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Introduction

Welcome to the second edition of Regulation Matters, ONR’s quarterly stakeholder newsletter.

In this edition we’re reporting on a recent meeting of the ONR Board where the future strategic plan was discussed, with the aim of supporting the ONR Strategy published earlier this year. The strategic plan will be published in 2016.

We’re also aiming to provide information on the various areas of regulation that we conduct. This quarter, you’ll find out more about the work of ONR in respect of nuclear safeguards, the measures in place to verify that countries comply with their international obligations not to use nuclear materials (plutonium, uranium and thorium) from their civil nuclear programmes for the creation of nuclear explosives.

ONR Comms Team

Cover photo: view of the Flamanville 3 construction site from the clifftop at night, November 2013 (courtesy of EDF / Morin Alexis)

View from the top

The ONR Board’s role is to provide leadership, set strategy, agree the framework within which ONR operates as a regulator, agree and monitor resources and performance, and ensure good governance.

In this edition, ONR Non-Executive Director and Chair of ONR’s Security Committee, Oona Muirhead gives her view on the Board’s recent strategy event in September.

At our annual strategy workshop in September the ONR Board and senior executive team worked on a long-term strategic plan. Key drivers for the plan include the expansion of the sector which is increasing demands on nuclear regulation to 2020 and beyond. At our workshop we reviewed the results of independent horizon scanning commissioned by the Executive about the future shape of the nuclear industry, and tested assumptions about the style and shape of ONR’s work over the long term in order to deliver our vision of being an exemplary nuclear regulator that inspires respect, trust and confidence.

Our new long-term strategic plan will drive forward and deepen our work with you all – as nuclear licensees and others with nuclear health, safety and security responsibilities – to achieve an enabling, outward-focused model of nuclear regulation in which ONR sets the regulatory outcomes sought and you as licensees are empowered to drive standards and improvement as an integral part of your business model.

ONR’s Acting Chief Nuclear Inspector, Richard Savage, writes further about this in this edition of Regulation Matters. As Chair of ONR’s Security Committee, I’m determined that this outcome-focused regulatory model should particularly address security and safety regulation in an integrated and consistent manner.

We also discussed ONR’s future capacity and capability which we know is a valid concern amongst our stakeholders, particularly following the Government’s announcement on Chinese investment in new nuclear build. Indeed capacity and capability are regular agenda items at ONR Board meetings; we are continually reviewing our current and future resource requirements to ensure that we have the right skills and expertise available at the right time to deliver regulation across all aspects of our work, including the new build programme and other government priorities. The Board is confident that we can meet the regulatory demands of the nuclear industry, and in new ways that are demonstrably value for money for our charge payers.

Our strategic plan will be set against the wider context of the whole nuclear sector over the next 15 years and the associated consequences for ONR. We intend to demonstrate how we will deliver on the commitments we made to our key stakeholders in our strategy and provide assurance that ONR has certainty about its objectives. We’re working on the specifics of the strategic plan and intend to publish it in March 2016 ready for the start of the new financial year. It will incorporate an annual element to meet the statutory requirement of the Energy Act 2013 for ONR to have an Annual Plan.
Appointment of new Chief Executive

In January 2016, ONR will welcome its new Chief Executive Adriènne Kelbie who will take over from Les Philpott who has been acting Chief Executive since March 2015.

ONR Chair Nick Baldwin said: “I am delighted to welcome Adriènne as our new Chief Executive and look forward to working with her. Her valuable skills and leadership experience will enable us to continue our work in taking forward our published strategy and building ONR as an enabling and responsive regulator.”

Currently the Chief Executive of the Disclosure and Barring Service, Adriènne has had a varied and successful career including periods as Deputy Chief Executive in a local authority and as Director of Operations responsible for national and international funding at the Big Lottery Fund.

DRS Adriènne said “There has never been a greater need for effective regulation, given the growing part that nuclear energy plays in the UK. This is a matter of legitimate public concern and national security. I’m looking forward to working with the Board and staff to help ONR achieve its vision as an enabling regulator that ensures the industry maintains high standards, controls its hazards effectively and has a culture of continuous improvement.”

Adriènne will take up her post on 18 January and will share her views in the next edition of Regulation Matters.

