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ELECTRONIC ENGINEERING ASSOCIATION SYMPOSIUM EXHIBITION HOME OFFICE

SYMPOSIUM AND EXHIBITION

on

POLICE TECHNOLOGY

Wembley Conference Centre

London, England

21 - 23 NOVEMBER 1977

organised jointly by the Electronic Engineering Association
and the Home Office

Programme

(All events at Wembley Conference Centre, unless otherwise stated)

MONDAY 21 NOVEMBER 1977

14.00   Registration of Delegates commences at Eurocrest Hotel

Evening   Reception by Her Majesty's Government at Lancaster House
Personal invitations for this reception will be issued to delegates

TUESDAY 22 NOVEMBER 1977

08.30   **Registration** continues at Wembley Conference Centre

09.15   **Session 1**   Chairman: Ronald Newham, President, Electronic Engineering Association

Welcome address by Lord Harris,
Minister of State at the Home Office

09.35   **Keynote address**

The Operational Requirements and Problems in the Modern Police Force by David B McNee, Commissioner of Police of the Metropolis

This session will introduce the Symposium which has been organised by the Home Office and the Electronic Engineering Association to describe advances during the past few years in the design and manufacture of equipment to meet police requirements in such fields as communications, command and control, and means of preventing and detecting crime.

10.15   Coffee

10.45   **Session 2**   **Tactical Response Systems**

Chairman: Roy Thomas

Tactical Response Systems are used by the Police to assist in dealing with the minute-by-minute demands arising from incidents and crimes. Essential components for a tactical response system are an efficient communications system and a command structure which allows fast deployment of resources in response to calls for assistance, without jeopardising requirements for preventive policing and area coverage.

A senior police officer will discuss the operational requirements for these systems and a Home Office scientist will describe the principles along which the United Kingdom has implemented them.

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Finally, a representative of Industry will outline the methodology of the systems now available.

1 The Police Operational Requirement
   by Ronald Broome, Assistant Chief Constable, West Midlands Police

2 The assessment of the problem and the principles along which the UK has tackled it, with examples
   by Arthur Burrows, Director, Police Scientific Development Branch, Home Office

3 The Industrial View which outlines the different solutions that have been tried; the State of Development of Hardware and Software and a look to the future
   by Ian Lund, Electronic Engineering Association

Discussion

12.45 -
15.30   **Luncheon and Exhibition**

15.30   **Session 3   The Role of Communications in Response Systems**
              Chairman: John Cubberley, Director of Telecommunications, Home Office

The initial section of the sessions will be devoted to a description by a Police Officer of how the operational demands of a modern police force are reflected in its telecommunication system, together with a brief survey of the types of facility which are needed to meet them. This will be followed by a section in which an Officer from the Home Offices' Directorate of Telecommunications describes the the work of his Department in meeting the present and future communication needs of Police Forces. Instances will be given of some forward looking telecommunications orientated projects which have been initiated and managed by the Directorate. A final section of the session will be concerned with an Industrial overview of Police Telecommunication requirements and will include descriptions of some recent technical advances which will help to enable them to be met. Topics to be covered will include secure speech, data transmission and automatic vehicle location.

1 The Police Operational Requirement
   by David East, Assistant Chief Constable, Avon and Somerset Constabulary

2 Current Philosophy
   by Jack Hallett, Deputy Director in Directorate of Telecommunications, Home Office

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3   The State of Technology
    by Ian Alexander, Electronic Engineering Association

Discussion

17.30   **Exhibition**

19.00   **Reception** by the President of the Electronic Engineering Association, Ronald Newham

19.45   **CONFERENCE DINNER**
        at the Wembley Conference Centre

WEDNESDAY 23 NOVEMBER 1977

09.00   **Session 4   Management Information Systems for Strategic Planning and Resources Allocation**
        Chairman: Allan Bell

The purpose of a Management Information System is to provide Managers, in this case Police Officers, with the appropriate data in an acceptable format, to assist them to perform their management functions of decision making and planning with greater efficiency and to a reduced timescale. The requirements for such a system and its close interrelationship with the tactical command and control system will be outlined by a Senior Police Officer. A Home Office scientist will describe the basic philosophy of design of such systems and the experimental approach taken in the UK. The Industry representative will provide details of the systems that have been developed and are now in operation covering the requirements for Strategic Planning of the CID, Traffic, Uniformed and Administrative branches of the Police Force.

1   The problems of police organisation
    by Brian Morgan, Assistant Chief Constable, Devon and Cornwall Constabulary
2   Home Office Projects
    by Alan Holt, Deputy Director, Police Scientific Development Branch, Home Office
3   The Industrial Response in Design of Systems and recommendations regarding organisation
    by Dr Robert France, Electronic Engineering Association

Discussion

11.00   Coffee

11.30   **Luncheon and Exhibition**

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14.00   **Session 5   The Application of Electronic Technology to Crime Detection and Prevention**

Chairman: Rupert Ashworth

Some of the basic activities that the Police have to carry out are:

1   Surveillance of an area, building or people by day or by night

2   Search of a particular area

3   Detection of objects or people

4   Transmission of the information to a central control so that a response can be organised

5   Tracking or following of people or vehicles.

In all these, electronics can assist. A Senior Officer of the Metropolitan Police will outline some of the requirements based on Operational Experience; this will be followed by a representative of the Home Office Police Scientific Branch describing experimental work that has been undertaken, while a representative of Industry will describe equipment that has been developed to meet these requirements.

