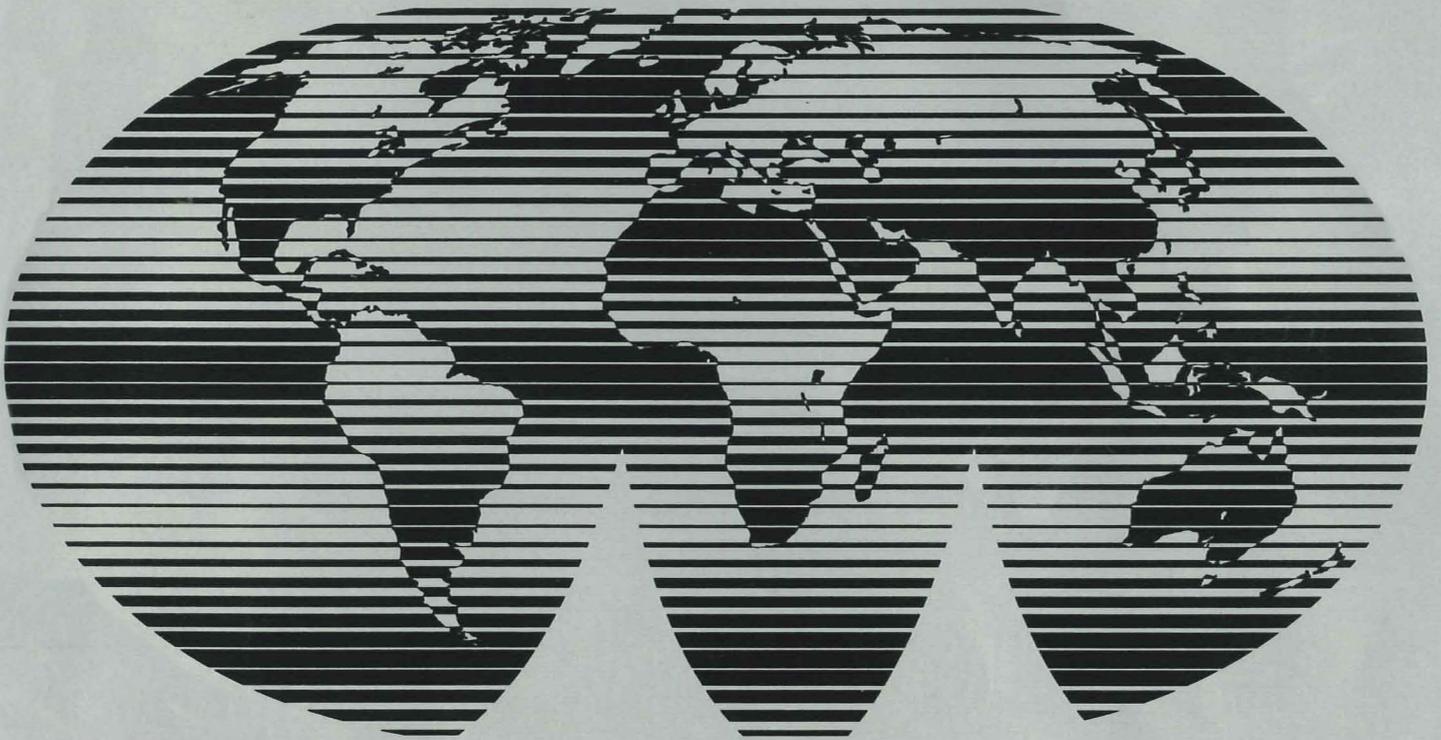


**GEC AVIONICS**

# ***Sales Directory & Product Guide***



*Serving the World with technology*

# Our capabilities at a glance.

## Flight Control Systems

Stability Augmentation  
Autopilots/Flight Directors/Autothrottles  
Automatic Landing  
Fly-by-Wire  
Fly-by-Light  
Quadruplex Actuators

## Powerplant Systems

Digital Engine Control  
Fuel Management  
Range/Endurance Computing  
Engine Intake Control  
Nozzle Control  
Fuel Mass Flowmeters

## Motion Sensors

Low Airspeed Sensors  
Gyros  
Accelerometers  
Attitude and Heading References  
'Strapdown' Inertial Measurement Units

## Navigation

VOR/ILS and DME  
TACAN  
Doppler Systems  
Inertial Systems  
Automatic Direction Finders  
OMEGA  
Stabilised Gyrocompasses

## Airborne Communications

HF, VHF and UHF Systems  
Tactical Systems  
Communication Control  
Antenna Couplers  
Data Link Systems  
Communication Systems Integration  
Secure systems  
JTIDS

## Display and Interfaces

Electronic Head-Up Displays  
Electronic Head-Down Displays  
Multi-mode and TV Tabular Displays  
Helmet Mounted Displays  
Situation Displays  
Projected Map Displays  
Digital Scan Converters  
Speech Recognition Systems

## Weapon Systems

Digital Head-Up Display Weapon Aiming  
Digital Inertial Navigation and Attack  
Stores Management  
Electro-Optical Weapon Guidance  
Underwater Weapon Guidance

## Airborne Computing

Air Data Computers  
Task-Orientated Computers  
Central Processors  
MIL STD 1553B Bus Systems  
MIL STD 1750 Computers

## Airborne Radar

Airborne Interception  
Air Combat  
Airborne Early Warning  
Mapping and Ground Attack

## Maritime Surveillance

Sonobouy Data Processing and Display Systems  
Helicopters Hybrid Sonar Processing and Display  
Tactical Navigation and Data Display

## Signal Processing

Ship and Submarine Sonar Systems  
Specified Acoustic Signal Processors

## Airborne Power Supply Systems Software

Software Engineering  
Software Design and Development  
Real Time System Software  
Computer Aided Design Software  
Test Program Software  
Software Training

## Automatic Testing

Combined Analogue/Digital,  
In-Circuit/Functional Automatic Test Systems  
Testability in Design  
Test Program Generation  
Databus Test Systems

## Recording Systems

Airborne Data Recorders  
Airborne and Severe Environmental  
Analogue and Digital Tape Recorders  
Solid State Integrated Flight Data Recorders,  
Data Acquisition and Replay Systems

## Laser Devices

Rangefinders and Target Markers  
Carbon Dioxide Lasers, Pulsed and CW  
Stabilised Frequency Lasers

## Electro-Optical Systems

Thermal Imaging and LLTV  
Missile Guidance, Gathering and Tracking  
Secure Command and Video Data Links  
Passive Surveillance and Target Designation  
Surveillance from Aircraft, Helicopters and RPVs  
Industrial Control and Surveillance  
Underwater Imaging and Acoustic Signal  
Processing

## Military Surveillance Systems

Battlefield Surveillance Radars  
Battlefield Remote Ground Sensors  
Surveillance Instrument Mounting Systems

## Civil Security Systems

Fixed-Site Seismic and IR Perimeter Security  
Systems  
Access Control  
Microprocessor Controlled Data Handling  
Closed Circuit and Low Light Television

## Offshore Technology

Underwater Exploration Systems  
Wellhead Monitoring and Surveillance  
Offshore Control and Instrumentation

## X-ray Devices

X-ray Generators  
Diffraction Equipment and Cameras

## Neutron Devices

Neutron Generators  
Activation Analysis and Radiographic Equipment  
Reactor Commissioning Equipment

## Systems Engineering

Turnkey Projects  
Avionics Retrofit  
System Integration  
Mission Systems

For full details please see Part 3

# Sales Directory & Product Guide

## August 1985

## GEC Avionics Limited

Head Office

**Airport Works  
Rochester Kent ME1 2XX  
England**

Telephone: Medway (0634) 44400

Telex: 96333 MEAROC G

## General Information

Can be obtained from the Information Officer  
at Head Office (address above)

## Sales Enquiries

Our business is conducted by trading Divisions, each of which is expert  
in its own field.

- To locate a required product or service, please refer to the  
alphabetical index (Part 3). The key shows which Division(s) can  
supply.
- If you wish to discuss new requirements, the Division to contact  
can be found from:  
the general description of our capabilities and organisation  
(Part 1) or  
the general description of each Division's business  
(Part 2, grey pages).
- To contact any Division, please refer to the index on pages  
8 and 9
- If in doubt, please contact the Information Officer at Head Office  
(address above).



