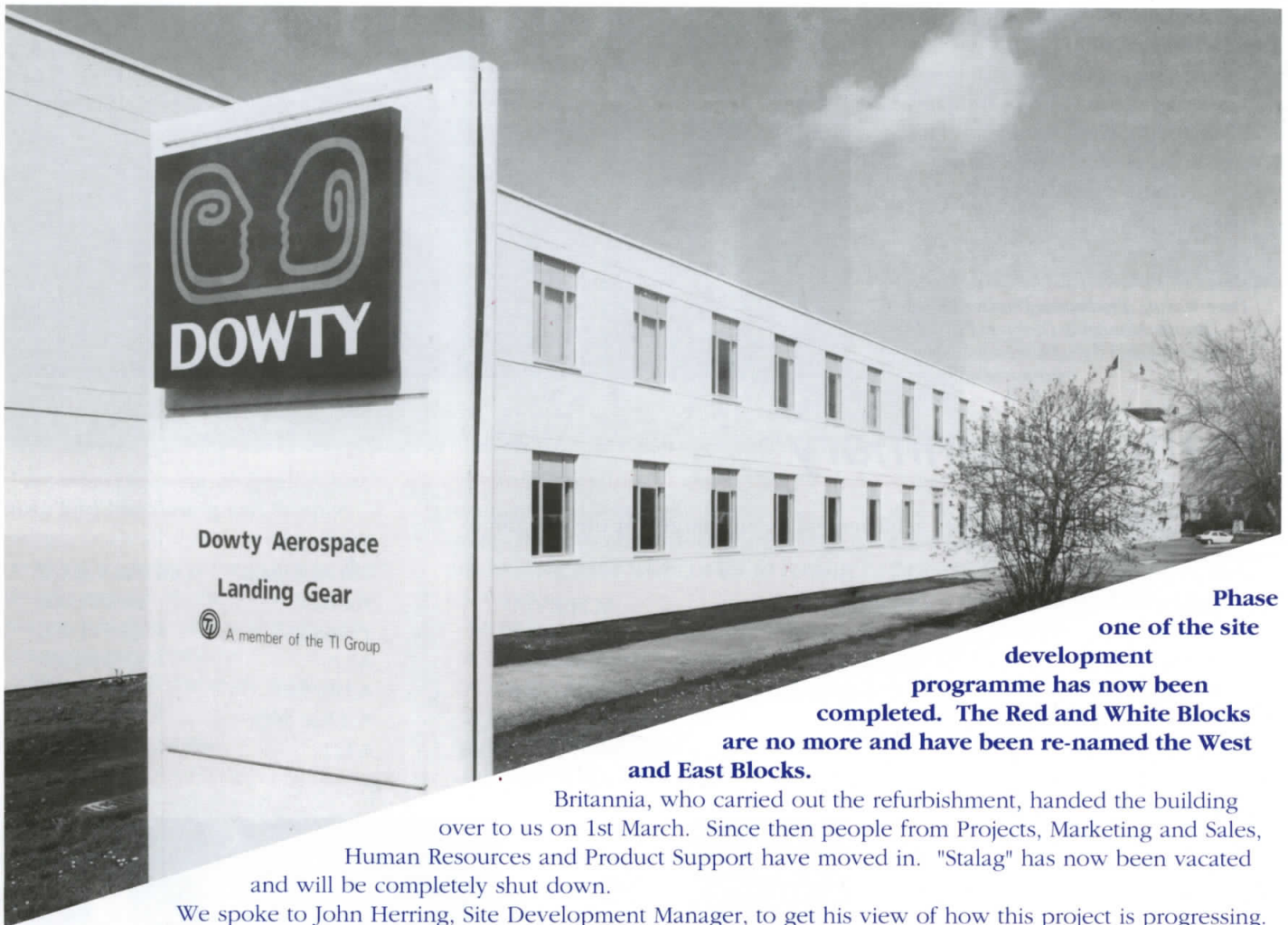


Landing Gear *Link*



The House Magazine of
Dowty Aerospace Landing Gear, Gloucester
Issue 4, May 1993

Red Block Goes West



What do you see as the benefits of the site redevelopment we have already completed?

