing work. It's also important to the future of the site, when reprocessing concludes and we move into post operational clean out (or POCO).

When we move to POCO the liquid wastes (or raffinates) that are transferred to the HALES plant for evaporation and storage will be different to those from reprocessing – in density and chemical makeup. This means they are likely to move and act differently to those we are used to. However, we'll still be using the same network of pipes to make these transfers.

This is where a team from our supply chain partner, the National Nuclear Laboratory (NNL), come in. A group of chemical engineers is currently researching how this new raffinate will act. At their Workington laboratory and rig hall facility, they have created a full size mock-up of the pipelines that transport it. As the pipelines are gravity fed, they've also recreated the slight downward gradients found in the pipelines on the Sellafield site.

By recreating this they can understand how the solid-carrying liquid will move through the pipework, whether it will settle within it, and what clean-up is required.

The NNL lead chemical engineer on the project, Dr Donna McKendrick, explains the importance: "The change in materials coming through the pipes will influence the clean-up regime required. By fully understanding this now, we can put in place the very best process, minimising the amount of fluid required. This will ultimately lead to savings on the storage and disposal costs for this and could potentially negate the need for a new storage facility in the future."

base inspection device which has measured thickness, as well as a coil inspection device and we have developed numerous test rigs to challenge and enhance our corrosion knowledge.

On top of this, we have changed the way we use the evaporator to minimise future corrosion.

The changes we have made have resulted in a lengthening of the evaporator's life, which have enhanced confidence we can bridge the gap until evaporator D is online.

23,000 tonnes
of concrete

This was made possible, in part, thanks to a new approach to risk management developed to break down the barriers to progress at Sellafield. This 'G6' thinking is so called because it is a collaborative way of working developed by the six organisations with responsibility for the safe and effective clean-up of the site (the Department of Energy and Climate Change, Shareholder Executive, Office for Nuclear Regulation, Environment Agency, the Nuclear Decommissioning Authority and Sellafield Ltd) – all of whom have a common goal to speed up decommissioning and hazard reduction.

Andy Lindley, director of the Office for Nuclear Regulation's Sellafield programme said: "We have been working closely with Sellafield Ltd to better understand the corrosion in Evaporator C and the risks posed by this; ensuring that we have confidence in its continued operation."

Evaporator D – making high hazard reduction possible

The advanced solutions delivered above have lengthened the life of our current evaporators, but they haven't removed the need for new, future-proof evaporative capability. This is where evaporator D comes in.

This new evaporator is in the final stages of construction and will be ready for operations by 2017. Its development has been complex and challenging, and not without its setbacks.

However, once complete, the new facility will provide us with the evaporative capability we need to both complete reprocessing fuel in Thorp and Magnox, and clean out these plants, the old evaporators and the storage tanks. The evaporator has been designed to handle these clean out wastes, which contain greater concentrations of suspended solids than the other evaporators.

Thanks to changes made early in the design an additional, planned evaporator, will no longer be required.

Evaporator D, which will have an operational life of 25 years, is a building of over 23,000 tonnes of concrete with 22,000m of pipework. It is built on an extraordinarily compact site adjacent to critical buildings. The evaporator was built in separate modules, which were delivered individually by sea, and were connected when on site. Even by Sellafield's standards, it has been a feat of engineering and of logistics, requiring the removal of bridges and street furniture from the site – such is its size.

22,000 metres
of pipework

It's a project which has built on the lessons we learned in all of our previous evaporators – so it'll be easier to do the corrosion inspections, will have more modern safety systems installed from day one, and will operate with the fundamentally safer segregated cooling water system – which none of its predecessors had.

A dedicated team from the HALES facility is now working to ensure we are ready for the final installation of the evaporator, which will include both inactive and active commissioning. Once this is complete, our most advanced evaporator will be switched on, and the future of the crucial task of high hazard removal through the evaporation of highly active liquor, will be secured. ■

Cumbria is **open for business...**

That was the message sent out by a damp but defiant county in the wake of the devastating floods brought by

Storm Desmond

The UK's heaviest recorded single downpour brought widespread evacuations from homes across the county during the first weekend in December.

The brunt was borne by Carlisle, Appleby, Keswick and Glenridding, with Cockermouth town centre also badly affected.

But incredibly, just seven days later, a deluge of dirty floodwater on Cockermouth's Main Street was replaced by an inundation of people as tens of thousands attended a weekend of events.

The centrepiece was a two-day Christmas food festival featuring flood-hit traders from across Cumbria selling goods and produce plus demonstrations from celebrity chefs, street entertainment, singing and local bands on the main stage.

The event, which had originally been scheduled for the second weekend in December, was thought doomed following the flooding.

But the community were determined it went ahead to send the message across the world that Cumbria remains open for business.

Our support meant that the event could be expanded, offering free stalls to retailers across the county who were affected by the floods. We were delighted to see 70 retailers take up the opportunity.

The weekend kicked off with a lantern parade down Main Street, which was broadcast live into national and regional news bulletins.

Our support is part of a £500,000 package of flood recovery investment, supported by the wider nuclear family, which includes cash to be made available to meet community need and in-kind support including equipment, materials, people and resources.

Many of our staff were involved in the emergency response as members of voluntary organisations including Mountain Rescue, retained fire officers, and the RNLI.

And the company and its supply chain are also providing: electricity generators; dehumidifiers; personal protective equipment like hard hats, hi viz jackets and gloves; plus portacabins.

A team of project managers from Sellafield are continuing to assist the Cumbria County Council-led flood recovery programme from the gold command centre in Penrith. ■

Our response includes:

- **A fund of £500k has been made available**. This is made up of £250k in cash (£100k from Sellafield Ltd, £100k from NDA, £50k from NMP), and £250k of 'in kind' support offering volunteer time, materials, equipment, skills and expertise.

- **£200k of the cash donation will sit in a nuclear response fund**, to be targeted at affected communities based on need, as directed by the official Cumbria County Council-led response. The remaining £50k will be directed to the Cumbria Community Foundation appeal.

- **'In kind' commitment is an open-ended offer for use of resources in the nuclear family** including Sellafield Ltd, the NDA, the Low Level Waste Repository and our supply chains, throughout the recovery period.

£500k
fund made available

£200k
cash response fund available

£250k
'in kind' support made available

IN FOCUS:

Pile Fuel Storage Pond

The Pile Fuel Storage Pond at Sellafield holds several accolades. Not only was it the very first nuclear fuel storage pond built on the site in the 1940s, it is also the largest single, open-air nuclear fuel storage pond in the world today.

Paul Nichol, Head of the Pile Fuel Storage Pond, reflects on what makes one of Sellafield Ltd's priority clean-up projects so special. He said: "There's a real sense of history about the place. We've all seen the lovely old photos of the pond being built and it really engenders a sense of pride. The nuclear pioneers who designed and built the pond didn't have any blueprints to copy and worked to unbelievable short timescales, so that they could produce nuclear materials for defence purposes."

Paul added: "It was really an amazing feat of science and engineering to build the Windscale suite of buildings in less than five years. I am proud to see that our workforce today has recaptured some of this old pioneering spirit, and are coming up with all sorts of innovative solutions for the incredibly difficult job we're faced with cleaning-up Sellafield.

"Decommissioning the Pile Fuel Storage Pond involves emptying it of all of the radioactive materials and redundant plant and equipment so that we can drain the pond water and finally demolish the structure.

"It might sound simple but it is a complex job that will see us remove around 20,000 individual items from the pond. Record keeping during the pond's early operations was poor but It's reckoned that there are 1000s of different types of wastes in the pond and these all have to be removed and a home found for each one. The home for most of the wastes will be one of the modern, nuclear stores specially built to store the waste safely above ground. However, some of the waste is what is rather quaintly called orphan wastes, which means it doesn't have a home to go to. New waste treatment plants and stores are being designed and built for these wastes.

This waste is being turned into solids when they are currently liquids or sludges, and are being placed into large, robust containers and immobilised – which means that the waste can't spill, leak or run away. It has to be solid, safe and stable for long term storage above ground and suitable for final disposal.

21 YEARS EARLY

The planned date for draining the pond water has been brought forward by 21 years from the 2011 programme of 2040 and is on track to shave £700m off the original £1 billion estimated cost.

Paul added "Windscale played a vital role in the production of nuclear material for national defence purposes, but not many people know that a huge array of nuclear materials for industrial and health purposes were also produced in the heart of the Windscale reactors. It wasn't all for the atomic weapons."

Other nuclear materials produced by Windscale included:

- **Cobalt cartridges** – produced for external beam radiotherapy, sterilisation of medical supplies and medical waste, radiation of foods for sterilisation and industrial radiotherapy of welds.
- **Caesium sources** – kilocurie radioactive sources were manufactured for medical uses to treat cancers using radiotherapy.
- **Plutonium isotopes** – radioactive material was produced for the Department of Health to power batteries used in early pacemakers.

1947

The British Government decides to develop its own nuclear deterrent.

1947

Work starts on two nuclear reactors at Windscale (later renamed Sellafield).

1948

Work starts on the Pile Fuel Storage Pond which will be used to cool, store and process the fuel when it comes out of the two new reactors.

1950

The first of the two reactors was loaded with nuclear fuel and a controlled nuclear chain reaction started.

1952

Once the fuel had been removed from the reactor, cooled in the pond and then reprocessed, the first plutonium from Windscale was transported to Aldermaston where the atomic bombs were manufactured.

1952

The first British atomic weapon was tested in the Monte Bello islands.

What are the main wastes in the pond?

Clockwise left to right: Last of canned fuel removed, decanner removed from pond, cobalt cartridge.

Opposite: Drum filling plant illustration.

Canned fuel

The majority of the canned fuel in the pond hailed from the Windscale Advanced Gas-cooled Reactor – the iconic golf ball structure in the Sellafield skyline – and was put into the pond in the 1960s. There is also a range of exotic fuels from test and research reactors in both the UK and abroad which had accumulated in the pond over its 65 year lifetime.

The last of the 191 cans of fuel was taken out of the pond in October 2015, a key milestone that means the radioactive inventory of the pond has now been halved. Paul added: "Getting this 2.5 tonnes of canned fuel out has also effectively eliminated the criticality risk associated with the pond – which means there is no chance of an uncontrolled nuclear chain reaction in."

The National Nuclear Laboratory provided technical support, remotely cutting the fuel out of old cans in special cell within the facility where physical access is not allowed because of radiation levels. The fuel was then identified and assessed before being placed into new containers to keep the fuel safe in a more modern storage pond.

Nick Hanigan, director for Waste Management and Decommissioning at the National Nuclear Laboratory, said: "This project is a fantastic example of how we and Sellafield Ltd are working together to accelerate decommissioning and reduce risk on the Sellafield site. The past few years have been a showcase of how integrated team working can drive innovative solutions and flexible working. I'm so proud for NNL to have been a key part of this success story."

Andy Lindley, director of the Office for Nuclear Regulation's Sellafield Programme said: "We are encouraged at the progress made by Sellafield Ltd and National Nuclear Laboratory to remove and process canned fuel from the pond. The remediation of fuel and sludges from the legacy ponds has been gathering pace during 2015 and the success in removing canned fuel is a key milestone in the long term goal of achieving risk and hazard reduction at the site."

Solids

In the solids category there was originally 750 tonnes of contaminated metal wastes, much of what has been lurking at the bottom of the pond and its associated bays for over 60 years. This included various pieces of installed equipment, machinery, pond furniture and fuel skips that are red with rust; so far 180 tonnes have been removed and cleaned up wherever possible.

This contaminated and redundant kit is being progressively removed from the pond and the first of two large fuel decanners, weighing in at 6.5 tonnes each, has recently been successfully lifted out of the pond. This underwater giant was used to strip off the fuel cladding and had to be cut into two using an underwater diamond saw before this hulk of rusty, contaminated metal could be lifted clear of the pond.

This group of material also includes 10 tonnes of non-fuel nuclear wastes including Calder fuel end cones and cobalt cartridges, and a right old cocktail of isotopes, radioactive cartridges, nuclear 'pennies' and so-called nuclear 'ammunition boxes' containing various radioactive materials. This is one of the most difficult groups of historical materials to find homes for within existing facilities at Sellafield.

One of the big successes has been with the 800 cobalt isotopes, which are being re-packaged using mini submarines that can literally grab the end of the one metre long cartridges and lift them into new skips to prepare them for shipping out. This delicate operation is done using surgical precision by the submarine pilots who work remotely, minimising their exposure to radiation.

Paul said: "One of our targets this year was to remove 50 tonnes and so far 10 tonnes of solids have been consolidated into containers. In just one shift we recently consolidated one quarter of a tonne, which is quite some feat considering the mini submarines can only lift 10kg at a time.

"In the past this sort of task would have been carried out manually with the workforce dressed in PVC and using tools to move the material from the side of the pond. The use of mini-submarines has lifted this burden. We have calculated that the mini submarine has taken a 20 sievert dose in the last 12 months, which is five times more than the combined Sellafield workforce dose of 4.3 sieverts – so they really are a vital part of our team."

Sludge

It is estimated that there is 350m^3 of radioactive sludge at the bottom of the seven metre-deep pond. Getting this radioactive sludge – made up of fuel corrosion products and algae that have built up – out of the pond at the same time as leaving the water in place to shield the nuclear fuel is just one of the challenges that the team is facing and overcoming.

Sludge has been progressively pumped from the bottom of the pond into an under-water corral. This temporary solution was not 100% effective as it proved difficult to stop the sludge floating out of the corral and back onto the floor of the pond. The construction of a new building alongside the pond will allow the team to pump the sludge out of the pond and into engineered drums so that it can be treated in other buildings on the Sellafield site.

Paul said: "The new building has an important job to do and the team has made best use of fit-for-purpose technology already in use by other industries, proving that Sellafield's unique challenges do not always need a unique solution.

"Using a simplified petrol-pump style design, the drum filling plant will safely export the sludge from the pond while also saving the UK taxpayer more than £50m compared to original bespoke designs, and will accelerate sludge retrieval by more than three years."

Metal Fuel

Remotely operated mini submarines have provided a valuable underwater help towards consolidating the remaining 12 tonnes of metal fuel in the pond into skips to prepare it for export.

Paul is confident that the team has almost conquered the metal fuel challenge. He said: "By the end of March 2016 we aim to have removed all of the remaining metal fuel, meaning that over 70% of the pond's radioactive inventory will have left the building."

over 70%

of the pond's radioactive inventory will have left the building by the end of March 2016.

Residuals

This category includes the residual solids and sludges that will be left after the bulk retrievals have been completed. Some of it is orphan wastes and it won't be easy to access as it is likely to be what is left at the bottom of various process bays within the pond. Current plans indicate that remote-controlled submarines will be used to access the darkest corners of the pond to remove the final wastes before the water is drained out of the pond.

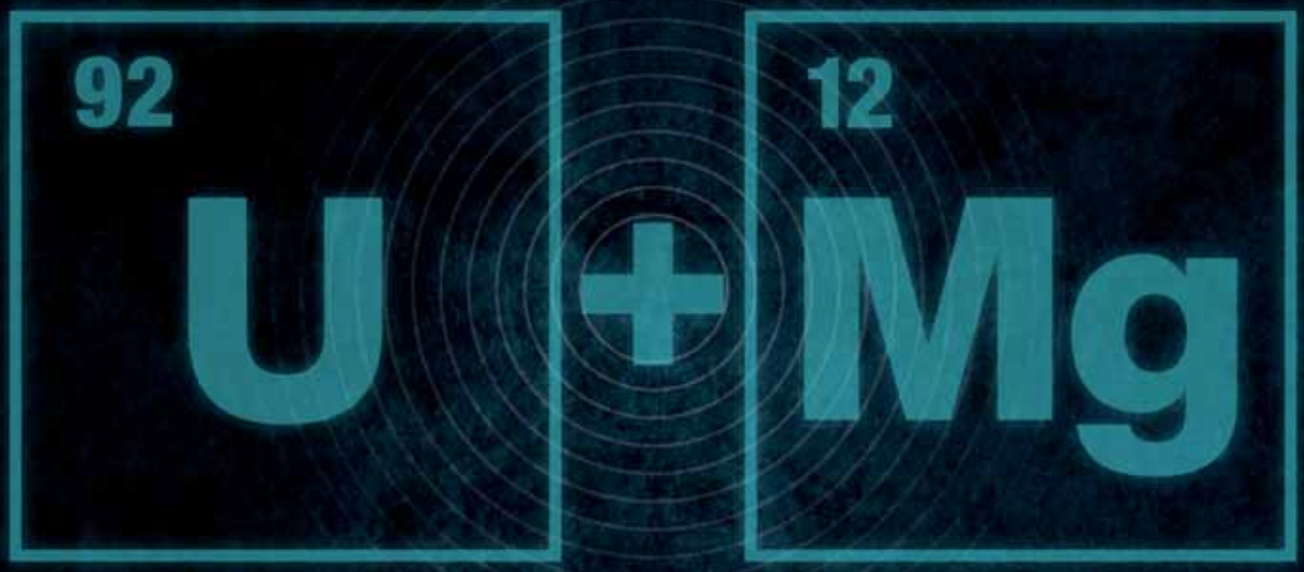
The Pile Fuel Storage Pond – fact file

Built and commissioned between 1948 and 1952, the pond and adjoining decanning building originally provided the storage and cooling facility for irradiated fuel and isotopes from the two Windscale reactors. The pond processed 2,100 tonnes of pile fuel and 300 tonnes of Magnox fuel.