1   Police Requirements and Experience
    by Peter Walton, Deputy Assistant Commissioner, Metropolitan Police

2   Experimental Techniques
    by Alan Rapsey, Deputy Director, Police Scientific Development Branch, Home Office

3   Industrial Possibilities
    by Dr Roy Hayes, Electronic Engineering Association

16.00   Tea

16.15   **Open Forum and Question Time**

17.00   **Summing up** by Rupert Ashworth, Chairman, Organising Committee

17.15   **Symposium closes**

LUNCHEONS

On both Tuesday and Wednesday, luncheon will be served to delegates in the Greenwich Room, adjacent to the Exhibition.

Catering will be buffet style so that delegates will be able to take their lunch at any time between the hours stated in the programme. This will facilitate discussion with exhibitors.

FACILITY VISITS

By arrangement delegates will be able to visit Police installations and manufacturers works on Thursday and Friday, 23 and 24 November 1977.

Arrangements for these visits can be made at the Home Office stand in the exhibition.

LANGUAGE

The proceedings will be conducted throughout in the English language.

BANKING

A branch of Lloyds Bank is available in the main foyer of the Centre for the convenience of delegates. Banking hours 09.30 - 15.30.

TELEPHONE

The Conference Centre is well supplied with public telephones. The telephone number of the organisers office at the Wembley Conference Centre will be 902 8833.

All enquiries to: The Electronic Engineering Association, Leicester House, 8 Leicester Street, London, Great Britain WC2H 7BN. Telephone: 01-437 0678. Telex : 263536.

Details of Travel and Hotels on page 24.

THE ELECTRONIC ENGINEERING ASSOCIATION — EEA

is the sponsor and organiser of the Symposium and Exhibition in cooperation with the Home Office, a department of the British Government.

The Association is the Trade Association representing the leading UK manufacturers of Electronic Capital Equipment. EEA deals with all matters of importance to this key industry, which directly or indirectly affect the whole of the British National Economy.

Since its formation in 1944 the Association's activities and membership have kept pace with importance and growth of the Industry. During 1976 the UK Capital Electronics Industry's total output was in the region of £1,400 millions of which approximately 40 per cent went in export.

POLICE SERVICES IN THE UNITED KINGDOM

Number and size of forces

There are 52 police forces. The Metropolitan Police, which is responsible for policing London and its suburbs, is the largest, with a strength of 22,000 officers. Several forces, which police the other conurbations of the country, each have between 4,000 and 7,000 officers; and forces in mixed urban and rural areas range in strength from 1,000 to 4,000 officers.

The control and administration of forces

Each force is commanded by a chief constable (in the Metropolitan and City of London forces his title is Commissioner). He is responsible for the organisation, administration and operation of the force. He is assisted by a deputy and by assistant chief constables (in the City of London the titles are Assistant Commissioner and Commander; and in the Metropolitan Police there are additional ranks of Deputy Commissioner and Deputy Assistant Commissioner). Outside the Metropolitan Police District, each force area has a police authority which has a duty to secure the maintenance of an adequate and efficient police force. The authority is composed of representatives of the local magistrates and of the elected members of the local government council for the area. Subject to the approval of the appropriate Secretary of State (in England and Wales the Home Secretary), the committee appoints the chief constable, his deputy and assistants. It provides a civilian staff, buildings and equipment for the force. The police authority for the Metropolitan Police District is the Home Secretary.

Force structure

Each force comprises a number of divisions, commanded by a chief superintendent or, in the Metropolitan Police, a commander. In the Metropolitan Police District divisions are grouped into areas. A division can vary in strength from under 200 to, in some London divisions, over 1,000 officers. A division is normally divided into sub-divisions of from 30 to 250 in the charge of a superintendent or chief inspector (or, in the larger Metropolitan Police sub-divisions, a chief superintendent). Below chief inspector the ranks are inspector, sergeant and constable. In some forces, divisions or sub-divisions have day-to-day responsibility for all police operations within their boundaries; in some forces criminal investigation and traffic matters are dealt with by departments working from the force headquarters; and in others, there is a combination of the two systems.

Cooperation between forces

Arrangements are made between forces to ensure that there is cooperation beyond boundaries in such matters as the prevention and detection of crime and the management of traffic. In England and Wales nine regional crime squads operate in cooperation with forces, and across boundaries, in cases of serious crime that has a regional or national context. Regional and national meetings of chief officers of police take place under arrangements made by the National Association of Chief Police Officers.

Central services

Central government meets part of the cost of police forces by making financial grants to police authorities; makes regulations for the government, administration and conditions of service of police forces; and organises on a regional and national basis certain services for police forces. The government departments carrying out these tasks are the Home Office in England and Wales, the Scottish Home and Health Department in Scotland and the Northern Ireland Office in relation to policing in Northern Ireland. The Queen appoints a Chief Inspector of Constabulary for England and Wales and one for Scotland and inspectors who, on a regional basis, inspect forces and report on their efficiency to the appropriate Secretary of State.