We've managed to close down buildings which weren't needed and bring people closer together. This has saved us money on utilities such as heating, lighting and rates.

The refurbished office accommodation in the West and East blocks is of a standard which projects an image in line with our aim to be a world leader. It also means we make savings because we have lower maintenance and running costs.

Are there any other features

about Phase 1 which you think are important?

Yes. Firstly I want to thank all the people who have been involved in the moves both in their own areas and in helping out other areas.

Secondly I want to highlight that the office refurbishment was completed on time and within budget and thank all those who contributed towards this.

What has been the reaction of the people who have moved into the West and East Blocks?

Very positive - even from the smokers! People who have moved in have

(Continued on Page 2)

Phase one of the site development programme has now been completed. The Red and White Blocks are no more and have been re-named the West and East Blocks.

Britannia, who carried out the refurbishment, handed the building over to us on 1st March. Since then people from Projects, Marketing and Sales, Human Resources and Product Support have moved in. "Stalag" has now been vacated and will be completely shut down.

We spoke to John Herring, Site Development Manager, to get his view of how this project is progressing.

Also featured in this edition of *LINK*:-

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also generally made an effort to maintain a high standard of house-keeping.

There was some concern initially about the offices being open plan but this has now disappeared and most people feel the open plan design helps to promote teamwork.

What about plans for developing the rest of the site?

Our aim is to provide a modern standard of accommodation for the rest of the site. This is the next phase of the site development programme which we have called Phase 2.

The main features of this are as follows:-

- Re-organise Medium Landing Gear into cell based units.
- Centralise all processing areas under one roof between the Medium and Large Landing Gear facilities.
- Move Engineering to new offices adjacent to the West and East Blocks.

Dave Waring, Production Director and Mike Bishop, Managing Director of Britannia Construction at the official handover of the refurbished office block.

- Move all Landing Gear facilities off South Works.
- Move the site entrance to Hatherley Lane.

What is the current position on Phase 2?

We are in the process of finalising our plans. This is a major project costing many times more than Phase 1

and so we are using outside specialists to overview our plans to see if we can make any improvements.

We do not yet have the financial approval to spend the substantial sums of money that are involved. However our aim is to bring all areas of the site up to an acceptable modern standard.



Financial Summary

Sales Shown below is our sales achievement against target for the first three months of this financial year.

SALES	TARGET	ACHIEVED
January 1993	£7,016,000	£7,509,000
February 1993	£6,167,000	£7,719,000
March 1993	£7,168,000	£7,466,000
	26,351	22,694

Sales have been above the targets set for 1993 mainly as a result of rescheduling deliveries. However, from April onwards, we are going to see the impact of the programme cutbacks on Airbus, Fokker and A.T.P.

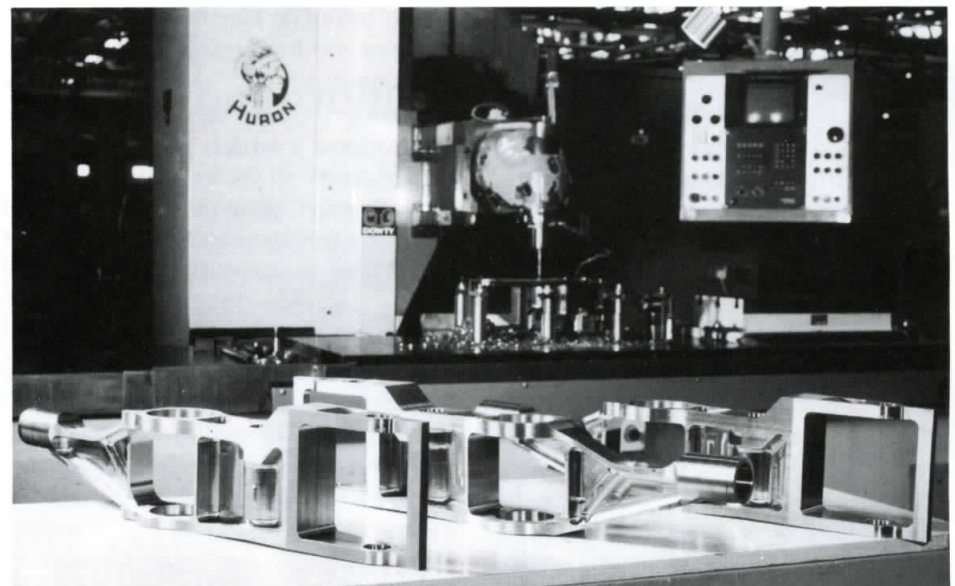
Our overall sales target for 1993 is now £77.5 million which compares with an initial target of £88.6 million. A further indication of the level of downturn can be judged from comparison with the sales target of £96.8 million which we had for the 1992/93 financial year when the Landing Gear business was launched in April last year.

