

ISSUE 2 2010

# INSIGHT

into nuclear decommissioning

NDA

Nuclear  
Decommissioning  
Authority



## Waste shipped back to overseas owners

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Dealing with the past. Protecting the future.



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## Welcome to the second edition of Insight, which looks at the NDA's work in dealing with the legacy of the UK's old nuclear facilities.

We were pleased by the responses to the first edition, both electronic and verbal, and have aimed to take your views into account as the format evolves.

New features include a site round-up and contributions from stakeholders. Do continue to feed your views back to us.

Comments to the editor Deborah Ward on 01925 902343 or [deborah.ward@nda.gov.uk](mailto:deborah.ward@nda.gov.uk)

Front cover shows Chapelcross site in Scotland

# An update from Chief Executive Tony Fountain



As all our stakeholders will understand, the economic climate is driving the need to overhaul spending priorities across all public sector bodies, including the NDA which represents over 50% of our sponsoring department's budget (Department of Energy and Climate Change).

Rather than being a victim of circumstances, we have engaged positively with Government officials to develop a set of options so that when funding decisions are made after the election, they can be made in the full knowledge of the implications for our mission, whether that be in reducing hazard, managing waste, progressing clean-up or on skills and jobs. We believe we have a set of options that will, crucially, continue to drive forward our core programmes to the satisfaction of the regulators, but also deliver significant reductions on the previously assumed expenditure profile and thereby assist Treasury with its challenges. Time will tell.

In the meantime, it has never been more important for the NDA and the SLCs to focus on value for money and efficiency as we seek to make progress on our mission.

As our Business Plan document, due for publication at the end of March, will re-iterate, we believe there is substantial scope for efficiency improvements in the estate and we will be targeting reductions in expenditure in the support and overheads category so that we can focus a greater proportion of our budget on front-line hazard reduction and decommissioning.

As for the NDA itself, my own personal focus is on improving our effectiveness as an organisation that puts into action the various plans drawn up in the last few years since we were established.

Now we have understood the liabilities, opened up sites to market-driven competition, developed lifetime plans for the sites and recruited our people, it is time to keep our promises on performance.

With this in mind, I am reviewing our organisational effectiveness with the aim of clarifying the roles of individuals as well as our partner organisations and streamlining our decision-making processes such as project sanctioning and budgeting. I am looking at the relationship between the NDA and the SLCs and PBOs in order to ensure we are structured and operating in a way that improves performance and delivery and doesn't create unnecessary bureaucracy.

Of course, at nearly £3 billion of expenditure a year, mostly through our sites, the Government expects us to have a close handle on where and how the money is being spent but we need to get the right balance between being a demanding customer and allowing our delivery partners to get on with the job.

We are also targeting a reduction in the operating costs of the NDA. We started this year with a budget for the NDA HQ (excluding the part of our organisation that is supporting Government on the implementation of the geological disposal facility) of £63 million. We are on track to come in at £56 million for the year, and are targeting a further 5% reduction next year.

Moving forward, another major goal will be the drafting and approval of our overarching Strategy document, which will update the current version published in March 2006.

In line with our commitments to openness and transparency, we have been sharing our evolving thinking and getting input from stakeholders – especially through the National Stakeholder Group – as we work towards publishing our second Strategy document for consultation later this year. For further details, see page 9.

The next 12 months promise to be every bit as challenging as the last. But by the end of it, we expect to have:

- A new Strategy approved by Government.
- Made good progress in the Dounreay PBO competition.
- Delivered real progress across all our strategic programmes.
- Confirmation of our next three-year spending allocation and revised plans in place.
- An organisation and an estate which is more efficient, more empowered and has a total focus on delivery.

In the first of an occasional series, Insight invites contributions from guest writers. Lord Jenkin held a variety of senior roles within Margaret Thatcher's Governments during the 1980s including Secretary of State for the Environment, and is Honorary President of the National Skills Academy for Nuclear. An MP for more than 20 years, he was elevated to the House of Lords in 1987 and continues to take a keen interest in energy matters including the nuclear industry.

## A vital role to play

by Lord Jenkin of Roding

The worldwide renaissance of the nuclear industry will make a huge impact in the battle to fight climate change. For too long, the nuclear industry has been the victim of both misrepresentation by its diehard opponents and its own cult of secrecy.

I therefore warmly welcome the decision by the NDA to tell the public about the Authority's aims and achievements. In the UK, there is no doubt whatever that, if all are to play their part in developing a new nuclear programme, the NDA has a vital role to play. Therefore, the more people who know about it, the better!

Though conceived less than seven years ago in a policy context that envisaged only the wind-up and dismantling of our civil nuclear installations, the NDA has had to face the dramatic reversal of policy with the decision by Ministers to promote new nuclear build. (Sadly, this has come 10 years too late: there is a huge catch-up job to do.)

The NDA can play its role in this by demonstrating its competence and effectiveness in the decommissioning of nuclear reactors that have reached the end of their lives, in the handling of nuclear waste and other radioactive materials, and the safe storage and ultimate disposal of high level waste.



It is right to recognise that the NDA is responsible for Europe's largest environmental restoration programme on former nuclear sites; it is also in a position to develop the provision of a national infrastructure to support the UK nuclear industry. Indeed, the NDA should increasingly see itself as serving the whole nuclear industry.

I have been encouraged by the progress that has been made in the appointment of world-class Site Licence Operators; they have brought valuable new skills, perspectives and techniques to the tasks in hand. I have met a number of the companies and consortia engaged in this work and there is no doubting their commitment and expertise.

One of the major problems they face however, in common with the NDA itself, is the system of short-term financing of what is a long-term programme of investment. There are 100 or more years

of work ahead to serve the industry properly, above all by the construction and operation of a safe repository for the disposal of high level waste.

In this context, how can this be achieved if all involved have to deal with a three-year cycle of funding? Of course (and I say this as a former Treasury Minister), the Treasury is bound to want to keep a very close eye on the spending of such huge sums. At the same time, I am convinced that the best management of these tasks will be if all those involved, the NDA, the SLCs and PBOs, can plan ahead so as to use their assets and expertise to the best possible advantage over the medium to long term.

I see this as a vital issue for whichever Government is in office after the General Election.

# Reprocessing spent fuel

A key area of responsibility for the NDA is managing spent fuel which has been used in reactors across the UK and overseas. Spent fuel management is a commercial Sellafield operation, earning essential revenue for the NDA which can then be used to fund decommissioning activities.

Two fuel reprocessing plants are located at the Sellafield site. One is used to reprocess Magnox fuel from early UK nuclear reactor operations. The other facility is Thorp (Thermal Oxide Reprocessing Plant), which reprocesses fuel from British Advanced Gas Cooled Reactors (AGRs) at British Energy sites, such as Hartlepool and Heysham, plus Light Water Reactor fuel from reactors around the world.

The contracts are overseen by International Nuclear Services (INS), the NDA's commercial sales expert.

