

**MARCONI**  
**AVIONICS**



**into 1984...**  
annual review of activities

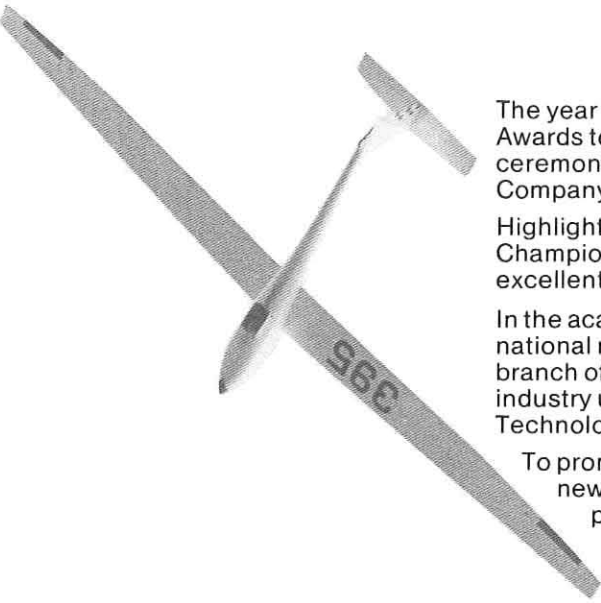
## 1983... a year of excellent achievement

The year was crowned on 12 November by the presentation of double Queen's Awards to Industry, for Export and for Technological Achievement. The ceremony, at Airport Works, was attended by delegates from throughout the Company's Establishments and factories.

Highlighting the summer were the Marconi Avionics National Gliding Championships, during which many of our customers were introduced to this excellent aeronautical sport and were taken gliding.

In the academic field, yet important to our long-term prospects, a five-year national research sponsorship was announced into Molecular Electronics. This branch of physics, which could radically affect the kinds of products which industry ultimately makes, will be researched at Cranfield Institute of Technology's School of Industrial Science.

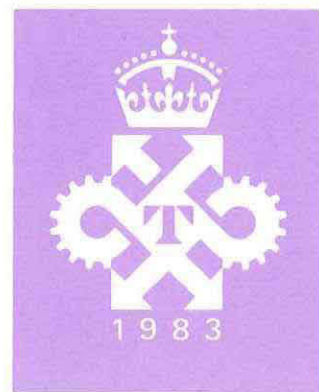
To promote business and a wider understanding of our Company, we release news about our various achievements whenever we can. We also take part in many exhibitions throughout the world, to associate the Company's name with excellence and to seek new customers.



During the year, we announced BSI approval for our manufacture of thick film hybrid microcircuits; the first export of Thermal Imaging Common Modules, to Brazil; a \$50 million United States order for 'wide angle' head-up displays, for F-16 C/D fighters; our selection for the final round of the British Army's Phoenix, remotely-piloted aircraft competition; a £25 million order for Queen's Award-winning AQS901 ASW systems for the RAAF; a licence agreement with Honeywell for laser INS; first production of the Foxhunter AI radar, for Tornado fighters; a £6 million order for AD3400 multimode radios for the Royal Navy; our 'ship-tracking, sub-hunting electronics', exhibited for the world's navies at RNEE; a £2 million order for TACAN, making it the standard radio navigation system for UK services; our subsea electronic controls and platform electronics for the new BP Magnus field; and, among many appointments, a Company Commercial Director, C C F Naylor, and Press Officer, Peter Simmons.



THE QUEEN'S AWARD FOR EXPORT ACHIEVEMENT 1983



THE QUEEN'S AWARD FOR TECHNOLOGICAL ACHIEVEMENT TO MARITIME AIRCRAFT SYSTEMS DIVISION 1983



A proud moment... Miss Debbie Soames, Keith Manning, Ivor Francis and Mrs Anne Dimmick, received the Queen's Awards on behalf of the Company

## Managing Director's Report



1983 has been a reasonably successful year for Marconi Avionics and I am happy to tell you that our Order Book in real terms, that is after allowing for the effects of inflation, is some 5% higher at the end of the year than it was at the beginning.

The delivery of production equipment for the Tornado, which represents a fairly large item of our total business, has been maintained well and further orders have been received.

New orders have also been received in Maritime Aircraft Systems Division, to equip a new batch of P-3C aircraft for Australia and orders for the Sea King Helicopter equipment, for delivery to India, appear to be imminent.

Good progress has been made on the Tornado radar equipment which is performing well.

Useful production orders are being received for our Infra-red Thermal Imaging equipment from Basildon. A number of demonstrations of thermal imaging systems have already been made in the United States and flight demonstrations are planned. The export potential of this equipment looks extremely good.

Unfortunately the US Government has not yet placed the orders for Standard Air Data Systems, which we had anticipated would arrive this year. Also, on a somewhat depressing note, the Agile Combat Aircraft, which has been under discussion for some time, as a collaborative venture between Britain, Germany and Italy, is not progressing as fast as we had all hoped. Whilst the problem is not yet critical, a new Combat Aircraft programme, to replace the Tornado programme when this eventually dies away, would nevertheless be very welcome to us.

J E Pateman CBE  
Managing Director  
Marconi Avionics Limited

21st December 1983

# Rochester Establishment

covers Rochester, Nailsea, Yeovil, and Byfleet.