All operations in the pond ceased in the 1970s. The plant was left in a care and maintenance regime, whilst operations were then transferred to more modern facilities. Extensive refurbishment and re-equipping took place in the 1980s and decommissioning started in the 1990s.

The pond is 100 metres long, 25 metres wide and 7 metres deep, containing over 15 million litres of water. In total there were around 180 metal skips in the pond each holding up to 6m^3 of fuel and waste.

The PFSP contains over 15,000m^3 of radioactive water, more than 300m^3 sludge, various nuclear wastes and legacy spent nuclear fuel in 180 metal skips in the pond



The Magnox Swarf Storage Silos

Several years ago, researchers began gathering evidence to underpin the clean-up plan for Sellafield's most hazardous facility.

Their task was to build a picture of the waste inside, which had long since been consigned to vaults beyond the reach of the human eye.

The findings would be used to refine the design of the plant to deal with the material.

But the results did not underpin the plan, in fact they undermined it.

And, in the process, they turned the decommissioning of the Magnox Swarf Storage Silo (MSSS) on its head.

This pioneering research work had yielded a revolutionary scientific breakthrough, which has been hailed as one of the most important moments in Sellafield's history.

Alan Parry, Sellafield Ltd's head of strategy for MSSS, explains why.

"I began working on this in earnest in April 2014, but the seed of the idea goes back a lot further," he says.

"The Silos Direct Encapsulation Plant (SDP), a complex treatment and encapsulation plant, had long been the preferred option for dealing with the intermediate level waste in MSSS.

"However, because of the uncertainties about the nature and state of the waste within the silos, the design had been based on ultra-conservative assumptions.

"The research work was commissioned in order to fill in some of the blanks; to give us the information we required to underpin the approach.

"However, the more we discovered about the material, particularly its reactivity when taken out of water and into air, the more it became obvious that our assumptions had been overly pessimistic.

"This gave us the opportunity to think radically about the best solution to dealing with this waste."

The findings were the result of experiments carried out laboratories at Springfields, near Preston, peer reviewed by academic institutions.

And these were bolstered by a parallel human research project, with former workers at the silo asked to recall their memories about what exactly was tipped into the building in the days when record keeping was not the priority it is today.

The findings emerged at an opportune time. In February 2014, the G6 group had been formed.

This is a collective made up of the organisations with a major stake in the decommissioning of Sellafield, it includes: the Department of Energy and Climate Change; the Nuclear Decommissioning Authority; Sellafield Ltd, the Office for Nuclear Regulation; the Shareholder Executive; and the Environment Agency.

Its purpose is to remove barriers – perceived or otherwise – to the accelerated clean-up of the site's high hazard facilities.

And solutions to the clean-up of MSSS were soon on its agenda.

"The SDP project was one of the first issues raised by the G6," recalls Alan.

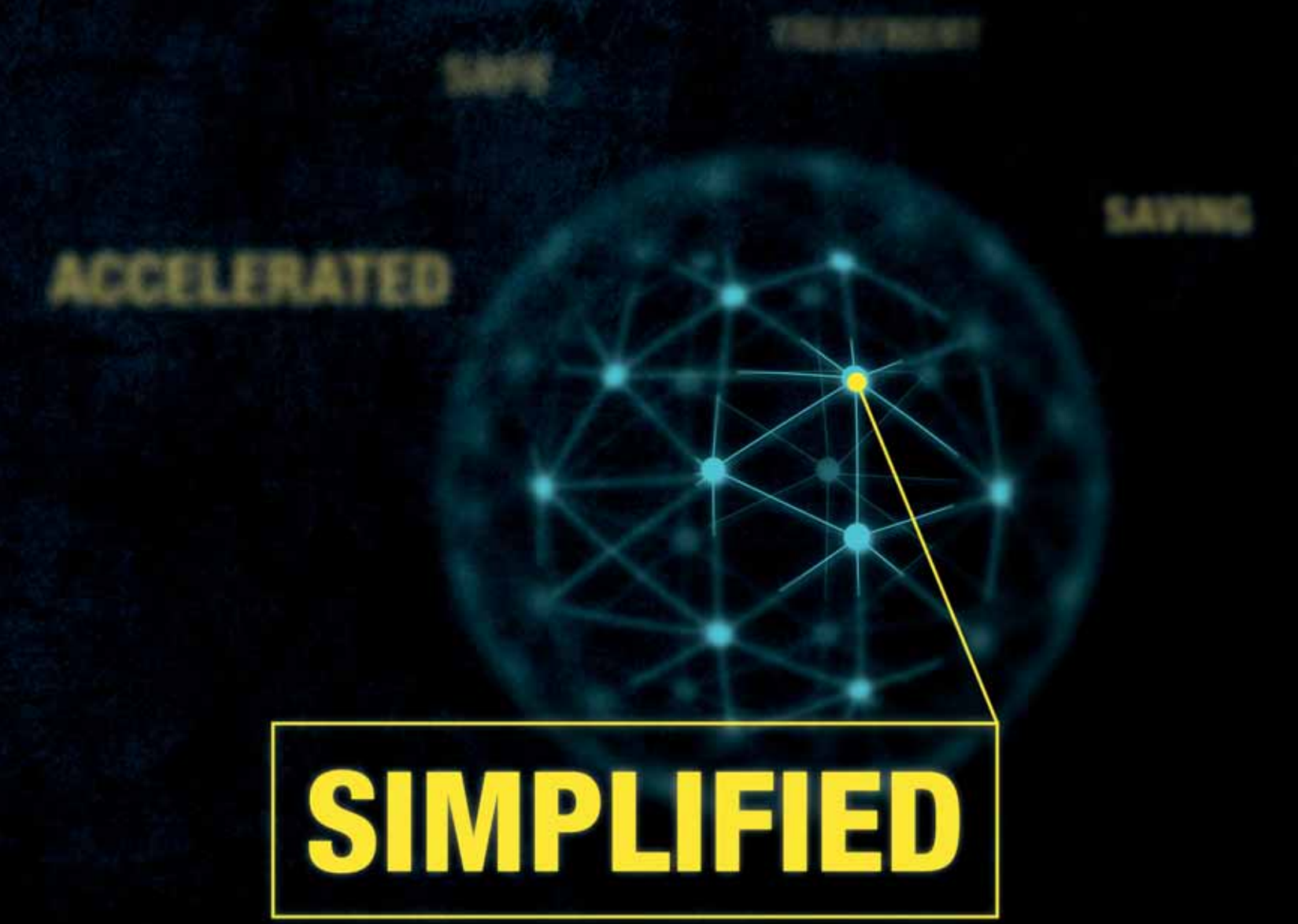
"The project was coming out of the procurement cycle and it was clear that it was not going to be available until later than we required it.

"This could have the potential hold up the number one priority task of the MSSS programme – removing the waste.

"Through the G6 we were able to look at the strategy and ask: 'Might there be another way of doing it?'

"We were able to take a holistic approach and ask ourselves what should be the primary focus of the programme?

"SDP was all about creating a disposable product; a heavily engineered solution that treated and encapsulated the waste in a form that would be acceptable for disposal in a geological disposal facility.



"However, we began to think that the emphasis was wrong; that what we should really be pursuing is accelerated risk reduction – emptying the silo in the quickest time possible.

"The SDP approach meant we had to execute a phased approach to waste retrievals, with pauses in between, thus slowing down that risk reduction.

"So we looked at a simplified approach, essentially a one-step solution – retrieving the waste, placing it 'raw' into containment, and transferring to interim storage.

"The containers would be grouted at a later stage before finally being consigned to a geological disposal facility.

"The removal of SDP, and its complex treatment and encapsulation processes, would in theory accelerate retrievals and de-risk the programme.

"As added bonus, it would have the potential to save hundreds of millions of pounds, although this was never the focus, merely a fortunate by-product.

"We had identified some feasibility, it looked good, but at that time it was not underpinned.

"From August this year, the work became about context – could we make this work in the Sellafield environment?

"We worked on that and took it through a review process.

"We calculated the benefits and discovered that because we could get after the waste earlier – without the need for discrete phases – we could empty the silo four years earlier and ensure far more predictability."

We calculated the benefits and discovered that because we could get after the waste earlier – without the need for discrete phases – we could empty the silo four years earlier and ensure far more predictability.

So far so good, but how would the company responsible for acceptability of waste products for the geological disposal – Radioactive Waste Management Ltd (RWM) – react to a move away from a heavily engineered waste product to a raw waste option?

"RWM were fantastic and understood straight away what we were trying to do," adds Alan.

"We worked with them to apply what we call the 'decommissioning mind set' and work out whether we had the balance right between the future needs of the geological disposal facility and reducing risk at Sellafield.

"They immediately saw that an insistence on an engineered waste product actually increased risk because it slowed down the emptying of the silo and introduced complexity – and thus unpredictability – into the programme.

"They did a formal assessment of the raw waste product and ultimately gave us a letter of acceptance to say they saw no reason why they could not accept the packages with some simple finishing steps like grouting prior to consignment."

Approval by ONR was also secured and the alternative approach was recommended by the Sellafield Ltd and NDA boards.

We have unpicked arguments that have been around for decades, by using research and experiments to remove uncertainty.

The final step was taken in October 2015 when the Government gave the green light to turn off the SDP project, allowing Sellafield Ltd to pursue the alternative approach full throttle.

"I'm immensely proud of what everyone involved in this has achieved," says Alan.

"Not many opportunities come along at Sellafield where you can reduce costs as well as reducing risk and hazard at the same time.

"One of the most exciting things about the new approach is that we're no longer foreclosing future opportunities for managing the waste.

"If something like Thorium research comes to maturity, we haven't packaged this waste away beyond reach. We can retrieve if an alternative approach becomes available."

The switch to alternative approach has been described by the NDA as a "paradigm shift" and by Sellafield Ltd's managing director as a "pivotal moment in the site's history."

So what is the lasting legacy of this work?

"I think what we've done is provide a new blueprint for problem solving at Sellafield," says Alan.

"We have unpicked arguments that have been around for decades, by using research and experiments to remove uncertainty. We haven't invented anything magical here, but I think we have pointed the way to a new way of thinking about Sellafield." ■

Steps to procurement

In January the NDA's decision to change ownership arrangements for Sellafield Ltd was announced and from 1 April 2016 the organisation will become a subsidiary of the NDA.

The upcoming change in ownership has paved the way for Sellafield Ltd to look at the future direction of the business against the long term needs of the hazard reduction and decommissioning mission.

This includes determining how the market can best enhance existing capability and acquiring the support needed to make sure it gets the maximum benefits from the model change.

As we discovered in the previous edition of this magazine, finding the right partner or partners takes some doing. It's not just about finding the right technical capability, but also complementary ways of working and values to ensure there is a good fit with the company to foster a productive long-term relationship. So this means there are several steps to take before signing on the dotted line.

After preliminary market testing in spring, Sellafield Ltd embarked on the next phase of engagement with the supply chain in early November, starting technical dialogue with companies who may have something to offer in terms of advice, counsel and/or delivery in many different areas across the organisation, from project management to business transformation. Information gained will help Sellafield shape its acquisition strategy before it then begins a formal procurement process next year.

Transition timeline

Activity	Indicative Planned Date/Duration
"Soft market testing" and client side benchmarking	**April-May 2015**
Prior Information Notice (PIN) for technical dialogue meetings	**Oct 2015**
Technical dialogue meetings	**Nov 2015**
Acquisition strategy produced and appropriate sanction sought	**Dec 2015 - Apr 2016**
Publish contract notice	**Apr 2016**
Hold industry event	**May 2016**
Tender return	**Nov 2016**
Complete tender evaluation	**Dec 2016**
Announce preferred bidder	**Feb 2017**
Contract agreement award	**Feb 2017**

Foodbank delivers 9,600 meals thanks to community collaboration

With our support, the North Lakes Foodbank provided 224 struggling families in Allerdale and Copeland with special food parcels during the summer holidays

14 tonnes of food was used to create the food parcels

The charity received an overwhelming response from local businesses*, with donations of leisure activity vouchers, money to boost supplies and food to fill the 'Holiday Lunchpacks 4 Kids' parcels.

Jessie Hendry Gooding, North Lakes Foodbank project manager thanked the volunteers, community groups and businesses for making the scheme a success. She said: "It is wonderful to see the local community come together to offer their support.

"It is very encouraging and a terrific example of community spirit and solidarity."

Sellafield Ltd helped create the packs by encouraging its 11,000 employees and supply chain members to donate food and money.

The company also allowed employees time off to help pack the parcels, purchased £1,000 worth of food and created recipe cards to show the families how to make nutritious meals from the food in their packs.

In total Sellafield Ltd and its supply chain gave a donation of £10,600 in food, money and time.

Helen Fisher, Head of socio-economics at Sellafield Ltd said: "As an integral part of the local community we recognise the need to help others and to encourage our suppliers to play their part in giving something back to the area – it is our collective responsibility to create a sustainable legacy from the resources and investment at Sellafield.

"During the last few months I have seen first-hand the huge amount of generosity shown towards the North Lakes Foodbank by our employees and supply chain colleagues. This really is a reflection of the honest, hardworking and generous people we have at the heart of the site, and the £10,600 they have raised in food and money is testament to that.

"The North Lakes Foodbank is a fantastic charity which does great work at a local level; I am so pleased that we have been able to help them make a difference to many disadvantaged families across Copeland and Allerdale this summer and I hope they can build on this success for many years to come."

*Support from: Cumbrian Newspapers (CN) Group, Shepley Engineers Limited, Jacob Stobbarts, PSL, North Country Leisure, Hartley's Ice-cream, Lake District Estates (La'all Ratty and Ullswater Streamers), the Beacon Museum, West Lakes Academy, Richardson's of Whitehaven, Hertel, BECBC, Centre for Leadership Performance.

The Scheme fed 431 children

The food packs, which differ to the three day 'crisis' parcels typically associated with Foodbanks, were designed specifically for families who are in receipt of 'Pupil Premium' on the grounds of low income.

DEFENCE IN DEPTH

Keeping Sellafield safe and secure

On patrol

The safe and secure stewardship of the Sellafield site is our priority. It is the first of our three strategic themes – safe, secure site stewardship; demonstrable progress; and return on investment – and it is never compromised.

The following pages show a small selection of the site's multiple layers of protection, designed to protect nuclear materials, our employees, our communities and the environment.

Physical protection

Emergency response

Sellafield's own emergency services

Covering an area of 2 square miles, Sellafield is home to nuclear facilities, office accommodation and all of the utilities and services you would expect of an industrial site the size of a small town.

The site has its own emergency services including a dedicated police force – the Civil Nuclear Constabulary, fire and rescue teams, rope rescue teams, paramedics and ambulance crews.


CROSSTECH

Well rehearsed

Practical training

The next generation of nuclear firefighters

In recent weeks, the government has challenged the value of some apprenticeships, questioning whether they give those undertaking them suitable skills and experience.

Sellafield Ltd apprentice schemes couldn't be further from this, delivering a range of trailblazing schemes with government support and encouragement.

In one of our newest schemes, we have just recruited six new apprentice firefighters to join our specialist team. This is one of only four firefighting apprenticeships outside of local government.

Across many areas of the business, we realise it's better to 'grow our own' and know that apprenticeships offer an ideal way of doing this.

We spoke to Connor Thurlow, one of the six new apprentices, to see why he had chosen this role, "I'm really enjoying the apprenticeship so far, in particular getting out and doing different types of training. As you might expect, the practical side – using different hydrants and pumps is the most enjoyable, but the Sellafield safety work we've done so far is also very important."

"I did public services at college, so I always knew that this kind of apprenticeship would interest me – and so far it has not disappointed."

Preparing for the unexpected

IN FEBRUARY 1996 THE WORST SNOW FALL IN MORE THAN TWO DECADES VIRTUALLY CUT WHITEHAVEN OFF FROM THE REST OF CUMBRIA, LEAVING PEOPLE STUCK ON THE SELLAFIELD SITE.

Chris Carruthers, who was catering manager on the site at the time, remembers how challenging it was to provide basic welfare in extreme conditions. He said: "I was with my team in the main canteen when we realised that we weren't going to be able to get home and we were aware that there would be colleagues stranded in buildings across the site who would need food and refreshments.

"In those days we used a 'cook and chill' system to provide meals on site, with food prepared in a factory in Cleator Moor and transported to the site every day. We had some fresh produce on site but we knew that it wouldn't last long."

Chris and his team gathered all of the food from the fridges and freezers and made the provisions last as long as possible while the head of catering tried to arrange for a tractor and trailer to take more supplies from the Cleator Moor factory.

The welfare arrangements on the site today are more advanced, with a team responsible for preparing, training and planning for emergencies.

Stores on the site are packed with food supplies and emergency equipment with shelves stacked high with thermal mugs, sleeping bags and roll up floor mats.