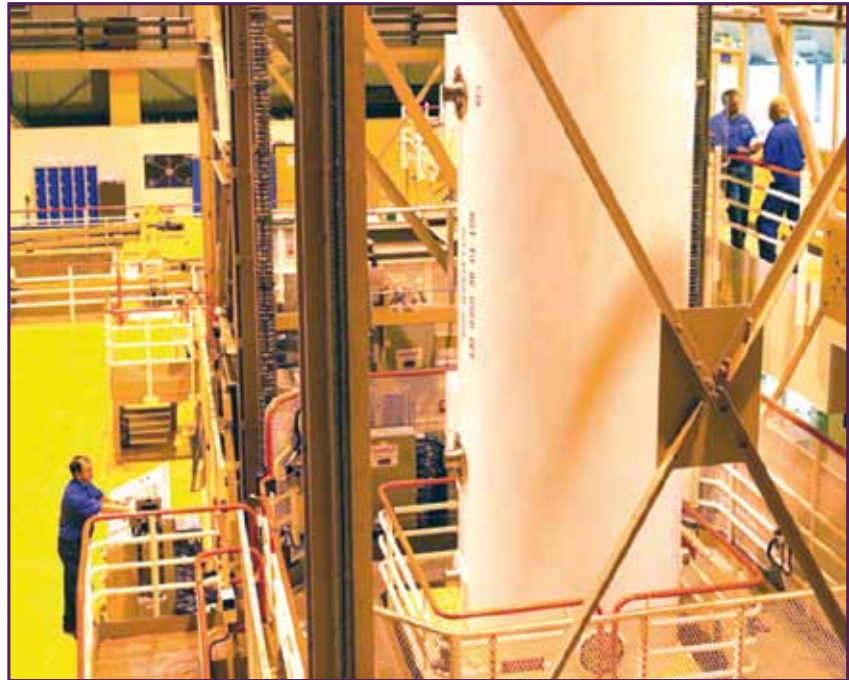
Thorp has already reprocessed more than 2,300 (26%) of the estimated 8,800 tonne total of AGR fuel from UK power stations, and has less than 700 tonnes of overseas fuel left to reprocess, plus around 150 tonnes of fuel inherited from historic prototype reactors. At present, Thorp is performing well and, in February, exceeded its output target for 2009-2010.

The fuel has a generating life of about four years before being replaced to ensure reactors continue to perform efficiently.

Once removed from the reactor, spent fuel is initially placed in storage ponds at the power stations to cool and allow short-lived radiation to decay. After this cooling period, it is transported to Sellafield either by sea, road or rail using specially designed high-specification shielded flasks.

On arrival at Sellafield, the spent fuel flasks are unloaded by a lifting beam attached to a crane, able to lift up to 150 tonnes. The flasks, usually weighing 40-80 tonnes, are again placed in storage ponds for unloading and further cooling and radioactive decay before the start of reprocessing.

At Thorp, spent fuel is dissolved in acid. This chemically separates the plutonium and uranium from high level waste. The retrieved uranium and plutonium powders are then placed in special containers and stored.



Spent fuel flask being manoeuvred in Thorp Receipt Area

The highly active liquid waste arising from reprocessing operations is treated at the Sellafield Vitrification Plant, where it is subjected to intense heat, evaporation and drying. The resulting calcine powder is mixed with manufactured glass pellets and again heated intensely. The process results in a molten liquid which is poured into a drum to solidify and a lid fitted. Following final checks, the container is moved to the Vitrified Product Store awaiting return to the waste owners.

Reprocessing also generates Intermediate Level Waste and Low Level Waste, for which further treatment may include recycling or compaction.

Remaining Intermediate Level Waste is treated and packaged, then stored on-site in specially engineered product stores. Low Level Waste is packaged and stored off site in the Low Level Waste Repository.

As a result of reprocessing, 97% of spent fuel can be recycled, avoiding large quantities of high level waste which would require storage in the proposed Geological Disposal Facility.

Reprocessing also means uranium can be reclaimed and, where appropriate, re-used to make new fuel, helping to conserve finite supplies of natural uranium ore.

The NDA has just published a discussion paper on the development of a strategy for managing spent oxide fuels. See [www.nda.gov.uk](http://www.nda.gov.uk).



Vitrification containers



## High level waste returned overseas

The return of solid Highly Active Waste (HAW) from Sellafield to overseas customers began in January.

Announced in September last year and known as the Vitrified Residue Returns programme, the first consignment resulted from reprocessing the spent fuel of Japanese customers.

The first stage was the transport of a single 113te flask, containing 28 stainless steel containers of solid HAW from Sellafield, on a specially constructed rail wagon, to Barrow, ready for shipment to Japan.

Direct Rail Services, an NDA subsidiary, was responsible for the rail transport of the shipment to Barrow and will continue to facilitate future specialist freight moves. On arrival at the port, the flask was transferred to the PNTL's Pacific Sandpiper (see picture right) and has now arrived safely in Japan.

Mark Jervis, INS Managing Director, said: "Transportation by sea is a tried and tested method that is safe and secure, highly regulated and internationally approved. The detailed arrangements for this shipment have been put in place



through discussions with customer and regulatory bodies in the UK and Japan."

In 2007, PNTL completed 12 similar HAW transports to Japan for the French nuclear industry.

Ian Hudson, the NDA's Sellafield Programme Director, said: "The first return of high level waste to overseas customers is a significant milestone in meeting our contractual commitments and delivering on Government Policy. The delivery of this

programme is a prime example of high quality teams working across the NDA estate, within Sellafield Ltd, INS, DRS and PNTL."

Mike Johnson, Director of Waste and Effluent Disposition for Sellafield Ltd, added: "This work demonstrates the ability of our workforce to safely prepare and deliver this material for transport, while meeting the most stringent national, international, and customer requirements."

### 40 years of safety at sea

The overseas shipment of nuclear materials and commercial sales contracts are handled by an NDA subsidiary that, in its first year of operations, secured £673 million of income for the clean-up mission.

However, the key activity of International Nuclear Services (INS) lies in providing a range of services relating to contracts for irradiated fuel management, interfacing with customers across the globe.

Warrington-based INS became an NDA owned company in 2008 as a consequence of the Sellafield competition process, when it was decided that a separate operation was needed to manage the high-value contracts and nuclear shipments on behalf of the NDA.

With a workforce of 140 dotted around various countries, contract work dominates the business, either Sellafield-focused for the international clients who use its reprocessing facilities or as a specialist in nuclear fuel cycle

expertise for overseas clients in both private and government sectors.

But it is the shipping expertise that currently draws more attention.

INS has been safely transporting nuclear cargoes worldwide for more than 40 years, without any accidental release of radioactivity and covering more than five million sea miles in the process.

Nuclear shipments can be sensitive, and part of the INS team is dedicated to building and maintaining relationships with partners overseas, providing assurances on safety and liaising on the logistics of nuclear transport.

