DOWTY

The Dowty Aerospace Gloucester Newsletter

February 1991 Issue 18

First Delivery of A330/340

On the 15th January we despatched the first production set of Airbus A330/340 main landing gears to British Aerospace ahead of schedule.

Graham Lockyer handed over the gears to Chris Geoghegan, Managing Director of the Airbus Division of British Aerospace Commercial Aircraft during an official ceremony which took place in our recently completed large landing gear assembly area (No. 5 shop).

During his address Graham Lockyer paid tribute to the team effort made by the workforce and commented, "this is a major milestone in a particularly important and prestigious landing gear programme, in which we have made significant investment and commitment. It confirms our position as a world leading supplier of large landing gear."

Later that day the gears were despatched and transported direct to the main Airbus assembly plant at Toulouse, where they will be fitted to the first aircraft which will be involved in flight tests. The first flight of the A340 is scheduled for Autumn 1991.

The A330/340 landing gear contract is expected to be worth £300 million to Dowty over the next 20 years. Delivery of the first aircraft set marks the beginning of the production phase of this major programme which is planned to build up to 7 aircraft sets per month. To date, DAG has received orders for 76 aircraft sets of A330/340 gears, with Airbus having won orders and options for some 400 aircraft.

Tough Times Ahead

The figures below show our regular update on our sales turnover and order book.

Although we are marginally ahead on our sales target we have fallen further behind on profit, Return on Capital Employed and cash. At the end of December 1990 our R.O.C.E. was 20.6% compared to the target of 26.6%.

High interest rates and the high value of the pound continue to make it increasingly difficult to meet our targets. Our response must be to redouble our efforts and try to recover the position by the end of this financial year on 31.3.91.

In terms of the future our prospects are being hit by the business reductions suffered by airline operators due to the economic recession and the Gulf crisis. We have all seen instances of this in the media and some specific examples are shown below:

* U.S. Air are currently losing money and have decided to lay up their fleet of BAe 146 aircraft from May this year.
* Middle Eastern airline companies, who are major customers of Airbus, have cancelled many flights due to the Gulf war.
* British Airways have postponed plans for a £2 billion replacement of their fleet.
* Air France have postponed delivery of 7 A340s for a year.
* We have been advised of an immediate retardation to the BAe 146 programme. This follows previous retardations on the Jetstream, A.T.P., and Tornado programmes earlier on in this financial year. In addition BAe Chester have asked us to stop all deliveries on BAe 125-800 until further notice.

Elsewhere in this Newsletter we report on our landing gear bid for the Fokker 130. In order to stand a chance of winning this business we have had to significantly reduce our prices and accept tough contractual conditions on all Fokker equipment.

High interest rates, the high value of the pound, the general economic recession and the dramatic fall in airline traffic all threaten our business. They make it more and more difficult for us to make a profit on existing contracts and win new orders.

We can survive and prosper as a successful company but to achieve this we must significantly reduce our costs.

Sales Turnover

Period	Target	Achieved
April to September 1990	£76,508,000	£77,302,000
October 1990	£13,871,000	£13,286,000
November 1990	£14,851,000	£15,103,000
December 1990	£11,833,000	£11,533,000
April to December 1990	£117,063,000	£117,224,000

Order Book

Month	Orders Received	Total Outstanding
October 1990	£27,000,000	£276,000,000
November 1990	£14,000,000	£275,000,000
December 1990	£18,000,000	£282,000,000

Major Orders (October 1990 to January 1991)

Project	Equipment	Order Value
A330/340	Landing Gear	£24,000,000
A320	Landing Gear, Hydraulics	£ 5,000,000
Fokker 50	Landing Gear, Propellers, Flaps	£ 4,000,000
Fokker 100	Landing Gear	£ 4,000,000
Fokker 27	Landing Gear	£ 1,000,000

Inter-Departmental Pool

The winning team of the Inter-Departmental Pool Competition 1990 were the Tech Block.

Pictured from left to right are Technical Office teamsters Vaughan Matthews, Mike Mustoe, Shane Febery, Jeremy Bird, Wally Long (Captain), Stan Lee, Ted Dix and Joe Thompson.

Learn to Survive

Guest speaker at our Apprentice Indenture Presentation and Prize Giving in December was Professor Iain Mangham from the School of Management at Bath University.