Profit So far this year we have managed to achieve our profit target. This is because of the reduction that has been achieved in our levels of revenue expenditure, together with the benefit from the higher sales volumes.

Order Intake The major orders

ORDERS

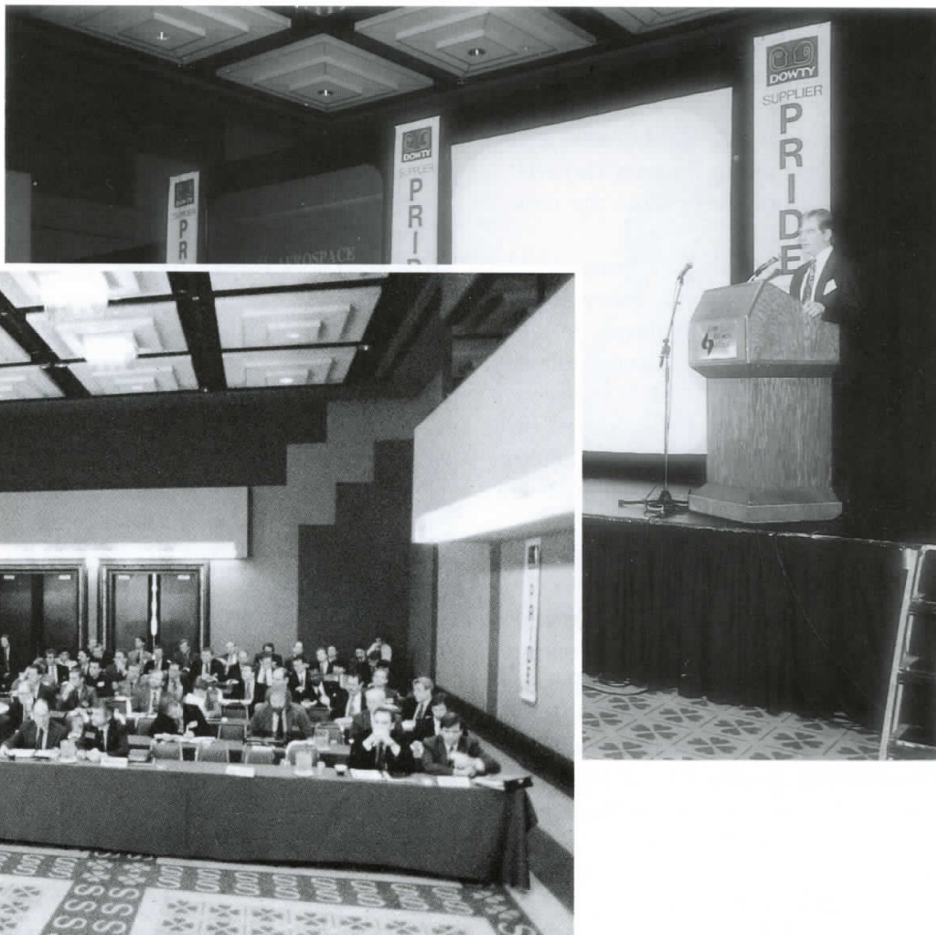
PROGRAMME	ORDER VALUE
Harrier	£2,859,000
Tornado	£2,514,000
A320	£1,256,000
A330/340	£365,000
Fokker 100	£90,000
A321	£60,000



MAGLEV UPDATE: Titanium vertical links pictured during the final stages of machining. The first batch of four units will be used for development testing at DALG and at NABCO

"PRIDE" Launched at Supplier Conference

When the Landing Gear Business Unit was formed in April last year we realised that it was important that all three sites - Gloucester, Toronto and Montreal - had a common approach to meeting customer requirements and also in dealing with our suppliers.



