Looking at your business another way

How Delos helped BNFL Sellafield become best in class in less than four years

The company

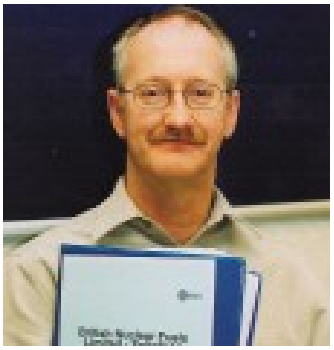
British Nuclear Fuels (BNFL) at Sellafield, Cumbria, is one of the world's leading re-processors of nuclear fuels. Part of an international business with 10,000 full-time employees, it comprises seven operating units (OU's).

Its three production businesses – Thorp, Magnox and Mixed-Oxide Fuel Manufacture (Mox) – receive used fuel from different nuclear reactor types. BNFL stores and cools the fuel, then reprocesses it to recover and store uranium and plutonium, separate out any waste products and re-manufactures fresh Mox fuel from the products.

Two further OU's, covering Waste Management, deal with the high, intermediate and low-level wastes generated by reprocessing. Low and intermediate level wastes are put in drums, filled with cement and held in purpose built stores at the site.

High level waste is concentrated and stored in tanks. The concentrate is then vitrified: dried, mixed with glass frit and baked into a stable, glass-based solid for safe disposal in stainless steel containers.

Operating Unit six is Decommissioning, a growing activity now in Sellafield Management and Operations (M&O) services: "We have a legacy of historic plant," says Graham Sunners, BNFL's Site Manufacturing Planning Manager at Sellafield.



Graham Sunners
Manufacturing Planning Manager

BNFL's final operating unit is Plant and Site services incorporating transport; analysis; a large laundry operation; the provision of steam, power, water, electricity and other utilities; and site security staff.

Finally, a series of traditional functions, EHS&Q, Finance, HR etc make up the organisation.

In general, half Sellafield's staff works on running the plants – re- processing fuel, managing waste and decommissioning facilities. The rest are engaged in change management projects which improve the processes, enhance the plants, improve safety performance or, in the words of Graham Sunners, "make the business fitter".

The challenge

Until the late 1990's all that connected Sellafield's operations was the pipework. Each business unit was autonomous, acting as its own profit centre. There was little coordination across the site.

Contact us: **T: +44(0)1743 588 981** **M: +44(0)7831 611 381** Email Enquiry www.delospartnership.com

For example, though the waste management OU's work comes from internal customers, it had poor information about likely demand a month or a year ahead.

All the OU's annual throughput targets were based more on meeting required outputs than on the capacities of each part of the plant. In one case the yearly business plans for Thorp and Magnox added up to more reprocessing than the business plan for the waste management area could cope with. "The numbers did not fit together," says Sunners, because there was no aggregation and analysis of the available information.

The quality of information varied. Some units had good operational planning, others did not. In many areas there was no day to day method of measuring either planned or actual performance so that operators or managers could manage their resources to meet the targets that had been set. "They didn't have plans that were realistic, that showed what they intended to process year on year, week by week, day by day basis," says Sunners.

Overall, says Sunners; "we didn't have a coordinated and coherent picture saying, 'this is our vision, these are our business objectives'.

By the late 1990's BNFL was coming under pressure to improve its efficiency. Like more conventional businesses, BNFL faced competition, from other re-processors and from alternative technologies, which bury rather than reprocess spent fuel.

"We needed our entire workforce focussed on the objectives that we want to achieve on this site."

There were several other business drivers:

- The fees under the NDA will be based on detailed plant performance measures.
- Thorp's reaching full production in 1999 revealed significant waste-management capacity constraints.
- The ripple effects caused by these capacity constraints, especially the effects of uncoordinated planned and unplanned down time in any part of the plant.

How Delos met the challenge

Though most of BNFL's workers and contractors thought the business unique, senior management began to see the benefit in treating BNFL as a manufacturing business like any other. Says Sunners: "We are part of a supply chain. We've got customers and suppliers. We buy materials, and we have processes that change things. We use people and machines to do this. We're trying to make profit, and we have costs to manage."

This realisation encouraged the company to explore the proven measurement and management tools already accepted in manufacturing industry. Chief among these is Delos's Integrated Business Planning, which BNFL calls Sales and Operations Planning (S&OP).

"S&OP has given us a lot of advantages," says Sunners. "It was a best practice model that was employed all around the world."

