SEPTEMBER 2005

DRIVING CHANGE

DELIVERING LOGISTICS FOR OPERATIONS

I was delighted to be asked to write the foreword to this special edition of Driving Change following the presentation, by my colleague Lord Drayson, of his prestigious Minister for Defence Procurement Award 2005 to the Lean Support Continuous Improvement Team (LSCIT).

Professor Lord Bhatacharyya KB CBE
Professor of Manufacturing Group at the University of Warwick

This award is one in which I too take tremendous pride because of the close involvement of the Warwick Manufacturing Group (WMG) in providing the educational programme for LSCIT. I well recall meeting the first Chief of Defence Logistics, General Sir Sam Cowan, to mark the inauguration of the programme. The aspiration was to blend high quality education with the practical application of that knowledge on focused benefit delivery projects. It was a highly innovative programme then and aligned precisely with WMG's philosophy of combining academic excellence with industrial relevance. Four years later, over 100 people have participated in the programme and I know from my colleagues at WMG just how talented they are and how committed they have proved to be in improving the effectiveness, efficiency and flexibility of logistics across defence.

To me, lean thinking is an euphemism for productivity improvement and as the professor of manufacturing at the University of Warwick, I know how difficult it is for any large enterprise to successfully embark on a major productivity improvement initiative. It is not enough to copy a generic model based on success in one sector in the hope that similar success can be emulated in another. Success has to be built on a foundation of innovation, rigour and a steadfast belief in the people who will deliver the essential changes.

Developing your own capability and not relying on external consultants is the key and this is precisely what the architects of the programme understood. The return on investment of twelve to one is sufficient testimony to the success of the team and one which other government departments and industry would do well to emulate.

The success of LSCIT today should be seen as merely a start on a long journey to embed a culture of continuous improvement and high productivity in MOD. I offer my warmest congratulations to the team and sincerely hope that we will be able to continue to work towards even greater success in the future.

THE FAB FOUR ....

The Support Options Matrix (SOM) is a framework for the design or improvement of equipment or system logistics support chains. Neal Lawson says: "*The DLO Plan says that the SOM is the key framework against which IPTLs will review current and planned support arrangements. It's the primary tool for identifying, designing and putting in place the optimum support arrangements in the real-world complexity of defence logistics.*"

The SOM breaks the support chain into the component parts of cost and performance drivers, illustrates a range of support chain design options, and presents a clear rationale for moving from A to B. It provides the tests for deciding whether to go from A to B, offers metrics necessary to measure the impact and illustrates the nature of changes in the finances; which types of money are going to go up and down?

The SOM is at the centre of everything that LSCIT does and can be used to describe the four LSCIT project types:

Neal Lawson Director Lean Support and Business Consultancy

- **Support Chain Improvements Planning:** These projects don't change the position on the SOM, they improve the quality of planning, making better decisions and trade-offs. Neal says: "*This is not moving repair facilities, moving desks or changing the balance of what MOD and industry decides. It's a project done in the head and optimises the existing plans and implementation of processes.*"

- **Lean Operations:** In contrast, Lean Operations projects are all about physical changes; streamlining flow lines, reducing repair and turnaround times for platforms and equipment. "*We're making the physical world work better,*" says Neal. The work at RAF Benson is a typical example.

"Logically, the first two project types would be done before the third"

- **Support Chain Transitions:** This is the most complicated of the project types. This activity looks at the best place to be on the SOM and shows what MOD and industry should or could do better. The only sensible way to determine that, is to understand what the key cost and performance drivers are and who's best placed to manage each of these drivers. An example of this is 996 Radar.

Logically, the first two project types would be done before the third. This would show how everything works, what is important and determine who is best to manage the project. In practice, Transition Projects are often started without attempting the first two. Neal says: "*This leads to complexities because we're trying to model what would've been possible with the other two as the value for money comparator.*" The model is then judged against what should be the optimum mix of MOD and industry involvement in one of the options on the SOM. This is almost three projects in one.

- **The fourth type of LSCIT project is Integrated Equipment Solutions,** which can be any one of those three types. The basic assumption is that an Integrated Equipment Solution can be performed for a whole range of equipments or platforms as one project.