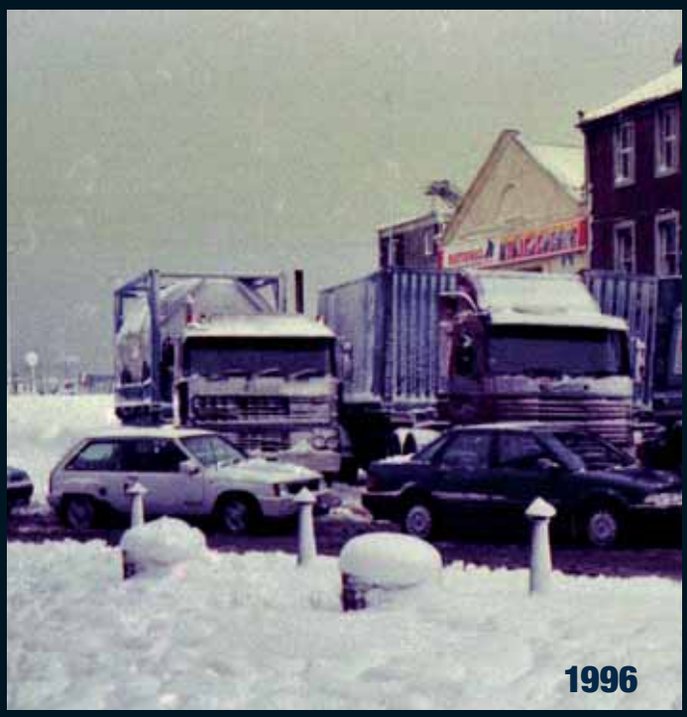
There are rows and rows of quick grab equipment cards specially designed for untrained personnel to grab and use. The instructions allow people to see very quickly how the pieces of equipment work or how to make meals using the cans of dried food.

"I can still remember the sense of community spirit on the site in 1996," Chris said, explaining how people volunteered to clean up, wash dishes and prepare the food. "When the unexpected happens it is good to know that everyone comes together to help. If it were to happen again we have much more equipment and supplies on the site and I know that people would still muck in and help each other to stay safe and well."

Sellafield is often described as a small town. It has its own services from laundries and canteens, to shops and medical teams. At any one time, up to 6,000 people can be on the Sellafield site, and, just like any other town, we have to be prepared to look after them if the unexpected happens.

EMERGENCY KIT INCLUDES:

- 882 dried food portions
- Over 2,000 disposable cups and cutlery, foil blankets, roll mats
- 22,000 evacuation welfare packs, which include; a poncho, overshoes, gloves and a valuables bag
- Over 1,500 torches and batteries
- Over 50 portable high power LED lanterns
- 2,000 thermal mugs
- Over 2,500 disposable over shoes
- Over 200 protective boiler suits, hi vis jackets and emergency clothing packs
- Life saver water cubes with the capacity to filter 5,000 litres of water, totalling 80,000 litres
- Over 100 emergency workers clothing and personal protective equipment



Graeme McKenzie-Netherwood, Energy and Sustainability Manager, Mitie

Mitie PLC

HOW WOULD YOU DESCRIBE YOUR ORGANISATION'S SOCIO-ECONOMIC PROGRAMME?

At Mitie (OneFM) we pride ourselves on being a responsible business and our yearly sustainability report (see link below) outlines our achievements and goals for the future.

We are really proud of the work we do to strengthen the communities we work in. Reaching out to our local communities, especially in partnership with clients and suppliers, enables us to optimise our contributions and expand our community footprint.

Our independent charitable Mitie Foundation is committed to improving employability for people from all backgrounds and our skill centres and Ready2Work programmes are being expanded to new locations to match our evolving business.

We work in partnership with Remploy to raise awareness and create opportunities for people with complex barriers to work and we have developed a diversity forum to continue our excellent work in this area.

We're happy to support Sellafield Ltd's West Cumbria work initiative, as it helps us in our goal of making sure that local job seekers are fully aware of the wide range of opportunities available across our business.

DO YOU HAVE A SPECIFIC SOCIO-ECONOMIC INITIATIVE/PROGRAMME IN WEST CUMBRIA OR WARRINGTON THAT YOU ARE PARTICULARLY PROUD OF?

We are particularly proud of our SME engagement. The nature of our business means that we rely heavily on the SME community, particularly in West Cumbria and Cumbria as a whole. For the 2014/15 Financial Year (April-March) we were happy to report that 74% of our external spend on the Sellafield Ltd part of the Cumbrian Collaboration Contract was with SMEs, with 50% of the spend within Cumbria and 24% with West Cumbrian SMEs.

WHAT BENEFITS DO YOU BELIEVE A COLLABORATIVE SOCIO-ECONOMIC APPROACH WILL BRING TO OUR COMMUNITIES?

A collaborative socio-economic approach means that communities will benefit from a coordinated plan backed by Sellafield Ltd and their direct suppliers. Collaboration removes time consuming replication of activities and instead focuses and targets coordinated socio-economic activity where it is really needed, for maximum effect.

74%

of our external spend on the Sellafield Ltd part of the Cumbrian Collaboration Contract was with SMEs.

Mitie PLC

Location:
Sellafield Ltd site and we have teams based at Hinton House, Risley and at LLWR

Number of employees:
631 across the Cumbrian Collaboration with 555 working on the Sellafield Ltd part of the contract

Number of apprentices:
Currently 13

www.mitie.com/documents/sustainability/sustainability-cr-reports/sustainability-report-2015.pdf

New approaches deliver benefits

The G6 ethos is helping to accelerate delivery at Sellafield with two project teams seeing first-hand how collaboration and new thinking can help them to decommission one of the site's priority clean-up projects, the Pile Fuel Storage Pond.

The pond and an adjoining decanning building provided storage and cooling facilities for irradiated fuel and isotopes from the two Windscale pile reactors. It processed 2,100 tonnes of pile fuel and 300 tonnes of Magnox fuel.

It stands at 100 metres long, 25 metres wide and seven metres deep, containing more than 15 million litres of water, more than 300m^3 of sludge, various nuclear wastes and legacy spent nuclear fuel. For more information on the pond, see our In Focus feature on page 16.

By applying the G6 approach, the team charged with removing canned fuel from the pond, and the team responsible for treating the sludge retrieved from the pond are on track to reduce risk and deliver efficiencies.

Retrieving canned fuel

Canned fuel is one of the highest hazards in the pond, so its safe retrieval is a key step in the clean-up of the legacy building. The team put infrastructure in place to be able to remove the canned fuel and transfer it a modern pond on site for safe storage.

Issues with a shield door within the pond, where the wheels of the door became stuck, threatened to create a three month delay in the retrievals programme.

The team engaged G6 to discuss the risk implications of progressing despite the issue with the shield door, versus the risk implications of leaving the canned fuel in the legacy pond. After detailed risk assessments and discussions, the group agreed that retrievals could continue as scheduled.

Sellafield Ltd's Rex Strong explained: "The project was made possible by a change of thinking and behaviours within Sellafield Ltd. The team challenged the 'norms' of 'the possible' within the pond and were part of genuine cross-programme working within Sellafield Ltd to find a fit for purpose answer in the best interest of hazard and risk reduction. The G6 approach was mirrored by NDA and energetically enabled by ONR and EA."

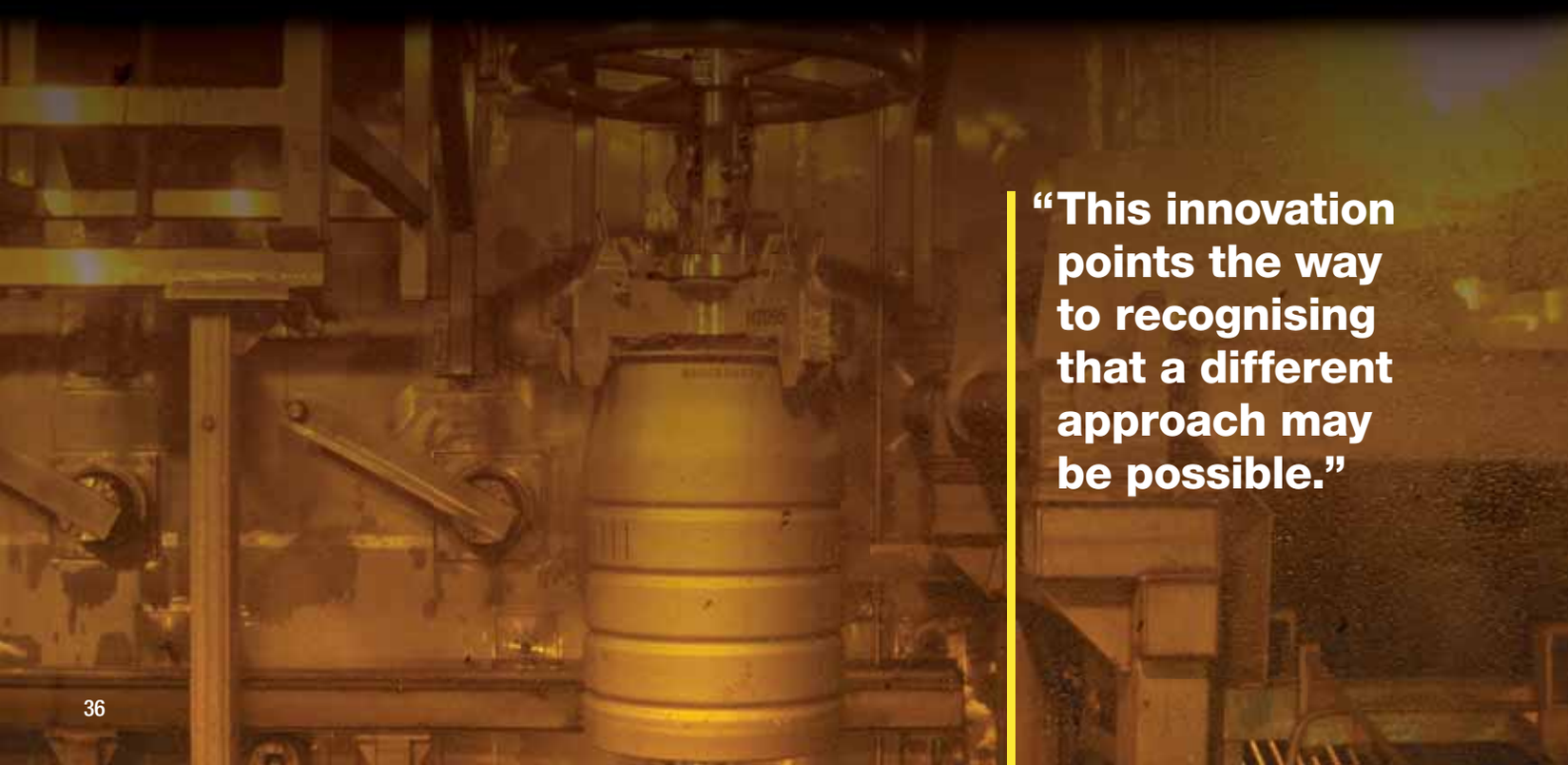
Sludge retrieval

The original plan for managing sludge (which is classed as intermediate level waste) retrieved from the pond was to treat and store it in a new waste facility, at a cost of £80m.

With the G6 ethos in mind, engineers from an existing intermediate level waste plant – the Waste Encapsulation Plant – and from the Pile Fuel Storage Pond demonstrated that they could make modifications to the Waste Encapsulation Plant so that it could treat the sludge, negating the need for a purpose built facility.

Rex explained: "This innovation points the way to recognising that a different approach may be possible; doing the work necessary to translate a bright idea into a practical system whilst protecting capability to meet existing commitments; developing options for making better use of assets, both plant and people; and allowing earlier hazard and risk reduction whilst reducing the financial burden on the taxpayer."

G6 brings together Sellafield Ltd, the Nuclear Decommissioning Authority, the Department of Energy and Climate Change, the office for nuclear regulation, Shareholder Executive, and the Environment Agency. Their aim is to work collaboratively to safely and securely accelerate risk and hazard reduction at Sellafield.



"This innovation points the way to recognising that a different approach may be possible."

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A

B

SOMETIMES WE HAVE TO BUILD BEFORE WE CAN DEMOLISH

C

D

THE SELLAFIELD SITE IS A HIVE OF CONSTRUCTION ACTIVITY, WHICH MIGHT SEEM STRANGE FOR A SITE WITH A CLEAN-UP MISSION, BUT SOMETIMES WE NEED TO BUILD NEW FACILITIES BEFORE WE CAN BRING OLD ONES DOWN.

That is exactly the case with the construction of our new Separation Area Ventilation stack which, once complete will allow us to demolish one of the oldest stacks on the sellafield skyline. Most of what is discharged from our stacks is process steam and heat, but aerial effluent discharges under strict license from the Environment Agency are also dispersed. They are tall so that the discharges are diluted and dispersed to ensure there is no impact on the local community or environment, and of course they are all filtered and monitored for belt and braces purposes.

SEPARATION AREA VENTILATION STACK

Work on the replacement Separation Area Ventilation stack started in 2010 with the installation of a new electrical substation and it's been a complex project to build a new 123 metre high stack, a new modern plant building and to route new pipebridges across the busiest part of the Sellafield site linking up the many plants, stores and process buildings.

It has been designed to provide a ventilation service for at least 100 years, which will hopefully see the legacy Sellafield buildings safely decommissioned and demolished.

The stack is supported by reinforced concrete piles driven many metres into the bedrock to hold the stack steady against the wild West Cumbrian winds and in the extremely unlikely event that there is an earthquake. On top of the working piles sits the enormous pile cap, which is a reinforced concrete raft.

It was built using a continuous slip forming process which was essentially a circular concrete shutter housed on the slip form rig, used as the working platform for the construction teams. It took 32 days of working 24 hours a day, seven days a week, to reach its full height and was continuously raised up via a hydraulic jacking system to build the stack's concrete windshield.

Steel support floors and access ladders were then fitted inside the stack's windshield. Then the six ventilation flues or ducts as they're known were winched up inside the stack – so it's not just one effluent stream but ductwork for six flue systems that you can see just popping out the top of the stack.

The three-storey-high plant room contains the state-of-the-art control room, filters and the fan room. New duct work and pipework is being fitted to connect the plant to the various donor plants as they're called. A pipebridge has been squeezed in across the separation area of Sellafield – which sees old and new buildings sitting cheek by jowl – and will be tied-in to the new stack for the aerial effluents discharges.

It's been a very challenging project because there are so many different plants involved which need to be connected into Separation Area Ventilation, whilst at the same time still discharging out of the two old stacks. These buildings will eventually be isolated from the old stacks when the new one comes on line, to allow the old chimneys to be demolished.

PRIMARY SEPARATION PLANT STACK

Once the new Separation Area Ventilation plant is operational, it will be time for the current chimney to come down. Given its location – both within site and on top of the former Primary Separation Plant – means that we have to think about this task differently to, say, the demolition of the Calder Hall cooling towers, with no explosives allowed.

This means we'll be demolishing the chimney metre by metre. With 61 metres of chimney stack to remove, that's a lot of concrete.

Work has already commenced on preparations, and we've recently installed a temporary external passenger and goods lift to the side of the building and a further lift will be attached to the stack, to help with this painstaking work.

An additional self-climbing platform will help remove the 600 tonnes of concrete and rebar, and over 25 tonnes of stainless steel flue that make up the huge structure.

However, even the installation and movement of this platform will not be without its own challenges. The tapered chimney increases in diameter as you get to the bottom of the stack, so the platform is required to increase in size correspondingly. To test the approach, a mini-replica of the chimney has been built.

This method of demolition is tried and tested – the iconic Battersea Power Station chimneys were recently demolished using the same approach, which will see the tower "eaten" by hydraulic jaws attached to a circular working rig at the top of the chimney.

As the rubble cannot be allowed to fall to the ground or inside the stack, it will then be transported down the lift in small containers – a meticulous and time consuming task.

The internal metal flue, when exposed, will be cut using plasma arc size reduction and lowered to the base for monitoring before disposal.

Steve Slater, head of decommissioning, said: "Demolishing this chimney will represent a very visual demonstration of our commitment to tackling one of the most guarded parts of Sellafield's legacy."

The demolition will reduce the size of the chimney by around a metre a week. The physical demolition work will start once the new stack is fully operational.

The project has been a number of years in development, to ensure it takes place as safely and effectively as possible. Nuvia Ltd has been employed to carry out the work, with the specialist skills of a number of other contractors including Delta Steeplejacks also being called upon. ■

A. Historic image of the First Generation Reprocessing Plant

B. A laser image of the inside of the First Generation Reprocessing Plant

C. Before we can take down an old Ventilation Stack...

D. ...we need to complete the installation of a new one

"This method of demolition is tried and tested – the iconic Battersea Power Station chimneys were recently demolished using the same approach, which will see the tower "eaten" by hydraulic jaws attached to a circular working rig at the top of the chimney."

Delivering security improvements

As a bustling site with more than a thousand different buildings, almost fifty nuclear facilities and around a dozen major construction plants, we receive hundreds of deliveries every single working day.

In fact, the current arrangements often create a rush for the gate at opening time, so that deliveries can be processed as quickly as possible. This can lead to traffic congestions and long delays. We've even seen extreme examples where, due to demand for escorts, a vehicle has been out of tachograph time before they've been granted access to the site, and know of courier companies who refuse to deliver to Sellafield.

Over the coming years, as we intensify our decommissioning work, more plants will move from the drawing board into construction. This can only mean that the number of deliveries we receive is going to increase significantly.

As a consequence, our current delivery arrangements are no longer fit for purpose, and are soon to be replaced by a new system.

From January 2016, all deliveries to our West Cumbrian sites will need to be booked via a delivery management system (DMS). This system is designed to bring order to the current chaotic arrangements, by providing visibility of expected deliveries and improvements for those delivering – through less queuing and congestion.

The type of system we're using is typical of big businesses and industrial sites, and will be familiar to some of our suppliers. It has been designed to be quick and easy to use, so that booking a delivery does not become an inconvenience.

Once the process is fully operational, deliveries that do not need to go direct to the Sellafield site will instead be directed to our new security and distribution centre, near Workington. There, the items will be security-screened and consolidated for onward delivery to the site.