In an entertaining speech Professor Mangham highlighted the changes which had taken place during his grandfather's lifetime — the development of telephones and telecommunications, radio and TV, motion pictures and manned space flight. His purpose was to highlight the rate of increase of technological change — "things today change at a much faster rate than they did years ago. Over the next 10 years we will see even more dramatic changes. We will see things that we cannot even imagine. Books will disappear, deserts will support crops, Australia will be reached in four hours from the UK and fatal diseases will be extinct".

Professor Mangham went on to highlight the speed with which new products were being launched today compared to the past. He pointed to Toshiba who marketed a new computer only eight months after conception.

He criticised the "British" attitude of being very eager to teach but unwilling to learn. "Whatever competitive edge we have today will soon be blunted. Whatever uncertainty we experience today will be more uncertain tomorrow. Insecurity will be a way of life". Companies which wanted to be world leaders must be willing to learn and adapt.

Following his address Professor Mangham presented indentures to 37 ex-apprentices who joined us last year. He also presented prizes to the following:

Andrew Jarvis	First Year Craft Prize
Peter Harding	First Year Technical Prize
Lee Williams	Intermediate Craft Prize
Richard Parker	Intermediate Technical Prize
Julian Bradley	Final Year Craft Prize
Nigel Miller	Final Year Technial Prize
Johnathan Lea	Final Year Student Prize
Robert Beck	Special Craft Prize

The Picture shows our ex-apprentices with Professor Mangham and Managing Director, Graham Lockyer.

Suggestion Wins Sony

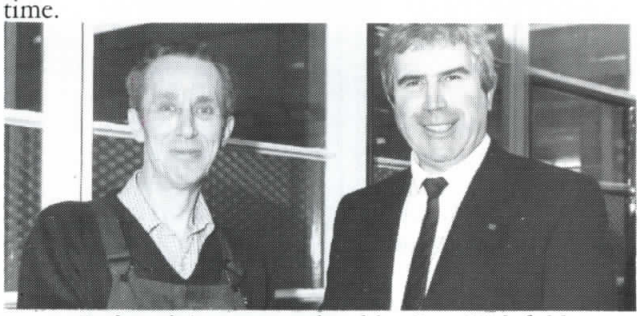
The winner of the Suggestion Scheme Quarterly Prize Draw was presented with his prize on 14th January.

Anthony Marfell's name was drawn from all the suggestions which were accepted between October and December 1990. Anthony, who works in the Works Managers Department, won a Sony Car Discman. Gary Wakefield, Works Manager made the presentation.

Congratulations also go to Dave Clarke of the Composite Blade Shop who received a cheque for £700 for his suggestion. Dave's idea was to replace blanking screws with rubber plugs made from discarded materials. This saves us the cost of purchasing special screws and helps to speed up blade manufacture.

Dave won Suggestion of the Month for December for this idea, for which he received a further £100.

Pete Stones, who is a Senior Estimator in our Tool Room also received a cheque of £400 for his idea. Pete suggested redesigning the anode contacts used in plating which were often being damaged. His new, sturdier design saves the Tool Room 240 hours of refurbishment time.



Anthony being congratulated by Gary Wakefield

Library Services Expand

For those of you who have yet to find it, our Library and Information Service is situated in the Technical Offices. Hilary Saxby, our Librarian for over nine years, told us about some of the changes that have happened to the LIS.

"We hold around 3,000 books, 8,000 reports, 6,000 technical papers and 100 periodical titles.

At first, the LIS was set up for use mainly by the Engineering Division. Recently, though, new services have been added to meet the demands of other areas of the Company.

Now you can borrow financial papers, books about business, papers about MRP or research new raw materials. The library computer can be used to help you with research for projects. Links are being set up with the Training Department so you can get books for study courses".

The LIS can borrow information from other libraries, including the British Library. Any suggestions of new titles for the Library are always welcome if the information you want isn't yet available.

Further information about the LIS can be obtained from Hilary (Ext. 1750) or Donna Langley (Ext. 4035).

Hilary at work in the Library

Montreal Update

Montreal has been chosen as the location for us to build a new large landing gear facility. We spoke to Les George, Director Production Engineering, to find out some further information.