Pumas can change their spots after all

The work done by station staff and LSCIT at RAF Benson, to lean the Puma support helicopter Depth hub, is the latest example of a classic Lean Operations project; streamlining the flow through physical changes and reducing repair turnaround times.

With the help of LSCIT, minor depth service times have been reduced and controlled to a steady 40 days.

Before the project, the Puma Depth hub had experienced a steady decline in turnaround time performance, with minor depth servicing taking anything between 40 and 75 days, with an average of 60. Both the increasing average and the variability were having an impact on aircraft availability, causing the station operating difficulties that needed to be addressed.

Wing Commander Simon Moss, OC Engineering and Support Wing at RAF Benson says: "I'm pleased with the work that has been done at Benson; it has been a struggle at times but you can now see a positive change. The changes seem to be working and we've got a steady flow of aircraft moving through."

Before the LSCIT-assisted improvements were introduced, squadrons had to request extensions beyond the prescribed maintenance period to meet the flying task. At that point, approximately 20% of the flying task was being met by extending maintenance periods.

LSCIT was engaged to help RAF Benson address two problems: first, to improve the maintenance production to ensure the operational availability of Puma (it was approximately 22% below the required level) and second, to meet the efficiency targets set by the E2E study.

So, how is RAF Benson achieving the new 40 day turnaround?

They have created six pulse bays, each producing aircraft from standard work packages into a single flight test cell. The first Puma was supposed to be serviced in 40 days and it took 40 days. This was achieved by working to a takt time of ten days. Takt time is the rate at which each of the maintenance phases needed to be completed to meet customer needs. Almost immediately after completing the first aircraft, Joint Helicopter Command (JHC) requested that three additional minor depth services be carried out. Subsequent improvements were identified and the following two aircraft were planned at 35 days, which has now been achieved. The improvements in planned performance enabled the new processes to cope with an increase in customer demand that needed a takt time of eight and a half days.

To get the servicing down to a steady 40 days from the average of 60, the process was completely redesigned. Trevor Drake, the LSCIT Land and Rotary Operations Manager says: "Everyone in the process understands that adhering to the schedule is vitally important. No faster, no slower, just keeping to the schedule."

One way of doing this is by using process control boards and flexible visual management systems in the workshops. Frequent readers of *Driving Change* will know that they are simple, visual boards to show everyone how far the service has progressed. Each service day is marked on the board and all the tasks that must be done on which day. When a task is complete, it is ticked off, and just by glancing at the board shows whether the aircraft is on schedule.

Handover of the logbook for the first aircraft to complete 40 day turnaround.

A key part of implementing the physical change is the involvement of the people on the shop floor. They are the ones who designed the process and decided on schedule times, rather than being told what they should be.