Training

In addition to training arrangements made by each force or by cooperation between forces, there are seven regional police training centres and an instructor training centre. The Police College at Bramshill, Hampshire, runs courses for senior officers from this country and overseas. There is a Scottish Police College at Tulliallan.

Communications

Communications within and between forces are by means of telephone, telex, teleprinter and radio. In recent years the use of radio has developed considerably so that officers on foot and in vehicles can be reached by and communicate quickly with their stations and headquarters. Sophisticated control equipment has been developed for use at force headquarters and at divisional and sub-division headquarters. Computerised systems assist the handling of incidents and the deployment and management of officers and vehicles.

The Police National Computer

The Police National Computer at Hendon in north London, gives police forces throughout the country immediate access to certain records that are kept centrally. The computer maintains indexes of stolen and suspect vehicles, of vehicle owners, and of the national fingerprint collection. It also has an index of the names of persons convicted of crime in the United Kingdom. It will shortly have one of people who are wanted or missing.

Research and development and the procurement of equipment

In England and Wales the Home Office Directorate of Telecommunications procures centrally and maintains communications equipment used by forces. The Directorate has a research and development programme which is carried out in cooperation with police forces and with the telecommunications industry in this country. The Police Scientific Development Branch of the Home Office has, in cooperation with industry and forces, given a priority to the application of computers to operational policing and to the development of equipment to help in the prevention and detection of crime and management of traffic.

Enquiries about central services

More detailed information will be available at the Home Office stand in the exhibition hall about services that are supplied centrally to police forces.

The Exhibition

This will be held at the Greenwich Room of the Wembley Conference Centre, which is close to the Severn Suite in which the symposium sessions will be held.

The Exhibition will be open on Tuesday 22nd November from 12.00 to 19.00, on Wednesday 23 November from 11.00 to 14.00. The range of equipment will include:

Computerised command, control and reporting systems; resource allocation systems.

A range of the latest communications equipment including portable radio; speech security and encryption equipments; portable microwave link equipment; portable data loggers and a range of manual and automotive test equipment.

Perimeter protection and intruder detection systems; micro-wave night vision and infra red surveillance and detection equipment; thermal imaging equipment; mobile target tracking systems; metal detector equipment.

Automatic vehicle location systems; mobile automatic data communications system for police vehicles.

AFA-MINERVA (EMI) LIMITED

Security House Grosvenor Road Twickenham TW1 4AB

Telephone 892 4422 Telex 265518

Response to alarms

Alarm Systems, whether for Fire, Intruder or Industrial process failure, all have one thing in common. They are specifically designed to draw attention to potential hazards.

An alarm, by itself, however, does not do anything. What is needed is response.

The response to an alarm signal is the most important event — it is usually automatic, and can be simply shutting off a fuel supply, or ringing of alarm bells.

These simple actions are usually only the first step. If the alarm is caused, say, by a faulty thermostat on a heating system, the first response may be to shut off fuel, and then ring an alarm bell. The next step should be to do something more positive, in this case perhaps to call for a service engineer to repair the fault.

Most automatic alarm systems are designed to respond when the premises are unoccupied, and this is when most large fires, break-ins and industrial failures are potentially the most dangerous.

In some circumstances, the automatic response of the alarm system by ringing of alarm bells is perfectly adequate. In other circumstances, where the potential risk is higher, the next step must also be taken by the alarm system.

This is where the AFA-MINERVA nationwide series of Communication Centres enters the scene. In these centres, which are manned 24 hours a day, 365 days a

year, facilities are available to monitor a wide range of alarm systems. This monitoring facility enables us to ensure that the correct response is given to every alarm signal; by alerting the Fire Brigade, Police or Maintenance Engineer.

The methods available to communicate the alarm vary according to the type of risk covered. It could be a simple system using the switched telephone network, or a very sophisticated system using a dedicated line, continuously monitored.

Whatever the risk, there is an appropriate method for ensuring quick, efficient response to an alarm.

BRITISH AEROSPACE
Hawker Siddeley Dynamics Manor Road Hatfield Hertfordshire
Telephone Hatfield 62300 Telex 22324
British Aircraft Corporation (Guided Weapons) Six Hills Way Stevenage
Hertfordshire
Telephone Stevenage 2422 Telex 825125

The group will feature optical and infra-red surveillance equipment and a binocular voice link. Items will include Steadyscope, a lightweight hand-held gyro-stabilised surveillance instrument designed to overcome the problems of vibration and movement. It is particularly suitable for vehicle and helicopter applications, and a model of an infra-red thermal imager, a real-time hand-held observation device. Relying on the detection of infra-red emissions, the thermal imager may be used in daylight or total darkness and enables the detection of vehicles, personnel and other objects under camouflage or obscured by smoke.

The binocular voice link is a covert and secure system consisting of two pairs of seemingly standard binoculars. One half of each binocular contains the communications equipment whilst the remaining half is a monocular. The system operates at frequencies outside the usual bands and is confined to narrow cones around the line of sight between operators.