A team consisting of Quality Assurance and Purchasing and Supply people from all three sites has been working to define how our suppliers should operate to meet our requirements, which in turn will meet our customer requirements.

The result of this team work is Supplier PRIDE

- Programme
- Requirements
- In
- Developing
- Excellence

The Supplier PRIDE manual gives

our suppliers all they need to know to meet our requirements. It also requires them to improve continuously, just like we have to, in order to remain competitive.

Some items that PRIDE covers are:-

- Statistical Process Control
- Gauge Repeatability and Reproducibility Studies
- A new simpler and more effective Supplier Rating System
- A common non-conformance system

We hope to cover some of these issues in future editions of **LINK**.

Supplier PRIDE was launched at a 2 day North American Supplier Conference held in Montreal in January. Delegates from our customers, from DALG worldwide and some of our suppliers made presentations which told the suppliers why we were launching PRIDE and what they had to do to meet our requirements.

The conference was declared a success with both our customers and suppliers impressed by the initiative.

PRIDE will be launched in Europe at a conference which is being held in the UK in May.

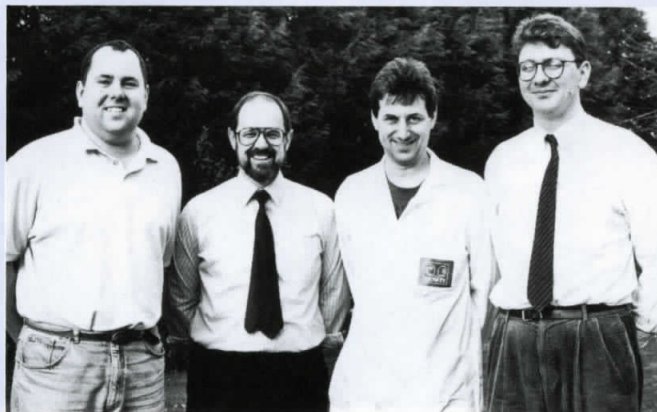
Inter-departmental Quiz

Which well-known entertainer died in a golf bunker? What's a pony in gambling terms? Which U.S. state has only one syllable? Which is the longest snake?

Twenty-three teams met in the Clubhouse to answer these and other mind-bending questions in the annual Inter-Departmental General Knowledge Quiz. Subjects ranged from snakes to gambling and included a special round about the recently deceased Bobby Moore.

The participants demonstrated not only their general knowledge but also their imagination with team names like 'The Four Must-A-Beers' and 'The Three Unpropelling Pencil Pushers and A Manager with Cramp'.

The highest placed Landing Gear team, with a score of 72, was The Process Rejects (Processing). Pictured below from left to right are team members Raymond Hall, Bruce Pudner, Dave Spackman and Gareth Hughes.



A340 Flight Range Extended

The Airbus family continues to develop, with the introduction of the new, extended range 271 Tonne A340.

LINK spoke to Colin Thornton and Martin Beirne of the Projects Department to find out more about the new aircraft.

What is meant by 271 Tonne?

The A340 271 Tonne is a development of the A340 we currently produce. 271 Tonne is its maximum take-off weight (MTOW). This is the weight which cannot be exceeded on take-off when fully laden with fuel and passengers. The MTOW of the current A340 we make is 257 Tonnes.

Why is the aircraft being developed?

The new version will give a greater range than the current A340, allowing more routes to be accessible. This will give Airbus a stronger place in the market held currently by McDonnell Douglas and Boeing.

What is different about the aircraft?

Structures have been altered where extra strength is needed, which applies to the main and nose landing gear and the centre section of the wing. In addition, space will be made for the extra fuel needed for the longer journeys.

We make the main landing gear. How will it be affected?

Because of the increased weight that the main landing gear will bear, most of the sections will be thickened to provide extra strength. However, the mechanisms and overall appearance will not change significantly.

Where will the main landing gear be made?

The work is expected to be shared in the same way as for the existing A340. The main fitting and sliding tube will be made in Dowty Aerospace Montreal, while the bogie beam and torque links and final assembly will be our responsibility. The finished 271 Tonne aircraft will be produced at the Airbus Industries facilities at Toulouse, France.