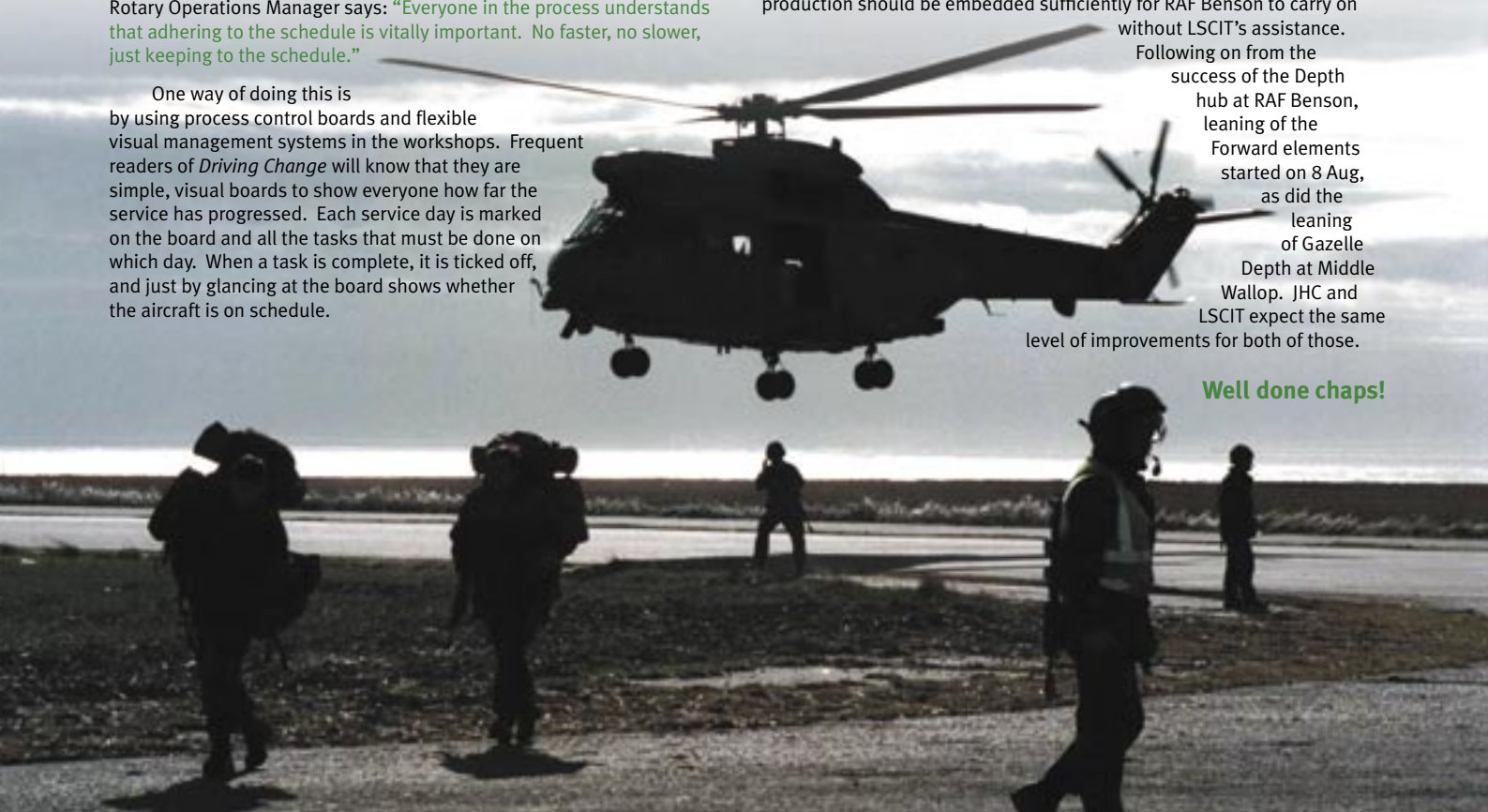
Personnel also have a board where they can place all their process improvement ideas and this is reviewed regularly and never ignored. "Anybody with a good idea can add their suggestions; the people doing the job are the ones who know how to do it best," says Trevor. So far 120 improvement ideas have been put forward and 85 have already been implemented.

The stores system for 'C' class parts such as nuts, bolts, washers and screws, has been improved and aligned with the actual processes. Only the things that are actually needed are in the carousel. "Most of it is common sense; but by integrating everything together, all the bits fit together properly.

"Benson is a very good project. It's doing all the right things in the right way and supporting what DLO and DLTP are trying to achieve. There's an improvement in effectiveness; reducing the number of extended flying hours and efficiency because the resources put in to achieve the end result will be less. We've managed to deliver effectiveness and efficiency on the same project in a fairly short timescale, with less than £20K investment in machinery or equipment," says Trevor.

By October 05, all the processes associated with on-aircraft production should be embedded sufficiently for RAF Benson to carry on without LSCIT's assistance. Following on from the success of the Depth hub at RAF Benson, leaning of the Forward elements started on 8 Aug, as did the leaning of Gazelle Depth at Middle Wallop. JHC and LSCIT expect the same level of improvements for both of those.

Well done chaps!



Royal Navy Enemy no. Four

996 Radar is fitted to Type 23 Frigates, T42 Destroyers, Aircraft Carriers, Landing Platform Helicopter and future Landing Platform Dock (Replacement) platforms of the surface fleet. It provides target information data to the Seawolf and Sea Dart Missile systems and surveillance information to the command systems.

The 996 Radar System project is an example of an LSCIT Support Chain Transition Project, which looks at the range of possible support solutions across the SOM, identifies the best, produces the business case for the implementation and then carries it out.

The entire 996 project will deliver the availability that Fleet requires and achieve savings of nearly £26m over 10 years. One of the most significant savings will be a reduction in planned antenna and stabilised turning unit refurbishments from 55 to 44 over the 10 year life of the contract, achieving projected savings of over £4m.