Since the previous issue of this Guide, we have changed our  
company name. Please note: Marconi Avionics has become, from the  
1st September 1984, GEC Avionics.

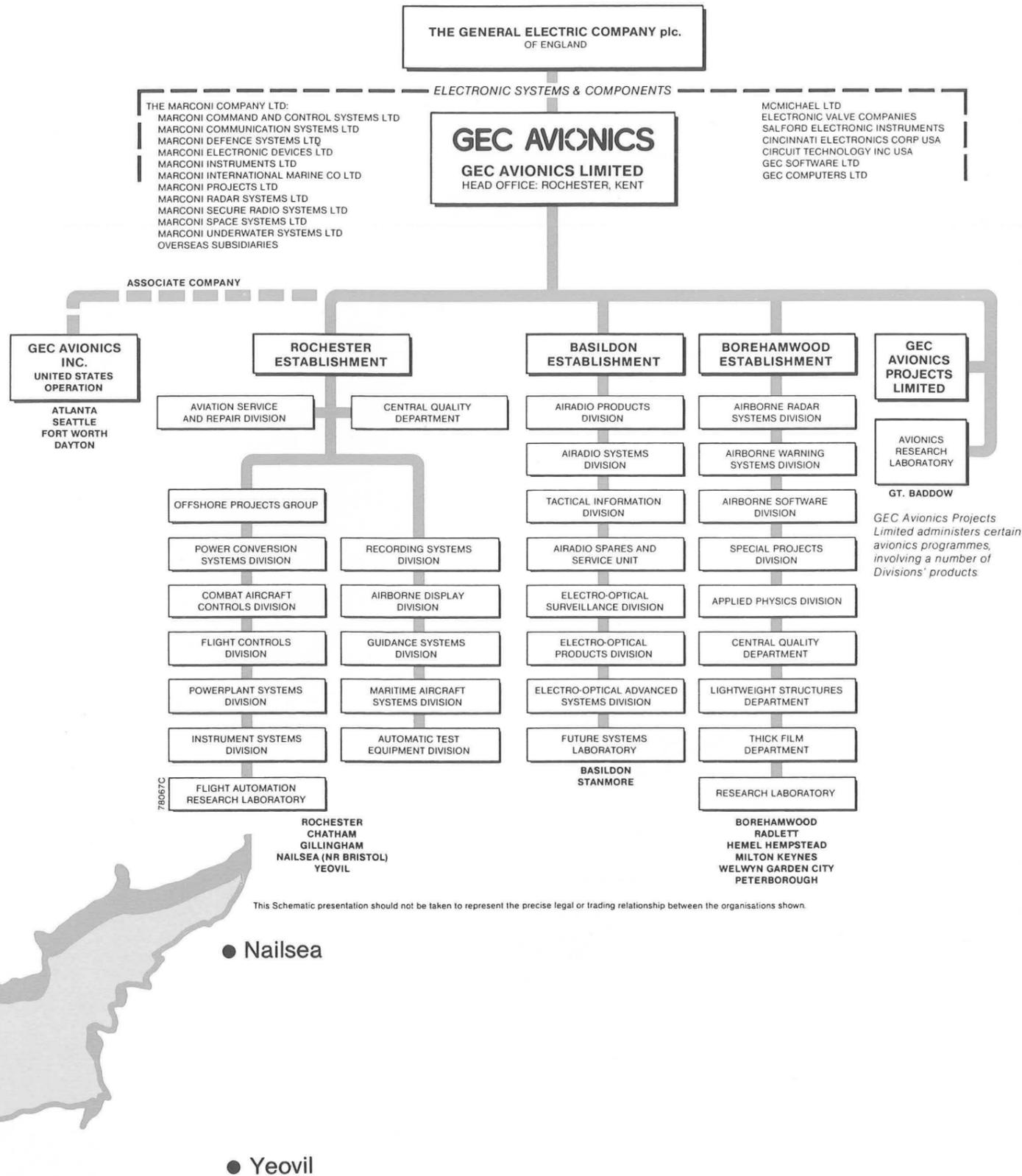
## After-Sales Support

Arrangements are usually agreed at the time of purchase. If there are  
difficulties, however, please contact:

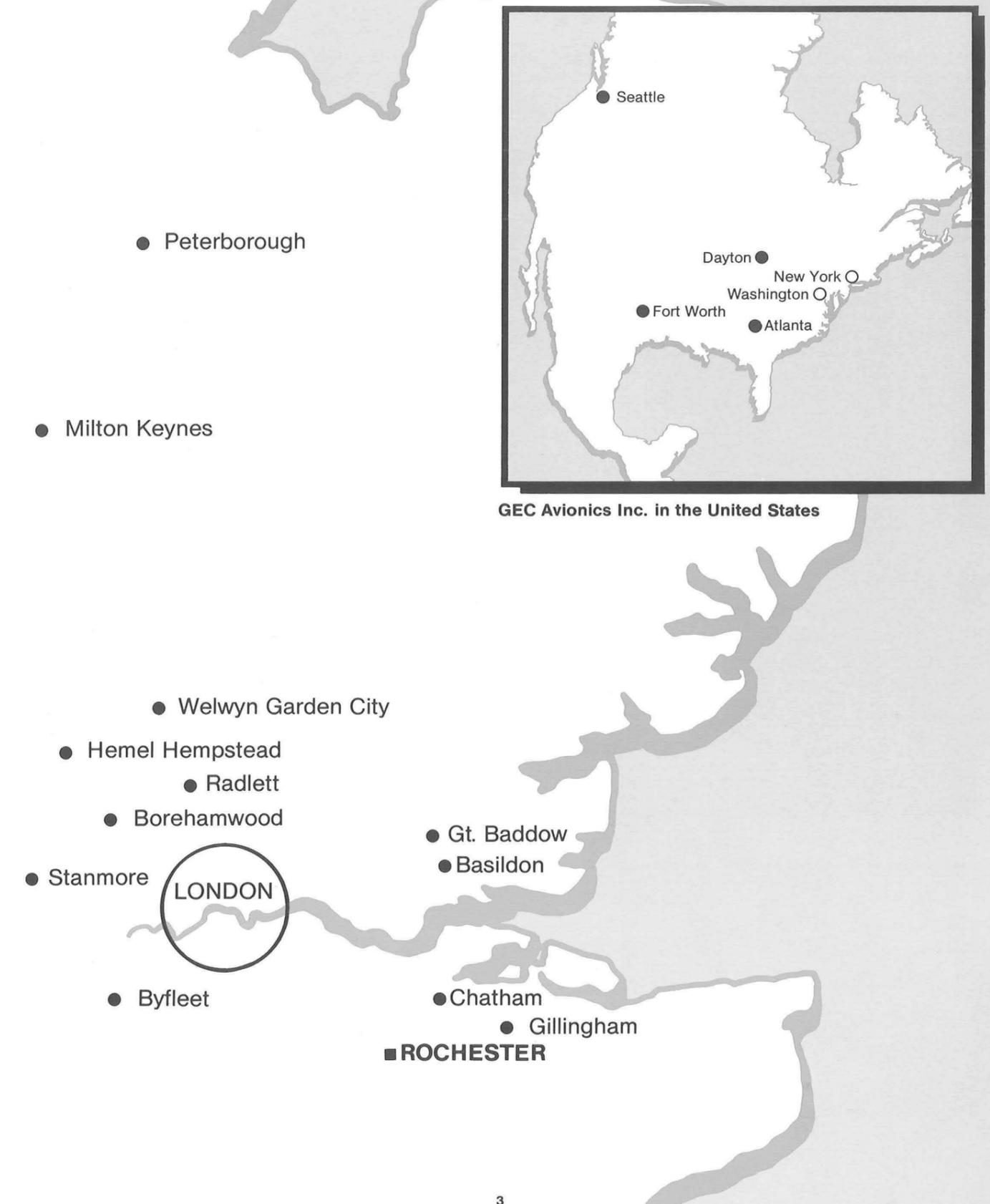
- Airradio Spares and Service Unit (for airborne radio), or
- Aviation Service and Repair Division (for avionics, other than  
radio or radar), or
- The Division which supplies the product concerned, or
- The Information Officer at Head Office.