When will the 271 Tonne aircraft go into service?

The 271 Tonne is planned to enter service in Spring 1996. It is expected to be owned by Singapore Airlines. Before this 4 aircraft will undergo thorough test and flight trials. The first of these will be the 117th A340 produced.

What will happen to the current version of the A340?

The 257 Tonne aircraft will continue to fly, but from about the 190th aircraft all will be manufactured to the new (271T) development standard.

When do we start work on the 271 Tonne?

Work has already begun on the project in the technical office, concentrating mainly on establishing the new sizes of major joints and dimensions on the main landing gear. The work level will rise significantly over the next 2 years, culminating in the delivery of the first set of main gears to Toulouse in March 1995.



Apprentices presenting Andy Stevens with a model version of the A330/340 landing gear

Support Provided For Courses

Training and education are key to improving our business performance. Last year, *LINK* reported the launch of our Training Policy and one element of this is the support provided for people who want to pursue academic courses.

Support takes the form of paying for course fees for relevant evening or correspondence courses. 37 DALG employees are currently being supported through local college courses including:-

- RSA Shorthand and Word-processing
- City and Guilds Quality, CAD and CNC Programming
- French and German
- B. TEC National Certificate in Business and Finance
- B. TEC HNC in Engineering, Electronics and Software Engineering
- Institute of Purchasing and Supply

LINK spoke to Lyn Prystajekyj, an Accounting Assistant in Finance, and Andrew Pond, a Machinist in Large Landing Gear, who are currently working up to end of year exams at Gloscat.

"I wanted to get more out of my job", Lyn explains. "I wanted to learn about accountancy procedures and about business in general".

Lyn chose to enrol on the B. TEC National Certificate in Business and Finance and approached her manager



Lyn and Andrew

for support. The course runs for 2 years and covers a range of subjects including Organisational Methods and Human Resources Management as well as accounting topics.

Lyn attends Gloscat for 2 evenings every week but has also used some of her own holiday in order to research her projects. Lyn comments, "It is hard work and requires a lot of personal commitment but I hope it will increase my career opportunities in the future".

Andrew echoes Lyn's comments. Since completing his apprenticeship, Andrew has enrolled for a succession of courses from CAD/CAM appreciation to CNC part-programming. He eventually began an ONC and has

now progressed to an HNC in Manufacturing Engineering.

Andrew, who works on the bridging shift, spends all Tuesday at Gloscat. But to complete all the work, Andrew learned the maths unit of his course from a book and passed the exam first time!

Like Lyn, Andrew hopes that continuing with his education will enhance his career prospects. "I'm toying with the idea of pursuing a degree in Production Engineering after my HNC", he told *Link*.

We wish everyone who is facing exams in June the very best of luck!

Introducing S.P.C.

To improve the quality of our products, we are using a technique called Statistical Process Control (SPC).

SPC is a way of using statistics and problem solving methods to help monitor and control variation in our processes so that what we produce meets our customers' requirements.

It can help us to continually isolate, control and eliminate variations resulting from people, machines, materials, methods and tooling. This will help to prevent us from producing items which don't meet our customer's requirements.

SPC is being introduced after some good work on a pilot programme by the Medium Landing Gear NC Section.

Employees who are involved in SPC teams are receiving training to help them to understand the techniques used. The following manufacturing areas are now collecting data:-

- Medium Landing Gear Numerical Control headed by Kevin Rockett. The team are looking at single point boring on the Giddings and Lewis machines.
- Large Landing Gear Numerical Control headed by Bob Fluck. This team is looking at 10 mm reamed holes on the A320 Main Fitting on the Droop and Rein axis machine.
- A Plating Shop team headed by Bruce Pudner is looking at the deposition of chrome plate.

SPC techniques are also being introduced in Engineering, Planning, Production Control and Projects.

Our customers expect us to use SPC because they see it as a technique which gives them confidence that we, and their other suppliers (our competitors), are giving them what they want. If we are to win business with Boeing and retain business with our present customers we have to develop the implementation of SPC throughout the business - so it is important to our future success.