FERRANTI LIMITED — MILITARY SYSTEMS DIVISION
Bird Hall Lane Cheadle Heath Stockport Cheshire SK3 0XQ
Telephone 061-428 0771 Telex 666803

Tactical response systems and management information systems
The Military Systems Division of Ferranti Limited, in conjunction with the UK Home Office and various UK Police Forces, has pioneered Tactical Response and Management Information Systems for Police and Fire Services. The company has a wide basis of successful experience in this area and offers a complete turnkey capability for assessment, design manufacture, installation, commissioning and training, including building works and the provision of ancillary communications and data equipment.

The company does not offer a standard system, as experience has shown that Police operational requirements vary widely between users, and can only be met adequately by custom-built systems designed by an experienced team after full consideration with the user. Nevertheless, these individually-designed schemes draw on proven experience from systems already in successful service.

The company's systems offer high reliability consequent upon the use of well-proven computer and ancillary equipment designed expressly for use in 24-hour service environments. The systems are programmed in high level languages which facilitate further development in service, and the hardware is of modular design and configuration to ensure simple in-service maintenance and to make possible system extension when this is required.

Facilities for on-the-job training of control room personnel are a standard built-in feature of the Tactical Response Systems, and enable officers with minimal training to operate the equipment. As they develop experience they make less use of these features and work more quickly, but the training features remain for further use as required.

The Management Information facilities enable senior officers to achieve a degree of detailed control over their resources which has not previously been possible, and can bring about improvements in the productivity of junior personnel, which can affect the system cost. At the same time the Tactical Response System will extend the effectiveness of control room staff and improve incident response times. These systems are among the most cost-effective ways in which modern technology can help Police Forces to discharge their responsibilities effectively and economically.

Ferranti Limited, employ 17,000 people in twelve locations in UK, and have related operations in six overseas countries. Products include:

>Aircraft Equipment; Integrated Circuits; Instruments; Microwave Devices; Computers; Display Systems; Transformers; Air Traffic Control; Training Simulators; Offshire Oilfield Equipment; Inertial Navigation Systems.

The Military Systems Division makes:

>Training Simulators; Message Switches; Police Systems; Shell Velocity Meters; Design Studies.

MARCONI RESEARCH LABORATORIES

GEC Marconi Electronics Ltd Marconi House New Street Chelmsford
Essex CM1 1PL   Telephone 0245 53221 Telex 99201

MADE

Marconi Research Laboratories, under a Home Office Contract developed a range of mobile equipments to meet the requirements for the Mobile Automatic Data Experiment — MADE. The purpose of MADE is to evaluate benefits to the Police of a number of vehicle mounted data communication devices; which provide a Police Officer with direct access via a highspeed, high integrity, two way, data link to his controller at his Force Control Room. MADE is being conducted with the assistance of the West Mercia and West Midlands Police Authorities. The MADE System for the evaluation commencing in Autumn 1977, comprises a number of suitably equipped Police Vehicles of both Police Forces, a central mobile base station with associated communications processor and landline links to each Force Control Room. On the Marconi Research Laboratories Stand a complete vehicle equipment comprising coded massage unit, touchmap, keyboard and display plus landcopy printer will be demonstrated together with facilities available at the Force Control Rooms.

Automatic vehicle location

Marconi Research Laboratories have developed an automatic vehicle location system known as:

LANDFALL

Links and Nodes Database for Automatic Landvehicle Location. In the Marconi system the road layout is considered as a network where each intersection is termed a 'node', each exit from a node a 'port', and the road joining the nodes a 'link'. Features of the road system can be conveniently translated into the links and nodes network form and stored in a digital processor. By starting at a known node and comparing the vehicle's movements along the roads with the links and nodes 'map' of the same roads, the position of the vehicle can be continuously determined. Sensors on the vehicle provide data on heading and distance travelled. Vehicle movements at a node (eg a turning manoeuvre) are readily identifiable, and this feature is used to fix the vehicle precisely at the node, thus trimming out any accumulated errors since the last fix, resulting in the high positional accuracy of the LANDFALL System: typically better than 15 metres in urban areas.

A Police car of the Metropolitan Police has been fitted with LANDFALL and will be demonstrating the system in the environs of the Conference Centre.

Dynamic channel allocation

In voice only Mobile Radio Communications Systems with high density communications traffic on the available channels, lengthy delays in obtaining access for voice contact can occur at peak times. Dynamic channel allocation provides a means of obtaining more efficient use of the voice channels and makes use of a separate channel for signalling purposes. In operation requests to use the voice channel are signalled, in data form, to the Control Centre and if an appropriate channel is free a signal is returned to switch to that channel thus establishing voice contact, at the same time routing the call to a free operator. Throughout the mobile user hears a conventional ringing tone as his call request is processed; but if a free channel is not immediately available a busy state is signalled and busy tone heard by the user. Either automatic call back or try-again-later approaches can be used to complete the speech circuit as special provisions for priority calls are also included.

Dynamic channel allocation employs a small digital processor at the base station and data control units with each mobile; the system is tailored to each user's requirements, which takes into account the user's typical voice traffic density, usage, peak load, response, coverage and environment.