Retirement of Dr Andy Hall, Chief Nuclear Inspector

ONR’s first Chief Nuclear Inspector as a statutory corporation, Dr Andy Hall retired in November following a long and successful career at ONR and in its previous form as part of the Health and Safety Executive.

Andy is well known across the industry and has earned great respect for his significant contribution to nuclear regulation both in the UK and internationally.

We would like to take the opportunity to thank Andy for his valued public service and commitment to ONR, and wish him well in his future.

Dr Richard Savage has been appointed as Acting Chief Nuclear Inspector, pending a competition to fill the role on a permanent basis. Richard was previously Head of the Ministry of Defence Nuclear Safety Regulator before joining ONR as a Deputy Chief Nuclear Inspector.
Enabling Regulation: Building on good practices

Over recent months, you may have heard the term ‘enabling regulation’ used by ONR to describe its regulatory approach. We asked Acting Chief Nuclear Inspector Richard Savage what it means to be an enabling regulator.

Enabling regulation is more open and constructive dialogue with dutyholders and other relevant stakeholders that seeks effective delivery against clear and prioritised safety and security outcomes, including nuclear, transport and conventional safety.

Is this a new approach for ONR?
This is not new – there is no new regulatory policy or guidance and it recognises the provisions established in the Regulators’ Code. However, it does require us to think and do things slightly differently to ensure that we can regulate as effectively and efficiently as we can. The nuclear landscape is rapidly developing, and our approach needs to evolve recognising the strategic context in which we regulate.

What are your expectations of industry?
This approach is not just about what we are doing to evolve, the industry must play their part to achieve successful outcomes. It is vitally important that dutyholders continue to fulfil their responsibilities and provide timely and quality submissions to ONR and uphold robust internal regulation in order that we can regulate effectively.

What is the Regulators’ Code?
The Regulators’ Code came into effect in April 2014. It seeks to promote proportionate, consistent and targeted regulatory activity through development of transparent and effective dialogue and understanding between regulators and those they regulate. ONR published its first report in September 2015 summarising its compliance evidence with the objectives and values of the code (see page 10).

So in practice, how does enabling regulation work?
There are a number of key characteristics that we are adopting in order to evolve our approach, including:

- More open and constructive dialogue with other stakeholders to achieve a common objective and outcome.
- Removing unnecessary blockers and distractions preventing progress.
- Identification and adoption of fit-for-purpose solutions, providing challenge to disproportionate proposals, reducing delays to safety benefits and making best use of resources.
- Effective communications and information sharing with dutyholders and the public.

How will you maintain your independence working this way?
ONR’s independence as a regulator is vital and independence in regulatory decision making remains absolute. This doesn’t mean that we cannot engage with other stakeholders to achieve a common overall objective and work together to achieve the desired outcome.

How will you manage this?
It is paramount that our judgements and decisions are proportionate and balanced, we will continue to implement and reinforce our robust governance and assurance processes in ONR. We already publish all reports justifying our regulatory decisions on our website, which will continue to promote stakeholder confidence in our approach and actions.

Are there any examples of enabling regulation?
In previous editions of Regulation Matters, you will have read several articles reporting on our strategy for regulating Sellafield. The articles have highlighted the collaborative approach with key stakeholders, which has resulted in many successes in the acceleration of hazard and risk reduction on site.

Will this mean a reduction in enforcement action?
Not at all, we are legally empowered to uphold the law and we will continue to hold the industry to account. The enabling regulation approach will not detract from our core purpose; safety and security will always be our priority and we will use this approach to encourage dutyholders to continue to uphold the high standards expected of them. We will influence to enable and hold to account.

What is next in embedding this approach at ONR?
Proposals for taking forward this activity will be discussed at ONR’s regulatory committee in January, which will include plans for guidance, training and communications. Further information on enabling regulation will be provided in future editions of Regulation Matters.
Holding the industry to account

ONR’s mission is ‘to provide efficient and effective regulation of the nuclear industry, holding it to account on behalf of the public’. As the nuclear regulator, ONR must take enforcement action when licensees are found to be failing to meet the safety and security standards required by law.

To do this ONR has a range of enforcement powers which range from providing advice to instigating court proceedings.

ONR has regulatory responsibility across a number of sectors: civil, defence, security, transport, conventional health and safety and fire safety.