The ships are tightly regulated by the marine authorities, with some categories of highly active nuclear material requiring armed escort, which is provided by the Civil Nuclear Constabulary.

"There are many layers of safety associated with the ships themselves, with the crew and with the route planning. Our track record is exemplary,"

said Corporate Responsibility Director Rupert Wilcox-Baker.

INS subsidiary Pacific Nuclear Transport Ltd (PNTL) runs a fleet of four specially designed ships, costing around £30 million apiece, and two more are on the way - the Pacific Egret has just been launched in Japan. Other INS assets include the marine terminal at Barrow, Cumbria, casks for the shipping of nuclear fuels, high-security vehicles and consultancy expertise.

"PNTL is the world's leading nuclear shipping company. The UK is pre-eminent in this field," Rupert added. "We transport Sellafield-related material, such as the recent shipment to Japan, but also have commercial clients all over the world which generate revenue that is, effectively, helping to contribute to the NDA's nuclear decommissioning programme."



Richard Ridings, Dino Taylor and Nigel Gurr with the last fuel element

## Magnox era draws to a close

The very last piece of fuel for a Magnox power station has finally been packed, ready for delivery.

The fuel element is destined for Oldbury Power Station and rolled off the production line in May 2008, ending 53 years of continuous Magnox fuel production at the Springfields plant near Preston.

The element itself was packed in mid-January. Actual deliveries depend on station requirements and there are currently a number of Oldbury and Wylfa finished fuel elements awaiting delivery.

"The current plan is that the last Oldbury fuel element will be sent to the station later this year and the last Wylfa element will be sent around June 2012," said Vaughn Sadler, Magnox Quality & Surveillance Engineer/A331 Plant Controller.

Springfields continues to supply a fuel storage, delivery and technical support service.

A fuel element is made up of a uranium metal rod encased in magnesium alloy, giving rise to the name 'Magnox'.

In total, around five and a half million Magnox elements have been produced at Springfields - enough to have powered a city the size of Greater London for almost 30 years.

## Pioneering work led the world

The Magnox power stations were the first generation of commercial nuclear power stations in the world and have been a major success story in the history of the UK's nuclear industry.

Thirteen were built in the UK, Italy and Japan and all the fuel was made at Springfields.

They have provided electricity safely, reliably and efficiently since the 1950s. During this time the stations have generated over 1220TWh globally of electricity, equivalent to burning more than 306 million tonnes of coal.

The pioneering work on Magnox fuel also helped the development of the fabrication processes for the Advanced Gas-Cooled Reactor (AGR) and other more advanced fuel types.



## Ordinary land - what an achievement

After two decades of tough clean-up work, part of the research site that gave birth to the UK's nuclear industry will officially become an ordinary piece of land again this year.

Once the remaining 23 acres at the front of the Harwell site, known as the eastern area, are formally released from the Nuclear Licence, the land will be available for commercial development.

De-licensing is one of the last major milestones in the decommissioning process, marking completion of the environmental restoration work.

Work on the clean-up started in the 1990s with the decommissioning and demolition of redundant facilities, the management of radioactive waste and ground restoration.

The changes are taking place in stages, beginning with the relocation of the Civil Nuclear Constabulary and Emergency Response teams to a new emergency services and security building located in the centre of the site. The building was constructed with both security and the environment in mind and, among other green features, incorporates light pipes, and a ground-source heating system.

That will be followed by the moving of the boundary fence and the opening of a new Eastern Entrance gate with visitors' reception building; this is probably the most visible demonstration of the tremendous progress that has been made.

Formal de-designation of the land, signed off by the Secretary of State for Energy and Climate Change, is expected to take place in two phases, the first of which will be released around September 2010, with the second tranche released around June 2011.



Above: Harwell in the old days  
Below: With facilities demolished



Harwell, which sits amid the Oxfordshire countryside, was established in 1946 as the UK's first research establishment into nuclear power and has been at the heart of numerous industry developments, with an international reputation for scientific excellence. The NDA occupies about one third of the Science and Innovation Campus, established as a public-private partnership in 2008, which is home to a range of research organisations and businesses.

"The final act in the process will be the passing of the released area of land to the Joint Venture for development commercially as part of the Science and Innovation Campus," explained eastern area project manager, Paul Atyeo. "From that moment on, the eastern area of the Harwell site will be open for use just like any other piece of industrial land."

Stone chippings where the ponds used to stand



## Berkeley sets the pace

When Berkeley Power Station stopped generating electricity in 1989, work began on the decades-long, painstaking process of removing the remaining radioactivity and demolishing the buildings.

The first step was defuelling, which removes 99% of the radioactivity, and this had taken place by 1992. For the remainder, the target date for completion is towards the end of this century, a similar timeframe for all the Magnox plants that heralded the start of the UK's nuclear age.

Plans for decommissioning were already being prepared in the 1970s, just a few years after operations started in 1962. As the first nuclear plant to be built solely for commercial purposes and one of the first to close, Berkeley has led the way in many areas.

Its two concrete-lined ponds, which provided temporary cooling for the hot used fuel and associated radioactive debris, are the first in the UK to be completely drained and demolished. Approximately the size of an Olympic swimming pool, 25 foot deep and housed in a low-level building, the ponds were highly radioactive and presented a major challenge. Over a period of almost 10 years, contaminants were cleaned, the water drained down, surface concrete removed by ultra-high pressure water jets followed by planing, scabbling and

the removal of ancillary equipment. Much of the work was carried out remotely to minimise risks to the workforce.

Finally, a huge tent, the largest scaffolded structure in Europe at the time, was erected to contain any airborne material while the buildings inside were demolished. Now, stone chippings mark the place where the ponds used to stand and signal the completion of the environmental restoration.

Another significant milestone will be reached in September when the twin reactor buildings are scheduled to be the UK's first to enter the final 'Care and Maintenance' Safestore state. After being sealed up, they will be left alone and monitored for around 70 years until the entire site is fully decommissioned in Final Site Clearance where it will be levelled and landscaped.

Before then, a more immediate source of excitement is the possibility of being able to use the pioneering MiniStores for storage of the intermediate-level waste that is held on-site in four subterranean vaults.

The original plan was to construct a £40 million specially shielded store to hold boxes containing the concrete-encapsulated material, but the advent of MiniStores raises the prospect of a more flexible and much cheaper option.

Site Director Sean Sargent told a recent meeting of local stakeholders that a two-year exploratory work programme had been approved by the NDA, which would assess the MiniStores' suitability for the specific conditions at Berkeley. He stressed that there were no foregone conclusions and that the original solution would still be available should the MiniStores ultimately fail to deliver.

"We're increasingly excited about this," he added. "But we do need to work out whether this is the best option."

The local community is due to be consulted over the next few months while data is collected and extensive environmental studies carried out. Meanwhile, piling work for the foundations of the ILW storage facility will continue as the MiniStores would also require a weather-proof building, though with less heavy shielding.