The Divisions are listed on pages 8 and 9

# Part 1 Organisation, Locations and Facilities



# Part 2 Locations and Facilities



## A worldwide operation...

**GEC Avionics, part of the United Kingdom's biggest electrical and electronics company, GEC, accounts for 13% of its overseas business. GEC Avionics is also Europe's biggest producer of aviation electronics of all kinds, ground support equipment for the world's civil and military aircraft, and related high technology systems for use on land and at sea.**

We are organised to innovate across the whole of our large product range and are an established supplier in some of the world's most competitive markets. Our Divisional organisation enables us to match our service to the needs of individual customers, to meet the most demanding technical specifications and delivery requirements.

The products and services we supply are backed by our full facilities for research, design, development, manufacture, quality assurance and after-sales support.

### Research

Applied research is carried out by the Flight Automation Research Laboratory at Rochester, the Research Laboratories at Borehamwood and Great Baddow, and the Electro-Optical Future Systems Laboratory at Basildon.

These organisations also carry out research and development work for customers, some details of which are described in the Directory (Part 2, grey pages). Our own extensive research facilities are backed by those of GEC.

### Design

Every manufacturing Division has its own design teams specialising in meeting customers' requirements. Extensive use is made of computer aids.



## with full facilities...

### Development

Engineering development is a service provided by every Division to ensure that our customers' installations are completed on time and to specification. A large proportion of our workforce is professionally qualified – mainly in engineering. Our extensive facilities for software design and development are staffed by our own highly-qualified Programmers and our specially-trained Software Engineers.

### Manufacture

Every Division's production organisation is backed by Central Machine Shop services including the latest kinds of automated machinery and assembly techniques.

### Support

Aviation products are supported by the Aviation Service and Repair Division and the Airradio Spares and Service Unit. We offer the full range of product support, including manuals, training, warranty administration, reliability guarantees, spares supply and repairs, including exchange schemes, and logistic support 'packages' to individual customer requirements. For support details concerning a specific product, please contact the relevant support or manufacturing Division.

### Project Management

We have wide experience in managing systems projects right through from specification to commissioning, in all fields of our business, both as 'design and build' and as 'turnkey' projects. We apply these skills to integrated systems, mission avionics, and weapon aiming and control systems, for applications which include aircraft retrofit.

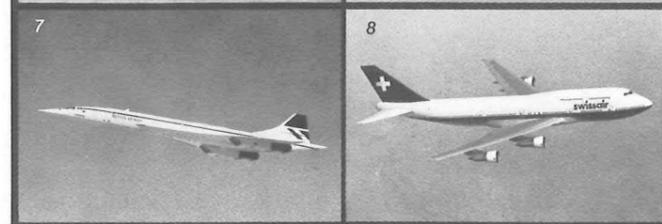
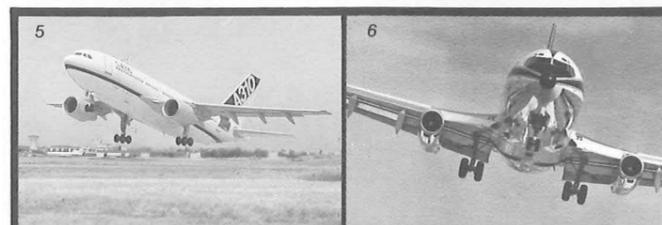
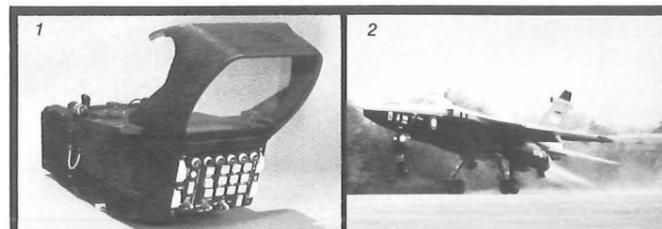


For further details, please contact an appropriate Division or ask for the Company Information Executive at Head Office.

## Military Systems

Systems we supply include radio navigation and communications, flight and engine control, powerplant test, navigation and weapon aiming, cockpit television, acoustic processing and display, head-up display, fuel measurement, radar, air data and mission systems in general for every kind of military aircraft. A few examples are illustrated.

- 1 We are the world's foremost producer of cockpit displays and head-up display/weapon aiming systems. This latest is the holographic HUD for the US Air Force LANTIRN programme.
- 2 The Jaguar 'fly-by-wire' system has demonstrated the benefits of full computer control for advanced combat aircraft. We are also producing advanced 'fly-by-light' systems.
- 3 The AQS-901 Acoustics Processing System is installed on anti-submarine aircraft of the Royal Air Force and the Royal Australian Air Force. The complementary lightweight AQS-902 system is in service with the Royal Navy 'Sea King' fleet and also with other forces. The next generation AQS-903 processing system is already under development.
- 4 The Phoenix system provides real-time battlefield surveillance data from an unmanned aircraft fitted with a thermal imaging system providing twenty-four hour, all weather coverage. The system, which includes launcher, data link and ground control station, is being provided for the British Army.
- 5 Our 'intelligent' electronic controls for the wing slats and flaps of the A310, A300-600 and A320 European Airbus are the first of their kind in airline service.
- 6 Boeing airliners all over the world fly our ADF, Doppler navigation, communications and automatic throttle control systems. The Boeing 737 is fitted with our new Doppler Velocity Sensor.
- 7 Our automatic flight control system for Concorde, produced with SFENA, is still the most operationally-advanced in airline service, including Mach 2 cruise and automatic blind landing.
- 8 The Boeing 747 is equipped with our full flight regime automatic throttle control system.



## Civil Systems

We have been continuously associated with airborne radio systems and instrumentation since the earliest days of air transport. Today we supply the world's airlines with automatic flight control, radio navigation and communications, energy management, electronic displays, ground proximity warning systems and automatic test equipment.



## Inertial Measurement

- 2 Our inertial measurement units include gimballed platforms, such as the NCS-1 attitude and heading reference unit for ships and boats and a whole range of 'strapdown' IMU (illustrated in production). The picture shows the micro-processor based units for the Spearfish torpedo and the MAVHRS vehicle heading reference, as well as production units for the Sting Ray torpedo.

## Security and Surveillance

- 3 We develop and supply advanced military sensors, such as, battlefield surveillance radars and remote ground sensor systems. We also supply intruder alarm, perimeter protection and overall security supervisory systems for civil and military applications. A spin-off from our radar technology is a product for detecting the level of material in storage bunkers and silos. This is a microwave radar (illustrated) which can operate over greater depths and dustier conditions than conventional systems.

## Radiation Devices

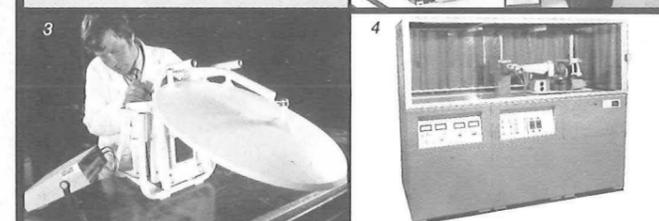
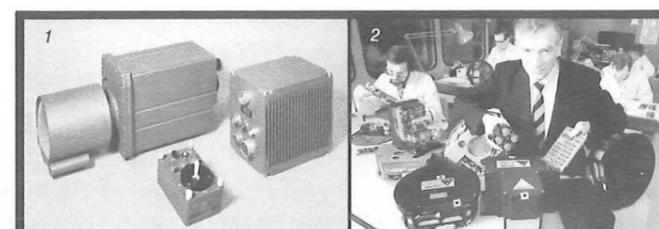
- 4 We produce systems and components for X-ray diffraction, gas lasers and neutron generators. Our high power rotating anode X-ray generator with Lang Topography camera is illustrated.

## Automatic Testing

- 5 Our extensive range of Automatic Test Equipment is based on our 25 years' experience in designing and manufacturing automatic test systems. Illustrated is an example of the ORION range of ATE, configured for functional digital and in-circuit testing.

