

Delivering Safety

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ABSTRACT

In the United Kingdom there have been significant recent changes to the management of civil nuclear liabilities. With the formation in April 2005 of the Nuclear Decommissioning Authority (NDA), ownership of the civil nuclear licensed sites in the UK, including the Magnox Reactor Stations, passed to this new organisation. The NDAs mission is to seek acceleration of the nuclear clean up programme and deliver increased value for money and, consequently, are driving their contractors to seek more innovative ways of performing work. British Nuclear Group manages the UK Magnox stations under contract to the NDA. This paper summarises the approach being taken within its Reactor Sites business to work with suppliers to enhance working arrangements at sites, improve the delivery of decommissioning programmes and deliver improvements in safety and environmental performance.

The UK Magnox stations are 1st generation gas-graphite reactors, constructed in the 1950s and 1960s. Two stations are currently still operating, three are shut-down undergoing defuelling and the other five are being decommissioned.

Despite the distractions of industry restructuring, an uncompromising policy of demanding improved performance in conjunction with improved safety and environmental standards has been adopted. Over the past 5 years, this policy has resulted in step-changes in performance at Reactor Sites, with increased electrical output and accelerated defuelling and decommissioning. The improvements in performance have been mirrored by improvements in safety (DACR of 0 at 5 sites); environmental standards (reductions in energy and water consumption, increased waste recycling) and the overall health of the workforce (20% reduction in sickness absence). These achievements have, in turn, been recognised by external bodies, resulting in several awards, including: the world's first ISRS and IERS level 10 awards (Sizewell, 2006), the NUMEX plant maintenance award (Bradwell, 2006), numerous RoSPA awards at site and sector level and nomination, at Company level, for the RoSPA George Earle trophy for outstanding performance in Health and Safety (Reactor Sites, 2006).

After 'setting the scene' and describing the challenges that the company has had to respond to, the paper explains how these improvements have been delivered. Specifically it explains the process that has been followed and the parts played by sites and suppliers to deliver improved performance. With the experience of already having transitioned several Magnox stations from operations to defuelling and then to decommissioning, the paper describes the valuable experience that has been gained in achieving an optimum change process and maintaining momentum.

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INTRODUCTION

In April 2005, the Nuclear Decommissioning Authority (NDA) was established to take strategic responsibility for the UK's civil nuclear legacy. At the same time, ownership of the sites previously owned and operated by British Nuclear Fuels plc. (BNFL) and the UK Atomic Energy Authority (UKAEA) transferred to the NDA and incumbent owner-operators became contractors overnight.

British Nuclear Group is a specialist site management and clean-up business focused on the delivery of accelerated nuclear clean-up programmes, safely and cost-effectively for its customers. Within British Nuclear Group, Reactor Sites (Reactor Sites) is the managing contractor for 10 of the UK's 11 Magnox reactors, five of which are being decommissioned, three are being defuelled (Sizewell A and Dungeness A ceased generation on the 31st December 2006) and the remaining two are still operating (see figure 1).

In order to support the NDA's competition strategy, Reactor Sites is currently in the process of re-organising its business into two Site Licence Companies (SLCs), each consisting of five Magnox sites. This involves a separation and re-licencing process, which, once completed, will allow the NDA to compete the contract for the management of the SLCs on a 2008-2011 timescale.

Against this background, the NDA has set targets for accelerating programmes and through the introduction of competition is expecting contractors to look for more innovative ways of delivering their contractual obligations within given funding constraints. Reactor Sites has responded to this not only through innovation but also by enhancing its compliance arrangements to better enable the delivery of these programmes. Any benefits from innovation will be limited if the arrangements under which the projects are managed are not similarly challenged.