## Old labs could be back in business

Adjacent to the power station are the old Berkeley Nuclear Laboratories, which were founded back in the 1960s and once employed 1,500 people.

Occupying approximately one third of the NDA-owned site, the offices and laboratories were established as a centre of nuclear research and development for the UK electricity supply industry. Later, the Berkeley Centre, as it became known, provided direct engineering and technical support to the Magnox power stations, and became the managerial headquarters of the old Magnox Electric company. Around 300 staff are still employed.

The entire nuclear-licensed site was therefore much larger than the average power station, though many buildings had no history of radiological use.

Some laboratories, however, were used to examine post-irradiated fuels and other materials from all over the UK, and were heavily shielded. Over the years, until operations ceased in 2005, they accumulated radiological debris, and much of this has been disposed of. Around half of the lab space is now free from radiological contamination with most cells demolished and removed. Some cells and all six caves remain for the present time.

The site achieved "Partial Site De-Licensing" release from the Nuclear Licence in 2006, the largest piece of land in the UK to do so and a first de-licensing since the NDA was formed. The perimeter fence was moved to reflect the new boundary, with the contaminated part of the complex remaining with the power station where clean-up work continues.

Depending on available funding, plans will be considered for the final separation of the two sites. All shared services, including utilities, IT, etc, will be rationalised and the former office and lab complex made available for marketing commercially, with the possibility of a land sale to maximise income. This final piece of the jigsaw can only be completed once the Designating Direction has been revoked by the Secretary of State at DECC, officially marking the end of the NDA's clean-up mission at Berkeley Centre.

## Strategy development



## Reviewing NDA's strategy

'During its start-up phase, NDA achieved a significant amount including increasing its knowledge of the liabilities, delivering competitions, restructuring the industry, developing Lifetime Plans, establishing the NDA organisation and publishing its first strategy. Moving forward, it is necessary for the NDA to have a good strategy in place, turn that into plans and then put these plans into action' – *Tony Fountain, NDA Chief Executive*

The development of strategy is an ongoing process that involves NDA's subject matter experts and their regular engagement with numerous stakeholders from across the industry, such as Regulators and Site Licence Companies (SLCs).

The Energy Act 2004 requires NDA to review and publish its strategy every five years. The NDA published its first strategy in 2006 and this is now being reviewed and revised for publication in April 2011.

The NDA's strategy considers how the sites will be restored for return to societal use, how spent fuels and nuclear materials will be managed, how current and future waste products will be managed and ultimately disposed of and how the NDA will use its assets to maximise income to enable the delivery of its wider mission.

Richard Arnott, NDA's Programme Manager, said: "The development of strategy relies on many factors, such as safety, technical and financial underpinning, the views of our stakeholders and interactions with policy. Our strategic decisions are based on sound business case principles that aim to achieve efficiency, value for money and the progressive delivery of our mission. Our next strategy aims to reflect the maturity of our development work in each

area of the NDA's remit at the time of publication."

The NDA will be conducting a public consultation commencing in September 2010 for a 12-week period. Director of Strategy and Technology, Adrian Simper, said: "The views of our stakeholders are important to us, so the NDA is currently developing a plan to engage its stakeholders through a variety of means and to communicate its strategy both before and during the public consultation. We have events planned with our statutory consultees and aim to visit our sites and their local communities during September and October 2010."

In addition, the NDA is holding two National Stakeholder Group events during 2010. The March event is timed to provide stakeholders with an early opportunity to influence the proposed strategy, and in September the NSG will provide the platform to launch the public consultation.

The NDA is also preparing a Strategic Environmental Assessment (SEA) to support its revised strategy, and this too will undergo the 12-week public consultation.

The NDA Strategy will be approved by the Secretary of State and Scottish ministers prior to publication in April 2011.

# So much cleaner than we thought!



Work in progress at the disposal plant

Whoever wins the NDA's latest competition will inherit a Site Licence Company that's already made huge strides in hazard reduction.

The programme of work at Dounreay, Scotland's biggest nuclear site, is geared towards reducing and eliminating the major hazards left over when its work on fast reactor research and development came to an end.

The reduction in these hazards is reflected in the recent decision to reduce the emergency planning zone around the site from 5km to just over 1km.

One of Dounreay's biggest hazards was its stock of liquid metal. Some 1,560 tonnes of sodium and potassium were poured into miles of pipes and vessels that surrounded the core of the site's two fast reactors.

The toxic metal is now being destroyed in a specially built £15 million plant - and it has recently been established that emissions from the plant have been up to 4,000 times cleaner than its designers expected.

Engineers believed they could reduce the levels of radioactivity in effluent from the new plant by up to 1,000 times at most.

But the plant in fact reported far superior decontamination levels, reaching four million during its first full run.

This is 4,000 times better than the designers thought possible, and means emissions from the plant have been a lot cleaner, while the impact on the environment from destruction of the liquid metal is barely even detectable.

Randall Bargelt, Site Director at the NDA, said: "This sort of performance is why Dounreay is renowned for its decommissioning progress - excellent results, with minimal impact on the environment.

"And now that Dounreay has been granted stabilised funding of up to £150 million, we can be confident that we will continue to see this sort of progress."

The liquid metal is a remnant of Britain's quest in the 1950s to generate electricity too cheap to meter from fast breeder nuclear reactors.

Over 1,500 tonnes of sodium used as reactor coolant have already been destroyed during the decommissioning of Dounreay, Britain's centre of fast reactor research until 1994.

Of the 57 tonnes of sodium and potassium mix (NaK), which was the coolant for the Dounreay Fast Reactor, almost 14 tonnes have been destroyed and DSRL are on schedule to destroy all 57 tonnes by 2013. This material is

heavily contaminated with radioactive caesium from the fuel used in the core.

Its destruction is one of the national priorities of the UK Government's Department of Energy and Climate Change.

The plant lifts the highly reactive alkali metal from the reactor system in 200-litre batches.

Each batch is reacted with water in a nitrogen atmosphere to create a hydroxide solution that is neutralised with nitric acid.

The process turns it into 2,000 litres of effluent that is about twice the strength of standard household drain cleaner.

But it still contains high levels of radioactive caesium, so the effluent is cleansed through a special resin fitted inside an ion exchange - and this has been so successful that the level of caesium in the effluent discharged to sea is barely even detectable.

Mike Brown, fast reactor decommissioning boss, said: "The progress we're making to destroy the hazard inside the sphere is a result of an enormous amount of effort that went into satisfying ourselves and our regulators about the safety of our plant and practices. Its destruction is a real milestone, not just for us but the country as a whole."



## Dounreay competition gathers pace



Nuclear industry representatives from around the globe have been visiting Scotland as part of the process to find a new Parent Body Organisation (PBO) for the Dounreay site.

During the first part of the industry event in Caithness (5 Feb 2010), local stakeholders spoke directly to bidders about opportunities in the area, as well as what they would like to see from a new PBO. Potential bidders were also given an outline of how the competition will be run - including ensuring an ethical and fair competition.