Deliveries that need to go to direct to the Sellafield site will be allocated a timeslot by the DMS, based upon the specific requirements of the delivery. This should see an end to the long waits and queues for access – which makes life better for everyone.

Delivering goods to the Sellafield site can be a frustrating task – for both Sellafield Ltd, and those who have to do it.

We've been working with our suppliers, contractors and couriers to ensure they're aware of the changes and understand what they will need to do differently. However, if you think you'll be affected by the changes and would like to know more, please take a look at the information on the supplier pages of our website:

suppliers.sellafieldsites.com or email: **controltower@sellafieldsites.com**

JOB SWAP

Sellafield Ltd Media Officer, Megan Savage swaps roles with Rupert Lewis, Communications Executive at the Nuclear Industry Association

MEGAN SAVAGE

When the idea of a job swap between Rupert and I was first put on the table I was over the moon. I recognised that it would be an opportunity for me to grow both personally and professionally so I jumped at the chance of being part of the NIA for a week.

The week lived up to all of my expectations and introduced me to a new side of communicating about the nuclear industry – new build. At Sellafield Ltd our focus is solely on the safe decommissioning of the existing nuclear legacy, but as part of the NIA I extended my understanding of nuclear new build and talked about Small Medium Reactors in the House of Commons.

My time in London also coincided with the announcement that EDF Energy had taken another step towards building the first new nuclear power station in a generation, reaching a financial and industrial agreement with its investors.

As the first new nuclear power station to be built in a generation and the first to be built without state funding, it was a big day for the UK's nuclear industry and, as the trade association and representative voice of Britain's civil nuclear industry, the NIA were right in the thick of it. Sara Crane, NIA's PR and Media Manager was receiving media requests left, right and centre.

I was over the moon when Sara suggested I accompany the NIA's Chief Executive, Keith Parker, to an interview with BBC 5 live. After a brisk walk we arrived at the studio. If you've ever watched the Newsroom, you'll be able to picture exactly what the studio looks like; a hive of activity, with journalists working furiously away at their computers while various televisions broadcast news from around the globe. It was a busy day for Keith; after being interviewed by Peter Allen on 5 live he then appeared on Sky News in the evening.

One of the best parts of the week was being able to spend time with Sara. An inspiring individual, Sara is someone I feel I can relate to and gain a lot from. As a young female at the start of the career ladder, she gave me a lot of useful advice which I can use to go forward and mould my own future.

I believe the opportunity has opened my horizons, given me a greater knowledge of the wider nuclear industry and helped me gain more confidence and skills, which will help my personal development as a communicator for the nuclear industry.

The swap has also been beneficial for our companies retrospectively too. Rupert and I have been able to transfer knowledge and build a stronger relationship between Sellafield Ltd and the NIA, so together we can promote a better understanding of the nuclear industry in the public, media and political spheres.

"Sellafield is a series of enormous projects and the size of the task in hand is daunting but progress on site was plain to see."

RUPERT LEWIS

There is not much to compare with London and Sellafield. Grey block buildings and smog versus rolling hills and clean air; a sea of retail chains and grumpy faces up against independent shops and cheerful smiles. In fact when I put it like that I'm not sure why I came back!

Moving up to Cockermouth and immersing myself in the Sellafield machine was an opportunity I was desperate not to miss. The whole experience gave me the chance to join a proactive media team working incredibly hard to change the perception of Europe's most hazardous site. Fresh off the back of the incredibly successful Jim Al-Khalili 'Inside Sellafield' documentary, the media and wider communications team are working to 'open' Sellafield and showcase the unbelievable work which has been kept hidden for so long.

On a tour of the site, I witnessed first-hand how Sellafield workers and its contractors are working on clean-up. Both driving and walking around the vast complex it was immediately apparent how seriously each individual takes their work and how proud they are to be working at Sellafield. From the security guard, Lois Holman (my excellent tour guide), the apprentices, receptionists, engineers and the poor lady who did her very best to make me look vaguely normal (see opposite) – the pride and thrill to be at work was written on all of their faces.

Sellafield is a series of enormous projects and the size of the task in hand is daunting but progress on site was plain to see. If you work in the nuclear industry and haven't been to the site I would certainly recommend a visit. It was fascinating, exciting and also slightly scary – not quite in equal measure! In fact I did two site visits over the course of the week, the second with local MP John Woodcock.

Presenting the Sellafield mission to political decision-makers and the public is a crucial exercise. John Woodcock was clearly impressed with the hive of activity on the site and was particularly interested in the scale of the apprenticeship programme, in particular the female intake which is over 30% – an industry record.

Other activities during the week included two awards events with the added bonus of complementary food and drink. The Cumbrian Business Awards gave me the opportunity to escape the Sellafield nuclear bubble for an evening and sit next to creator of 'Chimney Sheep', a brand I still haven't fully grasped… The other was Sellafield's apprenticeship graduation ceremony. The company has an award-winning apprenticeship scheme and after spending an afternoon with a handful of them, it was obvious why. All of them were supremely confident and desperate to begin their careers as newly qualified nuclear professionals.

Ultimately witnessing first-hand how complex the various challenges are at Sellafield and how important the nuclear industry is to Cumbria was brilliant. The nuclear-powered culture was evident from day one and I learnt an enormous amount about how media forms an integral part of the overall strategy for a business.

I would like to say a huge thank you to Ruth Hutchison, Matt Legg and Darren Ennis, primarily for putting up with me without complaining and for taking time out to make me feel so welcome all week. The thank you must also be extended to the rest of the Sellafield team who helped me, and to Cockermouth's local boozers for keeping me entertained in the evenings!

"We have been able to transfer knowledge between Sellafield Ltd and the NIA and ensure we continue to work together on promoting a better understanding of the nuclear industry in the public, media and political spheres."

Delivering the performance plan

DOWNLOAD
To download a copy of the performance plan visit www.sellafieldsites.com/press/performance-plan/

LATEST NEWS
To keep up to date with our performance, visit www.sellafieldsites.com/news or www.nda.gov.uk/what-we-do/our-priorities-and-progress

In December 2014, the Nuclear Decommissioning Authority (NDA) accepted our new performance plan for Sellafield Ltd.

The plan, which was published in March 2015, sets out the work that needs to be done on the nuclear site, and when over the coming decades. Every financial year we agree specific targets with the NDA which align to the overall performance plan and against which our performance is measured.

The tables on the opposite page set out how we're performing against our 2015/16 targets at the end of July 2016.

1947	2 square miles	>100	631,000 tonnes	258 GWh
Construction of the nuclear facilities commenced	Area of Sellafield site	No of nuclear buildings	Sellafield site steam usage 2014/15	Sellafield site electricity consumption 2014/15

Key information and data 2014/15

Key Milestones

Programme Area/Milestone	Early PP14 P0 Date	PP14 P50 Date	Late PP14 P80 Date	Operating Plan Target Date	P50 Forecast @Q2 FY15/16
First Generation Reprocessing Plant					
SAV – Active commissioning complete		Jun-16			Feb-16
Pile Fuel Storage Pond					
Completion of export & treatment of all canned fuel		Mar-16		Oct-15	Oct-15 – Complete
Completion of metal fuel retrievals	Dec-16	Aug-17	Feb-18		Aug-17
First Generation Magnox Storage Pond					
Commence bulk sludge retrievals	Jul-15	Apr-16	Jul-16		Jan-16
Commence fuel removal through export facility	Nov-15	Apr-16	Nov-16		Mar-16
Magnox Swarf Storage Silo					
SEP2 – Installation mid point achieved		Feb-16		Feb-16	Feb-16
SEP2 – Ready to commence retrievals	Jun-17	Nov-17	Mar-18		Jan-18
BEP – Start of Operations	Nov-18	Dec-19	Jan-21		Dec-19
Pile Fuel Cladding Silo					
5 off silo doors manufactured & testing of 2 doors complete		Mar-16		Feb-16	Feb-16
BEPPS/DIF – Ready to commence active commissioning	Sep-18	May-19	Mar-20		May-19
HAL					
Evap D – Ready to commence active commissioning	Mar-16	Apr-16	Aug-16		Feb-17
Magnox Reprocessing					
Complete all Magnox reprocessing	Jun-19	Dec-19	Jul-20		Dec-19
THORP Reprocessing					
Reprocess remaining contracted fuel	Nov-18	Nov-18	Mar-19		Nov-18
Security & Resilience					
Completion of HSA1		Apr-16		Mar-16	Mar-16
MSCF – Detailed design complete		Apr-16		Mar-16	Aug-16
MSCF – Commissioning complete	May-17	Mar-18	Aug-18		Aug-18

Note: Ranges provided where relevant.

Key Production Metrics

		Actuals	Actuals	Forecast	PP14 Baseline Assumption			Operating Plan Targets		
		14/15	Q2 FYTD 15/16	YE 15/16	15/16	16/17	17/18	15/16	16/17	17/18
Magnox	FHP Decanning (teU)	523	162	477	520	420	520	477	485	510
	Magnox Fuel Receipts (teU)	446	210	409	520	420	520	520	420	520
	AGR Fuel Receipts (teU)	191	77	192	178	183	183	192	192	192
THORP	Thorp HE Shear (teU)	386	134	435	434	389	450	434	389	450
	TR&S – MEB Removals	105	55	104	104	152	140	104	151	121
	SPRS Transfers	775	313	732	618	628	780	618	630	632
HLWP	WVP (hazard reduction teU)	1,503	739	1,205	1,297	1,130	1,279	1,202	1,130	1,279
Waste	CHILW Drum Transfers	1,102	246	481	1,632	0	0	475	583	180

Major Procurements Planned

Procurement Scope	Estimated Value	Contract Planned Date
Decommissioning Delivery Partner	£1bn	Dec-15
Supply of stainless steel boxes for ILW retrievals	£1bn	Jun-2015 – Complete
Supply of ASWs	£351m	Jun-2015 – Complete
Cranes	£200m	Nov-15
Tanks & Vessels	£100m	Apr-16
Shield Doors	£80m	Apr-16
Maintenance, Repair & Operation of Engineering Consumables	£65m	Jan-16
Security Fencing	£40m	Jan-16

All Capital Projects

Top 10 by Value (P50 £m; 2015mv)	Total Planned Costs To Go	15/16	16/17	17/18
Silos Direct Encapsulation Plant	2,412	97	120	157
Pile Fuel Cladding Silo Retrievals & Treatment	492	54	84	77
SEP Solid Waste Storage Retrievals	454	85	83	77
Box Encapsulation Plant	450	64	107	88
BEPPS/DIF	248	49	67	58
SPRS Retreatment	237	10	14	17
Security Systems Architecture Upgrade	229	13	67	87
Silo Maintenance Facility	153	51	43	30
Bulk Sludge & Fuel Retrievals Capability	92	36	22	16
Sellafield Security Control Facility	49	12	16	20
Total	**4,816**	**471**	**623**	**628**

Paul Dicks

Principal Inspector from the ONR Sellafield Programme, explains how ONR regulates Sellafield to ensure it operates in a safe and secure manner while continuing to facilitate accelerated hazard and risk reduction.

The Office for Nuclear Regulation (ONR) is one of Sellafield Ltd's key regulators – independently enforcing relevant nuclear, health and safety, security and radioactive materials transportation legislation across 37 nuclear licensed sites.

Its mission is 'to provide efficient and effective regulation of the nuclear industry, holding it to account on behalf of the public'.

WHY IS HAZARD AND RISK REDUCTION AT SELLAFIELD ONR'S KEY PRIORITY?

Some of the legacy facilities at Sellafield are very old, do not meet modern standards and their condition will not improve with age. The site therefore presents some unique challenges that need to be addressed quickly and safely. This is both a national priority and ONR's number one regulatory priority.

HOW IS SELLAFIELD REGULATED BY ONR?

Due to the unique challenges posed by Sellafield, an innovative regulatory strategy was developed by ONR in 2014. The strategy aims to safely facilitate and encourage hazard and risk remediation whilst maintaining adequate regulatory control. This means looking at the bigger picture and prioritising activities, concentrating efforts on those facilities and processes which most need improvement, and ensuring a 'fit-for-purpose' approach is adopted.

ONR's Sellafield Programme, led by Andy Lindley, is divided into two sub-programmes. One, led by Anthony Hart, focuses on routine inspection activities, ensuring the site continues to meet its legal requirements without resorting to over-engineering or complex processes.

The other sub-programme, led by Vik Winspear-Roberts, very much focuses on facilitating accelerated risk and hazard reduction, and engages with Sellafield's priority programmes to encourage the site to think and act differently about the way it works in order to safely deliver projects sooner and more efficiently.

ONR's strategy has been supported by the creation of the 'G6' – a group of six key organisations with the common purpose of accelerating hazard and risk reduction. The group is made up of ONR, Sellafield Ltd, Nuclear Decommissioning Authority, Department of Energy and Climate Change, Shareholder Executive and Environment Agency, all of whom have a common interest in driving progress on the site.

The establishment of G6 represents an acknowledgement that better co-ordination between decision makers could deliver mutually beneficial results, especially in terms of accelerated hazard and risk reduction. Although ONR is an independent regulator that applies a robust regulatory discipline on the Sellafield site, each organisation has been working to better align their interventions at Sellafield to ensure that they are not distracting the site from this common purpose.

WHO CARRIES OUT ONR'S INSPECTIONS?

The Sellafield site has two nominated ONR site inspectors, myself and Gordon Newsholme, who are the primary points of contact for the site, but the ONR Sellafield programme consists of dedicated site, project and specialist inspectors. A project or site inspector will typically spend 3 to 5 days per month at the site conducting a range of interventions with various Sellafield staff:

- ONR inspections aim to gather intelligence in a structured way about the licensees' safety and security performance. This is achieved through direct first-hand observation of plant, procedures and work activities, follow up of events and incidents, witnessing demonstration exercises and questioning staff on the site. Compliance inspections focus on checking licensee compliance with the nuclear site licence conditions and by enforcing other safety legislation for which ONR is the statutory regulator. Where an operator's safety standards fall short of what is required by law, ONR will implement an enforcement response which is proportionate to the degree of shortfall. ONR generally seeks to bring about safety improvements through a persuasive and influencing approach.
- ONR specialist inspectors provide expert assessment and advice in support of project and site inspectors, enabling ONR to reach independent and informed judgements on the adequacy of nuclear safety cases and to underpin our application of the regulatory regime. Before ONR can permission key activities we assess licensee safety cases, on a sample basis according to potential consequences, to ensure that the hazards have been understood and are properly controlled.

WHAT REPORTS ARE PRODUCED BY ONR ABOUT SELLAFIELD?

Project Assessment Reports are documents that explain our key regulatory decisions. ONR aims to be open and transparent in its work as far as possible and we wish to help all of our stakeholders, including the public, understand and engage with us about it.

Since April 2010, we have published PARs online. These can be found at http://www.onr.org.uk/pars/index.htm

Intervention records are written by our inspectors following visits to the sites we regulate. They are used to record findings and, if appropriate, any significant actions we require the site operator to carry out. These can be found at http://www.onr.org.uk/intervention-records/index.htm

Site Stakeholder Group Reports are issued as part of the commitment to making information available about inspection and regulatory activities. Sellafield activities are scrutinised by a local stakeholder group – the West Cumbria Sites Stakeholder Group (WCSSG) – that includes local authorities, trade unions, interested local groups and members of the public. The reports for WCSSG are distributed to members of the committees and cover activities associated with the regulation at the Sellafield site. ONR attend the WCSSG meetings and report on any regulatory actions taken and respond to any questions raised there.

WHAT'S NEXT?

The new strategy and the G6 approach have so far generated huge momentum at the site.

Spring 2015 saw the removal of sludges from one of the legacy ponds into the new Sludge Packaging Plant. This was a huge step forward in the UK's nuclear decommissioning programme.

A key highlight in October was the removal of the last "canned fuel" from the site's oldest nuclear fuel pond. The milestone was achieved at The Pile Fuel Storage Pond which is one of four high hazard facilities prioritised for clean-up. It needs to have its contents removed so it can be dewatered and decommissioned.

Another major waste retrievals project now under way is at the Magnox Swarf Storage Silo – a legacy facility that represents one of the largest hazards on the Sellafield site. The first silo emptying machine has arrived on site and we look forward to further progress being made at this facility.

Looking forward we are keen to see progress at the Pile Fuel Cladding Silo when preparation work begins at this facility in early 2016. ■

ONR Office for Nuclear Regulation

Paul Howarth interview

"Cumbria can be to nuclear what Saudi Arabia is to oil"

Cumbria is already the Centre of Nuclear Excellence.

We are not trying to build something new from scratch. The UK's nuclear industry was literally created here and today it is the epicentre of the country's expertise. Within a very concentrated space we have the country's nuclear clean-up priority, Sellafield, the centre of its nuclear research and development programme at the national nuclear laboratory, and its nuclear low-level waste capability and repository. The new nuclear reactors on the Moorside site next to Sellafield will see the county once again contributing nuclear energy to the national grid.

Very few places in the world can match our skills and capabilities when it comes to nuclear.

There are very good reasons why the majority of Government departments and bodies are located in London. Yet the Nuclear Decommissioning Authority – the body responsible for the clean-up of the existing civil nuclear industry across England, Wales and Scotland – is based in Cumbria. It is also home to the headquarters of Direct Rail Services who manage all UK nuclear rail transports, and International Nuclear Services who are responsible for international nuclear contracts and transports. Add to that the depth and breadth of our supply chain and we really are in an enviable position.