GEC-ELLIOTT TRAFFIC AUTOMATION LIMITED

GEC-Elliott Traffic Automation Ltd, a GEC-Marconi Electronics Company, have been involved in the design, manufacture and installation of sophisticated control systems for over fifty years. We are happy to co-operate with Local Authorities, Police and Emergency Services to provide Resource Availability Traffic Control and other automated systems that may be required.

We are a trading company within the General Electric Company Limited of England, the largest Electronics and Electrical manufacturing company in the United Kingdom, with broad ranging interests and experience, which provides unrivalled facilities in technological back-up and research.

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The Company will be demonstrating a mobile resource control system (Resource Availability) and a vehicle actuated traffic control system using the Type 25 Traffic Signal Controller.

The Resource Availability system uses a GEC in-vehicle encoder which permits the driver, at the touch of a button, to transmit vehicle identification, operational status, location and alarm data to a central GEC Highwayman resource file. Headquarters staff using Visual Display Units can interrogate the file by reference to location and resource type to permit a strategic deployment of resources. Designed to meet the British Home Office specifications for Police Forces, the unit is equally suitable for a variety of applications with existing in-vehicle radios.

The Type 25 vehicle actuated traffic signal controller is the standard urban signalling unit for the United Kingdom. It is a solid state construction designed to provide a safe, reliable and flexible control facility capable of dealing efficiently with changing traffic patterns and requirements. The demonstration unit carries the optional Mains Linking feature, a system whereby cableless linking can be provided between separate controllers to produce offsets between junctions.

Other products and systems manufactured and supplied by GEC-Elliott Traffic Automation include:

> Fixed Time Controllers; Pedestrian Crossing Controllers; Signals; Level Crossing Signals; Inductive Loop Detectors; Q Detectors; Vehicle Counters; Closed Circuit Television; Flexible Progressive Systems; Area Traffic Control Systems; Motorway Signalling and Surveillance System; Toll Registration Systems; Car Parking Systems; Information Display Systems; Revenue Collection Systems; Automatic Fare Collection Systems.

MARCONI SPACE AND DEFENCE SYSTEMS LIMITED
The Grove Warren Lane Stanmore HA7 4LY
Telephone 01-954 2311 Telex 22616

The company, a member of the GEC-Marconi Electronics Group, is active in the research, development and production of advanced electronic equipment and systems covering military data systems, military communications, spacecraft (including communications and control and guidance), naval and ocean engineering, underwater weapons, trainers and simulators, electronic counter measures, fire control, fusing and alarming, and weapon guidance. In all of these fields, the Company has acquired unique experience and expertise.

The MSDS Cryp range of equipment provides a very high level of security for voice data and facsimile.

Crypnet provides voice security over vhf and vhf radio links using conventional voice bandwidth radios.

Crypfone provides short-term voice security over any channel capable of transmitting voice.

Crypfax is for use with facsimile machines to provide secure transmission of documents.

Cryptex ensures maximum security for computer and voice links.

The MSDS *Lightweight Thermal Imaging Sight.* A completely *passive man portable night sight* for protection and surveillance. It can be used as a direct

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sight or by the use of a TV monitor by remote control.

The MSDS Police Real-Time on Line computerised command, control and information retrieval system will improve control of allocation of resources giving full details of current position and status of all mobile patrols. On-line communication facilities by teleprinter and video display. Computer stored information instantly available. Automatic reception and transmission of teleprinter messages.

MEL

Manor Royal Crawley Sussex RH10 2PZ
Telephone 0293-28787 Telex 87267

MEL, part of the multi-national Philips Group, is a leading supplier of electronic systems and equipment to the United Kingdom and overseas governments. The company has a world-wide reputation for the development and manufacture of advanced products for the defence, security, aerospace and medical fields. Major customers include the armed forces, security agencies, military and civil aviation administration and public authorities throughout the world. As a member of the Philips organisation, MEL has access to the entire research and development facilities of one of the world's largest manufacturers of electrical and associated products.

MEL's new speech scrambler, which has not yet been shown to the general public, is a pseudo-random code, time-division device which provides moderate level speech security for radio telephone and other communication circuits. Speech is converted into digital form and scrambled prior to transmission. Intelligibility is restored by transmission of a tone burst synchronisation signal immediately prior to the encoded speech, ensuring that the receiving decoder operates in the same sequence as the transmitting encoder. Hundreds of thousands of codes are available from this pseudo random system, which offers a relatively high degree of short term security to police and security authorities. The equipment is light, and small enough to be fitted to light vehicles down to patrolman's motorcycle level. At the Wembley Police Symposium the equipment will be displayed in a typical Range Rover installation.

Another new MEL product is a modular image intensifier system designed primarily for police purposes. The system is supplied either as individual components or as a complete kit containing channel plate or cascade type image intensifier tubes, together with a selection of lenses and adaptors permitting the use of still, cine or TV cameras at varying target ranges. This versatile system is designed for rapid field assembly into the optimum configuration for prevailing operational conditions. The entire kit packs into an attache case which is light enough to ensure full mobility of the operating officer.