Why did we choose Montreal? By investing in Canada, we will be strengthening our presence in North America. This will increase our chances of winning new business in the future from Boeing and McDonnell Douglas. Also we will receive financial assistance from the Canadian Government.

Where is the new facility being built? The site chosen is in Mirabel on the northern outskirts of Montreal, close to the city's main international airport.

When will the factory be complete? The building is virtually completed. The installation of the first machine tools is scheduled for late March, and production will start in April.

What will the new facility be manufacturing? It will be manufacturing the A330/340 main landing gear shock strut assembly. This consists of approximately 170 components the largest of which are the main fitting and sliding member.

What sort of machine tools are being purchased? Initially, the facility will be equipped with 10 major machine tools and a co-ordinate measuring machine. Most of this equipment is similar to that currently used in No. 2 Shop but with more advanced technology and on a larger scale. It will also be equipped with its own process and assembly areas. At a later date a further 10 machines will be installed.

How far have we got with recruiting people? D.A.M. now has a General Manager, an Operations Manager, a Works Engineer, a Human Resources Manager, a Quality Manager plus a number of engineers and machinists all recruited from the Quebec area.

Will D.A.M. be a separate company from D.A.G.? Yes it will. D.A.M. will have its own management team responsible to Graham Lockyer in his role as M.D. of the Aerospace Landing Gear business. We are however assisting in its set up. A number of their new recruits are currently undergoing training with us, and some of our employees will be spending a period at D.A.M. later in the year.

Our colleagues from Montreal with D.A.G. staff who are assisting with their training

Award for Customer Service

Pictured receiving his Chief Executive's Divisional Award for Excellence is Steve Barnes, Product Support Engineer. Chief Executive, Tony Thatcher, made the presentation in recognition of Steve's service support to Aerospatiale in Toulouse.

New Computer System

Delivery of an AMDAHL 5890 mainframe computer recently allows us to take a major step forward towards integrating our business functions.

The equipment is being customised to suit our needs and will eventually replace our ageing ICL machines. This has been a major undertaking involving a team of around 20 people, many of whom have been taken out of their normal work positions for many months.

Led by project manager Terry Hillyard, the team successfully implemented the first software, the finance system Millenium, in October 1990.

We are already feeling the benefits of our new integrated systems which are designed to make information more readily available and to produce information in a more useful form.

The picture shows Terry Hillyard (back row, far right) and some of the team who have helped to implement the new systems.

Visit to the U.S.S.R.

Whoever would have thought two years ago that we would be invited to visit a Russian factory involved in the manufacture of landing gears and hydraulic equipment much the same as we produce here in Gloucester?

After a visit to us by a Russian company called Hydromasch in August last year, we took up the opportunity of a return visit in October by sending out our Sales and Marketing Director, Max Kelly and three managers, John Herring, Don Young and Peter Bennett.

Clearly, the intent of the initial visit by Hydromasch to DAG was one of collaboration in future projects. With the cutback in military spending taking place throughout the world, Hydromasch, whose volume of business was dominated by the military market, felt a need to look to the west for collaborative partnerships.

Hydromasch employs about 7,000 people, of which 4,000 work at the Gorky site where our team visited.

Gorky is situated about 400 kilometres east of Moscow and, although there is an airport there, it is not open to the outside world as it is semi military. For this reason a very long and tiring journey has to be made by overnight sleeper rail-link from Moscow to Gorky, which takes about eight hours with many stops en route.

On arriving at Gorky, they booked into a hotel which was described as very basic and totally different from the type of hotel used by foreigners when visiting Moscow, e.g. the main reception was used purely for paying your bills. Keys to the rooms were held by an individual who was posted on each floor; they appeared to be very security conscious and the aim was to ensure that non-residents were unable to get into the hotel.

Bartering still appears to be a part of everyday life in Russia and a packet of Marlborough cigarettes is apparently a useful item to carry on your person.

How did the visit to the Hydromasch site go and what did our team think of the set up there?

John Herring reported that "from the minute we stepped out of the car and entered the site, until we left again everything was being video taped. Several photographers were on site and even special photographic lighting had been set up in the room where our meetings were held. It was almost as if we were celebrities!!"