This isn't just about managing what we already have. Cumbria can lead on the UK's desire to once again be a top table nuclear player.

The country has recognised that nuclear has to be a key part of the UK's future energy mix and I am delighted that we are seeing plans to build the next generation of nuclear reactors gathering pace. But the industry needs more than just reactors. We have to think about what technology is needed to deploy nuclear spent fuel cycle? Where will fuel for the reactors be made? What will happen to it when it comes out of the reactor? Where will the nuclear waste be managed? When they get to the end of their operating life, who will have unrivalled experience that could help to decommission the reactors? When you look at what is needed for nuclear, Cumbria already ticks most of the boxes in terms of skills, experience and expertise, and we must not lose the know-how of Sellafield in front and back end services.

CENTRE OF
NUCLEAR
EXCELLENCE

This was the bold claim made by the newly appointed chair of the Centre of Nuclear Excellence, Paul Howarth, when he spoke at the Nuclear Energy and Business Opportunities Conference in October.

We sat down with him to explore what makes Cumbria the UK's Centre of Nuclear Excellence; why nuclear is so important; and is he really confident that the north-west of England can emulate the success of Saudi Arabia?

Everyone is ready and willing to push in the same direction.

There are many organisations working in the Centre of Nuclear Excellence and some of us were once part of a single organisation – British Nuclear Fuels. The break-up of the monolithic organisation inevitably led to a certain amount of fragmentation in the industry as organisations sought to establish themselves in their own right. What I am really excited about now is seeing first hand that these organisations are ready and willing to align once again. We are operating our own organisations and delivering our own missions, while recognising that our issues are bigger than any single organisation can overcome and that the opportunities are bigger than any single organisation can capture. We can, and we are, standing together with a single voice in order to promote the UK's nuclear capability on the global stage.

The Centre of Nuclear Excellence isn't an exclusive club.

The spectrum of organisations involved in the Centre of Nuclear Excellence includes multi-million pound site operating companies, big supply chain players, and small to medium sized enterprises. I want to see that participation stretch even further, from multi-nationals to local shop keepers. We all have a part to play in making this area the go-to place for nuclear expertise. I want people to think of Cumbria when they think of nuclear, just as people think of Silicon Valley when they think about cutting edge technology or Saudi Arabia when they think of oil.

The community is at the very heart of the Centre of Nuclear Excellence.

World class people follow world class projects, there is a gravitational pull that draws the best to the best, and I want to see that happen in Cumbria. The industry will continue to provide opportunities for people who already live here, but by positioning ourselves as world leaders we can attract even more people to the area. Those people will need houses, schools, shops, car dealerships, entertainment, and more, which in turn raises the offering that the area makes and provides a bigger pull to the area.

If I wasn't confident in our chances of success, I wouldn't waste my time.

As the managing director of the National Nuclear Laboratory I already have a demanding, challenging and rewarding full time job. I see real potential in Cumbria's future, not only in supporting the UK but in becoming the hub of international and even global expertise. That is why I and others are finding the time, making the time, to make sure that Cumbria is recognised as the power behind the northern powerhouse.

Dave Polkey, Head of Atkins Whitehaven office

Atkins

As part of Atkins Global our sustainability principles are based around three key themes: a society for our future, an environment with a future, and a responsible business of the future. Locally, as we grow and embed our business in the area, our commitment is to improve the outlook for the people, communities and businesses of West Cumbria.

Young people are the lifeblood of our organisation and of any thriving community. Investment in skills, training and youth employment aren't just good for the people involved or the community, it also makes good business sense. It is the right thing to do. I am proud to say that apprenticeship and graduate schemes account for approximately 10% of our annual recruitment. Helping to raise the aspirations of young people and to making opportunities easily accessible underpins our model for business growth, and it is our intention to build on our current commitment to youth employment as the business develops.

I am also delighted that we have based our North West operations in West Cumbria. Our regional office is a bricks-and-mortar demonstration of our commitment to growth and establishing ourselves as a key part of the area's engineering community, providing opportunities for local talent and support for the local community.

We consider ourselves to be part of West Cumbria which is why we are keen to ensure that the Atkins socio-economic strategy is aligned to that of our customers, stakeholders and supply chain colleagues. Having an agreed set of priorities and adopting a collaborative approach across the business community will avoid overkill in some areas, will flag up any gaps and will inevitably have a greater positive impact. We can achieve more together than we can individually.

~10%

of our annual recruitment is apprenticeship and graduate schemes

Atkins

Location in Cumbria: Whitehaven

Number of employees: ~95

Number of graduates: 7

Number of apprentices: 9

www.atkinsglobal.com/en-GB/corporate-sustainability

Sellafield set the pace for medical science

It is often forgotten how much of the pioneering work at Sellafield during its early years supported peaceful uses and created health advantages.

Radiation has many uses outside of the nuclear industry and has brought many benefits to medicine over the decades.

The most well-known medical uses of radiation are X-rays, scans, radiotherapy for the treatment of serious diseases, sterilisation of medical supplies and medical waste.

Sellafield historically provided isotopes for lifesaving cancer treatment (radiotherapy) but one of the site's most significant contributions to modern science was the supply of plutonium to power pacemakers.

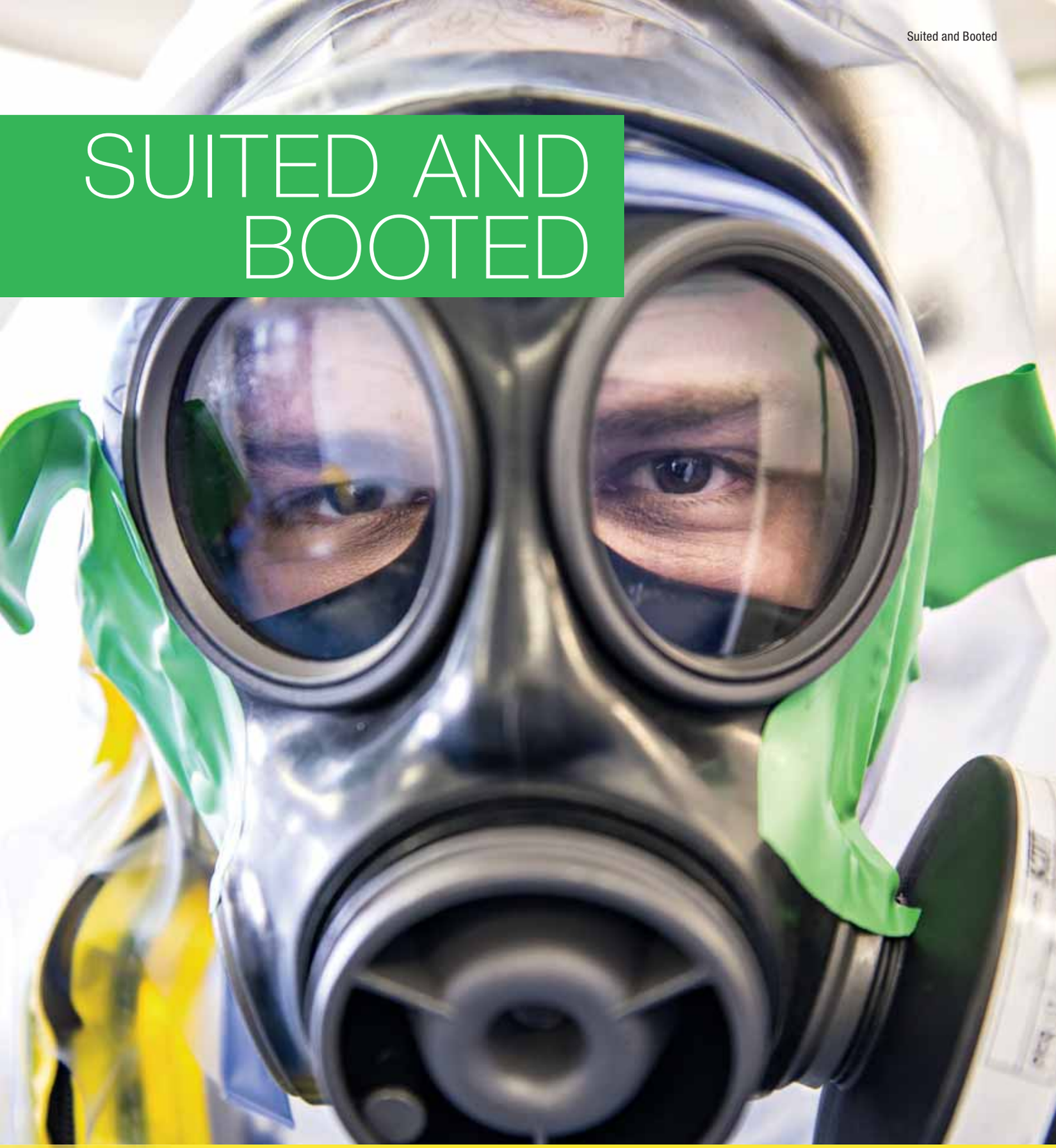
A laboratory on the site produced plutonium-238 – a radioactive material that has various peaceful uses due to its natural decay rate and less harmful properties – for the Department of Health, from 1974 until 1978.

Short battery life was proving to be a problem in the early days of pacemaker technology, until nuclear pioneers discovered a new type of battery powered by plutonium-238 that would make them last 20 years.

In 1970 the first nuclear-powered pacemaker was implanted and some went on to last more than 25 years, a feat that traditionally powered pacemakers could not achieve.

Now forty years on, a new robotic 'Raptor' arm is being used to empty the contaminated lab without the need for direct human intervention.

SUITED AND BOOTED



WORKING ON THE SELLAFIELD SITE CAN OFTEN BE DIFFERENT TO OTHER ENVIRONMENTS – EVEN OTHER INDUSTRIAL SITES. AS NUCLEAR PROFESSIONALS, WE CAN HAVE DIFFERENT SAFETY STANDARDS AND PROCEDURES TO THOSE FOUND ELSEWHERE. GIVEN THE WORK WE DO, AND THE ASSETS WE'RE PROTECTING, THIS IS A SENSIBLE APPROACH...

SUITED AND BOOTED

This approach means we're always keen to ensure people have the right tools for the job, the right training to use these, and know exactly what they're going to be doing.

One such example is in the use of PVC suits for tasks in environments where there could be contamination from radioactive particles. In such instances, personal protective equipment (PPE) such as the PVC suit act as the last line of defence, so it's crucial that they do their job properly.

BEFORE

The process to be given authorisation to wear a PVC suit to carry out work is a robust one, and I must admit I was daunted at first by the range of kit laid out in front of me and the process I knew I'd have to go through.

It was explained to me that the process starts with the training need being identified. This is followed by some pre-course training including a respirator fit test, which ensures that you get the right size respirator mask to wear with the suit.

Only once these steps are completed can you undergo the training to wear the suit.

This procedure can be a tricky one, especially for someone who hasn't undertaken it before, but for those who wear the suits regularly, it can quickly become second nature. The principle behind it is that there are layers of protection (for example, the user will wear three pairs of gloves once fully clothed), with all seals secured with tape.

The time taken to dress and undress from a PVC suit varies, but it can easily add ten or fifteen minutes onto a task for someone who infrequently does it. It is both surreal and reassuring to be taped into your outfit using green electrical tape!

After this training course, those who will then use a PVC suit for their role must undergo a medical to ensure they're fit enough to do so, in the circumstances they would use it. It is only at this stage that someone would be authorised to wear the suit.

GIVEN THAT THE SUIT IS DESIGNED TO STOP ANY CONTAMINATED PARTICLES TOUCHING YOUR BODY OR CLOTHES, IT IS CLEARLY IMPORTANT THAT THOSE WEARING ONE KNOW THE CORRECT PROCEDURE FOR PUTTING IT ON AND TAKING IT OFF.

The finished outfit has a look of Breaking Bad, and might feel strange for some, but the training and preparations for those who wear it help ensure the process feels natural – well as wearing kilos of PVC and breathing apparatus can feel.

I was conscious in trying the outfit on that this was a rare and surreal experience for me – people who are

Ian Curwen from stakeholder relations

We sent Ian Curwen from stakeholder relations to find out what wearing such a suit is like...

AFTER

required to wear PVC suits for their roles will have the training outlined in this article prior to touching a suit. Whilst I didn't undertake the medical and full training, I did ensure I was clean shaven, as those who wear the suits for work must be.

However, despite all of this, I found wearing the suit to be more natural than I imagined. In fact, it was reassuring to see the work that goes into training people to wear the suits, and the care taken to ensure the kit and procedures are suitable."

We also spoke to someone who wears this PPE for their role. Jeff Hailes, who is a team leader in the Magnox Reprocessing Plant said:

"I wear PVC and other PPE on a regular basis, and have no issues with this. We know the kit is robust and the tried and tested methods we used to put them on ensures that there very few contamination issues. The environment we work in can be tough – with temperatures in some areas up to 35 degrees – so it's good to know the kit you're wearing does the job. On top of this we hear clear rules on how long someone wearing the kit can work for, and the breaks they must have. These also help ensure that the job is done safely."

(continued)

THE PVC SUIT PROCESS

1. Training need is identified

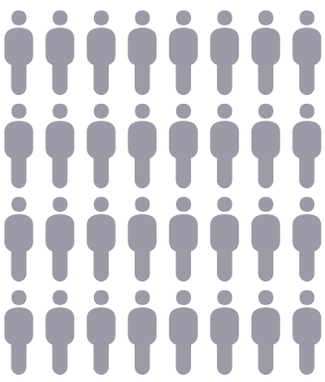
2. Pre course training including a respirator fit test and being a monitored worker

3. PVC suit training course

4. Medical

5. Plant specific training

SUIT FACTS



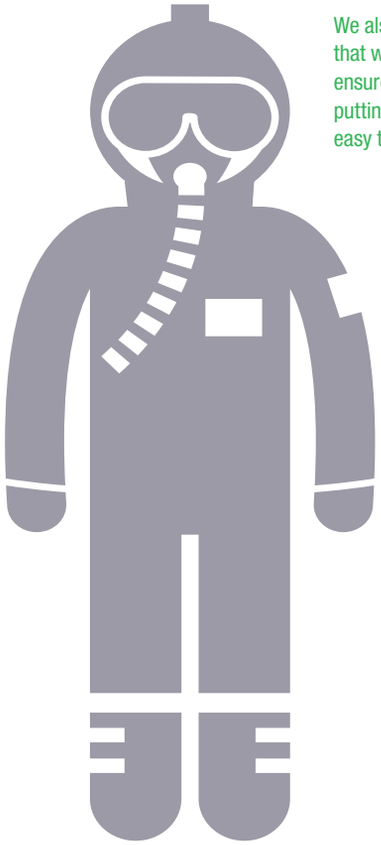
32
A WEEK

1,500+
A YEAR

Thirty-two people undergo this training each week, which means that more than 1,500 people are trained in a year.

2H 30M

It is a two and a half hour course, and this is then followed, if appropriate, with on plant and in role training.



We also work with those that wear the suits to ensure the procedure for putting it on works and is easy to follow

- We work closely with the manufacturers to ensure the suits are fit for purpose (they were recently redesigned from a two piece outfit to an all in one suit).
- In addition to the PVC suits, we also have a range of other bespoke outfits for employees and contractors to wear. These range from the 'basics' that people on plant wear to pressurised air-fed suits and many more in between. All are designed with specific tasks in mind and to ensure nuclear safety is not compromised due to inappropriate workwear.

COULD YOU BE A GAME CHANGER FOR US

THE SELLAFIELD SITE IS UTTERLY UNIQUE, WHICH MEANS THAT AS WE WORK TO TAKE IT APART AND MAKE IT SAFE FOR FUTURE GENERATIONS, WE COME ACROSS PROBLEMS WHICH HAVE NEVER NEEDED TO BE SOLVED BEFORE.

Our expertise in finding solutions to these tricky issues is second-to-none, but sometimes even we realise we could do with some help from a fresh pair of eyes and a new viewpoint.

That is why we have linked up with Innovus, the organisation which aims to significantly increase innovation activity in Cumbria, to create the Game Changers initiative.

Game Changers offers anyone – from individuals to small companies, larger organisations or universities – the chance to come up with a solution to our problems. That could be anything from how we remotely dismantle machinery in an inaccessible place to how we work out the proportions of chemicals housed in a tank which has not been opened for decades.

On offer is **£5,000**, which the successful bidders can use to develop the idea to pitch to Sellafield Ltd. Those chosen to progress will then receive additional funding for further development of their bright idea.

To find out more about this initiative, visit the Innovus website **www.innovus.org.uk**

INNOVUS
COMMERCIALISING INNOVATIVE TECHNOLOGIES

It's not just the ownership of Sellafield Ltd that is changing from 1 April 2016

As the organisation prepares for becoming a NDA subsidiary, Chris Darwin, Sellafield Ltd lead for the Model Change, talks about how the new arrangements provide the opportunity for the organisations to work together very differently.

Chris Darwin

TRANSITION

On 1 April 2016 Sellafield Ltd will become a subsidiary of the Nuclear Decommissioning Authority, replacing the ownership of the site licence company by the private sector. The new owner-subsidiary arrangement removes the need for any commercial contract between Sellafield Ltd and the NDA, creating an opportunity for very different ways of working together. Realising a truly collaborative relationship is part of the challenge facing Chris Darwin, Sellafield Ltd lead for the Sellafield Model Change Programme.