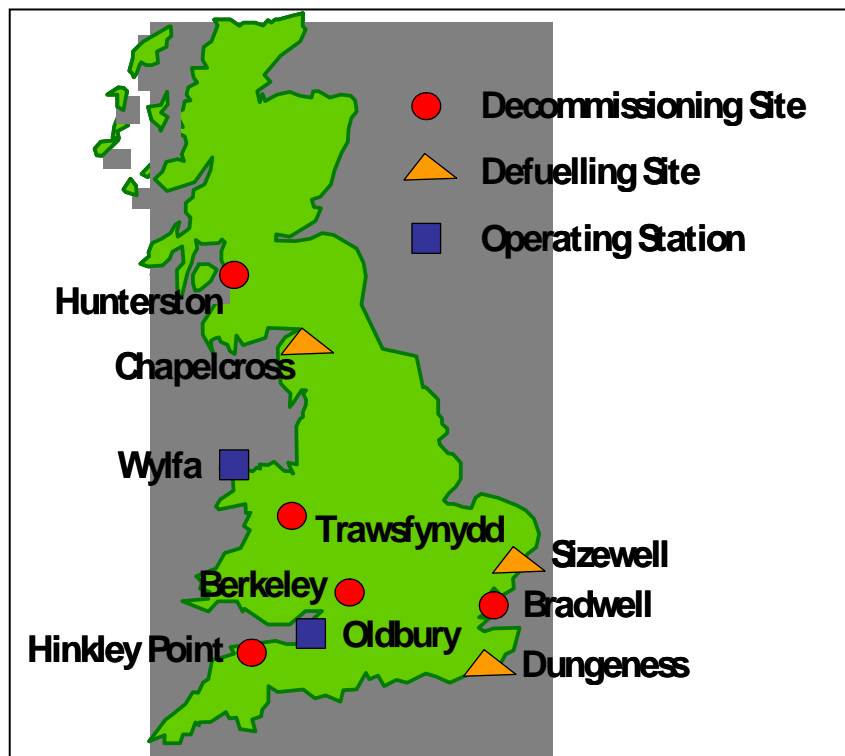


Fig. 1 - The UK Magnox sites managed and operated by Reactor Sites

THE CHALLENGE FACING REACTOR SITES

As a Managing Contractor, Reactor Sites has had to anticipate and respond to a variety of challenges over the course of the last eighteen months. These might be summarised as:

Owner Operator	=> Contractor
Closing Generation Business	=> Building a Decommissioning Industry
Severance	=> Re-skilling
Aging Workforce	=> New Recruits
Self Performed Work (Make)	=> Large Influx of Contractors (Buy)
Nuclear Safety Culture	=> Industrial Safety Mind-set
Managing Hazard	=> Hazard reduction

Against this background of industry restructuring, Reactor Sites has adopted an uncompromising policy of demanding improved performance in conjunction with improved safety and environmental standards. For the past five years, the policy has sought step-changes in performance: increased electrical output and accelerated reactor defuelling and decommissioning rates; mirrored by improvements in safety; environmental standards (reductions in energy and water consumption, increased waste recycling) and the overall health of the workforce (seeking targeted reductions in sickness absence). At the same time, an active programme of benchmarking has sought external recognition, including: WANO; ISRS and IERS awards; accreditation to National and International Standards (ISO 9001, ISO 140001) and recognition by European and National Safety bodies (NUMEX and RoSPA). [1]

The policy has been implemented using a combination of approaches. Peer reviews and gating panels have been used during planning and development stages of projects to ensure clarity of purpose, drive opportunities for innovation and align safety, environmental and operational objectives. Management at all levels of the organisation has been actively engaged with site teams in driving home the need for safe delivery via an integrated programme that includes: senior management performance tours; extensive use of behavioural safety reporting tools; the promotion of best practice PPE standards and focused initiatives on key activities from “Working at Heights” to “Defensive Driving”. In addition, the company has also worked extensively with the supply chain in order to enhance working arrangements at sites, improve the delivery of decommissioning programmes and enable further improvements in safety and environmental performance.

Central to all of these initiatives has been the use of a “gap analysis” tool to measure existing performance, identify improvement areas, set improvement targets and measure progress in closing gaps.