## Offshore Oil Production

- 6 We supply electro-hydraulic systems for subsea wellhead control, telemetry, platform electronics and remote viewing systems to the offshore oil and gas industry. The illustration shows control and monitoring electronics for the BP Magnus field, including 'fail-safe' control pods and quick-release inductive couplers for electrical power and signal connections.



## Electro-Optical Systems

- 1 Daylight and low light television systems, cockpit television, and surveillance systems, including helicopter television and data links, thermal imaging systems for day/night viewing, advanced picture processing systems and stereoscopic television, are examples of our large range of electro-optical systems. The illustration is of a Thermal Imager built from Class II Thermal Imaging Common Modules (TICM II), supplied to the armed forces of the United Kingdom and other nations.



# Index to Trading Divisions

Division	Code	Location	Tel No.	Telex No.	Facsimile No.	Personal Contact
<b>ROCHESTER ESTABLISHMENT</b>		<b>Airport Works, Rochester, Kent, ME1 2XX</b>	<b>(0634) 44400</b>	<b>96333</b>		
Airborne Display	01	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96304	814703	Sales Manager D.J.Sowler Extn 444
Automatic Test Equipment	02	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96246	827332	Sales Manager G.U.Rands Extn 386
Aviation Service and Repair	03	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96211	827332	Sales Manager W.H.Bland Extn 60
Central Quality Department (R)	04	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96333	827332	Divisional Manager K.W.Boardman Extn 5
Combat Aircraft Controls	05	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	965450	827362	Marketing Manager B.Read Extn 122
Flight Automation Research Laboratory	06	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44433	965884	827332	Divisional Manager R.P.G.Collinson Extn 39
Flight Controls	07	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	965450	827332	Marketing Manager T.G.Hamill Extn 350
Guidance Systems	08	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96333	827332	Marketing Manager D.Halliwell Extn 539
Instrument Systems	09	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96333	401748	Marketing Executive G.F.Walker Extn 343
Maritime Aircraft Systems	10	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96333	827332	Marketing Executive P.Duckworth Extn 263
Offshore Projects Group	11	2 High Street, <b>Nailsea</b> , Bristol, BS19 1BS	(0272) 856511	444791	841467	Divisional Manager C.J.Frost Extn 200
Power Conversion Systems Division	12	2 High Street, <b>Nailsea</b> , Bristol, BS19 1BS	(0272) 856511	444791	841467	Marketing Executive P.J.Cooper Extn 202
Powerplant Systems Division	13	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44433	965884	813652 GEC PSD	Marketing Manager J.A.Hill Extn 63
Recording Systems Division	14	2 High Street, <b>Nailsea</b> , Bristol, BS19 1BS	(0272) 856511	444791	841467	Commercial Manager C.S.Berrisford Extn 273
<b>ASSOCIATED OPERATIONS</b>						
GEC Avionics Inc.	21	2975 Northwoods Parkway, P.O. Box 81999, <b>Atlanta</b> , GA 30366	(404) 448 1947	708447	841467	(Please see details at right)
GEC Avionics Projects Ltd	25	Airport Works, <b>Rochester</b> , Kent, ME1 2XX	(0634) 44400	96333	827332	GAv Commercial Director C.C.F. Naylor Extn 278
GEC Avionics Research Laboratory	26	West Hanningfield Road, <b>Great Baddow</b> , Chelmsford, CM2 8HW	(0245) 73331	995016	75244	Manager D.W.Byatt Extn 3001
<b>BOREHAMWOOD ESTABLISHMENT</b>		<b>Elstree Way, Borehamwood, Herts.</b>	<b>(01) 953 2030</b>	<b>22777</b>		
Airborne Radar Systems	30	Monks Way, Linford Wood, <b>Milton Keynes</b> , Buckinghamshire, MK14 6LA	(0908) 315117	825329	317137	Marketing Manager R.E.Green Extn 3237
Airborne Software	31	Elstree Way, <b>Borehamwood</b> , Hertfordshire WD6 1RX	(01) 953 2030	22777	(01) 207 5417	Sales Manager A.P.Usher Extn 6787
Airborne Warning Systems	32	Eaton Road, <b>Hemel Hempstead</b> , Hertfordshire, HP2 7EA	(0442) 42141	825230	(0442) 67550	Marketing Manager J.K.Palmer (at Radlett) Tel:(092) 76 4757 Extn 352
Applied Physics	33	Elstree Way, <b>Borehamwood</b> , Hertfordshire, WD6 1RX	(01) 953 2030	22777	(01) 207 5417	Sales Manager J.C.Holborn Extn 6159
Central Quality Department	34	Elstree Way, <b>Borehamwood</b> , Hertfordshire WD6 1RX	(01) 953 2030	22777	(01) 207 5417	Divisional Manager C.W.Haslam Extn 6601
Lightweight Structures	35	Old Parkbury Lane, Colney Street, <b>St. Albans</b> , Hertfordshire, AL2 2EA	(092 76) 4757	922989	(092 76) 3558	Divisional Manager P.Miles Extn 404
Research Laboratory (Borehamwood)	36	Elstree Way, <b>Borehamwood</b> , Hertfordshire, WD6 1RX	(01) 953 2030	22777	(01) 207 5417	Divisional Manager J.Welsh Extn 6167
Special Projects	37	26-28 Hydeway, <b>Welwyn Garden City</b> , Hertfordshire, AL7 3ED	(070 73) 28511	269404	C/O (01) 207 5417	Sales Manager D.Brazier Extn 4
Thick Film Department	38	Old Parkbury Lane, Colney Street, <b>St. Albans</b> , Hertfordshire, AL2 2EA	(092 76) 4757	922989	(092 76) 3558	Manager T.W.Troll Extn 452
<b>BASILDON ESTABLISHMENT</b>		<b>Christopher Martin Road, Basildon, Essex.</b>	<b>(0268) 22822</b>	<b>99225/99451</b>		
Airadio Products	50	Christopher Martin Road, <b>Basildon</b> , Essex, SS14 3EL	(0268) 22822	99225	(0268) 27269/27322	Marketing Manager W.H.Mitchell Extn 3163
Airadio Spares and Service Unit	51	Dalston Gardens, <b>Stanmore</b> , Middlesex, HA7 1BZ	(01) 204 3322	27381	(0268) 27269/ 27322	Divisional Manager H.J.Daines Extn 1
Airadio Systems	52	Christopher Martin Road, <b>Basildon</b> , Essex, SS14 3EL	(0268) 22822	99225	(0268) 27269/ 27322	Marketing Manager W.J.Roberts Extn 3350
Electro-Optical Advanced Systems	53	Christopher Martin Road, <b>Basildon</b> , Essex, SS14 3EL	(0268) 22822	995313	(0268) 27269/27322	Marketing Manager T.Peterson Extn 3819
Electro-Optical Products	54	Christopher Martin Road, <b>Basildon</b> , Essex, SS14 3EL	(0268) 22822	99451	(0268) 27269/27322	Divisional Manager D.R.Ormerod Extn 3012
Electro-Optical Surveillance	55	Christopher Martin Road, <b>Basildon</b> , Essex, SS14 3EL	(0268) 22822	99451	(0268) 27269/27322	Sales Manager R.Durrant Extn 3616
Future Systems Laboratory	56	Christopher Martin Road, <b>Basildon</b> , Essex, SS14 3EL	(0268) 22822	995313	(0268) 27269/27322	Sales Manager I.Hunter Extn 3758
Tactical Information Division	57	Christopher Martin Road, <b>Basildon</b> , Essex, SS14 3EL	(0268) 22822	99225	(0268) 27269/27322	Manager A.G.Barrett Extn 3022

## GEC Avionics Limited-(Outside UK) Establishments and Area Managers' Addresses

To reach any of our Divisions from outside the UK, it may be convenient to contact an Associate Company or your nearest Area Manager:

### Associated Operation: USA

#### Atlanta

H.D.F.Eagles, President  
**GEC Avionics Inc.**, 2975 Northwoods Parkway,  
P.O. Box 81999  
Atlanta, GA 30366  
Tel. 404 448 1947 Telex 708447

#### Dayton

W.Broyles  
**GEC Avionics Inc.**, Suite 1375 Kettering Tower,  
Dayton, Ohio 45423  
Tel. 513 224 1110 Telex 28 8350