Max Kelly commented that "we were received extremely hospitably and were given the opportunity to see any part of the Hydromasch facility that we wished". The overall impressions gained were that Hydromasch has a volume of manufacture of landing gear and hydraulic items significantly larger than ours, and founded on different design and manufacturing technologies.

The most obvious difference in Hydromasch technology was the extensive use of welding. This is applied to the large landing gear components such as main fittings and sliding members as well as actuator bodies including the end caps, lugs and hydraulic connectors. The welding methods seen were electron beam, friction and arc welding. It was stated by Hydromasch that the manufacturing lead time from issue of materials to the shop floor was three to five months maximum. Clearly by using only small forgings their overall re-order lead time is shortened significantly.

Interpretation difficulties meant that Peter Bennett had to discuss a number of topics using diagrams and symbols. In this way, it was established that they understood the problems associated with hydrogen embrittlement and machining abuse both of which can cause serious failures on components manufactured from ultra high tensile steels.

When being shown around the hydraulics servo assembly areas, John Herring and Peter Bennett had the opportunity of talking to some of the workforce. John said "one or two of them spoke English and it was almost as if this was the first time they had spoken to an English person. They watched and listened with great interest as we spoke". They were particularly keen to discuss the relative merits of English and Russian football.

Apparently the workforce are paid according to output, and the average middle grade machinist rate is about 380-400 roubles per month (£1 = 1 rouble). They work two, forty hour shifts and there was some talk of their wages being supplemented with food obtained from a farm which is owned by the company! Multi manning of machines is common.

When asked of his overall response to the visit, Max Kelly replied that "the impression gained of Hydromasch was of a competent organisation, with whom we should not find it difficult to establish a working relationship, once we have assessed the future benefits we might gain from an association with them. Hydromasch does not give the impression of lacking in either technologies or effective control system. They have an extensive manufacturing facility which contains much N.C. equipment and some relatively modern machine tools. These included Wohlenberg lathes and Boehringer deep hole borers".

When our team were asked to sum up their visit in one word, the word they used was "Different".

O.B.E. for Max Kelly

Max Kelly, our Sales and Marketing Director, was awarded the Order of the British Empire in the Queen's Birthday Honours List.

Max, resplendent in morning suit, is pictured after receiving his medal at the investiture ceremony.

PRW Award for D.A.G.

We have recently been awarded one of the first ever PRW (Plastics and Rubber Weekly) awards for excellence. This is in recognition of our achievements in creativity and engineering design using polymeric materials on the SAAB 2000 composite propeller blade.

The awards were established jointly by Plastics and Rubber Weekly, the Plastics and Rubber Institute and Interplas "90". They are intended to acknowledge the important part played by designers in using polymer materials as an integral part of the design process from initial conception through to final manufacture.

The award was made at a prestigious ceremony on the first night of "Interplas 90" at the NEC in Birmingham, attended by over 300 leading industrialists. Key members of our composite blade team in attendance were Catherine Wain, Bob Tucker and Roy McCarthy.

The picture shows Roy receiving our award from Sir John Collyear watched by Tony Bonnington of Ciba-Geigy who are one of our key suppliers of composite materials.

Book Review

RAF Lyneham

Available on loan from our Library and Information Service is a book about RAF Lyneham by Wilf Pereira who used to work in Marketing Services. The book is lavishly illustrated with over 200 photographs. It tells how the RAF's fleet of 60 Hercules aircraft carries out routine and emergency missions round the world every day of the year. It also covers Lyneham's 50 year history, the exploits of four flying squadrons stationed there and the superb organisation required to keep the C130s operational.

Wilf took two years to perform this Herculean task, travelling twice a week to Lyneham where he interviewed hundreds of service and civilian personnel. The culmination of the research work was his joining air crews on two typical Hercules flights. The first was a squadron move to somewhere in Norway, the second a supply airbridge to Belize in Central America. His descriptions of these two operations became the opening and closing chapters of the RAF Lyneham book.

One of the RAF's 60 Hercules over Lyneham station and airfield

Book Review

"Rotol — The History of an Airscrew Company"

Written by ex-employee Bruce Staite, this book covers the early history of our company which began life as Rotol Airscrews in temporary premises in Gloucester in 1937. The name changed to Dowty Rotol in 1960 following the take-over by the Dowty Group.

