MARCONI-ELLIOTT
AVIONICS

Data Management for Maritime Aircraft

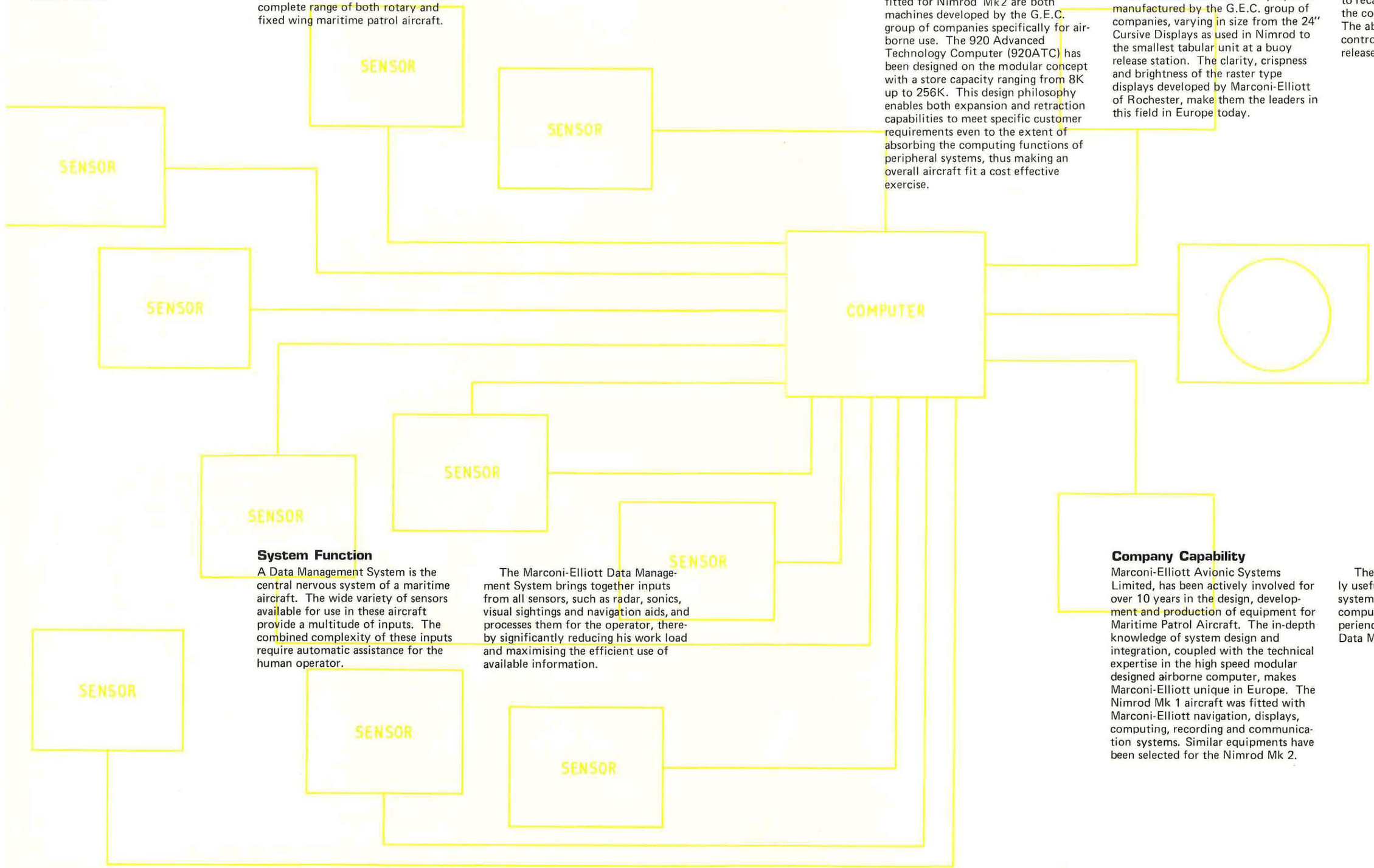
Introduction

The rapid growth of sea-power in many of the world's leading nations over the last few years and, in particular the increase in the number of deeper and quieter underwater vessels, has highlighted the need for advanced Maritime Avionic Systems.