#### Fort Worth

E.Harwood  
**GEC Avionics Inc.**, Suite 128  
6410 Southwest Blvd,  
Ft. Worth, TX 76109  
Tel. 817 763 0281

#### Seattle

P.Clarke  
**GEC Avionics Inc.**, Suite 350 Lakeridge 1  
14827 N.E. 40th Street,  
Redmond, Washington 98052  
Tel. 206 883 2525 Telex 152147

### Australia ( covering Australasia )

Air Commodore L H Williamson, RAAF, Retd.,  
2 Giffnock Avenue, North Ryde, New South Wales 2113.  
Tel. 887 6222 (Office)  
997 6937 (Home) Telex AA20511

### Brazil ( covering South America )

Frank Cassidy  
Caixa Postal 5110, Rio de Janeiro, CEP 22072.  
Tel. 247 1956 Telex 2122406

### Cyprus ( covering the Middle East )

Brian Ashley  
Flat 9, Kyma Court 2, Nicosia Road, Limassol.  
Tel. Limassol (051) 21277 Telex 5025 CHRIMAR

### Singapore ( covering South East Asia )

Graham Dare  
GEC of Singapore Pvt. Ltd., PO Box 4046, Magnet House,  
11 KM Bukit Timah Road, Singapore 2158.  
Tel. 4663011 (Office)  
2505723 (Home) Telex RS21508

## Part 2 Directory of Divisions and Departments

**GEC Avionics consists of over 30 separate and autonomous divisions and other trading organisations, all of which have the strength and support of the whole organisation behind them. Each division deals with every aspect of the design, production, marketing and support for its particular equipment. The divisional concept ensures flexibility and an ability to react quickly to customers' requirements.**

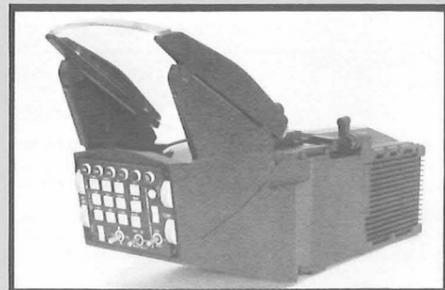
Each division and other trading organisation of our company is listed here alphabetically by Establishment,

and has a unique number code (see index) by which it can be identified in the Products/Services Guide section (Part 3). The number codes (01-14 for Rochester Establishment, 21-26 for Associated Operations, 30-38 for Borehamwood Establishment and 50-57 for Basildon Establishment), relate to this publication only and have no other significance.

We suggest that the first contact with a Division should be made to the Divisional Manager or Personal Contact at the appropriate address.

### Rochester Establishment

Airport Works,  
Rochester, Kent, ME1 2XX, England.  
Telephone: Medway (0634) 44400  
Telex: 96333 MEAROC G.



Pilots display unit for F-16 C/D

#### 01 Airborne Display Division

Airborne Display Division develops and produces all types of display systems for military aircraft and is the world's leading supplier of Head-Up Display (HUD) systems.

##### Activities

HUD systems are developed for both new aircraft and retrofit applications and normally consist of a pilot's display unit and an electronic unit (computer) which carries out interface, symbol generation and weapon aiming (air-to-air and air-to-ground). For specific projects, the electronic unit can also carry out full navigation computations. The latest systems are dual-mode, where the display can be either normal flight/weapon aiming symbology or a raster (television type)

display of a forward looking sensor (such as Forward Looking Infra Red), with the normal symbology superimposed. Many types of head down displays are also produced, the latest using a touch interactive system to ease the pilot/system interface. To complement the night vision HUDs, two types of night vision goggles are produced: 'Cats Eyes' specifically for fixed wing, and 'Night Owl' for both fixed wing and helicopter.

##### Products

Head up Displays for Fighter/Transport Aircraft, Head down Displays for Fighter/Transport Aircraft, Multisurface Display Processors, Weapon Aiming Computers, Displays, Helmet Mounted Displays Night Vision Goggles

#### 02 Automatic Test Equipment Division

Largest centre of ATE expertise in Europe.

##### Activities

Automatic test equipment for functional testing of digital and analogue equipment for factory, depot and field use, including mobile

applications. Systems available include the ORION series of ATE which has a modular configuration capability extending from simple in-circuit testing of components up to combined functional analogue/digital in-circuit systems.

Turnkey ATE projects with technology ranging from LF through RF to MW. MIL-STD-1553B test tools include a



ORION type 4460

Test Unit for Bus Controllers and Remote Terminals and an Integration Facility, incorporating a mini computer and disc system for System commissioning.

A full range of customer support services is provided.

##### Products

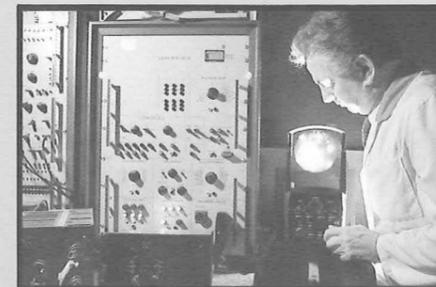
ORION 2210 - In-circuit  
ORION 4420 - Functional Digital  
ORION 4440 - Functional Analogue

ORION 4460 - Functional Digital/Analogue (Illustrated)

ORION 6620 - Functional Digital and In-circuit

ORION 6640 - Functional Analogue and In-circuit

ORION 6660 - Functional Digital/Analogue and 1553B Test Unit In-circuit 1553B Integration Facility



Equipment Under Test in Repair Shop.

#### 03 Aviation Service and Repair Division

Aviation Service and Repair Division offers total integrated support for GEC Avionics products.

##### Activities

Services embrace equipment repair, overhaul and modification, warranty administration, logistics support engineering, NATO codification, spares recommendations, stocking,

supply and AOG service, on-call and on-site field service, comprehensive equipment and maintenance training, test equipment design and supply, test equipment calibration, technical publications, development operation and transfer to customer of depot level repair facilities including provision and update of ATE software. Special-to-customer support options include cost-per-flying-hour, fixed-cost-fixed-turnaround and direct exchange schemes.



Setting up a vehicle for EMC testing to demonstrate its ability to withstand high RF fields

#### 04 Central Quality Department (Rochester)

Central Quality Department offers product assessment consultancy and testing services covering a wide range of National and International Standards.

##### Activities

Comprehensive environmental and

mechanical test facilities. Electromagnetic compatibility testing including mobile facilities and advisory services on suppression techniques for use on customers' sites, off-shore oil platforms and similar locations. Component testing and diagnosis. Calibration of electrical and mechanical items and environmental facilities.



Tornado, analogue FBW and Jaguar ACT, digital FBW.

#### 05 Combat Aircraft Controls Division

33 years' experience in flight control . . . 16 of them in digital flight control

##### Activities/Products

A wide range of automatic flight control systems, subsystems for combat aircraft and guidance and control systems for missiles. Products

include integrated AFCS to customers' requirements, autopilots, command and stability augmentation systems, fly-by-wire systems, fly-by-light systems, autothrottle controls, terrain following systems for aircraft and missiles, and specialised systems, such as are required for spin and incidence limiting. Also included are AFCS and FCC updates and aircraft modernization programme packages.

## Part 2 Directory of Divisions and Departments



The extensive laboratory includes specialised optical facilities.

### 06 Flight Automation Research Laboratory

Flight Automation Research Laboratory establishes new ideas and technology applicable to flight automation.

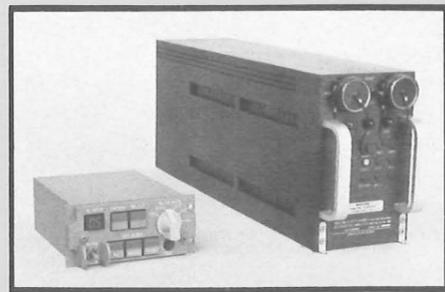
#### Activities

Research and applied engineering to assist GEC Avionics product divisions R & D for Government and Industrial customers and collaborative programmes with other Establishments .

