

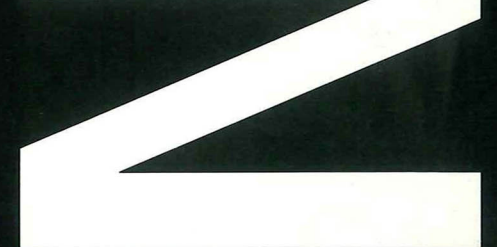
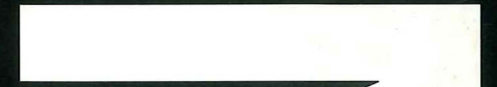
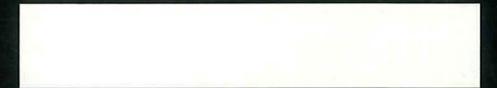
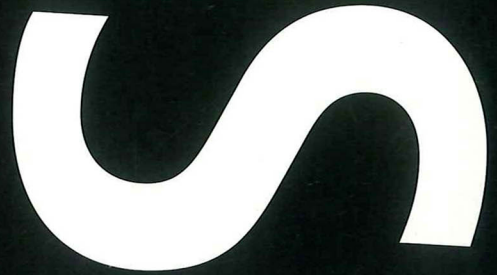
The magazine for **GEC-Marconi** people
Avionics



Fantastic Fore – Swing into action for charity



AMSAR – Radar for the 21st century



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Welcome to VISION

Welcome to the new re-launched VISION. I know many of you have been wondering where the company newspaper has disappeared to. Well, here's the answer.

Following the response to the readership survey conducted earlier this year, this new magazine format has been selected, incorporating many of your ideas and suggestions. Issued every three months, the magazine is a mix of news and features, which we hope you will find both interesting and informative.

An outside company, specialising in internal communications, will produce the new-look VISION. The Editorial Team will consist of myself, Jackie Berger, as Managing Editor, working with an external journalist, Emma Lawrence, as Editor and Heather Cox as Assistant Editor.

If you have any interesting news about yourself, work colleagues, the division you work in, sporting and social activities, or anything else you might consider to be appropriate, we would be delighted to hear from you. You can contact us directly, or go through the various divisional and site representatives. Contact numbers are listed below. To submit a story all you need to do is telephone a VISION representative. Emma Lawrence then contacts you direct for details to write the article, and you will get an opportunity to approve this before it goes to press.

Get scribbling!

Jackie Berger



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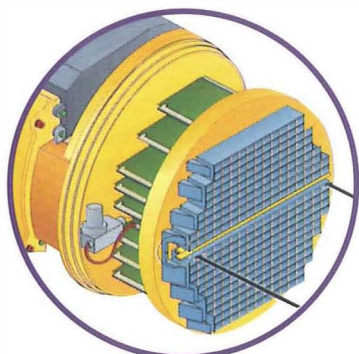
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Our thanks to British Aerospace for supplying the Eurofighter and Nimrod 2000 photographs that appear on pages 14 & 16

F-14 TEAM AWARD



Smiles all round for F-14 team at Rochester

The F-14 Digital Flight Control System (DFCS) Integrated Product Team has recently received an award for the most successful Foreign Comparative Test evaluation contract.

A letter of congratulation to the team has been sent by Dr Kaminski (the US Under-Secretary of Defense) to the Secretary of the Navy, Jon Dalton.

Support Division flies high with £40m contract

Support Division in Edinburgh has won a ground-breaking £40m contract for the support of the Royal Air Force's Tornado GR4/4A. Project Director Jim Bartholomew said: 'The award of this contract, the biggest of its type ever won by Support Division, marks the start of a new type of support to the RAF, where the company will be working alongside the customer, which traditionally, has repaired its avionics equipment in-house'.

British Aerospace gave Support Division responsibility for the Augmented Logistic Support of the new avionics fitted during the Tornado's Mid-Life Update after securing the overall support contract from the British Ministry of Defence. Support Division will provide an exchange service

at RAF bases in the UK and Germany, and unserviceable items will be repaired at GEC-Marconi factories in Rochester, Edinburgh and Portsmouth. Support Division will also be called upon for training, engineering support and technical publications.

With a growing trend in the Services to focus on core activities, there is an increasing move towards contracting such functions as support. Jim Bartholomew is hopeful that this contract win will lead on to even greater things. 'Tornado is a test case for us. If we can succeed here it might well prove a model for support of bigger projects in the future.'

Crucial tests for Tomcat

The Flight Test phase of the GMAv Digital Flight Control System (DFCS) for the F-14 Tomcat reached a new and critical stage in late October when Carrier Suitability trials on the USS John Stennis CVN-74 took place. After ten days of comprehensive testing, the trials of the DFCS were deemed a great success.

The main purpose of the Carrier Suitability trials was the testing of the Power Approach Automatic Rudder Interconnect (PA-ARI) Control Laws,

which are designed to improve safety during the final approach to the carrier. Flight test of the Tomcat's DFCS at the Naval Air Warfare Centre at Patuxent River, Maryland, has already demonstrated the great improvement in the F-14 flying qualities in the Power Approach mode for shore-based operations.

The Integrated Product Team brought together people from GMAv, the US Navy and Northrop-Grumman.



The team of flight crew, engineers and technicians worked in coordination with the ship's crew to prepare and maintain the test aircraft and to monitor the aircraft's systems throughout each flight.



Bright future for HADS

GMAV's domination of the global marketplace for military Air Data Systems continues unabated. An 'Instruction to Proceed' was recently issued by McDonnell Douglas for the supply of 24 Air Data Systems in support of the US Army's AH-64D Longbow Apache.