A321 Maiden Flight



The 186-seat A321 flew for the first time on 11th March from Deutsche Aerospace Airbus' Hamburg site in a highly successful mission lasting 4 hours and 40 minutes.

The flight took place just eight days after the A321 had been officially 'rolled out' from the new final assembly line in Hamburg, in front of a large audience including representatives from the world's airlines, the media and the aviation industry.

With a full passenger range of 4,350 km, the A321 has been designed to offer maximum commonality with the A320 and the yet to be launched shorter A319 version. Some 6.93 m longer than the A320, by the addition of a total of 13 frames forward and aft

of the wing, the A321 offers 24 percent more seats and 40 percent more underfloor hold volume than the A320.

Painted in Airbus Industries' colours and powered by International Aero Engine's V2530-A5, the aircraft, packed with nine tonnes of flight test instrumentation onboard, took off with a relatively high weight of 69 tonnes allowing a realistic evaluation of how the A321 will behave in service (maximum take-off weight of the A321 is 83 tonnes). The flight included speeds as low as 200 km/hr with flaps and slats extended, and the aircraft's maximum operating speeds and height of Mach 0.82 at 11,900 m.

The aircraft will soon be flown to the Airbus Industries flight test centre at Toulouse, France, for trials which

will involve four aircraft and some 850 hours of test flying and will lead to certification this December. The first A321, powered by two International Aero Engines V2530-A5 engines, is due to be delivered to the German airline Lufthansa in January 1994. A version with CFM-56-5B engines is due to be certificated in February 1994, and the first of these will be delivered to Italian airline Alitalia the following month.

At the time of the roll-out the A321 had secured 153 orders from eleven airlines, out of the total of 817 (from 38 clients) for the A319/A320/A321 family. This total includes six firm orders for the smaller member of the family, the 124-seat, A319 which has yet to be formally launched by Airbus.

Ghost Kitting Reduces Inventory

In the January edition of LINK, we reported on the importance of reducing the cost of inventory. This issue, we focus on the Finished Part Stores and Kit Marshalling to explain how inventory can be costly and what we are doing to reduce it.

F.P.S. hold all the finished items which we either buy or make ourselves for use in production. They are held until we either build them into assemblies or units, or sell them to customers as spares.

Much emphasis has always been placed on items which have a high

value. But it could be a single nut or bolt which holds up the building of thousands of pounds worth of equipment. To avoid this we used to gather together all the items we needed for a complete unit months in advance, just so that we could identify what was missing. We would 'Marshal' kits of parts just to identify our shortages.

Kit Marshalling months in advance has several negative effects. As soon as a kit is marshalled, its value increases because of the handling and paperwork which have to be done. Each time a missing part turns up the paperwork has to be updated manu-

ally - more work! We were also chasing items into stores early just to clear the shortages identified in the kits. So we were producing or buying parts earlier than we really needed them and increasing our inventory levels.

How have we managed to reduce this inventory? What was needed was visibility of the problem parts without having to marshal every kit early. A team was set up to look at this. The result of their work is that Andrew Neophytou, who is a Data Analysis Co-ordinator, has written a computer programme which lets us view short-

Building Bridges With Boeing



Boeing is the world's largest aircraft manufacturer. One of our strategic aims is to win a major contract from them. To help achieve this aim we have been building up our relationship with them over the last few years.

Recently, representatives from Boeing's purchasing department have visited this site to look at the possibility of placing sub-contract machining work with us. Although this has not yet resulted in any business for us, it has given us an opportunity to demonstrate our capabilities.

In addition, engineers from Menasco, Messier, Grumman, Rohr, Dowty Aerospace Toronto and DALG have been seconded to Boeing's Seattle site to help produce detail design drawings for their 777. These details are being produced using CATIA which, al-

though advanced technologically, is a time-consuming method of drawing.

We spoke to Roger Knight from Design Engineering, who spent 4 months with Boeing at the end of last year.

"I really enjoyed my visit to Boeing", Roger told *LINK*. "For a start, Boeing's Seattle site is such a big place - Boeing is Washington, and Washington is Boeing".