#### Products

Since its formation in 1961, the Laboratory has built up a leading role in an extensive range of areas which include:

Advanced digital processing  
CAE  
Control Systems  
Data transmission  
Direct Voice Input  
Displays  
Environmental design  
IKBS  
Man-machine interface  
Modular packaging  
Navigation  
Optical design  
Power supplies  
Processor architectures (incl. Mil Std 1750)  
Sensors (electro-optic)  
Software engineering  
Subsea Viewing Systems  
Systems engineering/studies  
Unmanned aircraft  
VLSI



An FCD Autothrottle System used by 43 Airlines

### 07 Flight Controls Division

Flight Controls Division provides systems for a wide range of aircraft types, both civil and military, from the smallest unmanned aircraft to the largest commercial passenger aircraft.

#### Activities/Products

Automatic flight control systems and sub-systems for civil and military transport aircraft, helicopters and unmanned aircraft, including drones,

targets and surveillance aircraft. The Division is prime contractor for the British Army PHEONIX rpv and surveillance system. Products also include integrated AFCS to customer requirements, autopilots, automatic landing and autothrottle systems; secondary flying control systems for slats and flaps; complete unmanned aircraft systems including ground handling and control equipment for battlefield surveillance, etc: hydraulic actuators and systems



Prototype flight trials digital map demonstrator.

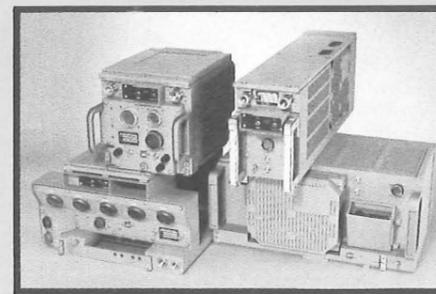
### 08 Guidance Systems Division

Guidance Systems Division is highly competent in the development of digital colour map readers.

#### Activities/Products

Development and production of aircraft, missile, vehicle and ship navigation attitude and heading reference and inertial systems, both gimballed and strapdown; related systems including digital computers, digital colour map units and terrain referenced systems. Total systems integration capabilities.

Sub-miniature precision rate and rate integrating gyroscopes and accelerometers including associated electronics. Multi-axis gyro and accelerometer units for a.c. or d.c. inputs and outputs. Strapdown attitude sensing units for underwater weapons and guided weapon applications.



Standard Central Data Computers (SCADC)

### 09 Instrument Systems Division

Instrument Systems with worldwide Applications

#### Activities

Advanced central air data computer and air data sensors for military and civil aircraft. Omni-directional air data systems for helicopters. Stores management systems for combat aircraft. Performance management systems for helicopters. Microprocessor based Ejection seat sequencers.

#### Principal Products

Standard Central Air Data Computer (SCADC): contracted to the USN/USAF to produce a range of Standard Air Data Computers that will retrofit over 30 aircraft variants.

Stores Management Systems: in use on the Tornado IDS with over 200 systems delivered to date.

Helicopter Air Data Systems: A 3-axis Air Data System for Helicopters. More than 600 systems delivered for the US Army AH-1S Cobra.



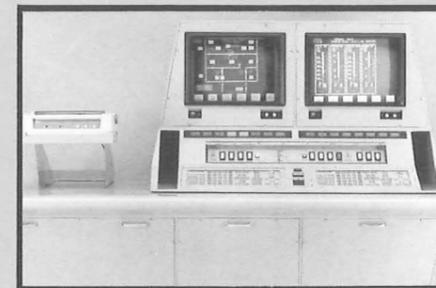
ASW Mission System for Fokker Enforcer.

### 10 Maritime Aircraft Systems Division

#### Activities/Products

Maritime Aircraft Systems Division is the world's leading supplier of modern airborne acoustic processing systems for anti-submarine (ASW) surveillance aircraft and helicopters. MASD also offers the TATTIX Tactical Processing and Display system and total avionic

system integration to exploit the increasing quantity of data from modern sensors and navigation systems. The Fokker Enforcer Maritime Surveillance aircraft installation shown is typical of MASD's avionics integration achievements.



A typical subsea control desk supplied to Chevron.

### 11 Offshore Projects Group

The Offshore Projects Group supplies fail-safe control and instrumentation systems to the offshore oil industry.

#### Activities/Products

Fail-safe electronics for the control of subsea wells and manifolds, well-to-platform telemetry, command and monitoring data links, quick-release inductive couplers for

power and signal connections, control and monitoring consoles for production platforms. Control and instrumentation systems for remotely operated vehicles.

### 12 Power Conversion Systems Division

Power Conversion Systems Division is a leading supplier of custom designed high reliability military power conversion units.

#### Activities

The division undertakes the Design, Development and Manufacture of Power Conversion Units for use in applications where high reliability performance in hostile environmental conditions is required.

#### Principal Products

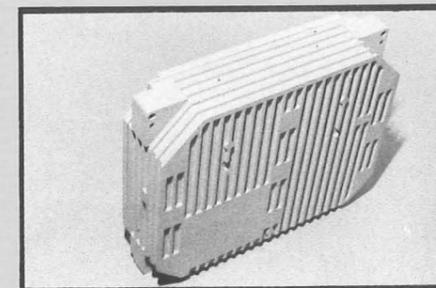
Custom Designed power conversion units:-

DC to DC Low Voltage  
AC to DC Low Voltage  
High Voltage Power Supplies

In the power range  $\leq 15$  watts to  $\geq 2$  kilo watts

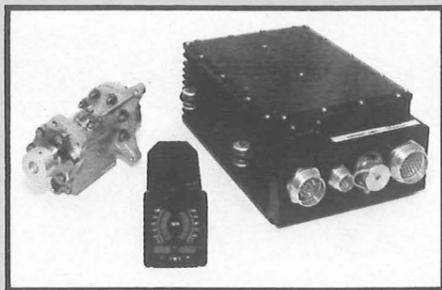
#### Applications

High reliability, hostile environment electronic/avionics systems.



Power Supply for Standard Central Air Data Computers (SCADC).

## Part 2 Directory of Divisions and Departments



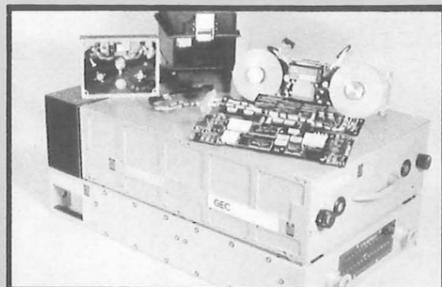
A Flowmeter, Liquid Crystal Display and an Electronic Supervisory Control Computer.

### 13 Powerplant Systems Division

Powerplant Systems Division is responsible for all aspects of aircraft engine control, monitoring and display. The division's products range from engine control units and fuel management systems to Liquid Crystal Display instruments and engine test facility instrumentation.

#### Activities/Products

Fuel control electronics for gas turbines, digital engine control, engine supervisory electronics, aircraft fuel flow and fuel quantity measurement systems, microprocessor-based fuel flowmeters, automatic test and monitoring systems for the cost-effective ground testing of powerplants.



A selection of our high integrity magnetic tape recorders.

### 14 Recording Systems Division

Shown here are some of our magnetic tape recorders which meet the challenge of maintaining high integrity data recording under the severity of the military and similar hostile environments.

#### Activities/Products

Design and manufacture of analogue and high density digital magnetic tape recorders, solid state recorders, the associated pre-recording data acquisition and signal processing control, for use in severe military and

industrial environments in air, land, sea and sub-sea application. The related replay, analysis, support and test equipment to provide a complete data recording and analysis capability. Advanced Integrated Flight Data recorders using real time processing for data compression to reduce storage capacity, facilitating lowest mass and volume, providing high integrity incident and maintenance recorders with crash protection and survivability. Teleprinter terminals for use in hostile environments.

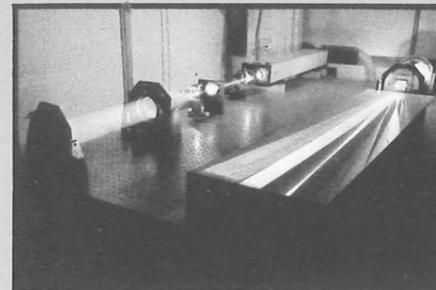
### 21 GEC Avionics Inc., Atlanta

GEC Avionics Inc. is engaged in the design, manufacture and integrated logistic support of the avionic and industrial electronic equipment which the company supplies to the United States. Established in 1962, GEC Avionics Inc. employs 300 people at its new main plant in Atlanta, Georgia, and branch offices in Fort Worth,

Seattle and Dayton. Company-funded research and development includes work in the area of carbon dioxide TEA lasers and laser rangefinders in association with Applied Physics Division at Borehamwood.