Alain Russell, Project Manager, believes that GMAV secured the contract because the Helicopter Air Data System (HADS) has capabilities far exceeding that of



MAD's Air Data System selected for US Army's Apache

its rivals. 'Our system is unique – it is the only one of its kind currently available that can provide measurement of air data in all three axes (forwards, rearwards, laterally and vertically).'

This salient feature means that, unlike conventional Air Data Systems, GMAV's solution has the ability to measure the rotor downwash, which during low airspeed becomes the dominant airflow component. This information results in a major improvement in weapon delivery as the Fire Control Computer can more accurately predict the trajectory of rockets and gun-rounds.

Unique system

For the AH-64D Programme, the system comprises two Airspeed and Direction Sensors (AADS) and a High Integration Air Data Computer (HIADC). The AADS are unique swivelling probes mounted on a boom below the rotor which sense pressure, airflow angle

and air temperature. The data they capture is fed to the HIADC which processes the information and forwards it to other aircraft instruments.

Mike Sweeney, Managing Director of Mission Avionics Division, emphasised the long-term prospects this order signals: 'Selection for the Apache has further strengthened and enhanced GMAV's position in the air data market and we are looking forward to working with McDonnell Douglas on this programme'. The future certainly looks bright for HADS. It is anticipated that total procurement of the GMAV solution worldwide will exceed 1,000.

Bin the Din

Aircrew may soon owe Flight Systems Division a debt of gratitude, not to say their hearing.

A team at Rochester is currently working hard towards achieving final certification for their Active Noise Control (ANC) system. A common problem on large four-engined aircraft and smaller twin-engine turbo props is excessive noise levels on the flight deck and in the cabin.

It is feared that for the aircrew who work in this environment day in day out the constant assault on their eardrums could result in damaged hearing. Tim Smith, Principle Marketing Engineer comments: 'Following flight trials we are now confident that ANC will substantially reduce flight deck and cabin noise levels, resulting in improved health and safety conditions'.

Noise Control is achieved by producing sound that is equal and opposite (antiphase) to the sound that is causing a noise problem. The antiphase sound then destructively interferes with the noise, resulting in a reduced noise level. The technique is most useful for low frequency wide area tonal noise cancellation, below 250 Hz, such as in a turbo prop aircraft cabin.

WORK A DAY IN MY SHOES

GEC-Marconi Aerospace Inc, USA, has introduced a new job-shadowing scheme to increase communication and understanding between employees.

The scheme, entitled *Work a Day In My Shoes*,



Director of Contracts Art Schutzer looks over the shoulder of Test Equipment Calibration Technician Khambu Koppula

pairs up participants from different working environments and allows them to spend a day shadowing their partner.

Employees are encouraged to work alongside each other in the hope that it will raise awareness about how specific parts of a company, from office desk to factory floor, contribute to the business goals as a whole.

Success

'Without this programme, members of the company would never know and realise the importance of the work and effort of each individual to keep the business going on,' said Khambu Koppula, Electrical Calibration Technician.

And of the 48 employees who have so far piloted the scheme many consider it a success, claiming the hands-on experience to be a valuable learning tool.

Phoenix

Much to the delight of Aerospace Systems and Flight Systems Division at Rochester, the Phoenix unmanned air vehicle (UAV) project is returning to full production after receiving the go-ahead from the UK MoD.

Working on a programme agreed with the MoD, the Phoenix team has spent the year ironing out the UAV's technical, reliability and support problems. The issues of propeller durability and sensor focus drift have now been successfully addressed as has the question of minimising damage sustained upon landing. The Phoenix's distinctive hump, a crushable shock absorber, has now been replaced by the more effective air bag.

Customer focus

The Agreed Programme of Work has now reached a successful conclusion, with the MoD announcing that they: 'now have confidence in the cost effectiveness, technical performance and reliability of the system to meet the Army's requirement'.

Fred Mackley, Project Director, attributes GMAV's success in retaining the contract to many factors, not least of which is listening,

Our team has taken on board the Company's Charter points

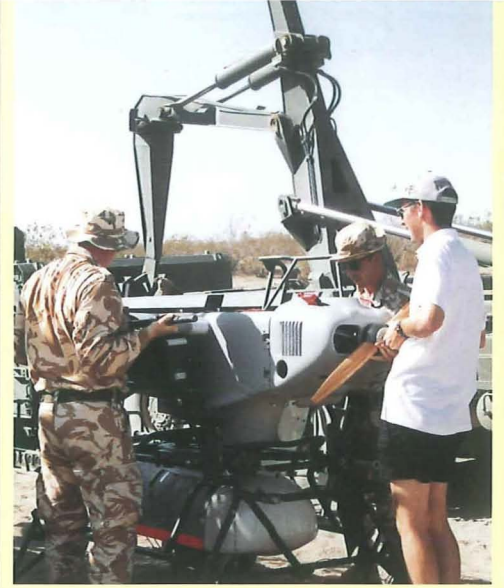
understanding and responding to the customer's needs and expectations. 'My primary task over the past 18 months has been to get close to the customer and listen to them in order to fully understand their concerns. Our team has taken on board the Company's Charter points regarding customer focus and we have encouraged our subcontractors to follow suit.'

A real challenge for the team has been in identifying who the customer actually is.