Enforcement action taken between August–December 2015

- ONR served carrier Forbes Transport Services Ltd of Dyce, Aberdeen with an Improvement Notice following a transport compliance inspection on 24 August 2015. The company did not have a written plan in place that would detail their actions, should an emergency arise whilst transporting radioactive materials by road.

- ONR agreed to extend an Improvement Notice issued to EDF Energy Nuclear Generation Ltd (NGL) in March 2015, until 30 November 2015. The company had no written plan that would detail their actions, should an emergency arise, whilst transporting radioactive material by road on at least two occasions in 2014. ONR considered Austin Wilkinson & Sons Ltd request, and their justification, for the extension of the notice, and were content that the dutyholder had made reasonably practicable attempts to address the notice in the original timescales.

Progress against enforcement action

- Sellafield Ltd complied with the requirements of an Improvement Notice, issued in November 2013, by making adequate safety improvements to operations at the site’s Fuel Handling Plant. The Improvement Notice was issued as a result of shortfalls in the handling of internal fuel flasks. These issues, which were identified by the company itself, related to concerns about the level of protection provided to employees and others against the risk of inadvertent exposure to ionising radiation.
Hazard reduction and remediation at Sellafield legacy facilities

ONR continues to see progress in hazard and risk reduction at Sellafield

ONR is pleased to see that significant progress in hazard and risk reduction continues to be made at Sellafield over recent months.

At the same time ONR’s Sellafield Programme continues to maintain strong regulation of the site ensuring the licensee maintains appropriate safety and security standards.

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 (PFSP) which is one of four high-hazard facilities prioritised for clean-up. It needs to have its contents removed so it can be drained and demolished.

Removal of the entire canned fuel inventory is a major step towards decommissioning this facility and reducing the risk posed by Sellafield’s legacy ponds.

Andy Lindley, Director of ONR’s Sellafield Programme said: “We are encouraged by the progress made by Sellafield Ltd to remove and process canned fuel from PFSP. “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.”

ONR’s Sellafield Strategy – launched in April 2014 - is supported by the ‘G6’ - the group of six key organisations that share the common purpose of accelerating hazard and risk reduction at the site.

The G6 includes ONR, Sellafield Ltd, Nuclear Decommissioning Authority (NDA), the Environment Agency, Department of Energy and Climate Change (DECC) and the Shareholder Executive.

Early successes for the group include the contribution it made to remove radioactive sludge from one of the most hazardous nuclear plants in Europe: the First Generation Magnox Storage Pond (FGMSP) in March 2015.

Andy added: “G6 works collaboratively to remove blockers. We have frank and open conversations to find fit-for-purpose solutions to obstacles, challenging the way things are and then doing things better.”

Another major waste retrievals project now underway is at the Magnox Swarf Storage Silo (MSSS) - a legacy facility that represents one of the largest hazards on the Sellafield site. The facility, which the Acting Chief Nuclear Inspector visited recently, comprises 22 vertical concrete silos, partially below ground level, that were in active use between 1964 and 1991 to store fuel cladding arising from the decanning of Magnox fuel elements.

Andy said: “Sellafield is preparing for the retrieval of the waste from MSSS, a facility which currently poses an intolerable risk.

“The installation of the Silo Emptying Plant (SEP) has commenced and after commissioning, the task of waste retrievals will begin.

“We fully understand that the installation and commissioning of the SEP emptying plant is a complex operation in itself that will carry a level of risk. This is unavoidable to ensure that the longer term risk is reduced as low as reasonably practicable and ultimately the waste recovered.

“Extensive work has been undertaken by ONR and other stakeholders to identify and evaluate the risks associated with the installation of the SEP machines on MSSS.

“We are satisfied that arrangements for undertaking the work and the preparations in place to mitigate the risks are adequate.”
ONR’s Acting Chief Nuclear Inspector visited Sellafield to hear about progress on key projects to achieve accelerated hazard and risk reduction at the site.

Richard Savage met Sellafield Managing Director Paul Foster during the visit which took in the Magnox Swarf Storage Silo (MSSS) and the site’s Analytical Services facility.

Richard’s visit to the MSSS was timely, with work underway to assemble the first of three Silo Emptying Plant (SEP) machines which will extract the radioactive contents of the silo as part of its decommissioning.