## Staying ahead

Sales figures again show growth in the real value of our products and we remain Europe's leading producer of aviation electronics, for civil and military aircraft. Although sales are predominantly avionics, the variety of non-aviation products is increasing and there has also been notable success with advanced technology equipment for other applications than defence.

## in world markets

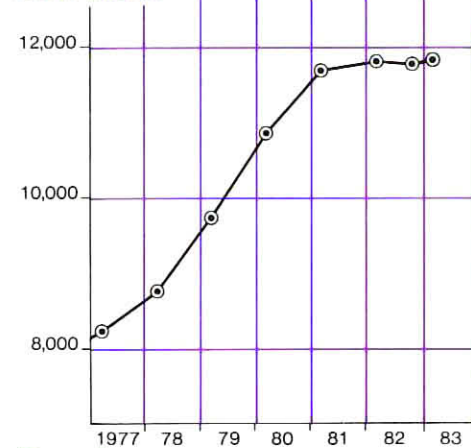
Export business, as a percentage of total sales, is again high, almost reaching the record 1982 level (which won us the 1983 Queen's Award for Export).

## with skill and strength

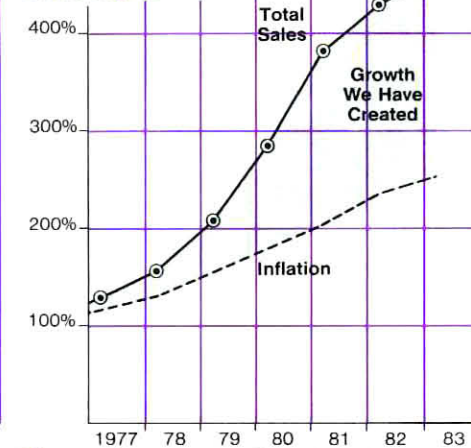
This latest version of our 'family tree' shows 33 trading operations backed up by Establishment and head office staff. The combined strength of all these teams has again remained at the peak level achieved in 1982, with improvements in the size and quality of our premises and the skill and training of our personnel.

It is a record to be proud of.

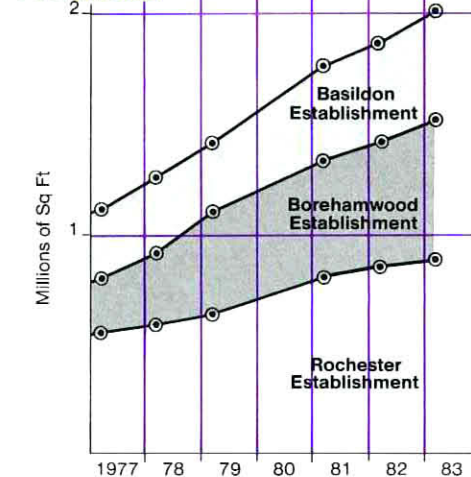
## MAv team



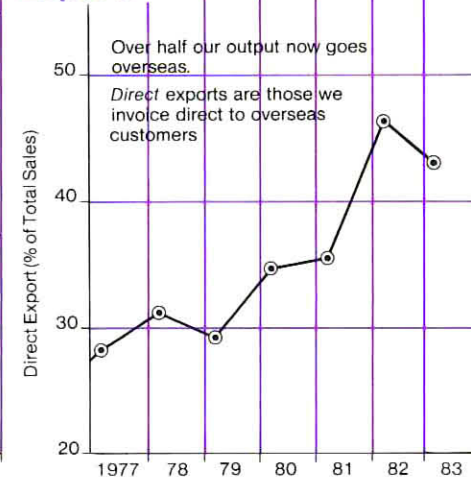
## Sales growth



## Premises



## Exports



Foreword by  
W H Alexander, OBE, Assistant Managing  
Director of Marconi Avionics Limited and  
chief executive for the Rochester  
Establishment.



While most of our 1983 activity was concerned with maintaining good progress on a number of established programmes rather than any spectacular new successes, there were a number of highlights, not least of which was winning once again a double Queen's Award for Industry; the Export award for the whole Company's performance and the Technology award for that of our own Maritime Aircraft Systems Division. The presentations were marked by an extremely well organised Open Day and I should like to thank Glyn Thomas and his team for all their efforts. In particular the Canteen, Works Engineering and the Security Guards are to be congratulated, as are all the divisional staff who came in and made the day so interesting for all our families and friends as well as special guests. It was a pleasure to see so many colleagues from all the establishments of Marconi Avionics.

I will not mention all our individual programmes which are fully covered in the divisional reports, except to say that nearly all are progressing very well and to the customer's satisfaction. One event I should like to mention, concerns our Offshore Projects Group at Nailsea. From October, when the BP Magnus Field in the North Sea was officially 'switched on' by the Prime Minister, our electronic subsea control systems have been responsible for bringing oil ashore.

Our business has always depended on keeping in the van of technology. We are continuing to invest large sums particularly on computers and associated equipment. Computer terminals can now be seen throughout the works. The encouraging response to the Computer Appreciation Scheme showed that there is no shortage of employees who want to know what computing is all about. We are sponsoring the new Information Technology Centre in the Medway Towns, to teach young people outside the Company the basics of computer hardware and software, and are continuing support for the local community in sponsoring Young Enterprise and the Medway Enterprise Agency and generally trying to assist local councils in improving the prosperity of the area in which we live and work.