The 996 Radar was selected because it was number four on the Royal Navy's top availability concerns list because of its poor availability and reliability.

One of the reasons for this is because it's a single point of failure piece of kit; if there's one failure in the system, the whole weapon system goes down. The equipment can only track the fault to three line replacement items, so three pieces of kit have to be removed to fix the problem.

In effect, the project assessed an Asset Availability Service (AAS) option developed by the supplier, Insyte (formerly AMS) against a *should-be* comparator developed by the Ship's Missile Systems (SMS) IPT and LSCIT, with the AAS option selected and now on contract.

The AAS solution required a shift away from a solution that rewarded industry for poor reliability by increasing the number of repair and spares orders, to one based on giving industry the incentive to improve operational availability.

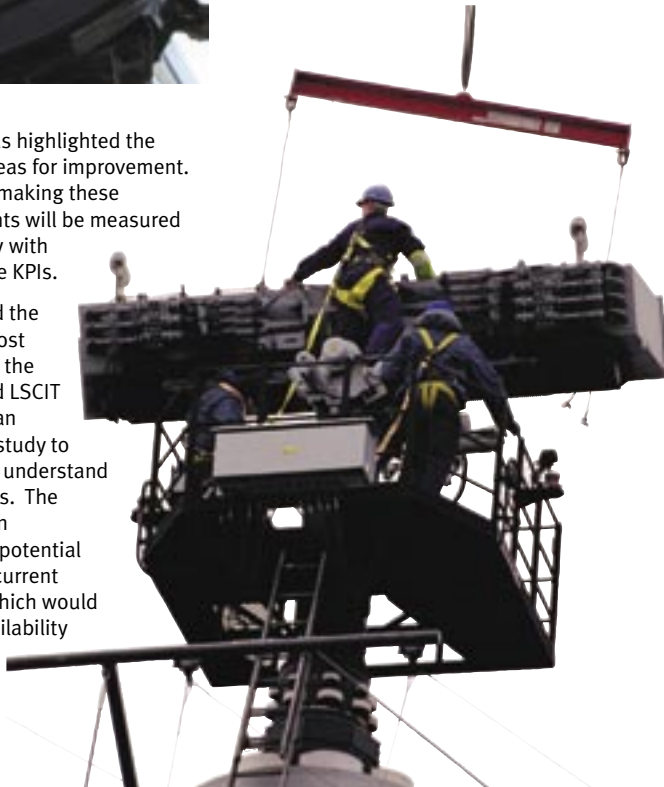
LSCIT facilitated the development of a suite of key performance indicators (KPIs) for the Insyte proposal to provide an incentive to improve operational availability. The KPIs target better value for money for the taxpayer and a better level of service for the Royal Navy. They contain measures that require industry to make the equipment more reliable and quicker to fix if it fails. The KPIs will be monitored closely during the first two years of the contract to ensure that the new arrangements are delivering the anticipated improvements.

Insyte's ability to deliver an AAS solution was measured using LSCIT's capability assessment tool. This has highlighted the potential areas for improvement. Progress in making these improvements will be measured concurrently with review of the KPIs.

To build the *should-be* cost comparator, the SMS IPT and LSCIT carried out an eight-week study to identify and understand all the issues. The investigation highlighted potential changes in current practices, which would improve availability and affordability before transferring responsibility to industry. These included benefits identified from process mapping and improvement activities, waste elimination and application of lean principles.

Another improvement in the new contract is the addition of an Insyte engineer within Superintendent Fleet Maintenance in Portsmouth. He is on hand to assess problems that arise with 996 on board platforms: **"Industry has been brought Forward and can make almost pre-emptive decisions,"** says Brian Cameron, LSCIT's Operation's Manager (Sea). From the company's point of view, this stops the repair loop being flooded with serviceable items and from a ship's point of view, problems can be fixed much quicker. When ships are alongside, the engineer checks the state of the kit and can change systems and parts when they need it. In principle, this should also contribute to improved operational availability of the 996 Radar.

An update on the results of the 996 contract will be published in a future edition of Driving Change.