Yet another new development aimed at providing detection and recognition in poor visibility or night conditions is the MEL hand held thermal imager, which, although designed initially for military use, is of obvious value in police and security operations. This instrument is capable of distinguishing targets which may be only slightly higher in temperature than their background or surroundings. It provides the observer with a clearly recognisable visual target image derived completely from target-produced thermal radiation. This system is also small and light enough to be carried.

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MEL's well established expertise in microwave technology is already widely known. Continuous refinement has produced smaller and lighter microwave communication systems which can be readily installed and concealed for clandestine observations to be carried out with the addition of a new generation lightweight television camera, either colour or monochrome. The small portable units have been tried and tested in both civil and military field operations with considerable success, and provide the ideal answer to the problems of providing an unobtrusive, easily installed system which can be rapidly deployed at the scene of an incident.

MULLARD LIMITED

Mullard House Torrington Place London WC1E 7HD
Telephone 01-580 6633 Telex 264341

Mullard are showing a range of image intensifiers, that includes both first and second generation types; and infra-red detectors, single elements and arrays, for imaging and other applications.

Among the image intensifiers on view will be the XX1063 cascade tube, a fast recovery self focusing, three stage 25 mm intensifier and automatic brightness control.

Two microchannel plate image intensifiers are being displayed. An 18 mm miniature type with pre-set gain up to 100,000 and a larger, 50 mm device for vehicle mounting.

The range of infra-red detectors and arrays being displayed includes CMT and In5b devices. The latest types to be introduced are the P1091 and P1092 detectors. Intended mainly for intruder alarm applications, they will detect the body temperature of an intruder at 12 M and beyond. These devices are also very suitable for use in applications such as gas analysis and flame detection.

MUIRHEAD DATA COMMUNICATIONS LIMITED

Beckenham Kent BR3 4BE
Telephone 01-650 4888 Telex 262710 (Muirhead Becknm)

Muirhead Data Communications Limited is part of the Muirhead Group of Companies and specialises in the design and manufacture of a wide range of facsimile communications equipment and systems.

The company is world leader in many specialised fields of facsimile applications and operates through an international network of subsidiary companies and agents.

Muirhead equipment on display at the exhibition will include:

Wirephoto
For the transmission/reception of suspect photographs and fingerprints via telephone lines or radio circuits.

Mobile facsimile
For the reception of data in 'hard copy' form in vehicles via radio.

Document facsimile
For the high speed transmission/reception of any graphic material — letters, diagrams, etc via telephone lines.

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Wirephoto

Muirhead Wirephoto equipment is designed for the high speed transmission of photographs and fingerprints over any distance to one of a range of Wirephoto Facsimile Recorders.

The Transmitter is compact, portable and fully automatic.

There are three basic Wirephoto Recorders. The first delivers a high quality picture facsimile on photographic paper, the second produces an instantly visible facsimile on electrolytic paper to a standard suitable for suspect identification. The third is a new electrostatic recorder which produces a very high quality facsimile of a photograph or fingerprints but on a low-cost recording medium.

Muirhead Wirephoto equipment is now used by Police and Border Security Forces around the world for the quick identification of suspects, and meets the specifications of most law enforcement agencies, including Interpol.

Mobile facsimile

Information can be transmitted from headquarters direct to a patrol vehicle and received in 'hard copy' form at very high speed without interfering with normal voice communications.

This is Muirhead's Mobile Facsimile System. A fixed station can transmit photographs, identikit pictures, sketches and even handwriting to any number of radio-equipped vehicles simultaneously, without driver participation.

The Rome Police use Muirhead's Mobile Facsimile system interfaced with a computer for direct reception of computer print-out data which includes information on some 10,000 Rome streets and high risk properties.

The system is also used by the Glasgow Fire Brigade for the high speed, error-free reception of information — such as floor plans and the location of dangerous material — in emergency vehicles.

Document facsimile

The necessity for fast, error-free communications is probably greater in police applications than any other. This is why Muirhead's Document Facsimile systems — MUFAX — have been adopted by a number of police forces both in the UK and overseas.

MUFAX allows for the transmission over any distance of any graphic material — typewriting, handwriting or diagrams — over public or private telephone lines or via radio.

A precise copy of the original document can be received in a matter of minutes. An A4 size document can, for example, be received in only two minutes.

Apart from its speed and accuracy, MUFAX means that both sender and receiver have a permanent record of the communication for future reference.

In addition to these specialised Facsimile Systems Muirhead will be exhibiting a comprehensive range of high quality, competitively priced modems, multiplexers and other line transmission equipment. Of special interest is the Speech Plus Telegraph equipment which can be used as a low cost conventional 8 channel telegraph terminal with built-in power supply and tone line unit, or as a speech plus six channel system complete with supply, single frequency signalling and echo suppression.

PLESSEY ELECTRONIC SYSTEMS LIMITED

Station Road Addlestone Weybridge Surrey KT15 2PW
Telephone 0932 47282 Telex 262320

Plessey is a world leader in electronics, communications and related fields, the activity of PESL can be described as the development and implementation of Information Systems. The acquisition of Information through Surveillance and Search, its Transmission to a Control Centre, the Analysis and Display of the relevant data in order to achieve the Management, Direction or control of resources to meet a particular objective.

A wide experience has been gained in the implementation of systems for Military Purposes, Air Traffic Control, Meteorology, Environmental Monitoring, the Management of Water Resources and this is now being applied to the problems facing the Police.