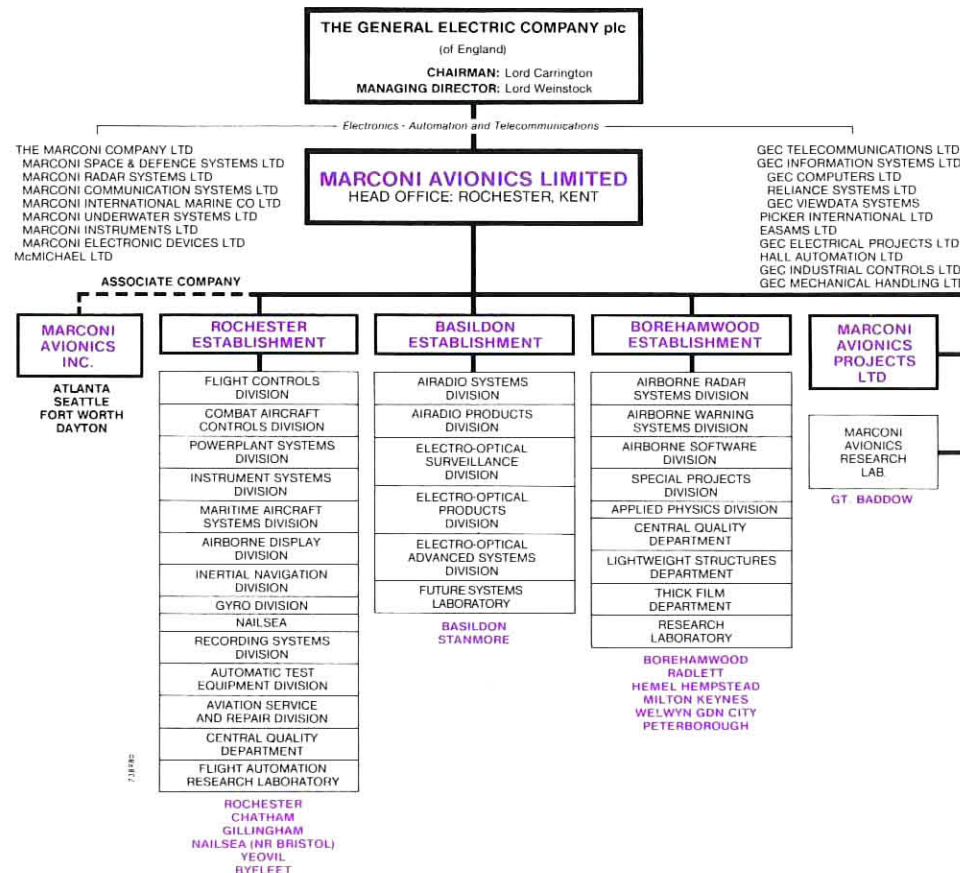
Training, still extremely important, involving over 10% of our population at any one time, has been augmented by a large intake of young people in the Youth Training Scheme. The Training Department continues to concentrate on the initial training of craft, technician and student apprentices, and on the considerable re-training required nowadays to keep up with new skills.

Outside working hours, the various social and sporting activities continue to enjoy great support and much success. The Brass Band, with a constantly improving performance at their various charity concerts, has now reached a very high standard. The Clubhouse at Hoo continues well patronised and I am pleased at how smoothly the transition has gone.

Looking to the future, our order book value is higher than ever before and, provided we remain innovative and competitive, we can look forward to even more success in years to come.

The Board of the company and its Directors are:

- Chairman: Sir Robert Telford CBE
- Managing Director: Mr J.E. Pateman CBE
- Consultant to Board: Dr. B.J. O'Kane CBE
- Assistant Managing Director: Mr. W. H. Alexander OBE
- Assistant Managing Director: Mr. P. F. Mariner
- Financial Director: Mr. D. C. Rickard
- Director: Mr. P. A. Hearne
- Director: Mr. R. W. Howard
- Director: Mr. W. R. Paterson
- Technical Director: Professor J. T. Shepherd
- Commercial Director: Mr C. C.F Naylor
- Director of Personnel: Mr. E. J. Bradley



**Airborne Display Division** has seen a year of increasing activity. The future F-16 C/D aircraft is to be equipped with a newly developed HUD derived from the LANTIRN and AFTI programmes, whilst the holographic LANTIRN display unit underwent a major enhancement. Both equipments were developed in under 10 months. New products are being very actively marketed throughout the world and it is expected that new contracts can be announced shortly. A much needed boost in computing power has been achieved with the installation of a VAX computer and Applicon CAD facilities.

**Maritime Aircraft Systems Division** won a follow-on contract to supply AQS901 systems to the RAAF for a second buy of P-3C Orions. AQS902, still produced for the Royal Navy, is

being extended to process both dipping sonar signals and sonobuoy data. AQS903 development continues for the next RN helicopter. The



USAF front pilot's view through the new wide angle HUD for the General Dynamics F-16 C/D fighter.

first two AQS902 export orders have been received. ASW systems integration work with helicopter and aircraft companies, and development of a new sonar/sonobuoy system with Plessey Marine, continues. For all this work, the Division won for the Company the Queen's Award for Technological Achievement.