The contractual customer is clearly the MoD Procurement Executive. However, Fred Mackley and his team also have to be aware of the concerns of the many other 'customers' involved. The Royal Electrical and Mechanical Engineers, for example, will provide support to Phoenix and their input was clearly invaluable in defining support issues. Other customers include the Defence Research Agency which provides the MoD with technical advice and obviously the end-users, the soldiers themselves.

Transformation

To meet these customer requirements in full the programme has undergone a substantial transformation during the past 18 months.



Hot and High Trials

Previously, Flight Systems Division had been the prime contractor as well as one of the four subcontractors. This dual role could sometimes be a difficult one and it was felt that FSD should focus on channelling its substantial technical expertise into the UAV's Flight Control System, antennas and power plant. Project management was handed over to a newly created GMAV company, a move which Dr Saul Lanyado believes helped secure the contract renewal. The Managing Director comments: 'The Phoenix programme is now managed by GEC-Marconi Aerospace Systems, which has been specifically set up to pool the company's expertise in systems integration, and we are sure this approach has had a major bearing on the successful progress of the contract'.

The attention paid to addressing customer needs has clearly paid off. The environmental 'Hot and High' trials in the Mojave Desert have just concluded satisfactorily, following on from the successful flight trials carried out at Larkhill range near Salisbury earlier. The major subcontracts are now being placed and the team is working towards full production early in the New Year.



Successful flight trials in the Mojave Desert



Meeting customer requirements: the Phoenix team at Rochester



GET SMART

Such was the popularity of the latest *Investors in People* workshop for line management at Rochester that the course organisers were forced to turn people away.

As news of the training session spread by word of mouth the course quickly became oversubscribed.

The subject arousing such interest? 'Developing People'.

Evaluating training

More specifically, it was how line managers can provide team members with constructive guidance and support for their personal development. An IIP survey, carried out by external assessors interviewing a broad cross-section of employees, identified that the present process of conducting appraisals and evaluating training methods was not really effective. The management team, recognising the importance of the issue, therefore initiated a one-day workshop during which line management would reassess the way they conducted appraisals and also discuss how they could better shape training to individual needs.

After an introduction by Technical Director Keith Snelling, the morning session kicked off with an explanation of the basic learning process, using the classic example of the child who puts his hand in the fire. Attendees were then invited to fill in a question-

naire to identify their individual learning style. They then went on to discuss how to identify the learning style of staff members and what effect this could have on working relationships.

Other subjects debated in the working groups included the value of SMART objectives and how the setting of development objectives is the key to a successful evaluation of training effectiveness. The topic of SMART objectives was introduced by watching a video which illustrates how an initially unpromising area of an organisation can be helped to improve by using objectives which are Specific, can be Measured, and Agreed between managers and staff, are Realistic and Timed. The attendees compared their own objectives, as appraised, and decided whether or not they were SMART – or could be SMARTened!

In practice

Will it work in practice? As Mary McKinlay, the Training Manager and one of the course organisers comments, it already has. 'In the second week that the workshops ran one attendee announced that his manager had been on the first day. On the following day he had sat down with individual team members and together they had transformed their personal goals into SMART objectives.'



WHAT THE ATTENDEES THOUGHT...

"I was pleased to be a participant in the training course and, although I have been deeply involved in IIP for a period of time, the course demonstrated the need for Company Managers to be fully motivated to ensure our credibility with the people we work with"

John Bradley, Personnel Director

"The training day was very motivational. It was particularly encouraging to see that the company is genuinely interested in its people's training and development"

**Chris Bower, Senior Software Engineer,
Mission Avionics Division**

"It sounds good and I hope things will change, but the general consensus of opinion seems to be, 'OK, but will anything really change?'"

**Chris Huttley, Manager, Reprographic Services,
Site Services**

"I was delighted to see the willingness of all people to partake in what they were being presented with. The onus is now on us, as managers, to deliver."

**Malcolm Peto, Managing Director GEC-Marconi
Aerospace Systems**

"The morning after I had attended the workshop I met with all my team members who would also be going at a later date. I made sure that they understood what the course was about, why it was important for them to attend and what they should aim to get out of it."

**Ken Rhodes, Business Manager, Repairs and
Spares, Support Division**

"The one-day seminar was a good reminder of how to recognise personal and staff strengths and weaknesses. I will be helping to see that the initiative is implemented throughout the company."

**Malcolm Earl, Programme Director Phoenix, Flight
Systems Division**

"It was good to see all levels of management attending the workshop. Listening to other peoples views and experiences was particularly useful."

Pat Everiss, Supervisor, Site Services

Focus on the future

Managing Director, Dr Saul Lanyado, talks to VISION about the challenges facing GEC-Marconi Avionics as the company approaches the 21st century

THE CHALLENGE

In September 1994 I was delighted to accept the post of Managing Director of GMAv. The Avionics group had a very good reputation, with an excellent product range. The international focus, most evident in the special relationship with North America, particularly interested me.

I also relished the challenge. In the early 1990s, the company was operating in a very difficult environment. I was eager to lead the company back to its former levels of success.

ORGANIC GROWTH

In order to move GMAv forward the main question to be addressed was how do you achieve growth in a stagnant marketplace. Carving out a larger share of the defence market and expanding our involvement in the commercial sector were obvious answers.

One way of increasing market share was by building relationships with other companies. Although initially partnerships can lead to increased costs and a clash of cultures, in the long term they often result in greater efficiency in terms of R&D and a stronger market

position. GTDAR, Thomson Marconi Sonar which now incorporates the former Mission Systems Division, GMAv and Honeywell on the civil HUD are all good examples.

We also need to respond to the fierce competition in the electronics industry by adopting COTS (commercial-off-the-shelf) solutions and gaining a competitive edge with excellent customer service.