THE “GAP ANALYSIS” TOOL

The gap analysis tool is in a six stage process. These stages are summarised below and shown in figure 2:

- Measure existing performance using appropriate indicators
- Benchmark performance against “Best in Class” (typically upper decile performers)
- Identify improvement areas by analysing performance\ benchmarking information
- Set challenging but achievable annual improvement milestones
- Develop plans to close “gaps”
- Measure progress in closing gaps taking care to report in an open and transparent manner - one set of indicators - one report - for all stakeholders.

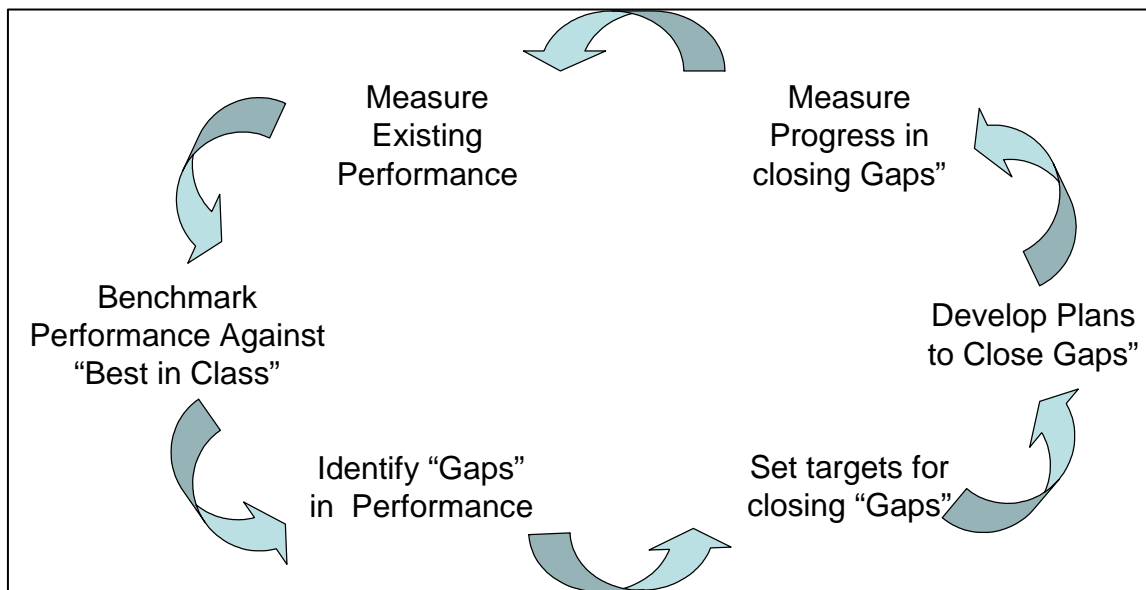


Fig. 2 – The “Gap Analysis” tool

In deploying the gap analysis methodology, the approach adopted by Reactor Sites has focused on ensuring the following:

- A single leading indicator for each improvement area
- Each leading indicator has an owner and a definition sheet to aid reporting and analysis
- Selecting, where possible, currently available indicators
- Setting ‘bottom up’ objectives, based on site improvement plans but challenged by Heads of Profession.
- Crucially, setting annual improvement milestones that drive improvement are be realistically achievable
- Ensuring a clear emphasis on Site Improvements Plans that:
 - Reflect local improvement areas
 - Include activities being undertaken to drive performance to exceed the executive expectation
 - Are based on a management review of the site’s EHS&Q performance, processes and future challenges

WORKED EXAMPLES OF THE ANALYSIS TOOL IN ACTION

Days Away Case Rate (DACR)

DACR was chosen as the longer term indicator and performance measure for conventional safety. The use of the more challenging OSHA measure was considered more meaningful than solely using the RIDDOR¹ measure for the reporting of injuries resulting in greater than 3 days away. Whilst a legal requirement to report such accidents in the UK, with so few events of this type occurring within the business, the RIDDOR measure was judged not to be helpful as an indicator of Reactor Sites’ performance.