**Gyro Division.** Extensive clean room renovation and new tooling and test equipment now affords facilities to manufacture a new range of high accuracy sub-miniature gyros, the GI-G6. Numerous applications include the 'Strapdown' guidance system for the Spearfish torpedo. Several guidance systems were delivered and were successful in trials. Late 1984 will see the Sting Ray guidance unit in high volume production, this year having

been crucial in commissioning the necessary automatic test facilities. Divisional expansion continues, with a good order book.

**Combat Aircraft Controls Division.** Manufacture of Tornado CSAS and AFDS continues as the main activity, with the recent addition of Tornado SPILS computers also now ordered by Germany. Further orders have been received for Jurom and Harrier systems. In Engineering the first flight standard equipment for AM-X nears completion and detailed design of ACA hardware has continued. The Jaguar FBW flight programme has met all objectives and further development work is expected. A number of advanced studies are in progress for the MOD and a very competitive proposal has been submitted for an F-16 Flight Controls update.

**Flight Controls Division** is in the final stage of the competition to supply the Phoenix unmanned surveillance aircraft for the British Army. The A300-600 European Airbus made its first flight with FCD's Slat and Flap Computer on board, just as the 100th computer was being delivered for the A310. Flight trials of the Advanced Subsonic Aerial Target (ASAT) of Flight Refuelling Limited with FCD's microprocessor-based flight control system, continued, recently moving to the Hebrides, ready to start operation. Production of Rapier radar actuators, AFCS for Lynx and BAC 1-11, drone equipment and 747 autothrottles continues.



First flight of latest European Airbus, the A300-600, with MAV electronics for slat and flap control.

**Powerplant Systems Division** finished installing the Canadian CF-18 Automated Powerplant Test System at Cold Lake, Alberta. The four RB199 systems handed over are performing well in service. The Supervisory Control, now in airline service, is showing commendable reliability. In engineering, development of the next generation of fuel system

customer interest. Work on engines for unmanned aircraft to improve overall performance is very encouraging. A prototype Standby Instrumentation Display has been made for BAe Brough and work is proceeding on the Maintenance Data Panel for the Agile Combat Aircraft.



Automatic Powerplant Test installation at RAF Honington for Tornado's RB199 engines.

**Automatic Test Equipment Division's** involvement with Europe's front line aircraft continues with thirteen LF ATEs ('Low Frequency' Automatic Test Equipments) now delivered to the RAF and the Luftwaffe for Tornado, and with increasing use of ATE for Nimrods at RAF Kinloss and RAF St Mawgan. In the factory, modules for A310, F-16 and AM-X system computers are being tested on Compact Alpha, three of which are used in Thermal Imaging Common Modules production. ATE Division's VAX 11/780 continues to serve GEC companies for test program generation and engineering support.

**Instrument Systems Division** has continued delivering Stores Management Systems and Triplex Transducer Units for Tornado. Establishing a US Army Depot Support Facility for Cobra Air Data Systems has been a major activity. Good orders continue for this system. The Standard Central Air Data Computer programme has progressed excellently to the qualification phase with successful first flight evaluation completed on E-2, A-4, A-6, A-7, KC-135, C-5A, C-141, F-111 and F-4 aircraft. US support of these vital flight trials has been provided at numerous USAF and US Navy bases. Increasing product marketing effort includes developing a new Stores Management Systems range.

**Recording Systems Division** quickly made good the upset to staff and

which led to its formation in MAV in November 1982, and has since made extensive proposals for a variety of new projects to military and industrial customers, with greatly encouraging results. Pre-production of a video recorder based archiving system for use with satellite image data is well downstream, and specialist work for the On-Line Inspection Centre of British Gas still provides a very significant proportion of development and production turnover.

**Inertial Navigation Division** has continued developing Vehicle Heading Reference Systems for navigation and gun laying. The land navigation system (MAVLANS) continues to attract great interest from our own and foreign armies. The Naval Compass Stabiliser (NCS1) which operated without fault in ships in the Falklands, has successfully completed Royal Navy trials as an accurate navigation system interfaced with a ship's sonar log. A novel colour map reader is being developed. Through an agreement with Honeywell, the Division is now marketing Laser Gyro INS for aircraft and other military applications at home and abroad.



MAV's new Land Navigation System is from IND, not the 'think tank' as this picture might imply!

**Aviation Service and Repair Division's** fully-operating repair facility for Tornado equipments is being extended. New repair programmes, for European F-16 HUD, RAF VC10 Tanker AFCS and RN torpedo gyroscopes, continue actively. A full support programme for the A310 Slat and Flap

future support plans are being developed with Product Divisions. Increased demand has meant expanding the Customer Training School. An interactive video disc has been developed, with maintenance information data on MAV(R) equipment, to demonstrate the audio-visual maintenance concept. Demonstrations with a MAV helmet-mounted display are attracting considerable interest.

**Flight Automation Research Laboratory** won the contract for a Digital Map Display for RAE Farnborough, completed the MAV Direct Voice Input system for RAE Bedford, delivered the fourth Programmable Raster Displays Generator, completed the 'Fly by Light' FCS for the SKS600 Airship and started developing a new Stereo Underwater Viewing System, under Department of Energy OSO sponsorship. With a new VAX 11/780 computer installed, a VLSI design facility is firmly established, and Optical Design and Intelligent Knowledge Based Systems work is intensifying.