Speakers included the local MP, representatives from NDA, Caithness & North Sutherland Regeneration Partnership, Caithness Chamber of Commerce, North Highland Initiative, North Highland College and UNITE trade union.

The second part of the event, in Glasgow on 9 March, provided key information about the specific requirements of the competition.

Prior to the event, the NDA announced its plan to maintain funding for Dounreay at a capped level of up to £150 million

per annum for the duration of the contract to achieve the site Interim End State, currently scheduled for 2025.

This will ensure an effective competition and deliver value for money from the new PBO.

These funding arrangements will mean re-phasing some major projects, in turn providing the PBO bidders with the opportunity to bring in their own ideas and innovations.

Randall Bargelt, the NDA's Dounreay Site Director, said: "It is important to all of us to achieve the best possible outcome for Dounreay through the competition process. And the fact that we can now present a stable, attractive, package to potential bidders is really good news."

Following the Caithness event, Bob Earnshaw, Acting Chair of the Dounreay Stakeholder Group, said: "The Dounreay Stakeholder Group was delighted to host the first part of this event. It gave us a

chance to outline to all those interested in the Dounreay competition what the opportunities are for the future."

Graeme Rankin, Competition Project Manager, said: "Both events were successful and interesting. We felt it was important that stakeholders had the opportunity to have their say and talk to potential bidders about their concerns and aspirations – and I believe potential bidders found this grassroots insight during the Caithness event very useful. The Glasgow event then provided bidders with the crucial details of how the competition will be run."

The successful PBO bidder will take ownership, via share transfer, of the SLC. The PBO's role will be to provide strategic leadership and vision for the SLC in order to enhance the achievement of the site's decommissioning mission.

The NDA's ownership of the Dounreay site will remain unchanged, while site decommissioning work will continue to be the responsibility of the Site Licence Company (SLC), Dounreay Site Restoration Ltd.

Competition is central to the NDA's strategy as part of its statutory duty to secure value for money while promoting competition and best practice.

## A watchful eye on the site team

Richard Smith, Chair of the Sizewell A & B Stakeholder Group since its inception in 2005, shares his thoughts on the group's work. A former banker and management accountant, Richard was recently elected as Chair of the NDA National Chairs' Forum. He served two terms as a local councillor, is a trustee of a national charity and earns his living trading in second-hand books, until recently from shop premises in his home town, and now on the internet.



### By Richard Smith, MVO

Openness and transparency are NDA watchwords.

To help translate this aspiration into practice, one of the early priority actions of the NDA was to found a series of Stakeholder Groups covering all of its sites. Four, including mine at Sizewell, decided in its remit to cover the NDA-owned 'A' site and also the adjacent (then British Energy-owned) 'B' site, as the interests of the community in both sites are, of course, identical.

We act as a conduit between the sites and our communities by providing a regular quarterly forum, open to the public, at which senior site management and the regulators report and face questioning. The NDA Site Programme Manager, and Inspectors from the Nuclear Installations Inspectorate and Environment Agency all regularly attend, and well know that they may face forthright questioning about their site-specific roles.

Our members are a tough lot. The core membership is formed from people with a current elected mandate - representatives from parish, town, district and county councils - together with those who are active in the local Business Association, National Farmers' Union and the Sizewell Residents' Association, among others. Our MP. is also a full member. He has attended once; otherwise he appoints a representative to report back to him, so he is kept well-briefed about issues that may arise.

We also have eight co-opted members (the maximum allowed under our Constitution) who bring a range of extra skills and experience to our work. These include 'green' activists, a retired engineer and a local fisherman. Staff representatives from both sites are also full members, giving us a grand total of around two dozen.

Our meetings, which are advertised in the local press, are lively and forthright. Written reports are circulated with the meeting agenda and are available on

our website. Questioning is always detailed and often passionate. One of our members is a founder of Greenpeace and representatives of the Shut Down Sizewell Campaign always attend, along with a dozen or so interested members of the public.

At a special meeting in 2009, called to discuss in detail a leak from the Sizewell A cooling pond, public attendance rose to nearly 100, but generally the two nuclear sites enjoy support as the local population have lived with Sizewell 'A' since the early 1960's, and 'B' since the '90s, and have been satisfied that they are operated and managed with safety as the number one priority. Even the proposal for a new twin-reactor 'C' development seems to enjoy community acceptance, but there is vociferous opposition from a section of our population, and final decisions have not yet been taken.

Meetings of my Stakeholder Group are never dull!

Sizewell A with B station in the background





# Yellow is the colour



The first MiniStore being moved at Dungeness, demonstrating the flexibility of the new option

The boxes might be square or cylindrical, but they're definitely yellow and definitely pioneering in terms of storing the UK's intermediate level radioactive waste.

Square versions of the MiniStores were successfully tested at the Dungeness A site last year while trials of the smaller, cylinder-shaped Mosaik containers are currently under way. Each has different qualities and is used for different types of waste.

The hope is that the MiniStores, which provide shielding from radiation, will provide an alternative to the construction of purpose-built on-site stores across the Magnox sites. Current plans assume that all sites will build stores over the coming years – some are already complete - but using the MiniStores could provide a much more affordable and flexible decommissioning solution.

The boxes would store the material until a geological disposal facility is developed, and, ideally, simply be transferred at the appropriate time.



A Mosaik container

The MiniStores concept has been used extensively in Europe for more than 20 years, where the boxes are used for interim storage, transportation and final disposal. Their introduction in the UK, however, needs to be comprehensively assessed and approved by the nuclear regulators.

Weighing 18 tonnes each and holding up to about 2.85m<sup>3</sup> of waste, the Dungeness MiniStores contain spent resin from existing storage tanks, freeing valuable space and allowing an additional 10 years' capacity, adequate for the projected life of the cooling ponds.

Regulatory approval from the Nuclear Installations Inspectorate was received last year for three Dungeness MiniStores to be used for 13 years storage, though not for final disposal in a repository. The approval was preceded by rigorous testing over a period of 20 weeks.

However, the project has provided valuable data to support a case for longer-term storage.

Mosaik containers weigh 7.6 tonnes when empty and 8.6 tonnes when full, and are being tested for the storage of highly irradiated debris from the fuel elements, in the form of springs, coupling wires and caps. Inside the container is an internal pot which contains the waste and was designed by the Dungeness team, with 75mm thick lead walls and an outer stainless steel frame.

Magnox intermediate level waste (ILW) management director Mike Gull said: "The outcome of the Dungeness pathfinder projects and our wider MiniStores assessment will hugely influence the future strategy for managing ILW and potentially save millions of pounds in decommissioning costs."

Last autumn, more than 40 local community representatives from Magnox North and Magnox South sites attended a workshop, aimed at giving them the opportunity to participate in the decision-making process.