### 25 GEC Avionics Projects Limited

This company coordinates major projects which involve the supply of a range of GEC Avionics products from various GEC Avionics divisions.



Diffraction patterns produced from computer generated holographic cylindrical lens.

### 26 GEC Avionics Research Laboratory, Great Baddow

The Avionics Research Laboratory undertakes research and development work of specific interest to the product divisions throughout the GEC Avionics Company.

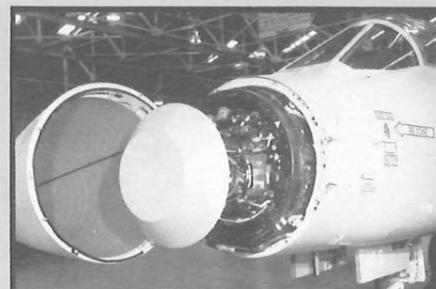
#### Activities

The laboratory is active on advanced radar techniques, holographic optical elements, signal processing, I.R. systems and control techniques. Its current projects include

computer generated holographic optics for display and optical scanning and the application of holography to I.R. systems. The Laboratory specialises in passive and covert I.R. and the radar targetting techniques include 3-5mm thermal cueing and synthetic aperture radar. The Research Laboratory supports avionics-related research at universities and the organisation is arranged to ensure maximum utilisation of resources at GEC Research Centres at Hirst and Gt. Baddow.

### Borehamwood Establishment

Main office: Elstree Way, Borehamwood, Herts, WD6 1RX, England  
Telephone: 01-953-2030  
Telex: 22777



The Foxhunter airborne interception radar (AI24) fitted in Royal Air Force Tornado F2 aircraft.

### 30 Airborne Radar Systems Division

Airborne Radar Systems Division undertakes the development, production and support of airborne interception radar systems, lightweight combat radars and associated automatic test equipment.

Two ARSD radar systems are currently in production - Foxhunter is Europe's most advanced airborne interception radar, while Skyranger is a low-cost, ranging radar for lightweight fighters.

#### Products

Airborne Interception Radars for air defence fighter aircraft. Ranging radars for lightweight fighter aircraft. Multi-mode radars for future combat aircraft.

Test Equipment for In-service Support of Radar Systems

ARSD has a unit in Basildon which makes LRUs on behalf of ARSD Borehamwood.



Software engineering is making an increasing contribution to mission systems of every kind.

### 31 Airborne Software Division

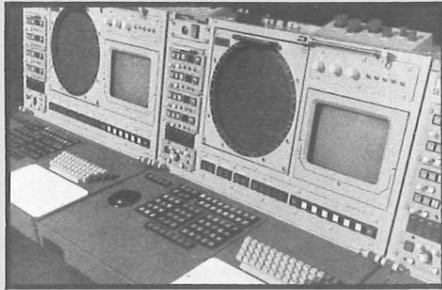
Airborne Software Division is a systems house specialising in real time software and support for military and commercial applications.

#### Activities

Studies, development, consultancy and services in the following fields: real time computer software, real time computer based military systems,

trials analysis and simulation software, requirements engineering, management software for air defence systems and related data handling systems. General training in software development, control and support, customer specific training.

## Part 2 Directory of Divisions and Departments



Communications Consoles

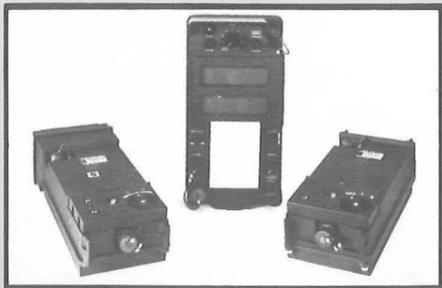
### 32 Airborne Warning Systems Division

Airborne Warning Systems Division makes airborne early warning radar systems and complete mission system avionics for AEW aircraft.

#### Activities/Products

System integration and project management. AEW radar systems design, development and production; test equipment and simulators.

Projects include the AEW Mission System for the RAF's Mk 3 AEW Nimrod and the APY 920 Mission System chosen for the proposed Lockheed C-130 AEW System.



HERMES Sensor, Monitor and Relay.

### 33 Applied Physics Division

The Physics Department specialises in the application of high vacuum and high voltage techniques to scientific instruments.

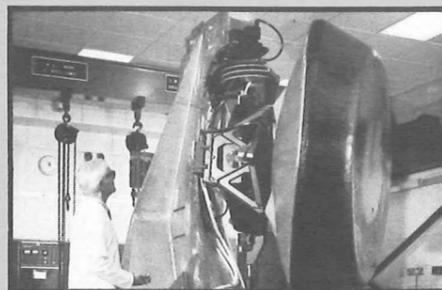
#### Activities

High intensity X-ray generators and instruments; X-ray diffraction and topography instruments; neutron generators and systems; carbon dioxide and HeNe lasers for military, scientific and industrial application.

Mobile Radar Department develops and produces selected security and surveillance systems for military and civil use.

#### Activities

Battlefield surveillance radars; battlefield remote ground sensors; precision angulation and mounting systems for battlefield optical equipment; radar level detectors for vertical storage bunkers, coal mines and silos; perimeter protection and site security systems based on infra-red, seismic and television techniques.



One of CQD's activities - Testing an AEW Radar Scanner on the 134 KN thrust vibration system.

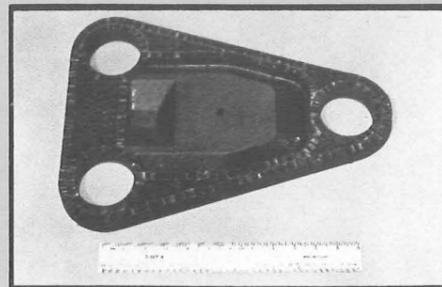
### 34 Central Quality Department (Borehamwood)

The Central Quality Department provides Quality support facilities for the entire Borehamwood establishment including a number of unique environmental testing facilities.

#### Activities

Quality assurance services to meet National and International Standards

including environmental engineering and extensive NATLAS accredited environmental testing facilities, active and passive component testing, component and material standardisation, calibration of electrical and physical measurement equipment, and the preparation of quality procedures, standards and codes of practice.



Components of a radar scanning aerial

### 35 Lightweight Structures Department

Lightweight Structures Department is the design and manufacturing centre for advanced composite materials technology in GEC Avionics.

#### Activities

The department designs, develops and produces high-performance precision lightweight composite

structures, in particular lightweight communications radar aeriels and radomes. Full technical support and testing service is offered.

### 36 Research Laboratory (Borehamwood)

This is the main Research Laboratory for the Radar, Laser and associated signal processing activities of the Company.

#### Activities

Research and development of microwave components, microwave

integrated circuits, aeriels and systems, radar techniques, radar and laser systems studies, scanners, thick and thin film hybrid microcircuits, laser anemometry and laser range finding, signal processing and VLSI.



Special Projects Division's engineering and production staff ensure that automatic test schedules provide the customer with equipment of proven high reliability.

### 37 Special Projects Division

Special Projects Division provides processors for Royal Navy towed array sonars.

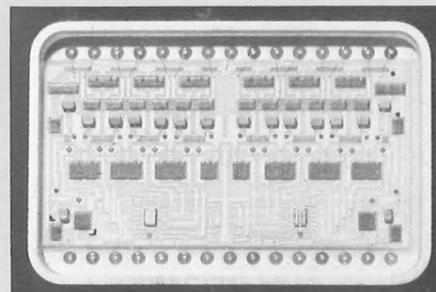
#### Activities

Advanced digital signal processing and display systems for ship and submarine sonar systems. Acoustic Analysis Equipments for postmission

evaluation; Sonar Simulator and Operator Trainers.

#### Products

Digital sonar signal processors. Sonar training equipment. Submarine sonar processing and display equipments. Shipborne sonar processing and display equipments. Adaptive digital filters.