The function of Maritime Patrol Aircraft embraces the surveillance, shadowing and attack of hostile surface and underwater craft. In addition, they provide a major contribution to search and rescue operations over the world's oceans.

Such a comprehensive role calls for high speed processing of data from many sensors and presenting this data to the operator in a simple rational manner, so that he is able to make operational decisions with the minimum of work load based on up to the second data.

This management function is performed in the Nimrod Mk2 by the Marconi-Elliott Central Tactical System. This system, designed on the modular concept, is capable of performing similar functions for the complete range of both rotary and fixed wing maritime patrol aircraft.



System Function

A Data Management System is the central nervous system of a maritime aircraft. The wide variety of sensors available for use in these aircraft provide a multitude of inputs. The combined complexity of these inputs require automatic assistance for the human operator.

The Marconi-Elliott Data Management System brings together inputs from all sensors, such as radar, sonics, visual sightings and navigation aids, and processes them for the operator, thereby significantly reducing his work load and maximising the efficient use of available information.

System Description

Units comprising a Data Management System can be broadly grouped under four functional headings:

- COMPUTER/PROCESSOR
- INTERFACE UNIT
- DISPLAYS
- OPERATOR INVOLVEMENT

Marconi-Elliott Avionic Systems Limited of Rochester have in-depth experience in all of these fields.

The computer currently used in the Nimrod, and the next generation being fitted for Nimrod Mk2 are both machines developed by the G.E.C. group of companies specifically for airborne use. The 920 Advanced Technology Computer (920ATC) has been designed on the modular concept with a store capacity ranging from 8K up to 256K. This design philosophy enables both expansion and retraction capabilities to meet specific customer requirements even to the extent of absorbing the computing functions of peripheral systems, thus making an overall aircraft fit a cost effective exercise.

The Interface Unit, again designed on the modular concept is capable of both receiving and transmitting all standard digital and analogue signals. Design philosophy has been to incorporate BITE circuitry so that computer controlled 1st line test facilities are able to check out the computer and its interface unit as a computing sub-assembly, thus forming the corner stone for computer controlled 1st line checks of a complete aircraft fit.

Both raster and cursive displays are manufactured by the G.E.C. group of companies, varying in size from the 24" Cursive Displays as used in Nimrod to the smallest tabular unit at a buoy release station. The clarity, crispness and brightness of the raster type displays developed by Marconi-Elliott of Rochester, make them the leaders in this field in Europe today.

The experience acquired in designing both digital maritime and tactical support aircraft's Weapon Aiming and Navigation Systems has high-lighted the need for active operator involvement at all levels. Marconi-Elliott systems design both ergonomically and electrically reflect this experience in the Operator/Computer interface. Computer controlled displays give 'uncluttered viewing' at all phases of operation from the routine navigation situation to the final attack phases. Overriding facilities enable the operator to recall and display any data stored by the computer throughout the patrol. The ability to abort is under operator control up to the moment of weapon release.

Company Capability

Marconi-Elliott Avionic Systems Limited, has been actively involved for over 10 years in the design, development and production of equipment for Maritime Patrol Aircraft. The in-depth knowledge of system design and integration, coupled with the technical expertise in the high speed modular designed airborne computer, makes Marconi-Elliott unique in Europe. The Nimrod Mk 1 aircraft was fitted with Marconi-Elliott navigation, displays, computing, recording and communication systems. Similar equipments have been selected for the Nimrod Mk 2.

The Company has gained particularly useful experience in the area of total system integration and control computer programming. This experience is now available to users of Data Management Systems.

System Design Philosophy

- MODULAR CONSTRUCTION
- EXPANSION CAPABILITY
- MULTI-PURPOSE DISPLAYS
- OPERATIONAL FLEXIBILITY

- LONG IN-SERVICE LIFE
- GROWTH POTENTIAL
- FULL OPERATOR-INVOLVEMENT

Marconi-Elliott Avionic Systems Limited
Airport Works, Rochester, Kent. ME1 2XX
England

INERTIAL NAVIGATION DIVISION

A GEC-Marconi Electronics Company

Telephone : Medway (0634) 44400
Telegrams : Elliotauto Rochester
Telex : 96333/4

MARCONI-ELLIOTT AVIONICS

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