BNFL called in Richard Watkins from Delos Partnership to run S&OP workshops

Beginning in 2000, BNFL set up a Watkins-trained team of S&OP practitioners to support S&OP's introduction both site wide and within OU's. The planning team drove the S&OP process forward, says Sunners: "They got all the operating unit heads, manufacturing managers, plant managers, engineering managers and technical managers involved in that process. It's now operating routinely and is a stable process operating in a formal way unifying all the business across the site."

Keeping the momentum going

Two years after BNFL had begun its S&OP programme the organisation had changed substantially. By then the plant had formed what Sunners calls; "a significant site-wide planning team". Although these practitioners were already running S&OP, many of them still had a local focus. So, when BNFL's managers decided they needed some re-education and continued training they again called on Richard Watkins to help develop the programme.
The primary benefit of the new initiative says Sunners; "is that everyone in the planning team will understand the full process and their part in it. It's important that they understand that the site runs on one set of numbers, and where those numbers come from. Why are they scheduling 25 widgets per day in their plant? What's the impact of changing to 30 widgets a day, and how is impact assessed?"

The course would not only explain generic planning and control processes, but put them in the context of World Class Operational practises. "This meant the inclusion of lean concepts, performance measurement and total quality management (TQM)," says Sunners.

Watkins worked with Sunners and two of his colleagues in the second quarter of 2002 to develop a two-day bespoke workshop which BNFL began to roll out at the beginning of 2003. "Richard tailored it to the way we've implemented it at Sellafield," says Sunners. "That gave it a real focus on what the planners and managers were doing, and what their day to day job was and how this contributed to the process".

From the two-day course Richard Watkins helped BNFL distil a half-day course on S&OP for all the active participants on the S&OP process, from the director of operations, operating unit heads through to plant managers and all technical, engineering and manufacturing managers.

The results

BNFL Sellafield has won a string of benefits from its education programmes. They range from measurables, like throughput, productivity and worker safety incidents to intangibles, like the ease with which OU heads work together to achieve their joint objectives.

"One of our biggest benefits is that BNFL now has achievable plans and tools to help it achieve them."

Before S&OP, BNFL's plans extended two years ahead at most. Now Sellafield has the data to develop a lifetime programme chart for the whole site up to the year 2150.

Says Sunners: “The numbers in any year all hang together properly, so that for example the reprocessing figures are manageable in the waste plants. This chart is revised every quarter, and once a year these figures are used as part of the business planning process.”

All the cross-site co-ordination from manufacturing and projects is done through regular operating unit and site level meetings. These meetings produce a chart every month for each operating area showing planned and actual throughput for the month:

“We’ve now got a set of objectives to be able to run the site effectively.”

Personnel safety has improved as the plants run more smoothly and the need for fire-fighting has reduced: “All our safety indicators are moving in a positive direction”, says Sunners; “supported by more effective plant operations.”

BNFL is now much better able to monitor and manage the capacity constraints imposed by irradiation dosage. Each worker carries a film badge to measure his or her irradiation dose. However skilled they are, once they have reached the dose limit they must be excluded from the plant. This is a capacity constraint.

Productivity is up. For example the melters used in the vitrification process, which is a key bottleneck, have a finite life. When that is over, there is a changeover period which used to be over two months. The use of the S&OP related productivity tools helped BNFL reduce this to between five and seven weeks and its still going down.

The biggest benefit of all from implementing S&OP and the underpinning processes is that BNFL’s senior management team have a business “dashboard’, updated weekly: “They’re getting real time information on how we’re doing, and they make decisions based on the real picture. We wouldn’t be able to do that without S&OP.
This may explain BNFL’s steadily improving hit rate on operational targets. The site is already working to the 68 operational targets which will be used when the NDA takes over in April 2005. 67 out of the 68 operational targets have been met for the last year. S&OP has been the main driver behind the transformation of BNFL’s performance.

OPERATIONAL TARGETS		
YEAR	SET	HIT
2000/01	20	4
2001/02	25	18
2002/03	54	51
2003/04	68	67

At a review of Sellafield’s pro cesses during 2003 the DTI team, who were preparing the way for the formation of the NDA, concluded that the current manufacturing planning and control process, is the best practice they have identified across all UK nuclear sites.

Summary

“We think we’re in pretty decent shape,” Sunners summarises, “and we intend to be able to prove to the NDA that, not only are we a competent M&O contractor, but we’re the best that they could get.”