Magnox North and Magnox South Nuclear Safety Committees have now agreed that the MiniStores approach can be included in their decommissioning strategies following a detailed analysis of technical issues. This has been endorsed by the NDA's Expenditure Review Panel (ERP), which has approved proposals to develop Lifetime Plan changes, reflecting the MiniStores approach, at eight Magnox sites.

# Innovative thinking to overcome challenges

NDA encourages and supports innovation as an essential part of its strategy, with the ultimate aim of overcoming the technical challenges posed by decommissioning and clean-up.

Dr Melanie Brownridge, Head of R&D, said: "NDA has a responsibility to support and fund relevant research and development and we are committed to investing in innovation to deliver our mission. We have successfully employed a variety of mechanisms to support suitable innovative projects and encourage development of a vibrant supply chain."

For smaller-scale projects, the Concept Development programme offers support, typically of £50,000 or less, to supply chain companies with ideas that have the potential to improve either the efficiency or effectiveness of nuclear decommissioning or clean-up.

So far, 24 concept projects have been undertaken following two open calls from the NDA in 06/07 and 07/08. The programme can provide a springboard for the progression of these ideas, or for a more developed project to reach deployment.

Dr Darrell Morris, R&D Manager, said: "New ideas and innovative thinking are an essential part of finding the right technology to accelerate clean-up, improve safety or just to operate more efficiently.

"We are always looking to accelerate the development of novel ideas and the Concept Development programme has been very successful so far."



The R&D team, Darrell Morris, Rebecca Trainor and Melanie Brownridge

Among the projects sponsored are:

- REACT Engineering Ltd's progression of an existing software concept for radiation mapping. NDA funding allowed the further development of the software to enable the accurate mapping of radiation sources and hotspots to aid potential decommissioning plans, even in the presence of heavy shielding such as concrete and water. This NVisage™ system is currently being deployed at Sellafield, and has the ability to advance many decommissioning projects.
- Bristol University's investigation into the use of crushed ice slurries as a means of cleaning out pipework. The process is similar to the use of solid 'pigs' in other industries but has the advantage that the ice can flow round bends and clean pipes efficiently with minimal secondary contamination, with a reduction in waste generation. Potential application of this technology is being reviewed for deployment by Sellafield Ltd and Magnox North Ltd.
- James Fisher Nuclear Ltd's development of a sonar system able to detect and locate solid items buried beneath sludges. This proposal looked at modifications to existing technology, and could be applied to a number of NDA facilities including Sellafield's legacy ponds and silos.

For larger-scale projects, the Technology Demonstration Project (TDP) provides funding of up to £1 million for companies to realign their technology toward the

nuclear industry. The technology must have a multi-site use and represent a realistic alternative approach to the decommissioning challenges.

The current TDP has been awarded to Cambridge-based TWI for their demonstration of concrete scabbling and pipework size-reduction using fibre lasers. This technology has the potential to be deployed into areas that are hazardous or inaccessible for people-led teams, through the laser's remote working capability. For more information on this project, please follow the links below:

<http://www.nda.gov.uk/stakeholders/newsletter/laser-trial.cfm>

<http://www.twi.co.uk/laserdemo>

The final mechanism that is used to directly fund relevant innovation in the supply chain is the Direct Research Portfolio (DRP). This portfolio consists of research in the fields of waste processing, material characterisation and actinide and strategic nuclear materials, as well as direct support to the University sector. Framework contracts in these areas were awarded to NNL, UKAEA, Serco, and Hyder Consulting in 2008. Details of the projects carried out in the DRP can be found at [www.nda.gov.uk/research](http://www.nda.gov.uk/research)

For further information on NDA Research and Development please contact [research@nda.gov.uk](mailto:research@nda.gov.uk).



# Metal recycling saves 95% for market

Waste metals with low levels of radioactivity are generally destined for the UK's purpose-built repository near the village of Drigg in Cumbria.

However, large quantities of contaminated material are now being stripped of the radioactive content and recycled as valuable scrap metal, suitable for a wide variety of everyday industrial uses.

The Studsvik Metal Recycling Facility (MRF) at Lillyhall in Cumbria received its first consignments of contaminated metals in September 2009 and was able to recycle more than 95% of the material back into the scrap metal market. Less than 5% of the original volume was packed and made ready for disposal at the Low Level Waste Repository (LLWR).

The potential savings for the taxpayer and longevity of the LLWR are significant, while the environmental impact of metals extraction is reduced and finite natural resources preserved for longer. Importantly, the facility assists Low Level Waste producers in applying Government policy on waste reduction and recycling.

The £6 million facility, housed in a former engineering workshop, is the first commercial venture of its kind in the UK, and the first to receive a nuclear site licence for 20 years. Studsvik, however, has been operating similar plants in Sweden for many years, and also has plants in the US. The technology is straightforward and well-proven: Industrial cutting, shot-blasting to decontaminate and compaction.

Much of the material, around 80%, comes from the NDA's operating and decommissioning sites, while private sector companies such as British Energy, Rolls-Royce, Babcock Marine and others provide the remainder of the business. Some 20 tonnes a week pass through the facility, totalling approx 1,000 tonnes annually, with the potential to increase as demand grows. Studsvik estimates that there are half a million tonnes of lightly contaminated metal waste in the UK that can be treated, recycled and re-used.



Staff prepare a contaminated drum for the blasting cabinet

Facility Manager Mike McMullen, having spent 20 years with UKAEA and latterly Sellafield on the Windscale site, has first-hand experience of the nuclear industry, especially in decommissioning and the production of metallic LLW. He says the facility offers a viable and proven alternative route to the direct disposal to LLWR of significant volumes of low level metallic wastes and is an exciting environmental development for the nuclear industry.

Rigorous checks and safeguards accompany all stages of the process, meeting the stringent criteria of the regulators, including the Nuclear Installations Inspectorate, Environment Agency and Office for Civil Nuclear Security.

The material is inspected on arrival, its weight and radioactive content recorded, then checked against the customer's submitted paperwork. Once the material has been accepted for processing, the initial personal protection required for the handling team is standard industrial overall, gloves and footwear. The size reduction method utilised may then determine the requirement to wear additional personal protective equipment.

The length of time in processing a consignment can vary and is dependent on the physical characteristics and complexity of the waste items. Further measurement and testing is carried out before the waste can be classified as exempt in accordance with current legal requirements for release to the scrap metal market.



Drums before and after decontamination, after which the metal can be recycled



# A brief glance across the UK

**Competition is central to strategy.**

We do not directly manage the facilities that we own. Instead we contract out the delivery of site programmes through management and operation contracts with licensed operators, Site Licence Companies (SLCs), at each site. SLCs manage sites, including preparation of site plans, performance and sub-contract work. Parent Body Organisations (PBOs) own shares in SLCs for the duration of their contract with the NDA. The PBO is responsible for managing the delivery of site programmes.