**Central Quality Department's** re-sited EMC Laboratory at Gads Hill has additional screened enclosures, increasing capacity and the ability to test larger systems. The improved Environmental Test Laboratory now houses a new, 12,000 lb thrust, vibration system and a solar radiation chamber. Both laboratories were given full accreditation by the National Testing Laboratory Accreditation Scheme (NATLAS). The Electrical Standards Laboratory's new automated calibration system handles a range of digital multimeters. The Mechanical Standards Laboratory is being re-sited at the Flying School.

**Electronic Data Processing** continues re-organising resources to meet increasing demands for information services at Rochester. Both ICL 2904 computers have been further upgraded and a major expansion of processing facilities is planned for 1984 to provide a wider MAPLE product support service. Enhancements of the Microdata Sovereign facilities are also planned to meet growing demands for capacity, flexibility and resilience. Hardware and software requirements for Time and Attendance Recording and Shop Floor Data Collection and Control will also be addressed.

**Nailsea Division's** Power Conversion Group is building up its order book whilst designing and supplying PCU's

for major company programmes such as SCADC, Spearfish torpedo, LANTIRN, Tornado, LAPADS and EH101. The continued build-up is supported by active marketing internally and outside GEC.

Offshore Projects Group achieved a major milestone with the start of oil production from BP's Magnus Field in the North Sea, using subsea control systems manufactured at Nailsea. Work is under way on another system for Chevron's Montanazo Field in the Mediterranean, which will be the world's deepest subsea completion at 2,500 feet.

**Works Engineering Services** has continued to cover land, buildings, plant, transport and communications. The Falcon building was successfully completed in the scheduled nine months from contract and a new warehouse was made available for the Company's Exhibition Department. The Establishment's Central Packing Department was added to Works Engineering Services activities. The combined effort of all Works Engineering Services departments provided the necessary support for the preparation and operation of the double Queen's Award presentation and the Open Day held at Rochester in November 1983.

**Accounts Department** continues to provide better financial services at reduced cost, with improved computer systems using direct entry equipment, and the transfer of payroll, management accounts, nominal ledger, sales ledger and fixed asset records to the IBM computer. Costing programs will be transferred and enhanced next year.

**Central Machine Shop** continues in its primary role of supplying mechanical assemblies and piece parts to Product Divisions at Rochester. The acquisition of 20

station auto change machine centres, as further modernisation, has proven a valuable asset. The high standard of conformal coating for printed circuit boards is recognised by many enquiries about the process technique from other Establishments.

**Personnel Department** increased recruitment, particularly for software and systems engineers. A new counselling service advises employees on Company careers. The Government's new Statutory Sick Pay scheme caused extra administration. The GEC employee's Share Option Scheme was introduced and many decided to join.

The Training Department introduced new technological courses and additional management and supervisory training. Sixty Government-sponsored trainees were recruited to our two newly-created Youth Training Schemes in addition to 115 trainees for our own needs. Training schemes provided 190 newly-qualified staff, including 40 programmers and engineers. With the Featherby Road site sold, all Social Club activities are now at the Clubhouse at Hoo.

**Marconi Avionics Research Laboratory**, Great Baddow, undertakes research specific to the Company, providing expertise in microwave techniques, lasers and holography, infra-red systems and signal processing for IR and radar. A Control Systems group is active on stabilisation and servo programmes. Recent applications are holographic optical elements for LANTIRN, frequency generators and low noise amplifiers for AEW, UMA control systems for Phoenix, and synthetic aperture radar processing equipment. The Laboratory also carries out future studies and supports long term avionics-related research at universities.

### United States Report:

#### Marconi Avionics Inc.

Co-manufacture of Head-Up Displays for the F-16 and A-7 aircraft continues to be the main activity in Marconi Avionics Inc, Atlanta.

An associated prime function is the support of the total Company's equipment sales into the United States which also involves the facilities at Fort Worth, Seattle and Dayton.

The US operation continues to develop and exploit opportunities in the field of CO<sub>2</sub> lasers and marketing assistance is provided to UK Divisions as required.

# Borehamwood Establishment

covers Borehamwood, Radlett, Hemel Hempstead, Welwyn Garden City, Milton Keynes and Peterborough

Foreword by  
P F Mariner, Assistant Managing Director of  
Marconi Avionics Limited and chief  
executive for the Borehamwood  
Establishment.



We have this year made considerable progress in meeting the challenges which are an inherent part of very large development and production programmes. As you will recall I was able to tell you last year that our Advanced Signal Processing Systems for the Royal Navy's Towed Array projects, for which we are prime contractor, were coming into a satisfactory position with prototypes at sea and performing fully. This success has been continued with timely delivery, installation and setting to work of equipments achieved this year on both programmes, and the winning of our first export order in this field.

The Foxhunter radar programme has made gratifying progress this year. Technical problems have been identified and remedies developed, and production deliveries from the pilot production batch are being made in accordance with the agreed programme.

The AEW MSA programme is well into its flight trials phase, which is providing valuable information on system characteristics and performance for the continuing development programme, a significant part of which is still ahead. In the course of the project the equipment has been significantly enhanced at the request of the customer and this has entailed considerably more work. The first set of trials by the customer is also proceeding satisfactorily. The production programme is being conducted in parallel and deliveries of Service equipments have been made according to schedule. Throughout the programme we have to deliver in excess of 3,000 line replaceable units.