In addition to being impressed with the sheer size of Boeing's operation, Roger noticed several features about the way they work. "Boeing work as one big team. You don't notice a hierarchy because everyone treats each other equally. They are very strict about meeting deadlines. You have to be self-disciplined and work as hard as is needed to make sure you meet your targets, or there is trouble! Fortu-

nately, you are given clearly defined objectives which help".

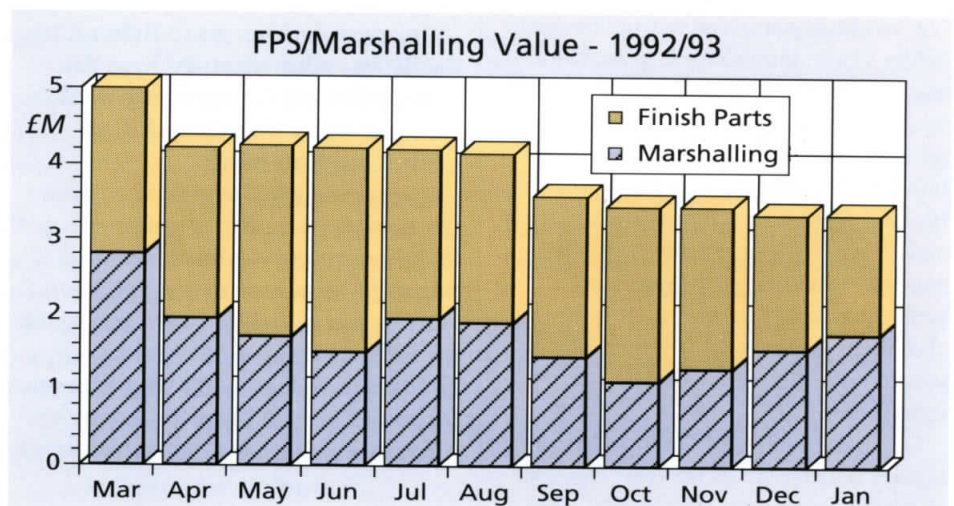
Roger also noticed that there was a lot of information available, and employee interest, about the competition and the market place. "Boeing really look hard at the competition. They regularly produce in-house videos giving news about products and competitors, including Airbus".

What can we learn from Boeing? As well as looking to them as an example of team-working, Roger feels that links with Boeing offer an opportunity to learn more about new techniques, such as the use of titanium welding.

We are continuing to develop our relationship with Boeing. Mark Wood, also from Design, is now participating in the initial studies for a new Boeing project, the 787.

ages without actually having to marshal kits early. This is known as 'ghost kitting'.

The new programme has given us the confidence to gradually reduce the marshalling period from 3 months to 2 weeks, without losing sight of the potential problem items. This has been a major factor in reducing the value of inventory on Finished Part Stores and Kit Marshalling from £4,989,000 in April 1992 to £3,305,000 today - a reduction of over a third as shown on the chart below.



The Healthy Option

The Occupational Health Centre, known as 'Medical' in past years, is part of the larger Human Resources Department. Most employees have at some point visited the department for a Panadol or a dose of cough mixture. But how many of us are aware of the wider role played by the Occupational Health staff. **LINK** spoke to Angela Grey, Occupational Health Sister, to find out more.

Reporting to Louise Morris, Site Services Officer, Angela is assisted in her work by Shanta Karadia, Occupational Health Nurse.

One of the department's everyday functions is to provide treatment for all employees who become ill or injured at work. Angela is trained to run courses in basic first aid. She has run a series of half day workshops and in March ran a full four day course which qualifies employees to administer first aid at work.