Competition is central to our strategy. We compete the Parent Body role to own shares in the Site Licence Companies (SLCs) as part of our statutory duties to secure value for money, promote competition, innovation and best practice. An SLC could manage one large complex site, a multiple-site group or smaller single or pairs of sites.

This form of management arrangement introduces competition at the strategic management level through a PBO, while retaining operational responsibility and the skills of the existing workforce within the SLC. The sites themselves remain in NDA ownership.

SLC	Magnox North
PBO	EnergySolutions

SLC	Magnox South
PBO	EnergySolutions

SLC	Dounreay Site Restoration Ltd
PBO	Babcock International Group

SLC	Research Sites Restoration Ltd
PBO	Babcock International Group

SLC	Sellafield Sites Ltd
PBO	Nuclear Management Partners Ltd



**Dounreay** continues to reduce and eliminate the major hazards from Britain's research with fast reactors.

Almost 1,700 tonnes of liquid metal has been destroyed safely – but the last few tonnes remaining inside DFR are the most hazardous of all and need extra special care.

The fuel complex continues to come apart. The latest area to be cleared is the most contaminated part of the old uranium recovery facility after a seven-year clean-up.

Robots developed for the North Sea are being brought in to begin dismantling the old uranium fuel reprocessing plant.



At **Trawsfynydd** another phase in the active commissioning work on the new ILW store has been completed with the transfer of six containers of Fuel Element Debris recovered from elsewhere on the site.

Meanwhile, at **Hunterston** work to clad the main reactor buildings in a new weather-proof membrane is nearing completion.

At **Chapelcross** the defuelling team has now removed around approximately 10% of the 38,075 fuel elements and despatched these to Sellafield for reprocessing in 25 flask movements. Another five flasks are scheduled for despatch by the end of March.

Away from the reactors themselves, the relining work to the Effluent Pipeline, which stretches three miles from the Chapelcross Site to the Solway Estuary at Annan was completed at the beginning of February and commissioning work has started.



**Oldbury** and **Wylfa**, the last operating reactors in the Magnox fleet continue to perform well. Safe generation of electricity is well ahead of target - generating valuable income for the NDA and its work programmes.

This achievement is particularly significant for Oldbury, which for the first time in its history completed two major reactor outages within a year, during which all statutory maintenance

and routine checks were carried out safely.

Wylfa is also celebrating the award of a second British Safety Council Sword of Honour. The site is one of just 40 organisations worldwide to receive the award, which is only open to organisations with the maximum rating of five stars in the Council's Five Star Health and Safety Management System Audit. Contenders have to prove they have a culture of aiming for best practice.



At **Winfrith**, the SGHWR and Dragon Team have recently started work on the size reduction and processing of the Dragon Cathedral tanks removed during phase one decommissioning. There are 17 tanks in total with 12 scheduled to be processed this financial year.

Last year, the Active Handling Building, known as A59, was fully decommissioned and demolished after eight years of clean-up work. A59 was built in the mid-1960s to carry out post-irradiation examination on spent nuclear fuels and other radioactive materials, and was one of the first of its kind.

The active cells at **Harwell's** former Post Irradiation Examination Facility are being cleaned out with the help of an innovative solution that draws on simple technology dating back thousands of years – the plough.

The team's inventive plan was to design a manually operated metal plough to retrieve debris that had accumulated on the cell floors over several decades of operations.

The idea evolved from a few schematics on a whiteboard, followed by a design and testing process before successful operation.

In January, the Westinghouse Executive approved the commercial deal for the acquisition of the **Springfields** site from the NDA. This concluded an extensive Westinghouse approval process and now enables the company to proceed with seeking endorsement from Toshiba.

In addition, the NDA Board has also approved the sale of Springfields Fuels Ltd to Westinghouse, now enabling their business case to be submitted to the Secretary of State. Both of these approvals align fully with the intention of transitioning to the new arrangements on the 1st April 2010.



A flask at Sizewell

**Dungeness** is moving forward on removing asbestos from the turbine alternator de-aerated water storage tanks.

When the site was generating the tanks were originally part of the boiler feed system. There are eight tanks on site and asbestos was removed from one of the tanks in September 2009. The site is on track to remove the asbestos from the seven remaining lagged tanks by the end of March.

The roof replacement work on reactor one is almost completed. The work is necessary to maintain the building in a safe condition. Reactor two roof replacement work was completed in the summer of 2009.

**Bradwell** site's pond complex, originally for cooling spent fuel before it was sent for reprocessing at Sellafield, is in an advanced state of decommissioning. This project presented a significant radiological safety challenge, surmountable only through effective management and in-depth knowledge of the hazards present.

The project's safety and environmental performance is impeccable and it has delivered all its NDA Performance Based Incentives, as well as attracting favourable feedback from regulators. Bradwell has established 'best practice' for ponds decommissioning across the UK and a programme has been established to incorporate its learning with that from similar UK and international decommissioning projects.

**Hinkley** projects continue to progress well, notably in the ponds where the whole complex is

anticipated to be verified as fuel free by September 2010.

Work is now in progress to process skips through the Aqueous Discharge Facility (ADF) and de-sludging has been improved by the introduction of a hydrocyclone. Work also continues on asbestos removal, asset management and the site electrical overlay system, with self-performance playing a key role.

A combination of factors has led to a slowing in progress of defuelling at **Sizewell A**. Issues with flask lid seals remain prevalent, resulting in a reduction in the number of flasks currently in service. Despite this, two flasks have been successfully loaded and dispatched to Sellafield. With no flasks currently at the site, the defuelling team has taken the opportunity to begin its periodic review of the Pond Safety Case. Once this review is complete, there will be a controlled return to defuelling activities if flasks have become available.

At **Berkeley**, work continues on site to meet the requirements of the site's Period Safety Review (PSR). This has included asset management work as well as clean-up in the site's shielded area facility. Recent success stories include the removal and disposal of a large quantity of zinc bromide from the site.

The zinc bromide was used as a shielding agent and its removal significantly reduced the Safety and Environment Detriment (SED) score for the site. The site also completed the successful post operative clean out of the shielded area cooling pond.



Since November 2008, following the appointment of Nuclear Management Partners as the new owners of **Sellafield Ltd**, the NDA has been working in partnership with both companies to develop a credible plan for the site to drive high hazard risk reduction.

Work is already underway and the last 15 months has seen:

- The transfer of historic waste from a 50-year-old tank into high-integrity storage
- Improvements to historic fuel storage ponds.
- The first consignment of Vitrified Waste returned to Japan.
- The production of the 5,000th container of high level solid waste in the vitrification plant.
- The processing the 6,000th tonne of spent fuel in Thorp.

A new lifetime plan, to be published in the spring, will set out a performance plan against which progress in delivering the NDA's mission can be measured.

By delivering that plan, implementing a range of improvements and drawing on the experience of NMP's parent companies (URS Washington, Amec and Areva), the objective is to progress high hazard reduction while ensuring best value for the UK taxpayer.