A range of sensors has been developed to assist the Police in the activity areas of Surveillance, Search and Detection using magnetic, seismic and Infra Red techniques. Sensors are available to search for people and hidden objects, to locate the position of known and unknown targets and to provide perimeter protection. A number of these sensors will be on display at the Plessey stand in the Exhibition.

Secure communication of information can be provided via microwave, laser or optical fibre links.

PESL capability in the design of Command and Control systems is being applied to the implementation of a Duplex realtime mini-computer system for the Bournemouth and Dorset Police Force. This provides four major facilities to the Police:

1 Message switching
This allows messages input on a teleprinter to be distributed to any number of teleprinters within the Force. It can also link the Command and Control computer to large information banks held on a main frame computer.

2 Computer aided despatch
This provides instant information to controllers so that the appropriate resources may be despatched in response to a call for assistance. Vehicle status and location information is fed automatically into the computer system and may be displayed at the controller's terminal when appropriate. Incident information resulting from calls for assistance is entered into the system from the same terminal and provides the basis for deployment and management planning purposes.

3 Information retrieval
Information retrieval allows information concerning stolen property, suspect vehicles, missing persons to be kept at a local level and accessed quickly.

4 Management information system
This contains a number of sub-systems dealing with a particular aspect of Police Management. Historical data can be retrieved from the main frame computer data bank and analysed to provide trends and changes in crime statistics, traffic incidents, etc.

Visitors to the Exhibition will be able to access the system via a Remote Terminal on the Plessey Stand.

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Other systems available are concerned with the collection of traffic data, the control of traffic and the monitoring of the environmental conditions for traffic such as visibility monitoring.

In all this work considerable effort has been invested in working closely with the UK Police and Home Office Police Scientific Branch to obtain an understanding of the problems facing the Police and the human factor relationships that must be taken into account in the design of any system if it is to be acceptable and efficient. This experience is invaluable in studying the problems facing the Police in the many different environments in other countries.

RACAL AMPLIVOX LIMITED
S G BROWN COMMUNICATIONS LIMITED
21 Market Place Wokingham Berks RG11 1AJ
Telephone Wokingham (0734) 782158   Telex 848166

Both companies are members of the internationally known Racal Electronics Group and are well established in the field of communications equipment and accessories. A wide range of hand and throat microphones, handsets, communication helmets and headsets, which are compatible with the majority of radio and telecommunication equipments, will be exhibited together with more specialised items such as a purpose-built helmet for bomb disposal operations and a complete range of field telephone equipment and switchboards. The widely used Quadrant transducer will be on display. This, when fitted in a police motorcyclist's helmet, allows immediate radio communication whilst on the move at high speeds without requiring a hand to be removed from the steering.

For the airborne patrol, the 'Six-Ninety Series' of communication control equipment is available in many configurations suitable for fixed or rotary wing aircraft and the use of this equipment allows easy interface of specialised voice communications equipment to an aircraft's normal air-to-ground systems. This is particularly desirable when the use of both police channels and normal ATC frequencies is required.

RACAL-THERMIONIC LIMITED
The necessity to record the RT traffic in areas such as police control centres is but one of the many tasks for which the Racal-Thermionic range of communications recorders is ideally suited. Multi-track record systems are available incorporating automatic time injection and back-up electronics to ensure continuous recording. Automatic time search is an additional advantage on the playback unit to facilitate the rapid location of a particular message.

The Racal-Thermionic range of communications recording equipment is designed to operate under adverse environmental conditions and is already in service with aviation authorities, police forces, fire brigades, coastguards and ambulance centres around the world.

International communications recorder
Using triple play tape the ICR provides continuous recording of more than 24 hours' duration on a single 8 inch spool. Available in 8, 16 or 32 channel versions. Designed for unattended operation each recorder has dual tape decks and built-in back-up electronics to ensure continuous recording.

International timing unit

Time signals for recording on tape are generated to internationally agreed standards by the ITU. The time signal in plain language or digitally encoded code is presented digitally on the front panel. Talking clock signals can be provided in any language to special order.

ICR accessories

The communications recorders are supported by a range of accessories such as bulk erasers, lightweight headsets, foot switches and tape splicer.

Racal-Thermionic Limited will also be showing the Callstore — a temporary message store using standard C60 audio cassettes.

On show for the first time on a Racal stand at an exhibition will be a selection of Night Viewing devices.

RACAL DATACOM

Racal Datacom specialises in communications security equipment for speech, facsimile, digital data and coded traffic.

Since the equipment has been designed for use by military communicators it has a very high degree of reliability.

The equipment exhibited concentrates on secure speech to and from vehicles employed in a versatile communications net. Particular emphasis is placed on the establishment and maintenance of synchronisation between the secure devices in poor signal conditions, as, for example, when operating in inner-city areas or at extreme radio range.

The demonstrations will highlight the ease of operation and high quality of recovered speech which will be of particular interest to police services throughout the world.

Racal-Datacom is part of the Racal Electronic Group which is an international organisation with more than 40 locations world wide.