Alongside the steady progress on fulfilling our present major contracts, our sales teams have been particularly active throughout the world in seeking out potential new orders in all product areas.

I should also draw special attention to the new products and new technology we have been successful in launching this year, which will maintain our position as the leader in the United Kingdom in our products and enable us to compete with the extensively funded programmes in the USA.

Finally, we must not forget that all those actively promoting the interests and objectives I have identified, can do so only because of the comprehensive back-up they are given by the conscientious efforts of their many colleagues in supporting activities within their own Divisions, in the specialist departments, and at Head Office.

**Airborne Software Division's** mission system software for AEW Nimrod and Foxhunter radar continues satisfactorily in flight trials. Work has begun on a fixed-price contract for an operational AEW training simulator. Courses have been delivered to educate RAF technicians in special features of the AEW software, and a similar course for the AI Foxhunter RDP software is in preparation. Software supplied for computer controlled security systems is working satisfactorily. Two systems have been installed and a third system is under development. A database system for drawing office configuration control is operating satisfactorily on a GEC 4085 in support of Foxhunter development.

**Airborne Radar Systems Division** is increasing the delivery rate of Foxhunter radars, which will be designated AI 24 on entering RAF service this year. Flight trials in development aircraft have indicated its power and versatility. Of increasing importance is the supply of support and test facilities for service. The lightweight, low cost Skyranger radar's performance has been validated by flight trials at an overseas customer's

ranges and it is in production for export. The Division is actively seeking wider markets for both radar systems.

**Airborne Warning Systems Division**, now well into the production phase of the Mission System Avionics for AEW Nimrod, has delivered four complete systems for installation in the aircraft. The first fully-commissioned AEW Nimrod is to be handed over to the RAF early in 1984. Installation of a full Mission Simulator, ordered this year for the RAF, is well under way. Export interest in a variety of AEW systems has been growing and the Division is working closely with several potential customers and following up all other export opportunities.

**Special Projects Division** has delivered several advanced sonar signal processors to its major customer, the Royal Navy, for submarine and frigate platforms. The first of the frigate sonars recently completed successfully, and well within timescales, its Sea Acceptance Trials under near-operational conditions. Technology advances, based on in-house systems and engineering

work, are providing solutions for lower costs, improved performance and greater operational flexibility. Contracts, including the first export, are now largely fixed-price.



Automatic NC Machining Centres in the Central Machine Shop.

**Applied Physics Division** and Mobile Radar Division have been combined, following the untimely death of Neil Robinson. The Physics Division's laser expertise is now combined with Mobile Radar Division's military systems experience, bringing together all aspects of military CO<sub>2</sub> laser systems.

Demonstration CO<sub>2</sub> laser rangefinders in a gunner's sight are to be delivered for military vehicle trials. Unique X-ray diffraction systems for semiconductor crystal perfection studies, have been delivered to several UK and US customers. Successful trials of the HERMES remote sensor system have taken place, for vehicle and personnel detection, and in a novel aircraft detection mode. Airborne Software Division's co-operation is benefiting more sophisticated civil Security and Surveillance systems, delivered to home and overseas customers.

**The Research Laboratory** provides technology support for current and potential business, carries out feasibility studies and advanced development, and provides expertise and information for systems design, engineering, manufacturing and marketing. Some 30 R&D items include ultra-low power signal and display processing, new reconfigurable signal processing systems for battlefield radars, compact frequency analysers, coherent detection systems for new laser radars, radar technology, systems studies for future aircraft, new 3mm waveband techniques, and a new highly agile nose radar scanner for future combat aircraft.

**Central Machine Shop**, having now installed NC Machining Centres and a programming facility, envisages further

capacity improvements through technical advances in the established machining, sheet metal fabrication and surface finishing facilities. This increased ability will further expand the direct contribution to major radar and sonar system contracts.

**The Model Shop** at Borehamwood, Radlett and Milton Keynes, is supporting all Herts and Bucks Divisions, its highly skilled craftsmen having contributed substantially to the mechanical and electrical prototypes for AEW Nimrod, Tornado ADV and future lightweight radar projects.

**Central Quality Department** has extensively modified its Environmental Test Laboratory to increase efficiency still further, and continues to participate in qualification testing and flight certification for AEW Nimrod and AI 24 radars. The Central Goods Receiving service has been integrated with the new computer-based On-Line Purchasing System, increasing overall efficiency. Calibration, component testing, quality documentation, and vendor audit and assessment services continue to contribute to quality assurance.

**Thick Film Department** has established its products in a number of major company projects, delivering against significant orders from external

commercial and Government sources, which should result in further orders in the future.

**Lightweight Structures Department** has continued to apply 'composite' manufacturing technology, gained through production of antennae for the AEW Nimrod and Tornado ADV, to numerous orders for air- and ground-based antennae and radomes, gained from inside and outside GEC. Substantial investment, made in further production and analytical test equipment, has further enhanced the Department's capabilities and will meet growing demands for glass, carbon and aramid fibre reinforced sandwich structures.