### Calder Hall Asbestos Removal

The Calder Hall Decommissioning Team has just completed a major asbestos strip. Approximately 2,000 tonnes of asbestos cladding have been removed from the 16 redundant reactor heat exchangers on the outside of the reactor containment building.

During operations, the heat which passed through the heat exchangers kept the asbestos cladding dry and in a stable condition. Once operations ceased in 2003, the asbestos could not be kept at a constant temperature, potentially reducing stability, hence the need to remove it.

The Sellafield complex



Licensed contractor Hertel undertook the removal work. Huge scaffold structures were erected and tents constructed around the plant to ensure safe ventilation in a controlled environment. Waste was segregated and analysed with waste suitable for bulk disposal sent to an off-site licensed disposal facility.

The success of this project is a great example of how to deal with significant hazards through a well managed, safe and integrated approach to decommissioning

### Sellafield Product and Residue Store (SPRS)

SPRS is one of the largest construction projects started at Sellafield since the NDA took ownership of the site. One of the key purposes of the store is to accommodate materials retrieved from the site's older facilities, repackaged and placed in a modern facility, allowing for decommissioning to be progressed. The building will also add to the product storage capabilities of the Thorp reprocessing plant and the Sellafield MOX Plant (SMP).

The construction phase of the store was completed on schedule, and the commissioning work is progressing well. This will lead to the completed plant being handed over to the operations team in the spring of 2011.

Sellafield Ltd's team at **Capenhurst** has recently celebrated reaching one year without a lost-time accident. Credit for this achievement goes to the Safety 1st campaign, which is led

by employees on the shop floor. The campaign is now in its fourth year and has attracted a great deal of attention from other NDA sites and also firms from outside the nuclear industry.

Capenhurst is also supporting the NDA Asset Use Programme, which will define the future of the site. It is looking at the different possible options for the land, materials and buildings at the site, including closer working with Capenhurst's other licensee, Urenco UK Ltd.

This is an important piece of work that could substantially change the face of the NDA's site at Capenhurst.



The **Low Level Waste Repository** is a strategic partner to the NDA in the development of the UK Nuclear Industry LLW Strategy. We continue to cost-effectively improve LLW management across the UK.

We continue to ramp up our Segregated Waste Services for metallic, combustibles and very low level wastes. A number of metallic consignments from both the nuclear and non-nuclear sector have been completed since September 2009 resulting in over 90% volume reduction.

With only 4% available capacity remaining in Vault 8, the recent handover of a second slab in the Vault 9 construction area preserves waste management capacity for the foreseeable future.



## Sites inspired to innovate



The Hinkley remotely operated vehicle

### A site-based campaign to encourage innovation is delivering significant savings and technological progress across the NDA estate.

The i4 campaign (shorthand for 'Inspire, Imagine, Innovate & Implement') has been running for the last three years in Magnox North, who have now been joined by Magnox South, representing 10 of the NDA's sites. Sponsors for the campaign are the NDA and EnergySolutions, Parent Body Organisation for both Magnox North and South.

The key to success is seeking participation from all levels of the workforce, taking suggestions forward and recognising the people behind the ideas.

Run annually, the campaign starts with workplace suggestion schemes, which capture ideas both simple and complex. Easy-to-implement suggestions can be put into practice immediately, while more complex suggestions pass through a process of prioritisation, approvals and validation until the final implementation stage.

Ultimately, the campaign drives the generation of ideas, workforce participation in the various innovative processes and embeds a culture of innovation. A range of categories

provide options for different types of innovation, from those promoting safety or teamwork to those focusing on the environment, value for money or already implemented.

The culmination is an annual competition in February, with the 2010 finals taking place in Chester. Ideas already in use are judged in advance for the NDA Implementation Award while new ideas compete against each other at the final, for the EnergySolutions Innovation Award, judged by a panel inspired by TV's *Dragon's Den*.

A third category, the Impact Award, recognises the person or team who has had a major impact on driving forward innovation.

This year, more than 1,500 ideas were submitted and more than 100 have already been implemented.

Dr Sara Johnston, Magnox Programme Director for the NDA and one of this year's dragons, said: "It was difficult to select an outright winner. The enthusiasm shown by the teams for their projects was very impressive and we welcome the spirit of innovation

that is fostered by the i4 campaign. It has brought real benefits and delivered real value for money to the decommissioning mission and to our goal of optimising generation."

The winner of the NDA Implementation Award for 2010 was:

- Dungeness A development of the MiniStores concept as an option for storing intermediate level waste (see page 13). MiniStores would be a cheaper and more flexible alternative to the construction of specially shielded purpose-built on-site stores, and have already saved £2 million.

The EnergySolutions Innovation Award was jointly won by:

- Wylfa and Magnox North's Engineering, Waste, Strategy and Technical Directorate, who worked on separate but related projects to improve the fuel cycle at Wylfa and facilitate fuel transfer across the reactors, leading to the potential for extended generation and hundreds of millions of pounds in additional revenue for the NDA.
- Hinkley team's remotely operated vehicle, custom-designed to access previously inaccessible areas of the ponds and adapted from a machine purchased via Ebay, saving around £230,000. The machine is now being used, with slight modifications, at other sites.

## Flood recovery

Nobody in West Cumbria was prepared for the devastation caused by unprecedented flooding in November last year. As one of the area's largest employers, and with many people directly affected, the nuclear industry brought skills, expertise and resources to play an instrumental role in the recovery.

Working together, the NDA, Sellafield Ltd and Nuclear Management Partners released staff, sub-contractors and socio-economic funding to help overcome the immediate impacts. Between them the NDA and NMP contributed £100,000 to help kick-start a community support fund, which rose to more than £1 million within a few weeks, targeted at the families directly affected.

All three organisations provided support on the ground with project management and communications staff joining the emergency recovery effort, as Brian Hough from the NDA explained:

"I had previous experience in handling major incidents from my time before joining the NDA and was asked to join the Gold Command team that was overseeing the recovery. We used our experienced press team from Sellafield to help cope with the massive influx of journalists and worked alongside the police and other emergency response services.

"We identified a desperate need for professional project management skills and quickly pulled together a joint NDA/Sellafield team to support the creation and delivery of the flood recovery programme. People were released from their existing duties and joined the recovery effort within 24 hours of that need being recognised."

That team was instrumental in securing the involvement of the local nuclear supply chain to help the clean-up effort on the ground. From providing clean-up teams through to civil engineering skills, there proved to be many areas where support could be provided by local contractors. Even today, that work continues with the project management team having built detailed work



High Street, Cockermouth, the morning after the initial flooding. Photo: CN Group.



The NDA's Brian Hough (far left) with other members of the joint NDA/Sellafield project management team

programmes that bring together a host of agencies and organisations.

The NDA is also supporting a number of local community projects. "There will always be projects that don't fit

other funding criteria but would give a great boost to the local community," said Brian. "They aren't necessarily the big ticket items but things that get the community back on track and provide a real morale boost."