A PERIOD OF TRANSITION

I have seen some dramatic changes taking place in the last two years. In particular, I think that there is now a greater understanding of project management so that we can consistently bring projects in on time and on budget. In the past, the majority of projects were run by technical managers, who, because they did not possess the necessary commercial skills, often missed out on some of their objectives. We therefore decided to bring key people together to focus on project management, both from within the company and externally. The transition to more effective project management was not difficult because we already had an excellent product base and talented people. It was simply a case of utilising people's abilities most effectively.

It is also very encouraging to see the cross-fertilisation of ideas between different divisions of GMAv and also GEC-Marconi as a whole. Successful companies are those that can offer the customer a good range of skills. By reorganising the company and opening up internal communication channels, our divisions are now working together to facilitate solutions and therefore we can offer the customer a much-improved service. The atmosphere is now very much one of 'we succeed together'.



THE FUTURE

Common-sense policies for training and career development are now up and running. What we need now is the creation of clear career paths. Although a lot of work has been done in this area, namely *Investors in People*, it requires the full commitment of line management to make it work.

The acid test of my input into the company will be whether career progression can take place across the divisions: whether we have truly got away from an 'island mentality'. I am hopeful that we will see this happening in the next twelve months.

I would finally like to thank all staff for their tremendous efforts this year. Thanks to you I am delighted to say that we have now reached the first milestone where we can demonstrate professionalism in project management and on-time delivery. The challenge remains to sharpen up our performance to compete effectively on a global scale – but we are back where we belong.



Bernie Stevens discusses the new Eurofighter HUD with Saul

CHARTING A COURSE

Lear Astronics' success continued unabated this year. The company has been selected to participate on several Joint Strike Fighter (JSF) Development Programmes and a significant milestone was achieved when the Lear Astronics Autonomous Landing Guidance System made its first flight on the US Air Force's Speckled Trout.

Other notable achievements include the successful testing of Astronics' Solid State Rate Gyro Assembly on a US Navy A-7 Corsair II and the award of the F-16 Grip Production contract by Lockheed Martin.

Commercially, wins on the de Havilland Dash 8-400 and the Learjet 45 Spoileron Controller mark Lear Astronics' initial penetration of the commuter aircraft and business jet markets, paving the way for future expansion.

Lear Astronics

FUTURE

In the short term, F-22 and RAH-66 programmes will receive some increased budget support and could potentially be accelerated. The Joint Strike Fighter (JSF) programme, planned for 2900 aircraft, kicked off with a down-select for a two team fly-off demonstration in October 1996.

Lear Astronics' strategy for the future is to leverage core technologies into new systems – focusing on such recently recognised opportunities as Landing Systems, Land Vehicle Position Navigation, Fuel Systems,

Engine Controls and Radar Absorbing Materials.

To exploit new business opportunities with the existing customer base and to diversify into new product areas, Lear Astronics is supporting a number of product investment initiatives. These include Autonomous Landing Guidance, Commercial Controls and Active Noise Control.

Flight Systems Division

During 1996, Flight Systems Division (FSD) continued to strive for improved customer satisfaction through emphasis on the quality and on-time delivery. This was recognised by McDonnell Douglas Aerospace when the Division was presented with MDA Silver Standard Preferred Supplier award in May. FSD is now progressing towards a similar award from British Aerospace.

Notable achievements this year include the first flight of the Eurofighter Phase 2A controls upgrade on Development Aircraft 1

and first flight of a two seat aircraft (Development Aircraft 6), and the continuation of the Sea Harrier autopilot upgrade programme with first deliveries commencing three months ahead of schedule.

FUTURE

Two of the most significant aircraft developments in the near future are the Joint Strike Fighter (JSF) and the prospective Boeing 747X. FSD has been actively pursuing opportunities on both these programmes and by the end of 1996

it is hoped will be selected as a supplier of the sticks and throttles for the two JSF down-selected teams. In order to develop the technology base and improve understanding as a supplier for future aircraft developments, FSD is undertaking a number of Private Venture Research and Development activities. Where possible these research activities are performed as development programmes, partly funded by the DTI, EC or MoD, such as the UK MoD Integrated Flight and Propulsion Control System technology demonstrator programme for the JSF.

FOR THE MILLENNIUM

Mission Avionics Division

Mission Avionics Division has seen a period of intense activity during 1996. This has been the result of major restructuring activities and a healthy order book at both the Rochester and Edinburgh sites. *Investors in People* activities are also continuing at both sites and considerable effort has been put into improving communication throughout the Division, such as pursuing the introduction of an intranet.

Participation in preferred supplier programmes is an ongoing activity. In October, MAD (Rochester) followed Edinburgh's example by achieving Bronze rating as part of BAE's Preferred Supplier Process.

FUTURE

Production orders for Eurofighter cockpit equipment and F-22 HUD are major objectives for the future, as are the civil HUD programmes. In the Helmets market EF2000, PAH-2 production and JSF programmes are all actively being pursued. Other key business opportunities are for the Head Down Displays/Multifunctional Displays on programmes such as F-16, Jaguar and JSF. MAD is also targeting the F-16, AH-1W and JSF programmes as a market for Mission Computers.



Aerospace Systems Ltd

FUTURE

1996 has proved a difficult but rewarding year. It was difficult in the sense that the alliance of BAe and Boeing was the winner of the competition to supply the Replacement Maritime Patrol Aircraft to the Royal Air Force. However, GEC-Marconi, led by Aerospace Systems, has subsequently been offered a significant part of the Nimrod 2000 Programme, managing the integration of Radar and ESM subsystems.