¹ Reporting of Injuries, Diseases and Dangerous Occurrences Regulations

In 2004/5, the Company's DACR performance out-turned at 0.38. At the start of 2005/6, a target of DACR < 0.28 was set. The target was set at this level for two main reasons. Firstly, the incremental change from 0.38 to 0.28 was seen as a challenging target for the year and secondly, achievement of 0.28 would place the Company in a strong position from which to achieve its long term goal of world class² performance, widely recognised as 0.1 or better, over the next three years.

A number of lower level indicators, or supporting, KPI's were used in conjunction with DACR, primarily for sites that were already performing at a level of 0.1 or better. For example at that time Hunterston had not had a qualifying DACR event for 4 years³ and for which Total Reportable Injury Rate (TRIR) was considered a more appropriate measure.

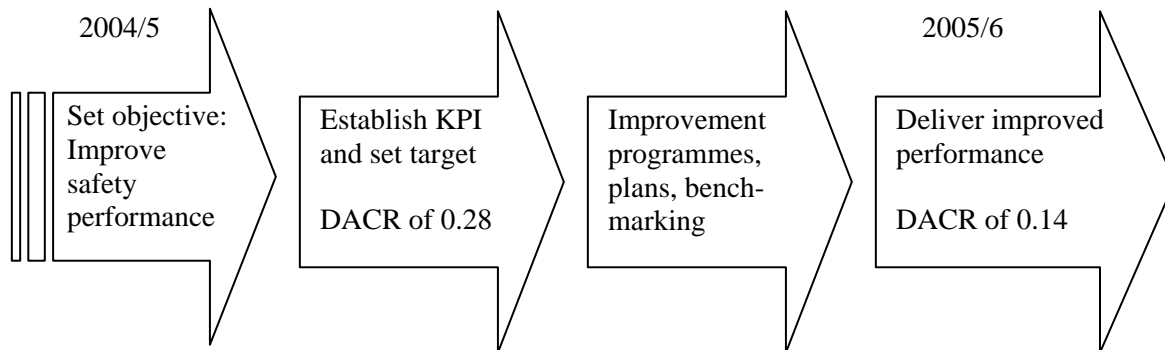
The DACR improvement target of 0.28 was underpinned by:

The DACR improvement target of 0.28 was underpinned by:

- the first year of a three year programme of improvements driven by the Executive
- local site improvement plans
- relevant benchmarking information to further stimulate best practice.

In addition, more management emphasis was put on behavioural safety observations and a greater level of engagement with the workforce at all levels to reinforce standards and expectations.

In 2005/6 Magnox Electric's DACR performance was 0.14 beating its target of 0.28 by a significant margin and setting the Company firmly on course to achieve world class performance within the next two years.



SICKNESS ABSENCE

The number of person days away was chosen as the performance measure for health. This measure included both work related and non-work related ill-health. Work related ill-health is intended to be the longer term indicator.

In 2004/5 Reactor Sites sickness absence performance was 6.5 days⁴. A target of 6.5 was set again for 2005/6. The reason for not setting a lower level was based on the knowledge that 2005/6 would be a year

² Upper decile performance of companies within the Industry using the OSHA reporting measures

³ At time of submission of this paper, Hunterston has achieved a period of over 5 years without a DAC.

⁴ It is noteworthy that the UK average is about 9.0.