"There are broadly three areas related to model change," Chris explains. "The first is around transferring the ownership of Sellafield Ltd shares from Nuclear Management Partners to the NDA, whilst maintaining our priority – nuclear safety and progress. The second is around creating the right kind of arrangements to support long-term improved performance at the site. It's about developing the appropriate architecture, from governance arrangements and deciding how assurance is carried out to determining how performance targets are set and measured to focus everyone's efforts on delivering the clean-up mission. We are on track for share transfer and almost at the stage of finalising the new 'model'."

"The third part of the programme is a bit trickier. It's not about structures or procedures but more around people and relationships. But we're half way there; we've created arrangements that will facilitate a step change in the way we all work together.

"The relationship between Sellafield Ltd and the NDA has for the last ten years been based on complex processes and procedures that come with any commercial contract. With that gone the focus is on strong governance and working together to achieve improved success at Sellafield.

"The organisations both have the same objective for the site – safety; accelerated hazard reduction; and value for money. These arrangements can really harness the skills and expertise of Sellafield Ltd and the NDA to help tackle the challenges of Europe's most challenging nuclear site."

Who will be responsible for what at Sellafield?

Nuclear Decommissioning Authority

- Legal owner of Sellafield Ltd and the Sellafield site
- Allocates funding to Sellafield and other civil nuclear sites in their estate
- Appoints the Chair of Sellafield Ltd
- Nominates NDA non-executive directors to the Board of Sellafield Ltd
- Sets governance and financial control frameworks
- Agrees performance targets and measures performance against Sellafield Ltd's Operating Plan

Sellafield Ltd

- Holds the Nuclear Site Licence for the Sellafield site
- Responsible for the safe and secure operation of the Sellafield site
- Directly accountable for the people, assets and liabilities under its control
- Creates and delivers the Sellafield Ltd strategy
- Creates and delivers the baseline plan for Sellafield

The **value** of decommissioning

When you're proud of something you want everyone to know about it and there's plenty for us to be proud of at Sellafield.

That's why our chief decommissioning officer, Tom Foster, jumped at the chance when he was invited to parliament to explain the progress being made at the site and the value this is bringing.

As the man with Sellafield's most important challenges in his in-tray – including the nationally-significant work to reduce hazards and risk in the site's legacy ponds and silos – Tom has more than enough going on to keep him busy in West Cumbria but understands the importance of getting out and telling the Sellafield story to a wider audience when he can.

"Demonstrating consistent delivery and ensuring value for money in every aspect of what we do is key to continued support from the public, and rightly so."

Tom joined speakers from the Nuclear Decommissioning Authority and Cavendish Nuclear on the panel of a packed session of the All Party Parliamentary Group (APPG) on Nuclear Energy to give his unique perspective on the past, present and future of Sellafield. The APPG provides a forum for parliamentarians of all colours to discuss civil nuclear energy on a cross-party basis; meeting throughout the year to encourage dialogue about every aspect of our diverse and dynamic industry.

Parliamentarians, industry representatives and members of the public heard how Sellafield has been part of the West Cumbrian community for more than seventy years and that each chapter of the site's history has seen the footprint expand and the skyline change continuously; evolving from a farm to one of the most complex nuclear sites in the world. The story of Sellafield is a story of nuclear pioneering, from its military origins to the development of civil nuclear power, its commercial operations to its current focus on clean-up and waste management. As a result Sellafield is not only unique but of central significance to the wider nuclear industry, and as relevant now as it has ever been.

But getting the job done safely and securely is only part of the story, Tom explained. We also need to gain the maximum value for what we do through the development of skills, the diversification of our supply chain and the transformation of local communities.

When you're proud of something you want everyone to know about it and there's plenty for us to be proud of at Sellafield.

Tom Foster
Chief Decommissioning Officer, Sellafield

"We refer to the priority decommissioning challenges as nationally vital, and indeed they are. It is only by cleaning up the legacy of nuclear in the UK and by proving that we can safely manage used nuclear fuel and radioactive wastes that people will have the confidence in the next generation of nuclear power."

That's why Sellafield Ltd is leading the way in growing its own talent by investing in record numbers of graduates, trainees and apprentice intakes across thirteen different apprenticeship programmes. It's also why we've recently become the hundredth member of the government-backed '5% Club'; committing to making 5% of our workforce apprentices, graduates or sponsored students within the next 5 years.

Not only this but we're spending £1.15bn to ensure a varied and vibrant supply chain, 99% of which is with UK companies. In doing so we recognise that we have a duty to spend every penny of our budget wisely to maximise the return on our investment and are putting SMEs – the engine of the UK economy – at the forefront of our commercial thinking.

In this way Sellafield Ltd is playing a leading role in creating a centre of nuclear excellence in West Cumbria, and as the public and private sector come together to capture the opportunities of today, Tom explained, the future looks bright for the industry.

"Our best days are ahead of us."

Sue Hayman
Labour MP for Workington

AS THE FIRST FEMALE MP TO BE ELECTED IN CUMBRIA, SUE IS A PROMINENT FIGURE IN THE POLITICAL LANDSCAPE OF WEST CUMBRIA.

MEGAN SAVAGE

Megan Savage sat down with Sue to talk about Cumbria's place in the new "northern powerhouse", women in the workplace and investing in the next generation.

MEGAN: In your maiden speech you said Cumbria must not be left out of Government plans to create a 'Northern Powerhouse'. Why do you want the county to be positioned at the forefront of the plans?

SUE: The 'Northern Powerhouse' as the Government initially proposed it was around Manchester and Yorkshire. I want to ensure Cumbria doesn't miss out on this opportunity – particularly West Cumbria because of the amount of economic investment we have coming into the area.

One of our problems is we are so far from London, if we don't shout loud enough we tend to get forgotten. I have to credit the work that has already been done locally by people like my fellow MP Jamie Reed to draw attention to the opportunities for investment in Cumbria and what we can give back to the rest of the country.

MEGAN: What is it exactly that Cumbria can offer the UK that no other area of the country can?

SUE: We are a centre of nuclear excellence – we have many years' experience in promoting and researching the nuclear industry, dealing with one of the world's most complex nuclear challenges and providing generations of nuclear professionals across a broad spectrum of skills. I say we have something big and very unique to offer the country.

MEGAN: Why is it imperative we are recognised as part of the northern powerhouse?

SUE: As well as the obvious reasons, it will raise ambitions across the county. One of the problems we have is our school children don't have enough aspirations about what they can achieve. If we have some real regeneration here kids will be able to see opportunities for the future and I think that's really important.

MEGAN: Do you think our schools do enough to raise children's aspirations and make them aware of the opportunities available on their doorstep?

SUE: We are definitely getting better at it and I'm hoping as the education system in West Cumbria continues to evolve we'll become smarter about encouraging children into science, technology, engineering and maths (STEM) subjects and telling them what kind of career they can progress into.

Critically, we're going to have a huge number of jobs in the nuclear industry coming up in Cumbria over the next few years and we need to make sure that we make the most of those opportunities for children who are at school now.

MEGAN: Do you think the nuclear industry and supply chain need to invest more in skills development of local young people?

SUE: Yes and I think companies like Sellafield Ltd appreciate that if they don't invest in the skills of young people it becomes more difficult for them going forward – the nuclear industry critically needs to recruit talented young people into the workforce if it is to continue moving forward.

One thing I think we need more of is young people in apprenticeships. I met the winning Sellafield Ltd Brathay team at Westminster and toured local training facilities like Gen2 and Lakes College so I know there's some fantastically talented young people out there; it's great we're doing so much work to increase training and employment opportunities for them locally but I know there is still room to expand. We need to look at how we invest in increasing training within local companies and get more young people into good quality apprenticeships.

MEGAN: How do you suggest we bridge the skills gap the engineering and energy sector is currently facing?

SUE: I believe one way to close the skills gap is to encourage more women to go into engineering. Currently, about 7% of engineering professionals are women so we really need to look at why that's the case. We need to start working with primary schools to encourage girls to take STEM subjects because by the time they reach secondary school it's too late; the cultural deficiency is already there. There's this stigma that a job in STEM is for brainy boys and not girls – a false perception which we can easily dispel if schools, families and even the media educate children about the opportunities that are out there in the STEM sector, no matter their gender.

MEGAN: You've made headlines as the first female MP for Cumbria; what's your opinion on gender equality?

SUE: I've had an enormous amount of media interest because 'the new MP for Workington is a woman' and it's a shame that's the case. It shouldn't be so interesting a woman has become a member of parliament; we'll have truly moved on when it no longer makes the headlines! Just being in the House of Commons, there's a couple of committees that I am the only female member of – one of which is the all-party parliamentary group for nuclear which I'm now the vice-chair of, along with Jamie Reed. As a female MP, I thought 'yes, I am going to be vice-chair of the nuclear group; I'm not just going to do 'girly things'.

MEGAN: Can you tell us more about what the all-party parliamentary group for nuclear does?

SUE: One of the main things we want to do is meet key people within the nuclear industry to make sure that the sector delivers what we want it to. Part of what we do is to push forward on nuclear new build while at the same time making sure Sellafield continues to get the funding it needs from the National Decommissioning Authority to keep its mission on track.

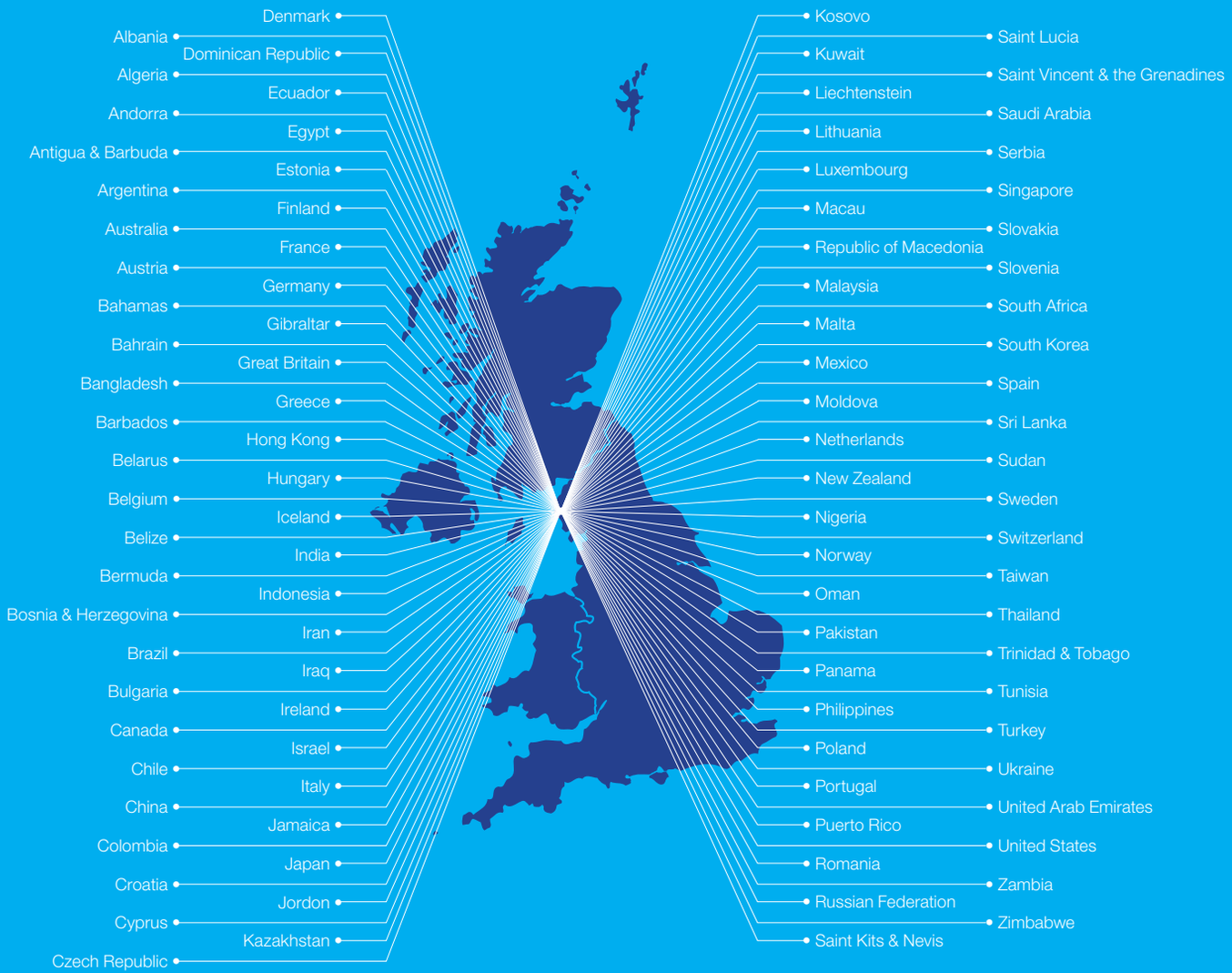
The nuclear industry has been incredibly important to West Cumbria for many years and will continue to be so for many years to come. Sellafield Ltd is just part of the bread and butter now; it provides a lot of well-paid jobs and invests substantially in the community, whether that be working with schools or growing local small and medium sized enterprises. As a group we understand that if Cumbria is to thrive and grow, we need to ensure the nuclear industry and the benefits it brings to the area continues in the future.

Making her voice heard on the back benches of Westminster alongside fellow West Cumbrian MP, Jamie Reed, Sue champions investment and regeneration of the county.

10 SELLAFIELD VISIT FACTS

1

WE HAVE HAD VISITORS FROM 44% OF THE WORLD'S COUNTRIES – FROM ANDORRA TO ZIMBABWE, TRINIDAD & TOBAGO TO FINLAND, SOMEONE FROM THESE COUNTIES HAS PAID SELLAFIELD A VISIT.



2

300

The Sellafield visits team welcome approximately 300 VIP and educational visits every year.

3

1957

The visits department was set-up in 1957 – Although it is clear that there were visitors before then – the opening of Calder Hall in 1956 but no records were kept unfortunately.

4

156+

Thorp Viewing Gallery is the most visited facility on site with 156 visits taking place in 2014/15.

Sellafield plays host to Ministerial visit

5

2,000+

Over 2,000 key stakeholders visit Sellafield site each year to see first-hand the work being undertaken on the site from decommissioning to new build.

6

OUR INFORMATION OFFICERS SHOW VISITORS AROUND THE SITE. THEY WALK THE EQUIVALENT DISTANCE OF LAND'S END TO JOHN O'GROATS EVERY YEAR.

7

In 2014/15 the information officers showed visitors around 67 individual facilities on site, some, like the Thorp Viewing Gallery, were visited on numerous occasions, others just once.

8

Our most unusual visitor to be shown around the site was Courage the Cat.

9

Some of our most famous visitors to Sellafield include Her Majesty The Queen, Prince Phillip, Prince Andrew, and previous Prime Ministers Margaret Thatcher, Tony Blair and Gordon Brown.

10

The newly appointed Minister of State for the Department of Energy and Climate Change, Andrea Leadsom, has already been to see the vital work being undertaken at Sellafield.

The Ministerial programme included visits to the First Generation Magnox Storage Pond and the Magnox Swarf Storage Silos. Here she met with members of both teams and saw first-hand the skills and expertise of the Sellafield workforce in action.

At the First Generation Magnox Storage Pond Facility the Minister chatted with Dorothy Gradden, Head of Programme Delivery, about the programme's achievements and challenges before watching the ROV working in the pond to consolidate fuel.

The Minister then moved on to visit the Magnox Swarf Storage Silos. Here Mr Tom Foster, Chief Decommissioning Officer, showed the Minister around the facility, explaining the work that had to be undertaken to enable the Silos Emptying Plant (SEP) machines to be installed in the building. The Minister was able to see the drive mechanism component of the SEP Machines, which had recently been delivered to the facility.

Following her visit Ms Leadsom said:

"IT WAS FASCINATING TO SEE FOR MYSELF THE SIZE AND SCALE OF THE CLEAN-UP CHALLENGE AT SELLAFIELD AND THE INCREDIBLY INNOVATIVE WAYS THESE ARE BEING OVERCOME. SELLAFIELD HAS PLAYED A KEY ROLE IN UK INDUSTRIAL HISTORY, PIONEERING THE DEVELOPMENT OF NUCLEAR POWER, AND IS NOW LEADING THE WORLD IN DECOMMISSIONING; DEVELOPING SKILLS, EXPERTISE AND TECHNOLOGIES, WHICH ARE ALREADY BEING EXPORTING AROUND THE WORLD."

It's fit for

When you think about innovative ways of working in the nuclear industry, you'd be forgiven if you only pictured hi-tech robots, ultra-modern drones and remotely operated vehicles. However whilst much of the work we do on site is less glamorous it can be just as cutting-edge.

Sellafield is a site 74 years in the making, and this means that over time, some of the technology we used has been superseded by more modern alternatives. Just think of how many times you'll have changed your mobile phone over the last decade and of the forgotten items that we once used daily, like VCRs and cassette players. So sometimes, we find new ways of doing things, which just make more sense, are that little bit simpler and are just easier than what went before. This article pays homage to some of these.

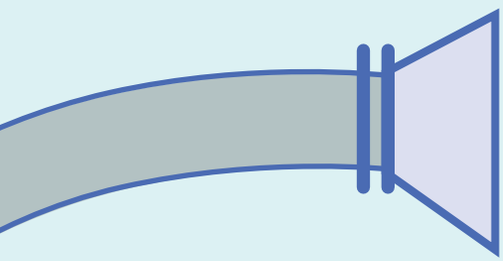
BELISHA BEACONS

You wouldn't see pedestrian crossings as new and would be hard pushed to describe them as particularly innovative, but that isn't always the case.