IMPROVING OPERATIONAL EFFECTIVENESS

The aim of Optimised Support Planning (OSP) is to improve equipment availability without increasing overall spending. It reflects CDL's emphasis on effectiveness as an outcome of logistics transformation and also his role as the end-to-end process owner.

Neal Lawson says: "*In terms of LSCIT's forward programme, OSP is undoubtedly at the top of what we're doing. This is a crucial project for the whole of defence logistics.*"

The OSP project is all about encouraging the management of logistics support on an output basis and providing IPTs, as the through-life and end-to-end deciders, with the processes and tools to make intelligent trade-off decisions between the cost and effectiveness of logistics support.

As a simple example, one trade-off every IPT has to make is the balance between prevention and correction. "*Should we spend money reducing the likelihood of something failing, or be good at getting things fixed fast?*" says Neal. "*The problem is, even at the very top level, we don't have enough of an understanding to make a decision on a quantifiable basis. It's still gut feeling.*"

There are four underlying problems that OSP aims to fix.

- There isn't a structured end-to-end performance management system. Neal says: "*If you take Maritime as an example, we've known for a long time how often things break and we know how long they remain broken. However, it's only now that we're starting to understand how much of that time is spent diagnosing what is wrong and how much time is spent supplying the parts to fix it.*"
- Inventory needs to be managed more effectively. "*It's a key enabler. If you can't manage your inventory, then you can't really drive output management,*" says Neal.
- There isn't a consistent analysis capability to find the root cause of problems, which means we are at risk of fixing symptoms not causes.
- There isn't an effective planning process that exists, all the way down from the top, customer needs, to the bottom, all the individual activities that industry and LSCIT undertake.

"*The concept of OSP is to plan from top to bottom, work to the plan and then create a feedback loop. If the plan doesn't work, you need to understand why, fix the problem and get back in control,*" says Neal.

OSP begins by determining what the customer wants. In Maritime, the customer for operational availability is Fleet and an example that LSCIT is currently working on with the Fleet Wide Systems IPT, is Type 1022 Radar. How many radars are required, on which ships and for how many days is the radar required to be available? OSP turns the Fleet operational programme into required 1022 equipment days and sets an acceptable tolerance for operational deficiency days, or OPDEFs. The second step, is to determine what has to be done to deliver the required availability; from buying stores to developing training for maintainers.

Key to OSP success is Sales and Operations Planning (S&OP), the production of one plan that everyone will follow. In industry, S&OP might mean getting the sales, marketing and production elements to work to the same plan. In defence logistics, it means breaking down the barriers between functional groups and TLBs that have been created over time. The plan will show what the customer wants and everything necessary to deliver that, but in reality, there is never enough money, people or facilities.

The next step is to consider what can be deleted, delayed or reduced without impacting on the output. Only then can reductions be considered that will have an impact on availability. The challenge for OSP here, and the advantage that we have already demonstrated in inventory management, is the ability to translate reductions in pounds sterling into quantified risks and reductions in output. This allows us to better understand the consequences of our actions and provides both providers and deciders with a better understanding of the least painful measure we can take to reduce the risk, with the minimum impact to output.

The process is challenging because it's broad and end-to-end, from the equipment on-board to the manufacturer and it's deep, all the way down into what everyone in an IPT is doing. The process is also complex because there are often multiple customers. For LSCIT and those implementing the OSP process, all the ground has to be covered quickly to contribute to the delivery of transformation targets for efficiency and effectiveness.

Some of the necessary tools already exist and some have been built from scratch. Importantly, OSP has the potential to align the cost of logistics support with delivery of the required output and support informed management decisions and interventions from all points of the end to end support chain.

HMS Gloucester Type 42 fitted with Type 1022 radar

The role of DLBC is to provide business consultancy across DLTP, DLO and DCSA to customers ranging from CDL/DCDL, Cluster Leaders, IPTs, Agencies/Commodity Groups and other enabling services in four main areas:

- Process Improvement
- Organisational Effectiveness
- Decision Support Services
- People and Change

Contact Principal Consultants: Jacky Jenkins (95371 4088), or Claire Fry (9355 84015).

Role of LSCIT is to:

- Catalyse the transformation of defence logistics
- Embed a continuous improvement culture
- Exploit Lean support best practice
- Support other transformation teams

Contact Nigel Butler AD Operations (9355 82675).