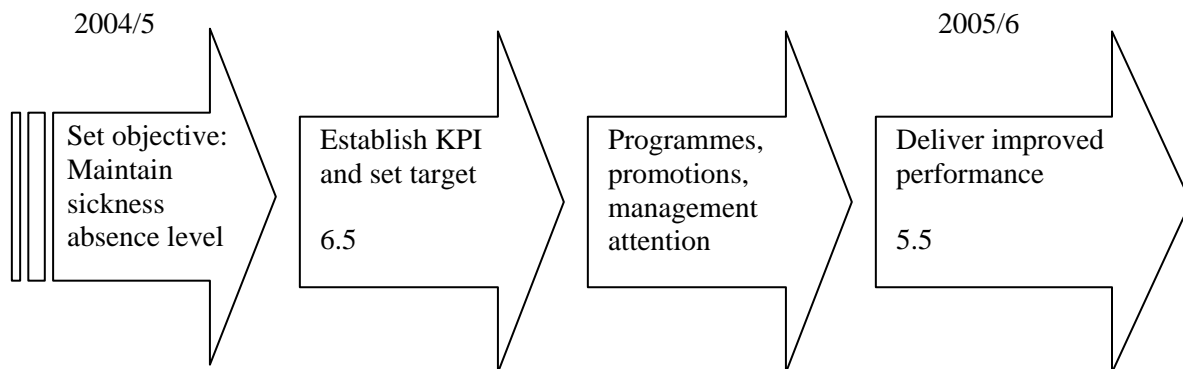
of tremendous change for the Company as it transitioned from being a owner-operator of the Magnox reactor sites to M&O contractor under contract to the NDA. At the same time, the Company would begin the process of reducing its corporate centre in favour of enhancing competence and capability at sites. In these areas of the company, the management of stress related illness was expected to be particularly challenging as staff would be required to change roles and some to relocate.

Achievement would however place the Company in a strong position from which to achieve its long term goal of world class⁵ performance, widely recognised as 3.0 or better, over the next three years. Again it was felt that this longer term goal would become achievable once the restructuring of the industry was underway and individuals became clearer about their new roles and responsibilities within a changed business environment.

A number of lower level indicators, or supporting, KPI's were used in conjunction with person days away, including indicators to differentiate between long and short term sickness, numbers of occasions of sickness and to identify cases of work related stress.

The improvement target was underpinned by targeted health programmes and promotions to better make aware and support employees (e.g. men's health, women's health, stress awareness, etc). At the same time, greater rigour was also applied to the line management of sickness absence by ensuring managers and team leaders were more actively managing absence. Greater attention was also paid to long term illness, in particular, ensuring that everything was being done to support staff so affected and secure their early return to good health and work.

In 2005/6, the Company's sickness absence performance out-turned at 5.5 days. Reactor Sites employs over 3500 employees and this improvement alone represented an equivalent number of person-days at work, delivering greater output and clean-up by comparison with start-of-year forecasts.



ACHIEVEMENTS REALISED

The Reactor Sites policy of demanding improved performance in conjunction with improved safety and environmental standards has resulted, since 2002, in step-changes in performance at Reactor Sites. During 2005/6, Reactor Sites delivered an extra TWhr of electrical output (representing over £30M additional income to the NDA) and achieved an average acceleration of 11% in reactor defuelling and decommissioning rates.

⁵ Upper decile performance of companies within the UK reporting sickness absence.

These performance improvements have been mirrored by improvements in safety (DACR reduced from 0.38 to 0.14); environmental standards (reductions in energy and water consumption, increased waste recycling) and the overall health of the workforce (20% reduction in sickness absence).