A further rewarding achievement was the conclusion of the APW (Agreed Programme of Work) on the Phoenix RPV, which has now resulted in the production contract being recommenced.

Formed to push forward the GEC-Marconi capability in the field of Prime Contracting and Systems Integration, Aerospace Systems' most important target for the future will be to ensure good participation for GEC-Marconi on JSF. Aerospace Systems, leading a GEC-Marconi Integrated Product Team, is anticipating supplying Avionics products and seeking the opportunity to provide Systems Integration for major subsystem elements.

GMAv INTERNATIONAL

Recognising the customer need to obtain total solutions, GMAv has formed an International

Division – GMAv International – to present the worldwide Aerospace community with a unified approach. Working with all other GMAv Divisions, the International Division will assist in the development of opportunities which involve satisfying customer demands for products and systems integration across internal company boundaries.

Key to achieving this will be the use of an Integrated Marketing Team approach generating the prime tactics supporting the Avionics Strategic Plan. Key targets identified and being addressed at this time are the ongoing Super 7 Programme and the AH 1-W Cobra upgrade Programme for the US Marine Corps.

CHARTING A COURSE

Precision Corp

Involved in the subcontract manufacture of aircraft structural components, GEC Precision Corporation in Wellington, Kansas, has had a successful year. Improvements in the Commercial and General Aviation industries have occurred sooner than forecast, resulting in profits well ahead of budget.

The current trend for privatisation of military support facilities has presented GEC-Marconi Avionics Inc in Atlanta with many opportunities to raise awareness amongst US operators that the company does have on-shore capability, helping progress several programmes.

On the commercial front, Avionics Inc continues to support the Boeing 777 through line stations at all major international airports, now including

Support Division

There have been three notable business successes within Support Division during the year. Following the decision by the British Army to procure the Phoenix RPV, Rochester will provide through-life support for the system; Donibristle has been awarded the Stingray Torpedo Life-extension contract; and the Division gained a £40m contract to support avionics equipment associated with the Tornado mid-life update programme. This latter contract is particularly significant. It

FUTURE

The future looks extremely bright with additional machine capacity being added to support the projected production rate increases. Precision Corp is heavily involved in the new Boeing 737-700 and the McDonnell Douglas C-17 and work is currently under way with Cessna Aircraft on the

South America. Fort Worth continues to play a vital role in supporting the F-16, with the upgrading and refurbishment of hundreds of aircraft due over the next decade.

FUTURE

The future of Atlanta will continue to focus primarily on the support it gives to GEC. The in-country support of equipment built in the UK is

introduces a new and exciting concept (Augmented Logistic Support) which requires industry to support the RAF's front line directly, undertaking work traditionally carried out by the RAF's maintenance, supply and distribution systems. The Division aims to extend this support concept to embrace whole platforms.

FUTURE

There are other major prospects on the horizon, including the Foxhunter radar upgrade

development of their newest business jet, the Citation Excel. Contracts have also been received from Raytheon for wing spars and stringers for their new JPATS airplane. Over the next few years, Precision Corp intends to obtain more assembly programmes, in addition to machining and fabrication contracts.

Avionics Inc

becoming an issue as a function of the bidding process. Atlanta will be broadening the range of GEC companies for which in-country support can be the winning element.

Also included in the plans for the years to come is an expansion of support for non-GEC companies who make similar equipment to that which is currently supported, but have no support infrastructure of their own.

programme, support for Eurofighter, the provision of depot facilities for overseas customers and the supply of an air combat training system to the RAF and foreign air forces.

Finally, as part of its Customer Focus initiative – and building upon recent successes in reducing turnaround times for spares and repairs – the Division plans to establish Electronic Data Exchange links with its major customers in order to further improve response times. Additionally, work is in hand to obtain an *Investors in People* award, and 'Preferred Supplier' status with major customers.

FOR THE MILLENNIUM

Power Systems Division

Power Systems Division has seen increased levels of activity in its aerospace business and this is expected to continue through to March 1997.

The key driver to this growth has been the success of airlines in pulling themselves back into profit since the downturn caused by the Gulf War. Orders for spares and repairs from airlines are at the highest levels ever. As a supplier of equipment, ranging from fuel

pumps to starter motors, PSD has been a direct beneficiary.

FUTURE

As the market leader in low pressure airframe fuel pumps and supplier of key mechanical equipment PSD has products on many key programmes around the world. The primary aim is to secure the position on the identified

new and derivative programmes (JSF, A3XX, B747X, B777 growth derivatives, the 100+ seater programmes).

In the area of military fighting vehicles, the target for application of a power distribution and utilities management system is the UK TRACER Programme. Participation in previous technology demonstrator initiatives places us in a strong position.

The past year has been filled with good news for Aerospace Inc. Lockheed Martin has awarded the company several new development programmes; a new flir door actuator for SAAB and an improved F-16 canopy actuator for the air force added to the list of impressive wins. The engineering team has been busy in meeting customer requirements and working well under

its new life-cycle management system.

FUTURE

After struggling for years in getting its routing instructions to accurately represent practice, the company won back its Certified Supplier status from Lockheed Martin Vought Systems after the company used a cross-functional team to create

Aerospace Inc

improved build books. The build book processes refined on the MLRS assemblies will be the methodology used to control all future assembly.

These new instructions will eventually be installed on multimedia computer terminals. All products are being reviewed and build books for the T-45 actuator and the HIMARS ADU will be available for these new programmes.