The Acting Chief Nuclear Inspector also gained a closer insight into the work of Sellafield’s Analytical Services facility, which houses laboratories essential to the site’s work.

Richard said: “It was pleasing to see at first hand the positive impact that improved co-ordination between key parties is achieving at Sellafield, while also considering the challenges ahead to maintain this momentum over future years.

“The ONR Sellafield Strategy and closer co-ordination is having a positive impact on acceleration of hazard and risk reduction. The approach is about building on good practices, identifying how we can do things safely and securely but maybe differently - challenging the way things are and then enabling effective delivery of safety and security outcomes. “By adopting new ways of

Acting CNI Richard Savage (right) with Chris Halliwell and Phil Hallington from Sellafield working, significant results have been achieved and this will need to continue over future years.”
ONR’s UK ABWR progresses to final stage of assessment

In October, ONR completed step 3 of the GDA of Hitachi-GE’s Advanced Boiling Water Reactor (ABWR) nuclear power station design. The third phase of GDA looks at the safety and security arguments presented by Hitachi-GE to underpin the safety and security claims. ONR concluded in its summary report that sufficient progress has been made for Hitachi-GE to move to the final assessment stage, step 4, which Hitachi-GE expects to complete in December 2017.

Throughout step 3, interactions with Hitachi-GE have been positive; they are responsive and open to constructive challenge and engagement. There is still a lot of work to be undertaken by Hitachi-GE, and they will have to maintain high quality, on-time delivery of their submissions to achieve their target date for completion of GDA.

For ONR, the assessment process will now move into its final stage. The steps for the Environment Agency and Natural Resources Wales (NRW) are different, and their step 3 continues, concluding with their public consultation on the environmental part of the assessment, scheduled to start in October 2016.

Once the overall assessment is complete, ONR, the Environment Agency and NRW will use this work to help inform any subsequent assessments for site specific proposals that use this reactor design, such as Horizon Nuclear Power’s proposed developments at Wylfa Newydd on Anglesey and Oldbury in South Gloucestershire.

AP1000

The AP1000 reactor design continues through the closure phase of the GDA process, with the regulators working to assess Westinghouse’s work to close the 51 outstanding issues.

Chinese technology

ONR and the Environment Agency are preparing to start GDA of the Chinese Hualong reactor in early 2016, subject to a formal request from the Secretary of State for Energy and Climate Change.

Small modular reactors

In addition, the outcome of the Government’s Spending Review made a commitment to developing small modular reactors in the UK. We will continue to engage with DECC to prepare for future assessments of these reactors.

Construction

In mid–October, during the Chinese President’s visit to the UK, the UK Government announced that Heads of Terms Shareholder agreements had been signed resulting in significant Chinese investment in the UK nuclear new build programme. The agreement commits all parties to delivery of the Hinkley Point C project and advancement of the Sizewell C and Bradwell projects to licensed site status.

In respect of Hinkley Point C, the current constrained budget remains in place until January 2016, at which time the site intends to commence full remobilisation in a controlled manner. Current asbestos remediation and archaeological work at site is being accelerated to enable this schedule.

ONR’s New Reactor Construction (NRC) team, in line with its enabling regulation approach, continues to engage with NNB GenCo and is currently assessing the safety submission to support the first consent (start of construction). Early engagement has started in all technical areas in respect of the pre-construction safety report (PCSR) to support the second consent (first nuclear concrete). Early sight of the PCSR chapters and supporting references is enabling ONR to influence where required and identify any potential issues early to minimise risk to the project.

View of the Flamanville 3 construction site from the clifftop at night, November 2013 (courtesy of EDF / Morin Alexis)

In September, ONR structural integrity specialists observed a meeting of the French Regulator, Autorité de Sûreté Nucléaire (ASN) Standing Group for nuclear pressure equipment. ONR attended to consider proposals by Areva to justify the adequacy of the fracture toughness of the Flamanville 3 reactor pressure vessel domes following the discovery of carbon segregation in the top and bottom domes. Key findings were that while ASN has accepted the principles of the proposed approach, several areas of the justification are work-in-progress and the outcome is uncertain; ASN is yet to decide whether the domes are acceptable for service. The Standing Group has reviewed the metallurgical processes that led to the anomalies at Finland’s Olkiluoto 3 EPR™ would not cause similar segregation.
Maintaining focus on core purpose

Transport Inspection campaign reveals dutyholder shortfalls

Analysis has been conducted following a recent transport inspection campaign in Aberdeen involving consignors and carriers of quantities of radioactive material used in the oil and gas industry. If these materials are not correctly transported, they could present a significant worker or public safety risk. ONR has written to dutyholders providing details of the shortfalls identified and the remedial actions required. In two cases, formal enforcement action was taken in line with ONR’s enforcement policy statement.