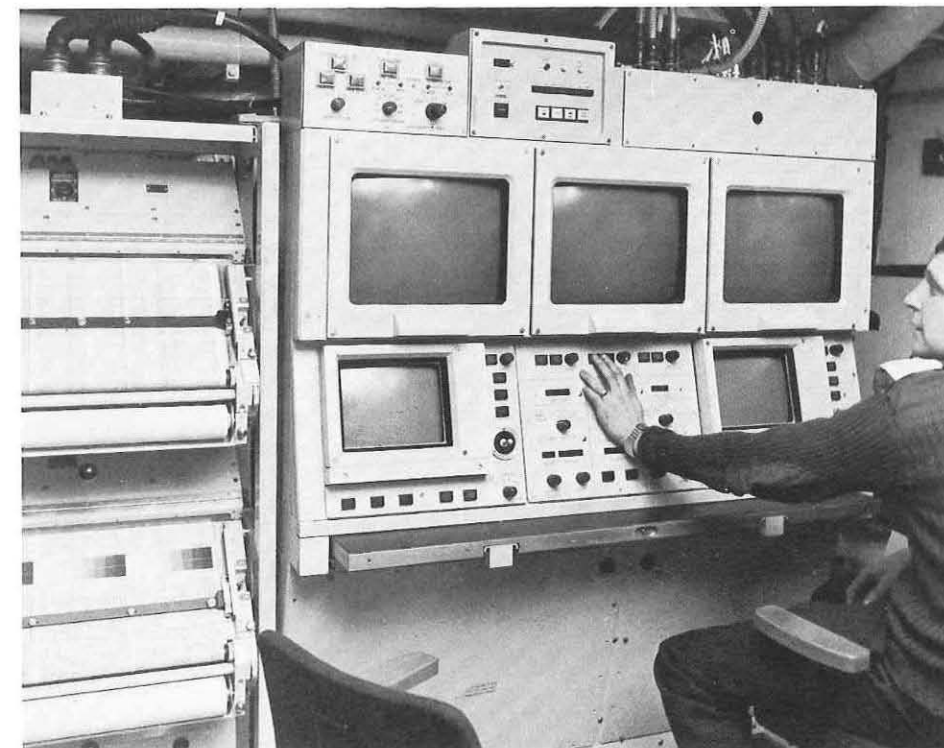
**Central Publications Department** provides a complete documentation service, embracing handbook, software documentation, and specification writing; editing and preparation of Company sales proposals, brochures and reports; reprographics; an expanded word processing facility with an Optical Character Reader and Word-Net System, and a fast, high quality service for 35mm and 16mm microfilming.

**Accounts Department** is involved with introducing MECCA systems, covering automatic processing, from Purchase Orders to clearance of invoices. It is expected to yield, over the next eighteen months, greater efficiencies throughout the Purchasing, Goods Inwards and Accounting areas.

**Personnel Department** maintained effort in software and engineering recruitment, with a graduate intake of 111. A re-designed Conditions of Service booklet has been issued for all staff.

Training Department continues to expand, with new courses on Microprocessor and Product Design, Microwave Appreciation, and a User Course for computerised purchasing. A BBC Micro User Group has been set up, the new Apprentice Association is thriving and Training Department has been involved as Managing Agents in the Government's Youth Training Scheme.

**Site Services** is responsible for premises and facilities at the Hemel Hempstead, Milton Keynes, Peterborough, Radlett and Welwyn Garden City sites, including telecommunications, external and inter-site mail, and medical services.



This Type 2031 signal processing system for towed array sonar has proved successful in RN sea acceptance trials.

# Basildon Establishment

covers Basildon and Stanmore

Foreword by  
W R Paterson, Director and General Manager  
of Marconi Avionics Limited and chief  
executive for the Basildon Establishment.



A high level of activity has been maintained throughout 1983 resulting in solid progress and achievement in all Basildon Divisions, including the Stanmore operations. By having good products and capability, the order book prospects for the rest of this financial year and next year continue to look healthy.

A feature of the past year has been the increase in competitive studies involving consortium arrangements with other companies and sites. Successful involvement in these studies is important for the future well-being of the Divisions at Basildon. However, the bulk of activity has been in manufacturing, and a significant number of new products have found their way on to the production line in the past year. These include the very successful AD3400 Wideband Transmitter/Receiver, Thermal Imaging Common Modules, the Javelin E-O Sensor System, DISSTA, and the AI radar line replaceable units. Important new production programmes such as Wideband Secure Speech and PET torpedo targets confirm the interest in the site's products and capability.

Exhaustive evaluation tests and demonstrations of many products have been going on throughout the year in the UK and abroad. Special thanks must go to those members of staff working far from the home base and on whose commitment and dedication successful marketing of the products depends. Of particular interest are the successful podded FLIR trials being conducted with RAE, and the flight trials of the AD3400 in the Far East.

New development contracts have been received since the last report, as well as a number of new funded demonstrator programmes, thus ensuring that a range of products will be available in the future to meet new market requirements.

Our considerable investment in plant and machinery manifests itself in recent acquisitions, now operational, like the SL 1 automatic telephone exchange, the computer controlled energy management systems, the Applicon CAD system, and the VAX 11/780 computer and peripherals.

Inevitably the competition has been, and continues to be, as fierce as ever, and much more has to be done if we are to stay up with the pack. Complacency is unacceptable in any area of our business. Whether in product design or management of material, the job simply has to be done better. 'Doing it better' has become a way of life at Basildon and management appreciates and thanks all of the workforce for their dedication and co-operation.