Far from being a dry history the book brings out the human and often humorous side to factory life, particularly during the wartime years. It runs to 240 pages with over 100 photographs. A chapter also covers the undercarriage and hydraulic firm of British Messier, which merged with Rotol in 1952.

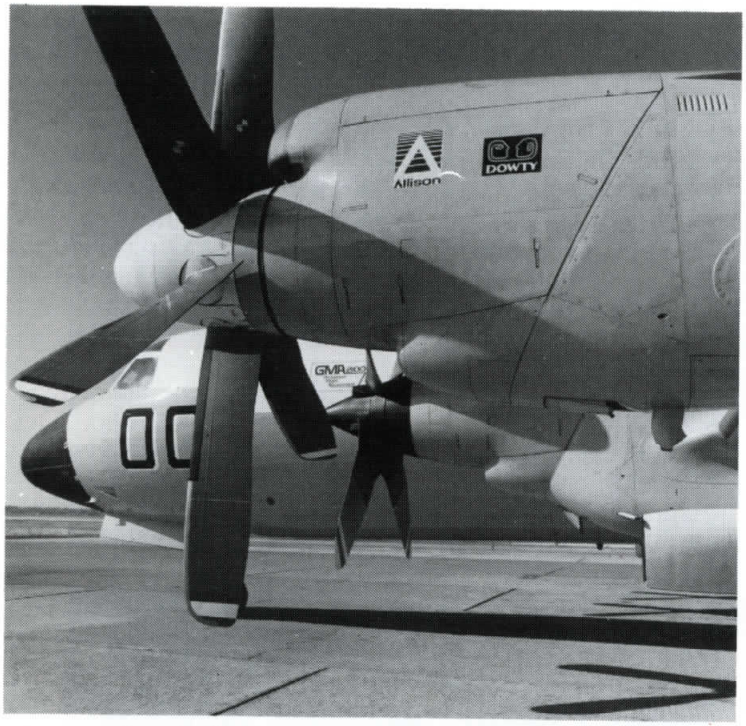
The author was prompted to write the book by the realisation that in 1988 we had occupied our present site for 50 years and that, during that time, no complete history had been written.

Copies can be obtained from Bruce's home address — 8 Mornington Drive, Leckhampton, Cheltenham GL53 0BH, at the reduced price of £10 to DAG employees (postage £1.50). Alternatively copies can be purchased through Hilary Saxby in our Library and Information Service.

P3 Flight Test

In September 1988, Dowty and Allison Gas Turbine embarked on a collaborative project to develop a high technology propulsion system aimed at meeting the requirements of anticipated derivatives and retrofits of the Lockheed P3 Orion and C130 Hercules aircraft.

As Dave Tily, Development Engineer, reports, thus began a rapid development programme. The first propeller spin test was completed by September 1989 at Dowty and the full power rating (6000 H.P.) demonstration at Allison Gas Turbine in January 1990. The programme culminated in a successful flight test of the system on a P3 Orion in August 1990.



Our six bladed propeller pictured on the P3 Orion flight test aircraft

The principle components of the system are: the six-bladed, 13′ 6″ diameter R373 propeller and electronic control, an Allison reduction gearbox and the GMA2100 free turbine turbo-prop engine.

The R373 propeller is the largest member of a family of all-composite bladed propellers that in the last 10 years has captured a large proportion of the growing regional aircraft market that includes the Fokker 50, Saab 340 and Saab 2000 aircraft.

Features of the propeller system include very light weight high performance aerofoil geometry for maximum efficiency and digital electronic pitch control.

The flight test programme began on 3rd August 1990 with the delivery of the test components to Aero Union Corporation at Chico, California (the owners and operators of the P3). The first ground run took place on August 17th and the first flight test on August 23rd. A comprehensive test and demonstration schedule was then carried out covering all aspects of the propulsion system including a propeller vibration survey, engine and propeller control compatibility, air starting assessment and feathered windmilling characteristics. Over 50 hours of flight and ground testing were accumulated. During the flight testing an assessment was also made of the system's accessibility and maintainability — an area where the Dowty propeller system has significant advantages over the existing equipment.