There were shortcomings identified in relation to the availability or adequacy of transport emergency arrangements. These are legally required by consignors and carriers, their purpose being to ensure a suitable written plan is available for use in the event of an emergency involving radioactive material in transit. Inspectors have provided information to the individual dutyholders whose emergency arrangements were lacking, but ONR has recognised that further advice to all dutyholders is required. Consequently, dutyholder guidance is being prepared to assist the understanding of the requirements of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009. A Technical Inspection Guide is also being prepared to aid inspectors and improve consistency during inspections of emergency plans prepared under the regulations. Both documents will be made available via the ONR website in due course.

Recent inspections also indicated a lack of awareness of the thresholds at which radioactive material is considered High Consequence Dangerous Goods (HCDG). Where HCDG are being transported, enhanced security provisions are required, and a security plan is necessary.

The ONR transport inspection and enforcement team are also planning to engage with industry associations within the freight transport and safety advisory communities. This engagement will highlight the issues identified during this inspection campaign and encourage them to work with us in promoting improvements in these areas and ensuring that our guidance is accessible to their members.

ONR leaders witness Oldbury fuel-free verification

ONR senior leaders including Chair Nick Baldwin were at Oldbury nuclear licensed site to witness fuel-free verification work after the site finished emptying fuel from its reactors.

The ONR visit was made after the removal of over 50,000 fuel elements from Oldbury’s reactors, marking the start of a new chapter for a site which has operated safely for more than 44 years.

The ONR group was taken on a tour of the site, during which they visited the reactor control room and witnessed the amount of equipment now out of service awaiting decommissioning, as well as the work being carried out to ship the remaining fuel from the site to Sellafield.

Once all of the fuel has been shipped, the site will have removed 99 percent of its radioactive hazard and will move into its decommissioning phase.

Peter Dickenson, ONR Principal Inspector for Oldbury, said: “The group enjoyed an interesting and informative visit. The removal of the final fuel element from the reactors is an important step in the decommissioning of Oldbury, and ONR oversaw all stages of the work and assured safe and secure progress.”

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“ONR was able to see the positive work that has been carried out first-hand and learn more about our important role in this process.”

Mina Golshan, DFW Programme Director, said: “With the last generating Magnox station at Wylfa due to follow the same path as Oldbury, our regulatory effort will focus on ensuring Magnox Ltd delivers safe and secure defueling at Wylfa and decommissioning of its remaining sites.”

After over 44 years of safe power generation was brought to an end in 2012, Oldbury had a total of 25,826 fuel elements in each of its reactors. If placed end to end, they would stretch 17 and a half miles.

The visit was hosted by Magnox Ltd Managing Director Kenny Douglas, his Environment, Health, Safety, Security and Quality Director Tony Wratten, and Oldbury and South West Regional Site Director, Mike Heaton.

Mr Douglas highlighted the good interactions that have taken place between Magnox Ltd and ONR, such as during the relicensing of Magnox Ltd, and gave examples of proposed changes to decommissioning activities, such as the potential use of divers to undertake decommissioning work on pond furniture.

ONR report on the Regulators’ Code

In September, ONR published a report summarising its compliance with the objectives and values of the Regulators’ Code. The Code was developed by the Better Regulation Delivery Office of the Department for Business, Innovation and Skills and came into effect in April 2014. It provides a flexible, principles based framework for regulatory delivery and outlines the services that can be expected of regulators.

ONR’s report provides an overview of the existing arrangements in place to demonstrate compliance with the Code, and also makes several recommendations to further embed the Regulators’ Code expectations into our everyday working practices. A further review of compliance with the Code will be undertaken in autumn 2016.