Radar Systems Division

In all areas of business, Radar Systems Division has had a successful year. The Super Skyranger prototype system and the Blue Hawk radar both performed well in flight trials before prospective customers, with the Chinese indicating that the Blue Hawk is the favourite radar choice for the new FC-1 fighter. The Royal Navy has been declaring its delight at the operational performance that Blue Vixen is giving them in the Sea Harrier F/A 2. The ECR 90 C5 radar has been upgraded to PDDP (Preliminary Declaration of Design Performance) qualification standard, has

passed its ground tests and is ready for its first flight. A downside to this year's successes was the failure to win the AEW Sea King MSU contract. In the surveillance radar business, a key achievement has been the formal acceptance of the Seaspray 2000 radar into service on the Dornier 228 for the Finnish Frontier Guard. The Division has maintained an excellent delivery record to GKN Westland for Seaspray 3000 radars for the Brazilian Super Lynx and it is expected that before the end of the year the Division will get further Seaspray 3000 orders for Super Lynx.

FUTURE

There is a lot of potential business for RSD in the coming year. Further surveillance orders are anticipated over the next few months from GKN Westland and BAe for the Kuwait Navy, Royal Malaysian Navy and the Royal New Zealand Navy. Prospects for the Blue Vixen radar system in the retrofit market are also currently being followed up. Work is also continuing on the AMSAR development programme, to produce a next generation radar system for the mid-life upgrade of the EF 2000 and Rafale fighters, in addition to its installation into Europe's Future Offensive Fighter.

Eurofighter 2000

Eurofighter demonstrated its air superiority in the skies above Farnborough amid great media attention whipped up by an announcement by Defence Secretary Michael Portillo that the UK is going ahead with the production phase of the programme. This was the first flying display by the Eurofighter in a major international airshow, creating a storm of publicity.

Sukhoi

One of the stars of the show was undoubtedly the Sukhoi SU-37. Hailed as the 'fighter aircraft for the first half of the 21st century', the Su-37 was finally allowed to demonstrate its impressive manoeuvrability after a ban from flying on the first day for contravening safety rules.

Using thrust vector engines and an active flight control system, the SU-37 wowed the crowds with manoeuvres such as a reverse somersault at near zero speed.

Other flying displays included the blink-and-you'll-miss-it Stealth Bomber, the Gripen, a Tornado GR1 and a Harrier GR7. Also making the show daily pages was the announcement of the rival solutions for the UK's Airborne Stand-off Radar (ASTOR) requirement. GEC-Marconi Avionics is part of the Raytheon bid, which has now been submitted to the UK MoD.

Farnborough '96

Learning how to be a fighter pilot was just one of the attractions drawing visitors to the GEC-Marconi stand at Farnborough '96.

The company's interactive displays proved to be a big hit with the crowds at one of the most successful Farnborough Air Shows in years. Delegations from around the world were able to observe the company's total capability in systems integration, with fully functioning fixed and rotary wing cockpits on display.

Other attractions included working demonstrations of the Blue Hawk radar, Viper 1 and Knighthelm helmets, FSD's Active Noise Control system and GMAeS' 'tactical workstation' designed for maritime patrol aircraft.



Deputy Prime Minister Michael Heseltine



Paul Kaminski US Under-Secretary of Defense



HRH Prince Edward

"It was exciting to look at the equipment we manufacture here on site. Normally, we never really get to see the products being demonstrated"

Jan Walkinshaw, Confidential Secretary, Mission Avionics Division

"I received a very strong message from customers that the interactive nature of the display made the GEC area stand out from the crowd"

Paul Childs, Senior Marketing Engineer, Airborne Computers Group, MAD, Rochester

"Farnborough '96 saw the most dramatic and coordinated presence by GMAv companies ever. This was very impressive to both our customers and suppliers"

Sir Geoffrey Pattie, Chairman, GEC-Marconi

Support deal struck at Farnborough



Frank McLaughlin, commercial director, Support Division shakes hands on deal with the managing director of EAL, Trevor Whetter

Support Division has secured a three-year deal with European Aviation Ltd to provide maintenance and repair of Automated Flight System components for EAL's BAC 1-11 fleet. The contract comes after a successful three-year history of BAC 1-11 maintenance.

Under the new contract a fixed price repair and fixed turnaround agreement will replace the previous system of individual quotation – a move that will reduce administration and help eliminate inefficiencies.

Scanning the Future

The future of AMSAR, the European airborne radar of the next generation, is looking bright. As Neville Williams, the GTDAR Administrateur Gérant comments: 'We have just completed year three of the programme very successfully. AMSAR is now entering the final part of Phase One, with the building of a Laboratory Prototype to be integrated at Radar Systems Division'.

The British, French and German programme, under contract from the French Government to the GEC Thomson DASA Airborne Radar joint venture, is now at a crucial stage for employees at the Microelectronics Group (MEG) at RSD.

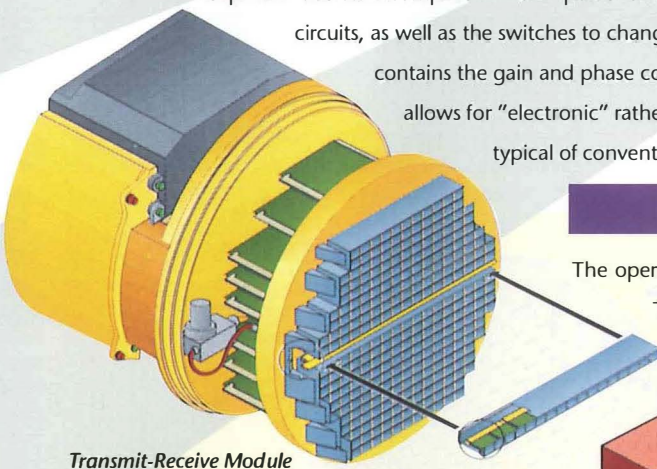
The Transmit-Receive Modules (TRMs) – which

enable the radar to generate multiple beams – have now passed the Acceptance Tests by the three governments. This means that MEG can now proceed with the manufacture of larger quantities for the Laboratory Prototype – the Partial Antenna Demonstrator.