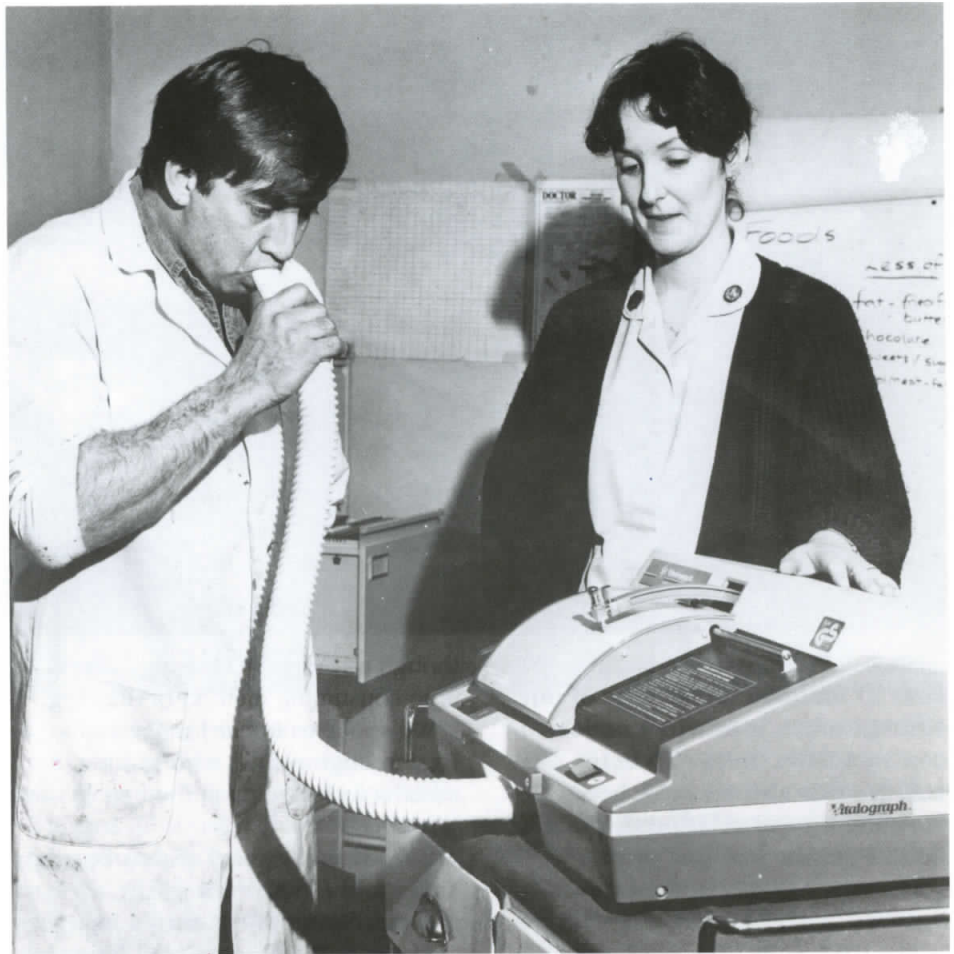
Occupational Health is also responsible for maintaining the medical records which are used to produce absence statistics.

As Angela explains, "Occupational Health goes further than compiling sick records and providing medical treatment. We are encouraging a preventative approach to health care". This includes:-

- Monitoring accident trends.
- Health surveillance of paint sprayers, cold chamber workers and fork lift truck drivers.
- Arranging eye tests for Inspectors and VDU operators.
- Monitoring noise levels throughout the site.
- Ensuring that employees who travel overseas are protected by the correct vaccines.

A working party was set up by our Safety Committee to look at introducing a no-smoking policy. As reported in the last issue of **LINK**, the recently refurbished East and West office blocks, Medium Landing Gear Assembly and pool cars are now no-smoking areas. Angela is currently running support sessions for people who would like assistance in giving up smoking. Anyone who would like to join in should contact Angela on extension 1951.

Occupational Health also helps to ensure that we keep up with changes in health and safety legislation. Two



Lung function testing on Vitalograph

recent new developments are regulations about manual handling and display screen equipment. Angela will be involved in helping to implement these new regulations.

Angela sums up her and Shanta's main objective. "We aim to provide a quality service which meets the company's changing needs. We want to establish and maintain a high degree

of well-being amongst all employees and to help protect them from any risks to their health arising from their work."

Tee-off For Trophy

Congratulations go to Brian Fitts, Facilities, who recently won the Tankards Golf Competition which was played at Lilleybrook Golf Club, Charlton Kings.

Approximately 200 golfers entered the competition. Brian had to win 6 knockout rounds to reach the final where he won by a margin of 3 and 2.

Brian received £300 and a trophy for his efforts. He told **LINK** that, in addition to redecorating his bathroom, he intends to put his prize money towards a golfing holiday in Majorca.