International safety mission at Sizewell B

In October, the International Atomic Energy Agency (IAEA) Operational Safety Review Team (OSART) undertook a mission to Sizewell B power station. Under the OSART programme, international teams of experts conduct in-depth reviews of operational safety performance at nuclear power plants.

Although the mission was focused upon the licensee (EDF Energy Nuclear Generation Ltd (NGL)); ONR inspectors were questioned as part of the mission to assist in the international team’s understanding of ONR’s nuclear regulation of operations at Sizewell B. At the mission close-out meeting, ONR’s Head of Operational Reactors, Graeme Thomas, provided the regulator’s response to the initial findings of the IAEA team, outlining the benefits that international benchmarking offers as part of continuous improvement in nuclear safety.

ONR will now await the final report of the OSART mission, expected in early 2016.

Cooling modifications installed at Heysham and Hartlepool

The four Advanced Gas-cooled Reactors at Heysham 1 and Hartlepool have been operating at reduced power following their return to service at the beginning of this year. The reactors were shut down on discovery of a cracked region on a boiler spine of Heysham 1 Reactor 1, and only returned to service when ONR was satisfied with NGL’s safety case, justifying operation of the reactors at reduced temperature. Heysham 1 Reactor 1 is also operating with the affected boiler quadrant isolated from service.

NGL made several commitments to improve the long term safety case position following the return to service of Heysham 1 and Hartlepool reactors. These included a plan to introduce a cooling modification to each of the boilers with the aim of reducing temperatures around the highest risk structural welds of the spine. The modifications have now been
completed at three of the reactors, with installation currently underway at the fourth and final reactor.

A significant amount of effort is being applied by ONR’s Operational Reactors team in assessing NGL’s Safety Justification to ensure that it presents a robust case that adequately supports the move to full power operations. ONR will only grant permission for the reactors to return to full power operation when it is satisfied with the justification and evidence provided by NGL.

**Reinforcing the importance of security**

ONR recently hosted a security briefing for senior managers from across the UK nuclear industry. The biannual event provides an opportunity for ONR to reinforce the importance of an effective security culture across the industry, briefing both safety and security specialists on all aspects of security, including physical, cyber security and information assurance, personnel and vetting, and transport security.

The event was supported by the Centre for the Protection of National Infrastructure and included further briefings from the Civil Nuclear Constabulary, the Police Counter Terrorism Intelligence Unit and British Army Explosive Ordnance Disposal. Staged at the national Health and Safety Laboratory in Buxton, the briefing also included a range demonstration of firepower and explosives.

The high level of support for this event from industry and the positive feedback that it receives is encouraging for ONR and indicates the appreciation for continued security improvement across the industry.

**Hunterston B graphite**

ONR was made aware in October that a type of age-related cracking had been discovered in three bricks of the graphite core of Hunterston B reactor 3, during routine inspections as part of its periodic shutdown. This type of cracking is an anticipated phenomenon that has been predicted by detailed analysis and substantial testing carried out by the licensee and was also discovered in the core of Reactor 4 in 2014. NGL sought to return Reactor 3 to service for a three-year period of operation, ONR is satisfied that an initial six month period of operation is safe and acceptable; however, a longer period of operation will need to be justified to ONR’s satisfaction and include a commitment that the station will undertake further inspections of the core within the next 12 months.

ONR issued consent for Reactor 3 to start-up on 30 November.

Security is everyone’s responsibility and a sound security culture is best achieved when there is the right leadership of security at senior and executive levels.

Adrian Freer, ONR Programme Director for Civil Nuclear Security
To be an exemplary employer

Successful graduate giving something back
Paul Butler, 28, a recent graduate, who has just completed his first year as an ONR Nuclear Associate, organised ONR’s third ‘Introduction to Regulation’ seminar for the Young Generation Network (YGN) in September 2015.

The seminar attracted 46 YGN delegates who attended to hear from ONR on a variety of topics. The objective of the event is to provide an overview of regulation of the UK nuclear industry and included presentations from various ONR specialist staff. The event received positive feedback, with two highly rated (feedback: 97% excellent or very good) interactive sessions in ONR’s emergency response suite, which was used extensively during the Fukushima incident. Delegates were given the opportunity to undertake a simulated emergency exercise, to help them to understand how ONR would respond in the event of a nuclear emergency.