It is highly probable that testing of TRMs will also be conducted at MEG in Crewe Toll. Typically, a single antenna array will comprise upward of 1500 modules, requiring a facility for assembling and testing modules at the rate of one every 10 minutes. Following significant investment into the TRM RF Test Station in MEG GMAv has now laid the foundation for such a facility.

AHEAD OF THE FIELD

The Transmit-Receive Module (TRM) is the key building block of a Phased Array Antenna. A typical system may use between 1,000-2,000 of them. As Dr Angus McLachlan, Chief TRM Engineer on AMSAR explains: 'The TRM comprises a "low" power transmitter (5-10w) and low noise receive circuits, as well as the switches to change over from Receive to Transmit. It also contains the gain and phase control for each element. This control allows for "electronic" rather than the "mechanical" beam steering typical of conventional radars.'



Transmit-Receive Module

LOOKING TO THE FUTURE

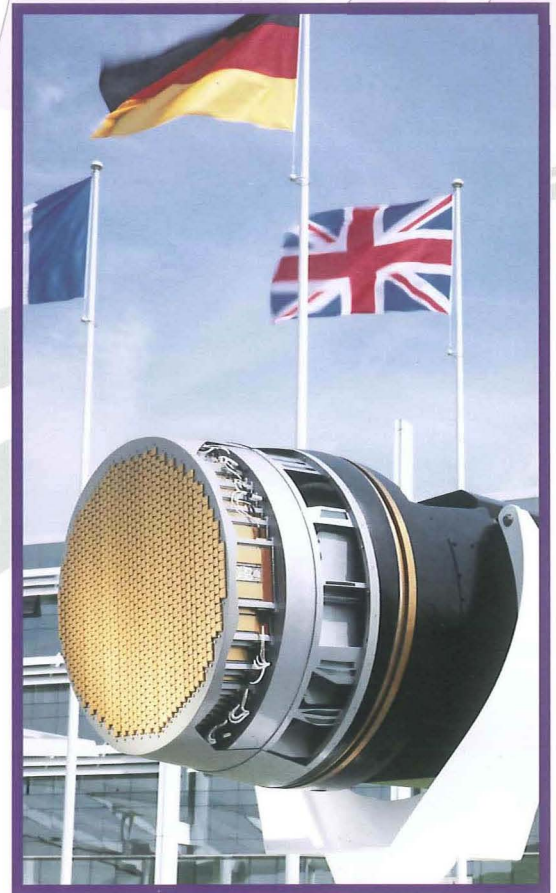
AMSAR is truly the radar for the twenty-first century. As Neville Williams states: 'It is totally solid state, totally adaptive and an integral part of the future advanced integrated avionics system of the next generation aircraft'.

OPERATIONAL BENEFITS

The operational benefits of AESA are numerous.

The ability to independently generate and control multiple beams results in greatly improved tactical situation awareness in a number of significant areas including:

- **Improved tracking and range** The detection and tracking of multiple targets, including those beyond visual range, would give the pilot a significant advantage in combat. It has been calculated that tracking and range is improved by up to 50 per cent.



- **Simultaneous operating modes**

This enables the pilot to detect targets both in the air and on the ground while engaging in terrain avoidance and also terrain following.

- **Multiple jammer nulling**

The ability to null signals from several. AESA can simultaneously send "nulls" to a number of active jammers while maintaining detection/tracking.

- **Transitory target detection**

Conventional single beam radars cannot always guarantee detection of transitory targets. AESA's multiple beams enhance the search and detection capabilities of targets in transit.

Good news for RMPA team

In the 18 months prior to July 1996, the MoD sought competitors to bid for the Replacement Maritime Patrol Aircraft (RMPA). The RMPA Competition was a fiercely fought campaign and the race was essentially neck-and-neck between Lockheed-Martin/GEC Marconi with the Orion 2000 and BAe/Boeing with the Nimrod 2000.

Lessons learnt

In July the MoD made the decision to select the Nimrod 2000. This decision was based on a number of different criteria, one of which was price. We believed we had very strong arguments in support of the Orion 2000 and its Mission System Avionics. However, in the end the BAe argument of upgrading the Nimrod at a lower cost held sway with the MoD. Many lessons were learnt from the campaign including how best to meet

the Customer's needs and how to deal with the problems he faces during a competition.

As for the future, we are currently following up the Secretary of State's announcement of GEC-Marconi involvement and a package of work with BAe and Boeing is being discussed which will provide opportunities on the Nimrod 2000 platform. These work packages cover specific equipments such as radios and SATCOM all the way to an involvement in the Mission System and its prime sensors. In addition, we expect to become involved in the Test and Evaluation activities that are necessary prior to satisfying the RAF that they are getting the weapon system they asked for in their initial specification. Lastly, Support Division is likely to play a large part in the follow-on support of the Mission System and its software. We hope that the contracts to the company will be awarded later this year.