We've recently installed some new belisha beacons on the Sellafield site, to replace an obsolete set. Traditionally, these beacons are connected to the power supply of a nearby building. This requires excavation of ground, which leads to the creation of spoil that needs to be disposed of

On top of that, it can be a slow process, and excavation on a nuclear site brings its own potential risks – namely the potential for the land to be contaminated, the risk of hitting power supplies buried underground, and that the building they're connected to will eventually be demolished.

With this new set we've installed, we've avoided the need to excavate the land, dispose of the waste, find a power supply, and reduced the time need to install from weeks to a single day – all by using solar powered beacons.



VACUUM EXTRACTION

Given the complexities and time involved with excavation and spoil extraction on the Sellafield site, any approach that can offer improvements to this system would be well received.

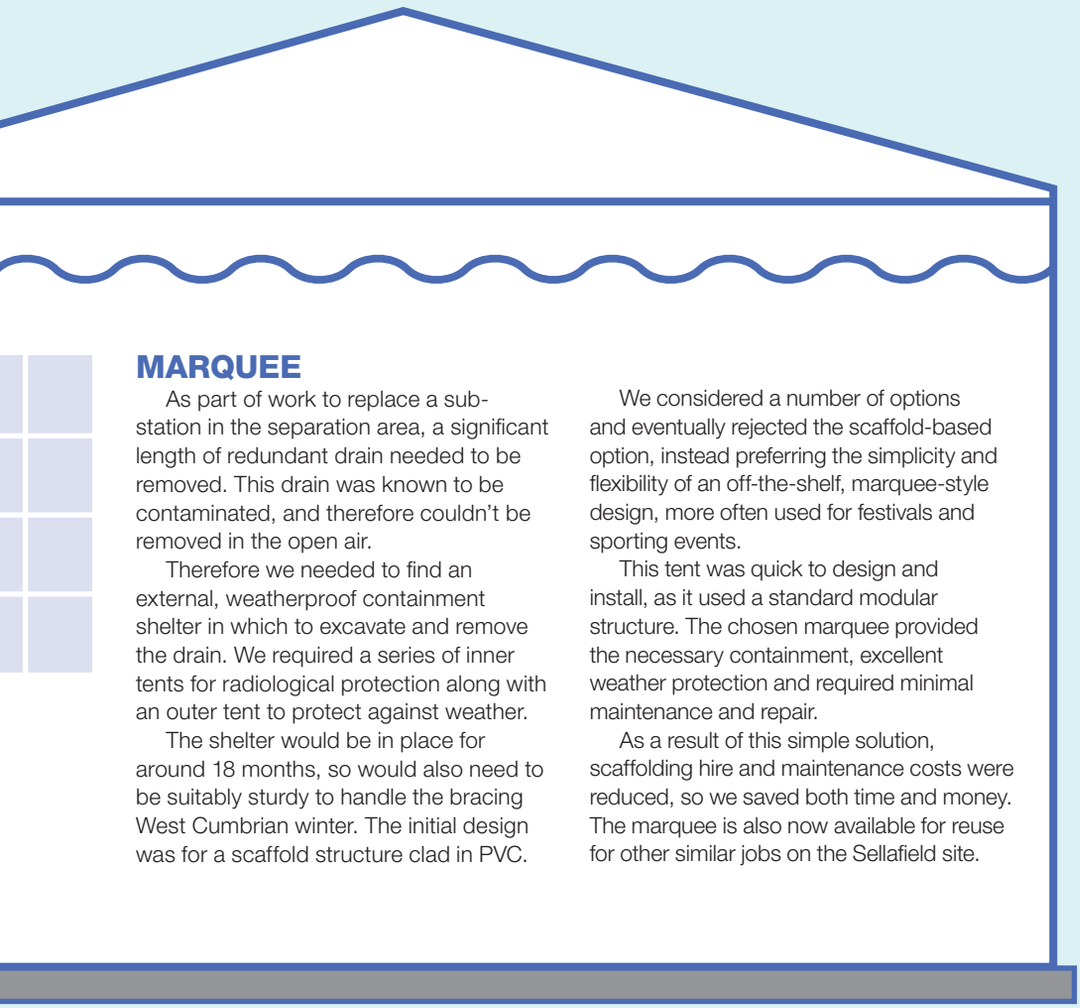
Modern vacuum extraction equipment has been used to help improve excavating activities on the Sellafield site, especially where there is a risk of buried or unknown services.

The system, which is new to the Sellafield site, speeds up soil extraction in sensitive locations. Previously, hand tools were used for this work. Removing this means the process is also much safer.

The 'vac-ex' system and extraction vehicle were used once contamination concerns were addressed and successful trials were completed.

Both of these approaches were developed through work with our Infrastructure Strategic Alliance partnership.

purpose



MARQUEE

As part of work to replace a sub-station in the separation area, a significant length of redundant drain needed to be removed. This drain was known to be contaminated, and therefore couldn't be removed in the open air.

Therefore we needed to find an external, weatherproof containment shelter in which to excavate and remove the drain. We required a series of inner tents for radiological protection along with an outer tent to protect against weather.

The shelter would be in place for around 18 months, so would also need to be suitably sturdy to handle the bracing West Cumbrian winter. The initial design was for a scaffold structure clad in PVC.

We considered a number of options and eventually rejected the scaffold-based option, instead preferring the simplicity and flexibility of an off-the-shelf, marquee-style design, more often used for festivals and sporting events.

This tent was quick to design and install, as it used a standard modular structure. The chosen marquee provided the necessary containment, excellent weather protection and required minimal maintenance and repair.

As a result of this simple solution, scaffolding hire and maintenance costs were reduced, so we saved both time and money. The marquee is also now available for reuse for other similar jobs on the Sellafield site.

3D PRINTING

Few advances in technology promise as much to an industry like ours as 3D printing.

The possibilities for printing highly-specialist materials that would ordinarily be cost prohibitive to produce need little explanation.

One such use was somewhat less visually stimulating, but just as cost-effective and useful – namely to produce mounts to hold specialist CCTV cameras on the Sellafield site.

The time to procure these from the supply chain would have been a number of weeks, and given the specialist nature, would have been expensive.

Instead, we used our on site 3D printers to produce the required mounts overnight, at a fraction of the cost.

ROPE ACCESS

Access to repair buildings on the Sellafield site can be difficult – both because of the type of materials we're dealing with, and because it's one of the most congested industrial sites of its kind.

We often use conventional scaffolding to work at heights. Given the additional safety measures required on the site, this can be a slow and costly process.

One recent example on the Magnox Reprocessing Plant would have taken seven weeks to install scaffolding, at a six figure cost to the business.

However, an alternative, using trained rope access staff, has proven a quick and more cost-effective option – taking only two weeks and costing a fifth of the original estimate. This meant the cost was slashed from an estimated £100,000 to £20,000.

This approach sees teams using techniques initially developed in climbing and caving to access difficult locations for specialist jobs.

We've used skilled teams from our partners, Rope Access, for work on the site for a number of years, and in the right circumstances, this can prove a fantastic alternative where scaffolding isn't suitable.

Teams have also been used for internal work where it may not have been cost-effective or even feasible to install scaffolding – for example, to replace light fittings at height.

Those involved are fully trained in rope access as well as the skills required for the task they're undertaking, such as asbestos control, in the example above.

Lots of the work we do at Sellafield involves hi-tech firsts – pushing the envelope of what is feasible and possible thanks to technological advances.

But this isn't always the best option. In some cases, the simplest option is the most effective in allowing us to deliver our mission quickly and safely. The key is to make the best choice for the task – the one that is fit for purpose.

Scrutinising Sellafield

Interview with David Moore

At Sellafield Ltd we know what it is like to clean-up the Sellafield site. It is our mission. But what is it like to grow up in the shadow of the site and to take a lead role in ensuring that we are always held to account?

Above: David Moore

David Moore was born and bred in Seascale, a village with a population of around 1,700 residents that sits beside the iconic nuclear site.

His view of Sellafield has developed throughout the years and he supports the nuclear industry. However, that support was not echoed by earlier generations of his family, with his grandfather and father rejecting the nuclear industry when it first came to the area.

His grandfather's view was one of fear, he believed that the community was 'doing business with scientists'. David said: "my grandfather like many others at the time was afraid of the unknown, and in the 1940s Sellafield was shrouded in secrecy.

"My father's view centred around scepticism, with the Windscale Fire in 1957 contributing greatly to his perception of the site and industry."

David explained: "My family consists of three generations of working in the dairy industry, my grandfather, my father and myself. The Windscale reactor fire in 1957 is well documented now, but my father bore the brunt along with all the other local farmers as for many weeks he disposed of all his fresh milk down the drains because of fear of contamination.

"In those days there was nothing much in the way of communications with the local community and people were sceptical. The small farming village of Seascale overflowed with people from outside the area who had come to find work at Sellafield. I remember my father would go to the pub and all the Sellafield workers would sit at one side of the room and the older Seascale generation would sit at the other, the whole atmosphere oozed an aura of secrecy.

"Times have changed now for the better. The people in charge of the site developed an 'open and honest' policy and good relationships have been formed. Processes have been put in place to make sure local people understand what Sellafield is all about, and they are encouraged to ask questions of both Sellafield and our other local nuclear site, the Low Level Waste Repository, if they feel uncertain about anything."

Local stakeholder groups were set up to encourage members of the public to go along and find out more about the site and its operations. David commented: "This would never have happened in the early days, it's a massive step change and one that has benefited both the industry and the local communities."

David has chaired the local stakeholder group throughout its evolution from the original Windscale Local Liaison Committee to the West Cumbria Sites Stakeholder Group as it is known today. He sees the role as crucial for the local community and has committed his time to it for eighteen years.

"Having an independent Chairman, by that I mean not working for Sellafield Ltd or the site owner, the Nuclear Decommissioning Authority, is important. The community doesn't want the wool pulled over its eyes, it needs to have confidence that the chair will challenge the industry if required and request answers where needed.

"Over the years the group has gained a reputation as being 'best in class' and I am proud that our model of scrutiny has been replicated across the nuclear estate throughout Britain and we are without doubt the envy of a lot of nuclear industries across the world."

Above:
David's grandfather, Ernest Moore (left) and great-grandfather, James Dixon Moore

Left: David's father, Harold Moore

David's role as Chairman has taken him to Japan, to speak to officials about community relationships and the methods of engagement that the West Cumbria Sites Stakeholder Group use, and to Hungary at the invitation of the local Mayor who was impressed with the way in which Sellafield Ltd engages with its local community.

"I'm really comfortable now with the site. I and others like me have professional working relationships with Sellafield Ltd, and I am kept up to date with news good and bad and have the confidence that they are doing all the right things to ensure a safe environment for their communities.

As well as his role of Chairman of the local stakeholder group, David has recently taken up the role of Nuclear Portfolio Holder for the local borough council and he sees the knowledge and relationships he has developed with Sellafield Ltd as a tremendous advantage to the work he will be carrying out within that role.

"Sellafield Ltd, although a major part of the nuclear portfolio, is one cog in a nuclear industry wheel as major developments are about to emerge. Three brand new reactors are to be built next door to Sellafield and along with it there comes a plethora of socio economic opportunities, like infrastructure, new roads, new national grid, skills development. Engagement with the Department of Energy and Climate Change will be entered into about new arrangements for future sites for geological disposal, the list is endless.

"My role is to look at the bigger picture and aim to get maximum benefit for the community through all of the nuclear establishments, and that means working together. The knowledge I have of the Sellafield site is comparable to someone who works there. I have lived and breathed it all of my life, that knowledge is going to be invaluable to me in the negotiations I will have."

"My role is to look at the bigger picture and aim to get maximum benefit for the community through all of the nuclear establishments, and that means working together."

The sky's the limit

168 entries

40 shortlisted

13 winners

That commitment to going the extra mile was on display at our annual Excellence Day with teams showing innovation and inspiring ways of working to deliver fit for purpose solutions.

In its eighth year, the event is an opportunity to celebrate the achievements of our greatest asset – our people.

Managing Director Paul Foster said: "I particularly enjoy these events as they are an opportunity to reflect on the significant progress made by our people over the past year and to highlight areas of excellence in our business.

"We all know the drive to reduce high hazards, deliver safe operations and value for money – teams are showcasing what can be achieved.

"We are the largest and most complex nuclear facility in Europe, dealing with unique challenges, and if there isn't a role for excellence in what we're doing, then where is there? I want to thank our employees and our supply chain colleagues for working so hard to improve not only their own performance, but that of the entire business."

The Excellence Day's first outing was back in 2008 when an event to highlight the role of quality in delivering excellence was held to promote World Quality Day. Since then the event has taken various formats, safety and business excellence integrating but at the core of all of these occasions are our employees. Systems and processes are important but success comes down to people – they make the real difference.

Industry and supply chain colleagues have supported and attended these events, sometimes in partnership and always as an opportunity to share learning.

An impressive range of speakers internal to Sellafield Ltd, from industry and the world of celebrity, Olympic athletes and business leaders have been a part of our excellence days – all giving their experiences and what drives excellence.

This year's guest speaker came from an environment where the management of risk is crucial. Former Red Arrow and RAF fighter pilot, Justin Hughes told employees: "It's not just about skill, the right attitude and behaviour are vital to success.

"A job in a high-risk environment can't be done by any individual on their own, it only works with people acting inter-dependently and cohesively," Justin said. "Although my career has been very technical and skill based, the key point of difference in making it work is teamwork."

And teamwork was very much at the forefront and central to the event as it is every year.

Recognising our asset – our people

At the heart of these celebrations are the awards themselves. Employees across the business highlight the work they've been doing throughout the year and the innovations and improvements they've made.

This year, a record 168 entries were submitted to the awards competition; from that, 40 were shortlisted to showcase at this year's event at Energus, Lillyhall. A judging team from Sellafield Ltd's Executive selected 13 winning teams who went on to display their achievements at a similar event at Hinton House, Warrington.

Deputy Managing Director, George Beveridge, presenting this year's winners with their awards, said: "The entries were of a very high standard and the judges had difficult deliberations. Well done to all entries and those who supported them; you are all winners. The judges were particularly pleased to see fit for purpose solutions in some very complex projects."

A new award was included this year, designed to highlight the work being done through our G6 collaboration to safely and securely accelerate risk and hazard reduction at Sellafield.

The G6 judges, Graham Jonsson, Nuclear Decommissioning Authority, Michael Finnerty, Office for Nuclear Regulation and Rex Strong, Sellafield Ltd were impressed with the standard, depth and quality of the entries, and made two awards highlighting the work being done through our G6 collaboration to safely and securely accelerate risk and hazard reduction at Sellafield.

Rex said: "The successful canned fuel export from the legacy Pile Fuel Storage Pond (PFSP) demonstrates the change in thinking and behaviours within Sellafield Ltd. It challenged the 'norms' of 'the possible' within PFSP and genuine cross-programme working to find a fit for purpose answer in the best interest of hazard and risk reduction. The G6 approach was mirrored by Nuclear Decommissioning Authority and energetically enabled by the Office for Nuclear Regulation and the Environment Agency.

"Waste Encapsulation Plant's preparation to receive sludge from PFSP demonstrated an innovative approach, translating a bright idea into a practical system, whilst protecting capability to meet existing commitments. They made better use of assets – both plant and people – to reduce the financial burden on the taxpayer."

And winning means a lot for those who took part, as it's recognition for the hard work that people across the business, not just those who entered the awards, are doing every day to meet the substantial challenges of our business.

Howard Carpenter, Encapsulation Plants, said: "Over the last few years everyone in Encapsulation Plants has been working hard to improve our plants and make capacity available to new missions. The excellence award we won was in recognition of one of those areas where we have adapted the Waste Encapsulation Plant to receive pile fuel storage sludge and support high hazard retrievals acceleration.

"I was really proud of the award and the recognition made of the innovative and hard work we are doing. Our team also went round the other stands and it was a great experience to see the amount of innovative things happening across the site that you do not hear about on a day-to-day basis. It really felt that the business as a whole was doing everything possible to deliver our missions."

> Every day, Sellafield Ltd is home to excellence, across the range of challenging work that takes place throughout our business.

Award winners 2015

Safe, secure site stewardship

Shielded trollies in the First Generation Magnox Storage Pond

In order to achieve risk and hazard reduction in the legacy pond, a new fuel export route is required. This involved extensive in-cell working where the average radiation dose rate limits working times. The Sellafield Ltd and Nuvia project team designed and procured three interlocking shielded trolleys using the existing cell rail system, providing a safe working platform above the fuel storage pond. The dose rate was successfully reduced removing radiation dose as a constraint from the majority of in-cell installation. Significant savings were achieved in terms of time, cost and individual radiation dose.

Environmental practices at the Silos Maintenance Facility

The Silos Maintenance Facility project is a major new construction build. The site layout has been developed to optimise segregation and handling of wastes. During the enabling works phase, this delivered the re-use of 5,500m^3 of soil and minimised the number of vehicle movements. In the main construction phase, the recycling ratio of the project has been consistently maintained at over 90 per cent.