The test programme was a major success, all design objectives being met or exceeded. It aroused much interest with visitors including representatives from the U.S. and German MOD's Lockheed and Saab. All remarked favourably.

Performing the test on a P3 aircraft gained additional significance when the U.S. navy cancelled the P7 project (which was intended as a replacement of the P3) in July 1990, increasing the likelihood of an uprated P3.

The success of the demonstration programme has placed Dowty in an excellent position by enabling us to offer a low risk, fully developed and proven propulsion system for a range of large civil and military turboprop applications.

Landing Gear Bids

We have bid for the landing gear contracts on two new aircraft projects.

In October last year, we submitted a bid for the main and nose landing gears of an Indonesian commuter aircraft called the N-250.

This aircraft is a 50 seater twin engined turbo-prop with a potential stretch to 80 seats. The first flight is scheduled for the next Indonesian Airshow in 1996.

Negotiations are currently ongoing with a possible result prior to the end of this month.

We intend to submit a proposal for a six bladed composite for this aircraft later this year.

The second project is a revised version of the Fokker 100 which would increase the capacity to 130 seats.

We were asked by Fokker to submit a proposal for the main landing gear which would fit the Fokker 100 and could be modified, with minimum change, to be used for the larger, 130 seater, aircraft.

Faced with fierce competition from the USA, we have submitted a highly competitive proposal. Every effort is being made to reduce the cost by simple design and improved manufacturing.

Course Success

Training and education is a key element in enabling us to achieve our business mission of becoming the Preferred Partner of our customers and associates. We, therefore, give assistance and encouragement to employees who want to improve their level of education to help our Company's future.

Pictured left to right are Steven Smith, Sue O'Brien, Adrian Lugg, Alan World, and Paul Downham

Last November, six people who successfully completed higher education courses through GlosCat received their certificates at a presentation in Cheltenham Town Hall. Alan World and Sue O'Brien who work in our Accounts Departments were awarded Certificates in Management Studies.

Virginia Smith, who works in our Laboratory, received a Higher National Certificate in chemistry.

Paul Downham, one of our Senior Draughtsmen, Adrian Lugg, who works in Development Test, and Steven Smith from our Technical Office each received a Higher National Certificate in Production Engineering.

Our congratulations also go to Ray Goold, Development Engineer. Four years of hard work were recognised when Ray was awarded the Degree of Bachelor of Arts by the Open University.

Focus on DAAS

Dowty Aerospace Aviation Services is the company responsible for repair and overhaul within the Aerospace Division of the Dowty Group. It consists of three facilities based at Sterling (in the U.S.), Singapore and here in Gloucester.

Dowty Aerospace Aviation Services (Gloucester) split from Dowty Aerospace Gloucester last year. Since that time, DAAS employees have implemented numerous changes including a computer system for controlling production and inventory. This is only the start of a far-reaching modernisation programme. To find out about the activity on this site we spoke to Gordon Childs, Assembly Manager.

Gordon told us that although DAAS (Gloucester) is a relatively small company, employing about 250 people, it services around 80 world airlines and the Ministry of Defence. "Our aim in providing a service to our customers is to keep turn-around times short, whilst maintaining high standards" he commented.

DAAS handles a wide range of equipment, the most recent being the A320 and BAe 146 landing gear. However some equipment repaired here is over 40 years old — Spitfire and Hurricane propellers and the Shackleton undercarriage are recent examples.

Not all the equipment serviced is made by Dowty. DAAS now overhauls the propellers for the C130 Hercules transport plane, manufactured by Hamilton Standard. In this case a number of new techniques, such as moulding, had to be used.

The picture shows Gordon Childs with members of the DAAS team in the Repair Shop

Dowty Sports & Social Society

Forthcoming Events at Staverton

March 1 30+ Club Dance
March 7 C. & G. Quiz
March 8 Barn Dance
March 15 Modern Dance Club Spring Dance
March 17 Dowty Judo open contest
March 21 Young Friends of Samaritans Pop Quiz
March 22 Barn Dance in aid of British Heart Foundation
March 24 More Judo
March 28 Police Quiz
March 29 Lakeside FC Disco

April 6 Soccer Club presentation night and disco
April 26 Save the Children Fund Quiz

Every Saturday — Dance to live music

Stoate & Bishop (Printers) Limited, Cheltenham