GEC-MARCONI TO SUPPORT RAF HELICOPTERS

Support Division has secured a major new support contract with GKN Westland Helicopters Limited.

Support Division, Donibristle, in collaboration with Racal Instruments, has been selected to supply a containerised support facility for the avionics in the Royal Air Force's EH101 Utility Helicopter.

The Support Helicopter Air Portable Avionics Workshops (SHAPAWs) are a new concept in transportable automatic test equipment which are high in performance yet cost effective. The contract calls for the delivery of three SHAPAWs commencing in 1999.

Bob Bryce, Major Bids Manager at Donibristle, explains the importance of the



SD secures SHAPAWs contract

deal: 'The Division has put a lot of effort into perfecting customer focus and I feel this has been a major factor here. GEC-Marconi is proving to be a more responsive and listening organisation,' he adds. 'We try to uncover the real requirements of the customer beyond those written in front of us, and this seems to have set us ahead of the competition.'

IN BRIEF

Fond farewell

Colleagues bid Dave Nisbet a fond farewell at a party to celebrate his retirement. Dave had been Major Projects Director at Rochester for many years.



New book

Dick Collinson, ex GEC-Marconi Avionics, Rochester, who retired in November 1991, has recently had his book *Introduction to Avionics* published by Chapman & Hall. Dick was the Manager of the former Flight Automation Research Laboratory, Rochester, from 1972 to 1990.

The book, which has been well received, explains the underlying theory and implementation of modern avionic systems and covers fly-by-wire flight control systems, navigation, displays, autopilots and flight management systems.

The publishers are offering a 10 per cent discount to company employees, making a net price of £31.50 post-free. Interested readers should contact Charlotte Maybank, ITP Corporate Special Sales, Chapman & Hall Ltd., 2-6 Boundary Row, London, SE1 8HN. Tel: 0171 865 0066; Fax: 0171 522 9623.



THE FANTASTIC FORE

A team of four GEC employees has recently completed a series of fund-raising events in aid of Marie Curie Cancer Care, raising over £13,000 in total for the cause.

At the centre of the fund-raising was a 72-hole Golfathon played at St Andrews. Geoff Baxter, Head of the Art Department, explains: 'We played four different courses at St Andrews, in a day. The idea was to invite individuals to sponsor us, at £1 a time, by guessing how many shots we would play

on the day.

This raised over £2,800'.

The event was backed by local businesses and individuals and supported by many members of the golfing profession, who donated prizes for the winning guesses.

'In conjunction with the Golfathon we held two very successful ceilidhs at Edinburgh



and Castle Douglas where other donated items were put up for auction,' Geoff adds. 'Each auction raised over £3,000.'

WINTER WARMER

In December, Lear Astronics will host its annual Christmas Lunch for about 750 employees, served by the President's staff.

Organisers from Human Resources are taking advantage of the weather and arranging for the festivities to take place on a sun-drenched patio.

Employees will also be given a taste of a colder climate. An all-day family party at Disneyland in Anaheim is planned, with the park themed around a winter wonderland. Although the chances of the snow being real are reportedly slim!



Family day fun



After months of planning, Radar System Division family day proved to be a big hit, especially with the kids. It's not every day they get to sit in an RAF glider or have their thermal image put on screen.

1. What is the name of the radar being developed for the Eurofighter?
2. Which aircraft's digital flight control system has just completed carrier suitability trials?
3. Support Division has just been awarded a £40m support contract for which aircraft?
4. Name the joint venture working on AMSAR.
5. FSD's Helicopter Air Data System has just been selected for which US Army helicopter?
6. What kind of objectives are line management being asked to set?

Here's your chance to win a fantastic weekend away for two at a Posthouse Forte (for UK employees) or Marriott (for US employees) hotel. Simply circle the correct answers and send to:

Emma Lawrence, VISION, The ITEM Group, Burnham House, High Street, Burnham, Bucks, SL1 7JZ. Fax: 01628 667 155

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ECR

Senior government officials from the four Eurofighter partner nations have recently been treated to a highly successful demonstration of the ECR 90's capabilities on board a BAC 1-11 aircraft, used by GMAV Edinburgh for equipment trials.

Co-hosted by GMAV and BAe in Edinburgh, the presentation and flight demonstration in September was the first opportunity that the RSD-led European consortium has had to demonstrate to the high-ranking representatives of all four partner nations that the Eurofighter radar will meet the necessary performance requirements. All of RSD's partners in the Euroradar consortium, DASA Vs, ENOSA and FIAR, were represented and contributed to the success of the demonstration.

Eurofighter

After the visit, Christian Biener, senior official with the German Government's weapons-procurement division, commented: 'The demonstration of the radar during the hack aircraft flight as a highlight of the visit was very impressive'.

Frank Yuill, Project Director at GMAV, believes that the close working relationship that has developed between BAe and GMAV has been a critical factor in the programme's success so far: 'As a consequence of our good relationship and teamwork with BAe at all levels, problems are being solved expeditiously, which is reflected in the way that key milestones continue to be met. Flight trials of the pre-production radar have gone extremely well as a consequence of the amount of simulation and testing of software'.

Conceived for the Eurofighter, the European Collaborative Radar – giving it its full title – is a third generation multi-mode radar for high-performance aircraft. More powerful in terms of processing power than current systems, ECR 90 provides long range all aspect, all altitude detection and tracking of multiple targets. It can also, when combined with an appropriate missile system, support simultaneous multiple target engagement.

The EF 2000 team at RSD is now working towards the planned first flight of the ECR 90 on the Eurofighter.