Paul relished the chance to give something back to his former peers, drawing on his own experiences to deliver a focussed, varied programme.

Paul said “I worked in a variety of nuclear industries as a graduate, but ONR was my personal choice as it has such a variety of disciplines, regulates safety and security at 37 licensed nuclear sites and my HQ base is only three miles from Liverpool city centre.”

Due to his commitment and ONR’s encouragement, Paul is now on the YGN committee and delivered a presentation ‘A brief history of regulation – from Windscale to GDA’ on behalf of ONR at the YGN Annual Dinner & Day Seminar on 29 October 2015.

ONR welcomes new graduates
ONR welcomed its second cohort of seven new graduates in October 2015, following its first intake in 2014. The five women and two men are working across the organisation, in areas such as transport, external hazards, electrical, mechanical and civil engineering and emergency response.

The number of female graduates reflects ONR’s diversity achievements in attracting more women into the nuclear sector, with 20% more females in ONR specialist roles in September 2015, than in September 2014.

Graduate Alex Edey, 22, graduated from Durham University in June with an MSCi in Geoscience (Geology) and is currently working in our external hazards section. Alex said: “I wanted to work for ONR because they offered me a role where I can use my geology knowledge, but also have the chance to learn about an industry which is completely new to me. Many of the people at ONR are experts in their field and they have lots of knowledge to share, and everyone I have met has been incredibly friendly and willing to help. Over the next five years I want to discover what it is really like to work in nuclear, gaining as much experience as possible and becoming chartered with the Geological Society.”

Potential recruits to ONR, graduate or otherwise, are often surprised at the range of specialisms to be found in ONR – especially the following:

- Safeguards
- Conventional health and safety and environmental protection
- Fire safety
- Security, including cyber-security
- Human & organisational capability
- Transport assessment, inspection and enforcement.
New recruits give positive feedback

ONR has welcomed 74 new nuclear specialists since April 2014 as part of ONR’s continuous improvement cycle and we’ve been capturing their views as they embark on their new roles within ONR.

100% of all new starters have given positive feedback on:
- Our easy job application process.
- Our excellent and comprehensive training programme.
- The personal approach in dealing directly with HR colleagues, as opposed to a call centre.

ONR launched its new Induction process in May 2015 and this feedback shows that it is really adding value to our new starters’ experience. We also value the development of our existing staff, who spent 3,360 days training in 2014/15; averaging 6.5 training days per person.

ONR’s 2015 Nuclear Specialist recruitment figures prove the attractiveness of working for the nuclear regulator and the rigour of our selection process: Our target was 35 recruits, there were 894 applicants, 112 were interviewed, 41 offers made and 34 offers accepted.

New recruit Neil Watson, a specialist Mechanical Engineering inspector, who works in our Cheltenham office, joined us in June 2015 from the Ministry of Defence.

Neil said: “Looking back it’s quite remarkable how much I have learnt in a relatively short space of time, due to the excellent structured training which all new inspectors are required to complete to become warranted. “ONRs recruitment process is seamless: the online application system is straightforward and very user-friendly, with the ability to track the progress of your application. The whole induction process was very thorough and the ONR HR team couldn’t have been more helpful. I have a coach and a mentor, both of whom are extremely knowledgeable, providing clear guidance and supporting me over the past few months. In fact, I have found everyone in ONR to be friendly and approachable and always more than happy to impart their specialist knowledge. I am really enjoying working for ONR in such an exciting role as assessing new reactor design.”

ONR is currently recruiting nuclear inspectors across a range of disciplines and one fire safety inspector. Further details are available on ONR’s current vacancies webpage.
Nuclear safeguards are measures to verify that countries comply with their international obligations not to use nuclear materials (plutonium, uranium and thorium) from their civil nuclear programmes for nuclear explosives.

A fundamental principle of the safeguards regime is that verification of peaceful use is performed by international inspectorates and therefore independent of individual countries. In the UK this means inspectors from Euratom (the European Commission) and IAEA. ONR works with UK dutyholders and the international inspectorates to ensure that what is done to meet UK safeguards obligations is both effective and efficient. Here, we explain what ONR does to enable successful safeguards implementation in the UK: who we work with and what is involved, and how this differs from ONR’s role as the nuclear safety and security regulator.