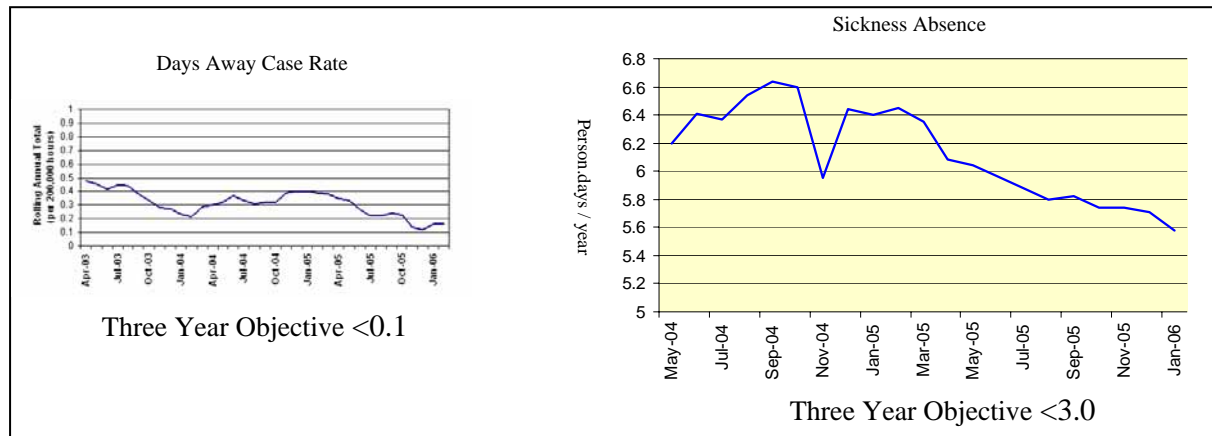


Fig. 3 – Improvements secured in key indicators

Against a background of a major industry restructuring, these achievements which are summarised in Figures 3 and 4, are considered to be impressive. They have also been recognised by external bodies, resulting in several awards, including: the world’s first ISRS and IERS level 10 awards (Sizewell, 2006), the NUMEX award (Bradwell, 2006), numerous RoSPA awards and nomination for the RoSPA George Earle trophy (Reactor Sites, 2006).

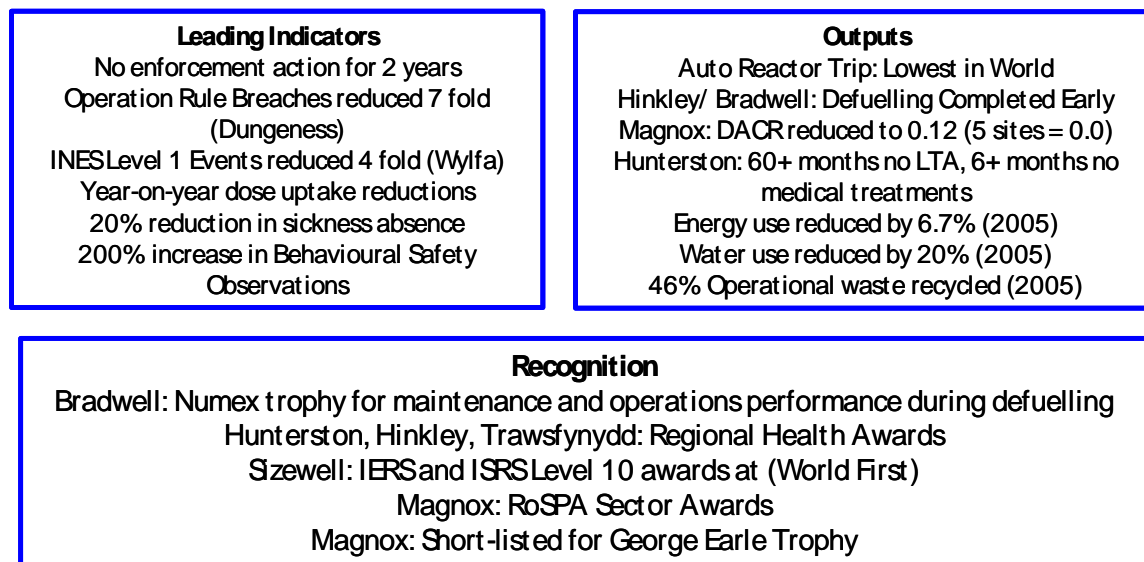


Fig. 4 - Improvements realised and Recognised

LOOKING FORWARD

By a combination of policy setting, management action and the application of a “gap analysis” tool to measure existing performance, identify improvement areas, set improvement targets and measure progress in closing gaps, Reactor Sites has achieved significant improvements in safety and delivery performance.

The company is now committed to drive for sustained excellence, and aspires to become an industry benchmark for EHS&Q performance. In order to achieve this, the company recognises that it will have to

continue to anticipate and manage changing hazards and risks as the plant it is managing transition through the life-cycle from generation and late life management through to defuelling and decommissioning.

Most importantly, the Reactor Sites management team recognises that in order to achieve these objectives, it will have to keep its people and suppliers safe at all times and that nothing is more important than delivering safety.

ACKNOWLEDGEMENTS

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