High Level Input Hybrid Type 122. Used by ADD Rochester.

### 38 Thick Film Department

#### Activities

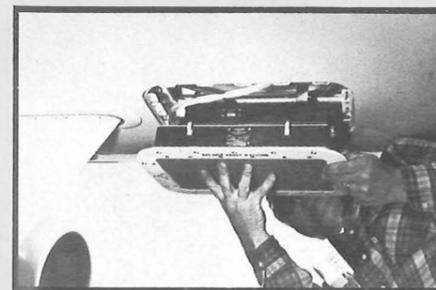
The Department is approved to DEF STAN O5-21 and to the Full Assessment Level of BS9450, for the design, manufacture and testing of a wide range of microelectronic products, for commercial and military applications. 100% Product screening procedures include temperature cycling, seal integrity and burn-in, and additional screening can be offered on request.

#### Products/Services

Active Filters  
Switched Filters  
Resistor/Capacitor Networks  
Amplifiers  
Linear Circuits  
Digital Circuits  
High Voltage Resistors  
Miniature Electronic Sub-Assemblies  
Custom Electronic Packaging  
Analogue Circuits,  
Chip Carrier Assemblies.

### Basildon Establishment

Main office: Christopher Martin Road, Basildon, Essex, SS14 3EL, England.  
Telephone: Basildon (0268) 22822  
Telex: 99225 (Airadio),  
99451 (Electro-optical)



AD 660 Doppler Velocity Sensor on B737 aircraft.

### 50 Airadio Products Division

Airadio Products Division produces airborne radio navigation and communications equipment for widespread use in civil and military aircraft of all kinds.

#### Activities/Products

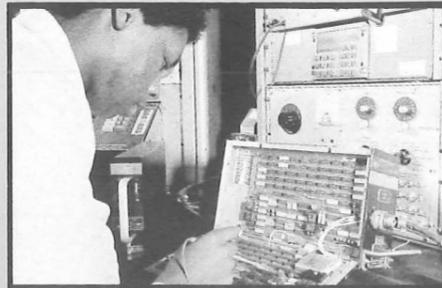
Systems to ARINC and MIL STD specifications include HF, VHF and

UHF communications for clear and secure voice and data. Automatic Direction Finders (ADF), Voice Operated Switch (VOS) and Global Positioning System (GPS). Communications control systems (intercomm) and communication management systems. SELCAL systems. Antenna couplers and tuning units. Voice conditioning systems. Navigation systems include

# Part 2 Directory of Divisions and Departments

Doppler, TACAN, VOR, ILS, Marker, DME, R-Nav and OMEGA VLF systems. Ground proximity warning systems (GPWS) for civil aircraft. Sonobuoy homing receivers. Tactical communications and homing systems.

Central suppression units. Doppler speed and motion sensors for surface transport systems. Muzzle velocity measurement equipment.



Repair and overhaul work station.

## 51 Airadio Spares and Service Unit

The Airadio Spares and Service Unit offers aircraft operators a complete radio/radar servicing facility.

### Activities

Repair and overhaul of all types of radio communication and navigation systems for general aviation and corporate jet operators, as well as

airline and military organisations throughout the world. The ASSU not only supports all the equipment manufactured by the Airadio Products Division of GEC Avionics but also offers a complete service for the equipment of a large number of other manufacturers, such as Collins, Gables, King, Bendix etc.



The EH101 Helicopter Communications Sub-System and rig.

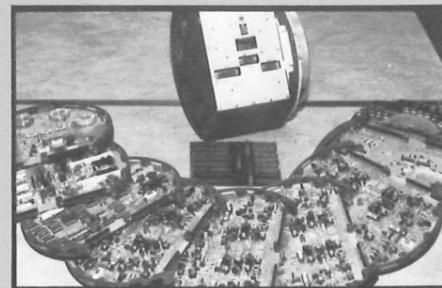
## 52 Airadio Systems Division

Airadio Systems Division is well established with a proven track record, in the design and manufacture of communications and navigation systems.

### Activities/Products

Definition, development and integration of complete radio

communications and radio navigation systems for air-to-air, air-to-surface and ground-to-air military and civil applications; encryption and decoding systems for secure communications on voice and data link; ECM-resistant systems; transportable ground-air communications stations; automatic and multi-function avionics management systems.



Signal Processing Electronics in Production

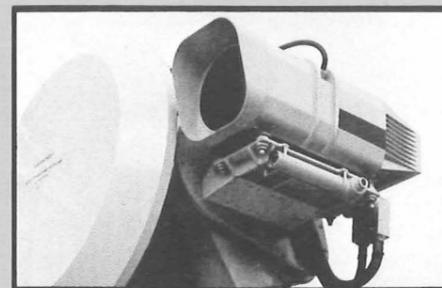
## 53 Electro-Optical Advanced Systems Division

Electro-optical Advanced Systems Division undertakes the Development and Production of advanced electro-optical systems for defence and industry.

### Activities/Products

Missile guidance, gathering and tracking systems. Electro-optical

seekers and advanced image processing systems. Thermal cueing and automatic target tracking signal processing systems for torpedoes and support services such as recovery frames and underwater targets. Robotic visual inspection systems for industry.



V3800 Thermal Imager mounted on tracking radar.

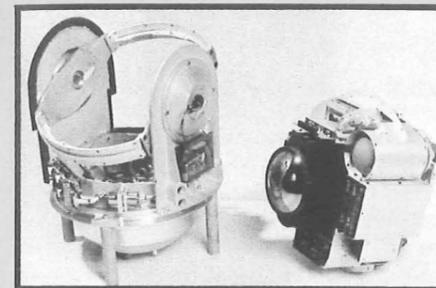
## 54 Electro-Optical Products Division

Producers of Naval Thermal Imaging Sensors and Automatic Tracking Systems.

### Activities/Products

Electro-Optical guidance systems for missiles; daylight and low light television and thermal imaging systems for weapon fire control;

tracking trials recording and analysis systems; gun boresight television. Fibre optic analogue and digital data transmission systems for vehicle remote control and for video distribution. Solid state imaging sensors; miniature CCD television cameras. Television surveillance systems for hazardous industrial environments. Specialised security surveillance systems, both static and mobile.



Stabilised platform and sensor payload

## 55 Electro-optical Surveillance Division

Electro-optical Surveillance Division is the leading designer and manufacturer of high quality thermal imagers and precision sensor sightline stabilisation systems.

### Activities

EOSD produces thermal imaging and low light television systems for military and civil use. The Division is the prime contractor to UK MOD for Class II Thermal Imaging Common Modules (TICM II) from which a wide variety of thermal imagers are being configured for night vision, weapon aiming and surveillance applications, on land, at sea and in the air. Many of the systems make use of the Division's expertise in steering and stabilisation, command and control, video displays and advanced signal processing. A typical civil system is Heli-Tele, a

helicopter-borne surveillance system which can transmit live imagery to fixed and mobile ground stations.

### Product List

Thermal Imagers - a wide range of military and civil uses.	
Sensor Stabilised Platform	- fixed wing and rotary wing applications - RPVs
Radio Links	- transmission of television and command data
Airborne Colour Displays	- Heli-Tele
Pilot Night Navigation Systems	- for fixed or rotary wing aircraft.
Advanced Signal Processing	- framestores - encryption



The Staring Array Camera.

## 56 Future Systems Laboratory

"Today's Research, Tomorrow's Reality:-"

The Future Systems Laboratory applies advanced techniques and technology to signal processing and sensors for future electro-optical design, development and feasibility studies.

### Activities

Design, development and feasibility studies for Electro-optical systems, including performance and effectiveness modelling, computer simulations, image processing, correlation trackers, pattern recognition, sensors and control systems.



The Terminal Acceptance Test Station for the Joint Tactical Information Distribution System. Part of the JTIDS test complex at T.I.D.

## 57 Tactical Information Division

The Tactical Information Division is currently concerned primarily with a Joint Tactical Information Distribution System (JTIDS) - a breakthrough in radio communications. Generally, the division designs secure jam-resistant, non-modal data and voice communications. These may be for military or for any other application

where reliable, fast, secure interference-free data/voice communications are essential. The division works closely with other divisions in the Airadio Group at Basildon.

# Part 3 Product Service Guide

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