What are nuclear safeguards?
Safeguards are measures to verify that countries with civil nuclear programmes are not using nuclear materials for the manufacture of nuclear weapons.

Who is responsible for safeguards?
DECC is responsible to Parliament for the UK’s international safeguards obligations. ONR’s role includes overseeing and enabling safeguards implementation in the UK, fulfilling safeguards related reporting obligations on behalf of the Government and providing technical advice to DECC and more widely. But safeguards inspections are undertaken by the Euratom and IAEA inspectorates, and it is their conclusions from these inspections on which the safeguards regime depends.

Why does ONR have a safeguards role?
ONR has this safeguards role because what is needed for successful safeguards implementation has much in common with ONR’s activities as the nuclear safety and security regulator. For example, the accurate and timely knowledge of what material is where (so-called nuclear materials accountancy), which is fundamental to successful safeguards, is important in meeting security and safety requirements. ONR processes such as GDA also enable engagement to ensure that safeguards requirements are taken into account early in the process of design and construction. This ensures that the necessary safeguards measures are designed and planned for efficiently and any possible tension between ONR’s safety and security requirements and what is needed to meet safeguards obligations is identified and resolved.

What exactly does ONR do?
ONR’s safeguards role involves:

- supporting and intervening as necessary with the international safeguards inspectorates of the European Commission, the IAEA and UK dutyholders so that safeguards requirements are met. This includes working across ONR...
to ensure safeguards considerations are part of systematic early engagement on new projects.
- submitting the UK and domestic safeguards-related reports that are the direct responsibility of the UK Government. This includes obtaining, assessing and compiling the necessary information from safeguards dutyholders across the UK.
- providing the UK Government with informed independent assessment of safeguards application and compliance in the UK, and with technical advice on safeguards implementation more generally (eg supporting UK input to maintain and strengthen the global safeguards regime).

You can read more about ONR’s role on our website.

What are nuclear materials?
The ‘nuclear materials’ subject to safeguards requirements are those essential to nuclear explosives. They are defined in terms of special fissionable or fissile materials (eg plutonium-239 or enriched uranium or uranium-233) which may be in forms that require only limited further processing to make them usable for explosive purposes, and source materials (eg natural or depleted uranium, or thorium) from which special fissionable materials can be produced. Full definition of the terms is included in the Euratom Treaty and the Statute of the IAEA.

Is this just in the UK?
No. Safeguards are a cornerstone of the international nuclear non-proliferation regime. The 186 non-nuclear-weapon states that are party to the Treaty on the Non-Proliferation of Nuclear Weapons (the NPT) each commit to having the IAEA apply safeguards to all their nuclear material. Nuclear material in all the countries of the EU is also subject to the safeguards requirements of the Euratom Treaty.

But why do we have such extensive safeguards in the UK when we already have nuclear weapons?
Despite being a nuclear-weapon state, the UK is subject to Euratom safeguards and has an agreement with the IAEA and Euratom to allow joint safeguards on its civil nuclear material. This helps to demonstrate how the UK values the non-proliferation regime. It provides independent assurance of clear separation between nuclear material in the UK’s civil and military cycles, which is of particular importance to key nuclear supplier and/or customer countries, and shows that nuclear industries in the UK are not at any commercial advantage because the UK is a nuclear-weapon state.

Just what does verification by the IAEA and Euratom involve?
There are two basic components to the verification: reports (‘declarations’) to the inspectorates on nuclear material and facilities (and more recently on wider nuclear fuel cycle-related activities) coupled with assessment and inspection by Euratom and the IAEA to check the correctness and completeness of the declared information. The latter includes direct access to and measurement of the material itself allied to the use of cameras and seals to preserve measurement knowledge and limit the need for repeated re-measurement (so-called containment and surveillance). Verification in the UK included nearly 220 inspections during 2014.

Our work on safeguards is different from ONR’s regulatory activities and may sometimes seem to suffer from being seen to address a less immediate and more abstract threat. But safeguards are a crucial part of the global nuclear non-proliferation regime and successful implementation in the UK is an important part of demonstrating the UK’s commitment to that regime. ONR’s safeguards work is therefore very much consistent with ONR’s mission and the national interest of maintaining UK nuclear non-proliferation credentials and influence.

Mike Beaman
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