Many challenging questions face the Basildon and Stanmore operations. Can the potential of thermal imaging be brought to fruition? Will productivity continue to improve, particularly in engineering laboratories? Will tangible benefits be realised from the explosion of computerisation? Can the necessary improvements in material management be achieved? The answer to those questions must be made to come out: 'YES'.

**Airadio Systems Division**, having won a MOD(PE) production order for a digital speech communication system, is pursuing development work for various applications. Following completion of project definition, a development contract for the Sea King replacement (EH101) communication system is expected shortly. Considerable expertise, gained over recent years in integrating data links with aircraft tactical processors, has led to the ASD 40 data link system design for universal civil and military applications. Other significant developments are the Integrated Control and Display Unit and the Automatic Speech Recognition System.

**Airadio Products Division** won new orders: for several hundred AD3400 multimode radios (an equipment which has been highly praised for its performance in a Lynx helicopter); AD150 Voice Conditioning and VOS

units (after successful flight trials); AD1550 Comms Control Systems for BAe 125 and 146 aircraft; AD190 VHF/FM and AD1420 HF systems for Jaguars; AD660 Dopplers; and AD2770, and the new AD2780, TACAN. Developments included



The AD3400 VHF/UHF system bridges the gap between all 'line of sight' radio users.

modules to extend the AD3400 and to up-rate the AD260 navigation system. Results of proposals to major customers, for communications and navigation equipment, are expected soon.

**Electro-Optical Products Division's** development and production of weapon control systems still expands, for GW and gun control. GW activity centres on Seacat and Javelin, the Army's new shoulder-launched surface-to-air missile. It uses our lightweight E-O guidance system, now in production. V3800 thermal imaging target tracking systems generated considerable Royal Navy and overseas interest. After the Brazilian Corvette contract, thermal imagers are now being supplied to Switzerland for Contraves' new Seaguard Close-in Weapon System for ships. Weapon control is expected to become the Division's most significant business for several years.

**Electro-Optical Surveillance Division** has delivered a substantial number of Thermal Imaging Common Modules (TICM II), now in large scale production for UK defence programmes. They are already being used in no fewer than ten different imager configurations, purchased by thirteen separate customers, in six countries, and have proved exceptionally successful in FLIR pods for night flying. Image stabilisation work continues, including a new contract for a gimbal stabilisation system to allow the USAF to evaluate its own thermal sensors on a trials aircraft.

**Electro-Optical Advanced Systems Division**, now consolidated in its new building, has continued growing. Expansion of CAD facilities includes procurement of a VAX computer to support most tasks, including Silicon design, and more computers are being introduced in production engineering and commercial departments. A major advance has been the winning of orders for two feasibility studies for major projects. Production of torpedo electronics continues for Sting Ray and is starting for Spearfish, complemented by design and production work for large underwater targets.

**Airborne Radar Systems Division's** Basildon operation delivered 113 power supply units and 137 transmitters for Tornado's terrain-following radar, now bringing to over 350 the LRU sets delivered on time to AEG-Telefunken, Ferranti and Fiar.



Large numbers of assemblies have been delivered, on time, for Tornado's 'terrain-following' radar.



This FLIR (forward-looking infra-red) pod, fitted on a combat aircraft, is made entirely from Thermal Imaging Common Modules.

Work has rapidly expanded on the Foxhunter Airborne Interception radar, with first production units delivered in March. The first production radar is performing well in flight trials. The initial batch of twenty LRU sets is nearly complete and work has started on the next batch of fifty.

**Future Systems Laboratory** has continued to expand and improve its system studies capability. Activities include a major study and build contract for MIRACLE (MAV Infra-Red Correlation Equipment), jointly with EOASD, along with feasibility studies for two important UK projects; design of an ultrafiche high density optical storage system; fibre optic video data links for aircraft, with EOPD; and work on predictors with EOSD.

**Central Machine Shop** has supplied 90% of its machined parts and mechanical assemblies to Divisions on site, some items also going to Rochester and to MUSL. These and repeat orders have kept the 148 employees busy. A computerised manufacturing and control system is being installed, incorporating a DNC link with some existing shop floor NC milling machines. This is to keep ahead with modern practice and improve cost, delivery and quality.

**Plant Engineering Department** is renovating a 24,000 sq ft building for EOSD. Work has also started on a new 11 kV electrical substation and a new standby generator is being

installed at J Building. The summer shutdown of the boiler house made substantial energy savings.

**Services Control** continued to provide communications, transport, central purchasing and stores services, with the new SL1 telephone exchange becoming operational on 28 February, enhancing the service and handling 13,000 calls per week. Communications have further improved with the installation of Cheetah telex machines and facsimile equipment.

**Accounts Department** has taken over the responsibility from Chelmsford Computer Centre for loading its own jobs on to the computer, giving greater flexibility and reducing costs. Projects include 'on line' bought and sales ledger, updating the payroll system and changing cost codes.

**Personnel and Training Department.** Within an unchanged personnel strength, the number of engineering technologists rose 12% due to significant recruitment of experienced engineers and graduates. Over 60 final year apprentices took permanent jobs with us and a similar number were recruited. In the pilot YTS scheme, all young people attended full time employment, both in and outside the company, and programmes for 30 new trainees include clerical, electrical and mechanical operators, electronics and catering.

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