Demonstrable progress

Successful completion of canned fuel exports from the Pile Fuel Storage Pond

A key element of the Pile Fuel Storage Pond (PFSP) remediation programme is the retrieval, export and re-packaging of historic canned fuel into a form suitable for long-term storage at Thorp. The PFSP team safely removed all of the oxide and carbide canned fuel from the PFSP and transferred it to the Active Handling Facility, marking a major key decommissioning milestone and a key step in the risk and hazard reduction programme.
**Also winners of a G6 award*

Modifications of Waste Encapsulation Plant to support the processing of Pile Fuel Storage Pond sludge

The sludge waste retrieved from the Pile Fuel Storage Pond (PFSP) was originally intended to go to a new sludge treatment facility. Teams in Waste Encapsulation Plant (WEP) demonstrated the capability to accept the feedstream in addition to its current mission of receiving reprocessing wastes from Thorp. This required significant changes in WEP to allow the waste to be processed. The WEP delivery team was set up from existing resources, with support from PFSP and commissioning.
**Also winners of a G6 award*

First Generation Magnox Storage Pond additional Sludge Retrieval Project

Removal and storage of the sludge from the First Generation Magnox Storage Pond is a high priority for risk and hazard reduction at Sellafield. The recently constructed and actively commissioned Sludge Packaging Plant 1 (SPP1) facility is designed to provide high integrity sludge storage and became available to receive sludge in November 2014. However, the Bulk Sludge and Fuel Removal Project, the planned capability to provide de-sludging equipment in the pond was not scheduled to be available until late 2015. This schedule provided the programme with an opportunity to examine alternative options to get sludge to SPP1 and accelerate active commissioning. In conjunction with the supply chain, an integrated team developed and deployed, in less than twelve months, a sludge pumping system enabling the start of sludge retrievals some 12 months earlier, leading to the successful active commissioning of SPP1.

Fit for purpose engineering solutions to allow ongoing reprocessing

In the last year Thorp Head End has received a number of challenges which threatened to halt or severely curtail reprocessing operations. With considerations including nuclear safety, prospective down time and cost impact, fit for purpose solutions have been sought to ensure that Thorp can continue to reprocess. These plant based solutions have allowed continued reprocessing through 2014 and into 2015, without which the current shear rate would not have been met.

Return of Waste Vitrification Plant Line 3 to service following contamination event

Following a power loss to part of the Sellafield site in late November 2013, the Waste Vitrification Plant Line 3 suffered a significant spread of contamination to many parts of the building. Although the workforce was safety evacuated immediately following the event, there was an immediate challenge as to how

The awards are for teams and individuals across all levels of Sellafield Ltd's business who have demonstrated excellent performance and best practice in delivering across the three key areas of our strategy: safe, secure site stewardship; demonstrable progress and return on investment.

the building could be safely managed and ultimately returned to service. The WVP Line 3 Recovery Team successfully achieved this objective, carrying out over 33,000 man entries and de-contaminating rooms to a high standard with an excellent safety record. Significant plant modifications were made to prevent a future repeat event, a revised safety case implemented and WVP Line 3 was successfully returned to service in November 2014.

Return on investment

Obsolescence management of high integrity cranes and skip handlers

The operational reliability and availability of the high integrity nuclear rated cranes and skip-handlers at Sellafield are an essential part of safe and successful operations. With an operating life spanning many decades, their continued use presents significant business risks through a range of plant equipment and skills related obsolescence challenges. Plant Engineering, with the support of individuals from across the company, took an holistic approach to obsolescence management that has resulted in the successful mitigation of these risks and has to date resulted in asset care avoidance savings as well as expected lifetime savings.

Removal of withdrawal well pump from the First Generation Magnox Storage Pond

The removal of redundant equipment from one the most hazardous areas within the facility was required to enable the installation of vital retrievals equipment. Working in heavily congested areas, with high radiation levels, the removal of three redundant pumps, buried in sludge, was successfully undertaken. Working as an integrated team with supply chain partners to ensure the right mix of skills and experience, the team not only successfully completed the required scope but developed a cleaning technique, so successful that pumps which could not be removed because traditional cleaning methods had proved ineffective were cleaned enough to be categorised as low level waste.

Improved reliability, performance and availability of the pH sampling system in the Enhanced Actinide Removal Plant

Operation of the bulks effluent process is required in order for Magnox reprocessing to operate, as it is their effluent discharge route. Improvements have been delivered to the pH sampling system bringing Vacuum Operated Slug Lifts into operation, which provides cover and reduces plant downtime. The system can now run in automatic with no need for 24 hour operator input.

People's Choice Award

Working together to enhance existing Highly Active Evaporator capacity in support of Highly Active liquor reduction and reprocessing

Evaporator remnant life is essential to site high hazard reduction and it is also important in terms of power station availability in the UK. An integrated team approach was used to provide fit for purpose solutions utilising the strengths of many departments and supply chain to enhance existing evaporator capacity until Evaporator D comes on line. The improvements made as a result of a multi-strand approach have ensured availability and reliability of the evaporators to support timely reprocessing.

West Cumbria Sites
Stakeholder Group

The West Cumbria Sites Stakeholder Group is an independent body that scrutinises the work done at nuclear sites in the West Cumbria area

Get involved in 2016

Dates and venues for the West Cumbria Sites Stakeholder Group (WCSSG) main meetings and Working Group meetings for 2016

Date	Event	Venue	Time
Tuesday 19th January	Spent Fuel Management and Nuclear Materials Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1500
Wednesday 20th January	Low Level Waste Repository	Drigg and Carleton Village Hall	1400-1600
Thursday 21st January	Enablers Working Group meeting	Yottenfews Farmhouse	1000-1300
Tuesday 2nd February	West Cumbria Sites Stakeholder Group meeting	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Monday 14th March	Emergency Planning Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Wednesday 16th March	Risk and Hazard Reduction and Waste Management Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1500
Tuesday 19th April	Spent Fuel Management and Nuclear Materials Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1500
Wednesday 20th April	Low Level Waste Repository	Drigg and Carleton Village Hall	1400-1600
Tuesday 3rd May	West Cumbria Sites Stakeholder Group meeting	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Thursday 26th May	Environmental Health Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Wednesday 15th June	Risk and Hazard Reduction and Waste Management Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Tuesday 19th July	Spent Fuel Management and Nuclear Materials Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Wednesday 20th July	Low Level Waste Repository	Drigg and Carleton Village Hall	1800-2000
Tuesday 2nd August	West Cumbria Sites Stakeholder Group meeting	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Monday 12th September	Emergency Planning Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Wednesday 21st September	Risk and Hazard Reduction and Waste Management Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Tuesday 18th October	Spent Fuel Management and Nuclear Materials Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Wednesday 19th October	Low Level Waste Repository	Drigg and Carleton Village Hall	1400-1600
Tuesday 1st November	West Cumbria Sites Stakeholder Group meeting	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Thursday 24th November	Environmental Health Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
Wednesday 21st December	Risk and Hazard Reduction and Waste Management Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600

Please note: Dates and venues could change and it would be advisable to confirm arrangements with the relevant contacts prior to the meeting:

West Cumbria Sites Stakeholder Group
Rosina Robinson: 019467 85802

SFM&NM Working Group
Elaine Johnson: 019467 75742

Low Level Waste Working Group
Cath Giel: 019467 70233

Emergency Planning Working Group
Matthew Welsh: 019467 88503

Environmental Health Working Group
George Royston-Bishop: 019467 79607

R&HR&WM Working Group
Caroline Agnew: 019467 79789

Enablers Working Group
Rosina Robinson: 019467 85802

For more information visit
www.wcssg.co.uk

As Sellafield Ltd non-executive director, Tim Chittenden prepares to complete his two-year tenure as president of the Nuclear Institute, we look at the role of the institute and its achievements under Tim's presidency.

NIA PRESIDENT STEPS DOWN

TIM CHITTENDEN

ACHIEVEMENTS DURING HIS TENURE INCLUDE:

SKILLS

Supporting a range of skills initiatives such as nuclear Arkwright scholarships, trailblazer apprenticeships, awards for employees in their early career stages.

PROFESSIONALISM

Increasing awareness of nuclear professionalism through a partnership with the National Skills Academy for Nuclear to certify training schemes, including Nuclear Graduates and 20 apprenticeships, against the Nuclear Delta.

Tim has used his vast career experiences to great effect at the Nuclear Institute. He started as a technical apprentice at ICI, completed an Engineering Science degree at Cambridge University and served for 35 years with the Royal Navy.

The institute, a charity formed to promote nuclear professionalism in the industry and to encourage education and public understanding of nuclear energy, is the only individual membership organisation focused solely on the nuclear industry.

Tim said: "It is not just for engineers and scientists, but for all professionals with direct or indirect responsibility for nuclear safety and standards including for example lawyers and financiers.

"It promotes and maintains high standards of individual behaviour and knowledge among its members, as defined by the recently introduced Nuclear Institute Nuclear Delta standard which defines the attributes that separate a nuclear professional from other professionals."

Tim became involved in the institute after winning the INucE award for a post graduate diploma in Nuclear Engineering in 1975, joined the BNES Western Area Committee in the 1990s and the Nuclear Institute Cumbria Committee in 2011, before becoming vice president in 2012 and president in December 2013.

Tim said: "All of my achievements are due to the Institute members, who have expanded the breadth of membership and supported the needs of all nuclear professionals, not just engineers. We are constantly promoting the world class professionals within the industry to the public and encouraging new entrants into what is a fast growing sector."

Tim is stepping down from his role as president of the Nuclear Institute in December but will continue his involvement as past president. He will continue his role as Sellafield Ltd non-executive director, supporting the transition to the company becoming a wholly owned subsidiary of the Nuclear Decommissioning Authority in April 2016.

DIVERSITY

Encouraging partnership with Women in Nuclear and Nuclear Institute Young Generation Network for young nuclear workers to provide opportunities for knowledge sharing and networking for those early in their career.

POLITICS

Joining with more than 40 similar organisations worldwide to campaign for recognition that nuclear power has a role to play as part of a balanced low carbon energy future.

26 NOVEMBER 2015

WEST CUMBRIA COMMUNITY **HEROES** AWARDS 2015

We were once again the proud sponsor of the annual West Cumbria Community Heroes Awards, which sees members of the Cumbrian community nominated by people who wanted to acknowledge their kindness, selflessness or bravery, with a judging panel having the difficult task of choosing a worthy winner from each category.

We were also thrilled to see that one of our own employees and community volunteers, Paul Murphy, recognised for going beyond the call of duty to save lives across Cumbria.

Paul, a design engineer, took to the stage at the West Cumbria Community Heroes Awards ceremony to be named 'emergency services champion' for his crucial work as a volunteer with Blood Bikes Cumbria.

As one of Blood Bikes Cumbria's area managers, he was praised for giving his time freely to transport vital supplies, from blood to breast milk, between the West Cumberland Hospital in Whitehaven, the Cumberland Infirmary in Carlisle and Haematology laboratories in Northumbria, as well as transporting blood to be used by medics on the Great North Air Ambulance.

He said: "I'm quite overwhelmed to receive this award when there are so many other people in the room who do fantastic work within our community.

"I am incredibly proud to be part of Blood Bikes Cumbria. Our amazing team of volunteers works relentlessly to continue to provide what has become a vital volunteer emergency service. It is wonderful to be recognised for the hard work we have all put in and although it is my name on the award I would like to accept this on behalf of the whole team.

"I would also like to say a special thank you to my employers at Sellafield Ltd, who allow me the time and support I need to carry out this sometimes unpredictable role."

Last year Sellafield Ltd and Nuclear Management Partners donated £10,000 that was used to buy a motorbike which helped Blood Bikes Cumbria to save local health care providers around £80,000 in out of hours transport costs.

"We have been, and continue to be, staggered by the kindness and generosity of local businesses and of course the general public. We rely solely on these donations and so I would like to take this opportunity to say a big thank you to everyone who has donated," Paul added.

THE WINNERS

Carer of the Year – **Shelly and Robert Wall**

Neighbour of the Year – **Rhoda Sharkey**

Good Friend – **Arben Pervizaj**

Young Sporting Hero – **Kyle Bickley**

Sporting Hero – **Luke Greenbank**

Unsung Hero – **Alan Hunter**

Volunteer of the Year – **Sandra McKeown**

Best Community Project – **Mirehouse Residents Group**

School Worker of the Year – **Jericho Primary Schoo**l

Large Sustainable Business of the Year – **Jacobs**

SME Sustainable Business of the year – **REACT Engineering**

Emergency Services Champion – **Paul Murphy**

Young Achiever – **Kyle Bickley**

Judges Special Award – **Gerard Richardson**

West Cumbrian Male of the Year – **Stephen Coates**

West Cumbrian Female of the Year – **Jenny Brumby**

Award nominees, guests and sponsors were moved by the accomplishments of our community heroes.

Batman and a Stormtrooper were on hand to celebrate with our West Cumbrian heroes.

PHOTOGRAPHER
in residence

I approach photography at Sellafield as I would any other job, taking the best shot possible in whatever scenario I am in. It's all about finding the right angle to keep the viewer interested, either by creating a small story or using perspective. Sometimes odd angles or crops make a photo special and I love that there are endless possibilities for this at Sellafield.

Sellafield is an amazing site with so many different and brilliant people. I love getting to know them, their stories and capturing their skills and passion.

I love changing the view point from a normal standing perspective so the viewer is not sure what is being looked at, therefore creating extra interest and getting the mind working.

Thomas Skovsende

FIVE MINUTES WITH

Shirley Williams

Collaborative working with key decision makers – known as G6 – has helped Sellafield Ltd make progress in high hazard and risk reduction over the past 18 months. Shirley Williams, Sellafield Ltd's Head of Public Affairs, talks about how communications supports this work.

What is G6?

First of all, G6 isn't a thing, it's a way of working agreed between the six key organisations with influence over delivery of the Sellafield Ltd hazard reduction mission – Department for Energy and Climate Change, Shareholder Executive, Nuclear Decommissioning Authority, Office for Nuclear Regulation, Environment Agency and Sellafield Ltd.

Reducing the risk and hazard at Sellafield is a national priority, and successful delivery of the mission is also a key enabler to the UK's future energy policy. Up till recently there was no forum where the site's operator, customer, regulator and Government could regularly meet to address issues which are hampering the acceleration of risk and hazard reduction. G6 fills that gap by looking collectively at problems that can't be sorted by Sellafield Ltd alone.

What are you trying to achieve?

The key word is probably challenge. G6 brings together a range of expertise and experience from the different organisations, who can challenge our mind set around the way things have to be done. For example, there are a lot of myths around what the regulators will and will not allow us to do… if there is a blocker stopping us from removing or reducing hazard, G6 can help us find a safe way to remove it.

What's the role of communications?

On a very basic level, G6 is a tool and it can only be used if people know it's in the toolkit! So our first job as a communications team is to raise awareness of what G6 is and how it can support risk and hazard reduction.

One of our key challenges has been to explain the difference between collaborative working – a collective approach to making progress – and the regulators' role in maintaining strong regulatory discipline.

And myth busting is important, too. The communications team helps create a space in which barriers can be explored and sign post people with ideas to places where they can find or help create answers.

How does it work?

We have a team of communicators from each of the G6 organisations, meeting regularly and sharing "case studies" describing where the approach has delivered benefits.

Each organisation engages with its own set of stakeholders to help spread the message, and of course, we all have communications channels with our employees who are the people who make things happen. Our aim is to ensure all employees and our supply chain are aware of how G6 works, and actively look for new and more effective ways of working.

What benefits does this way of working achieve?

The benefits of G6 are enormous, including a significant contribution to removal of the first radioactive sludge from First Generation Magnox Storage Pond (FGMSP), canned fuel exports from the Pile Fuel Storage Pond (PFSP) and the project that engineered modifications to the Waste Encapsulation Plant to support the processing of Pile Fuel Storage Pond (PFSP) sludge.

In the communications world, working together has led to a better understanding of each other's roles and issues. Taking our communications colleagues into some of the facilities they write about has really helped them understand, and therefore explain, issues and progress.

I also think there are less tangible but equally important benefits. A few years ago, Sellafield's public position could be very defensive in the face of regulatory challenge. I hope today that our approach reflects a real recognition that robust regulation is healthy and should be welcomed.

What are your highlights so far?

We had a very successful conference back in July attended by more than 160 people from across the member organisations. There was a real buzz in the room, frankly too much to cover in one day, but it was a great way of raising awareness across the different companies and parts of the business. The key take away for me was there is a huge appetite for the G6 approach, and there were a number of "light bulb" moments where individuals and teams realised how they could use this tool to help remove barriers and move their work forward.

Even better, lots of teams followed picked up the baton and started using G6 in their areas.

What is next?

One priority is ensuring stakeholders understand that we will face periods of elevated risk while we remove waste from some of our older high hazard facilities, and the contingency plans we're putting in place to manage that risk.

On a more practical level, we're launching a G6 section on the Sellafield Ltd intranet site so that employees can share their experiences of collaborative working. The site will contain a latest news section, frequently asked questions, and a "chat" function encouraging people to share ideas and good practice. The G6 ethos is about teams and individuals having the confidence to challenge the way we work and develop better ways of doing things. We're hoping the intranet site will provide a tool to help us all to do just that.


NEXT ISSUE
Sellafield
Issue 03
March 2016
Inside the fence:
A day in the life of a Sellafield worker
Beyond ponds and silos:
Decommissioning Sellafield
Meet:
Jamie Reed MP
INFRASTRUCTURE: Discover the town of Sellafield
Available March 2016
Sellafield Ltd

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Free entry
until 29 Feb 2016

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Tuesday to Sunday 10am-4:30pm.
Monday opening is restricted to Bank Holidays and school holidays.

the beacon museum

**The Beacon, West Strand,
Whitehaven, Cumbria,
CA28 7LY**

www.thebeacon-whitehaven.co.uk