SHORT BROTHERS LIMITED

PO Box 241 Airport Road Belfast BT3 9DZ Northern Ireland
Telephone 0232 58444 Telex 74688 Telegrams Aircraft Belfast

SHORLAND ARMOURED VEHICLES

Shorlands, manufactured by Shorts of Belfast, are among the world's most widely used internal security vehicles, being employed by police, military or para-military forces in 26 countries. The current range includes the Mk 3 patrol car and the more recently introduced SB301 armoured personnel vehicle which is displayed on the company's stand.

Both units have been developed to provide law enforcement organisations with robust and efficient low-cost armoured vehicles for use in situations of civil unrest or against terrorist groups in rural and urban areas. Their designs incorporate many refinements resulting from operational experience in Northern Ireland and other countries where terrorism and mob violence have posed major security problems, and the vehicles have repeatedly proved their ability to perform efficiently in the most hostile environments.

Both the SB301 and the Mk 3 are based on the strengthened version of the 109 in Land Rover chassis and both are protected by through-hardened steel armour

plate which is proof against fire from a NATO-standard 7.62 mm self-loading rifle or FN 7.62 mm machine gun down to 46 m (50 yds) firing at right angles to the target. Servicing and maintenance are as easy as with the Land Rover itself and over 80 per cent commonality of spares with the standard vehicle ensures that parts are readily available.

Combining low initial and operating costs with high performance and the ability to absorb punishment, Shorlands are among the most cost-effective units in the security field. They are currently providing an essential service to law enforcement agencies throughout the world in widely varying climates and terrains, and have earned a reputation for toughness and reliability under the most arduous operating conditions.

SB301 armoured personnel vehicle

Designed specifically for the safe, rapid deployment of security forces in high-risk areas, SB301 combines all-round armoured protection with a comfortable interior to combat crew fatigue and a fully equipped for defensive or retaliatory action in hostile environments.

The vehicle carries a crew of eight, six men in the rear compartment on forward facing seats with the commander and driver up-front. Controls are similar to those in the standard Land Rover with the addition of the mechanism for operating the floodlight and CS gas dischargers which are mounted above the cab. Quick release harness is fitted for crew comfort and protection over rough terrain, and the interior is lined with polyurethane foam faced with tough-washable plastic. Efficient cooling is installed for operation in tropical conditions; there is a side-mounted interior light and an overhead grab rail.

Eight gun ports are provided, three on each flank and one in each rear door, to facilitate the use of hand weapons. They can be quickly secured to seal the vehicle in riot situations. The floor is constructed of tough glass-reinforced plastic and, like that of the Mk 3, has been developed in conjunction with the British Ministry of Defence, to provide the best available protection against blast, nail and pipe bombs. Its design has been thoroughly tested in operation against terrorists.

Top speed in 96 km/h (60 mph) on normal roads and the four-wheel drive ensures good traction over difficult terrain. SB301's simplicity of operation means that special training is totally unnecessary; the vehicle being both driven and serviced as a standard Land Rover.

Mk 3 armoured patrol car

Tough, versatile, hard-hitting, the Mk 3 is currently operating in 24 countries providing an economical aid to law enforcement in situations which require mobile strike power but do not justify the use of sophisticated and expensive fighting vehicles.

The three-man crew comprises commander and driver in front, and gunner in an all-round protected turret mounting a NATO 7.62 mm general purpose machine gun. The turret, mounted on rollers, rotates through 360° and the gun can be aimed by means of an optical periscope with the hatches closed. Smoke or CS gas grenade dischargers can be mounted on either side of the turret, and a spotlight, synchronised in azimuth and elevation with the machine gun, is provided for night operation. Quick release hatches seal off the vehicle in seconds to make

it a strong, mobile fortress and the proven six-cylinder engine, similar to that employed in the SB301, supplies power in-hand for any emergency. Access to the engine compartment can be gained only by operating the release mechanism inside the vehicle. Similarly, the fuel tank filler openings are controlled from the cabin so that all vital access points are sealed against outside attack.

Performance data

Weight	SB301	Operating weight including crew [8 at 90 kg (200 lb)] 3545 kg (7800 lb)
	Mk 3	Kerb weight 2931 kg (6450 lb). Operating weight including crew [3 at 81.64 kg (180 lb)] 3360 kg (7400 lb)
Engine size		2625 cc (160.3 cu in)
No of cylinders		6
Gross bhp		91 bhp at 4500 rpm
Maximum torque		17.9 mkg (130 ft/lb) at 1750 rpm
Maximum speed (average)	SB301	Road 96.00 km/h (60 mph) Cross-country 48.28 km/h (30 mph)
	Mk 3	Road 88.4 km/h (55 mph) Cross-country 48.28 km/h (30 mph)
Range of action (at average operating speed)	SB301 Mk 3	368 km (230 miles) Standard tank 257.2 km (160 miles) Long-range tanks 514.4 km (320 miles)
Gross power weight ratio	SB301 Mk 3	26.4 hp/ton 28.75 hp/ton
Maximum tractive effort in low gear		1172 lb/ton
Maximum climbing ability	SB301 Mk 3	1 in 2.0 1 in 1.7
Maximum gradient for stop and restart	SB301 Mk 3	1 in 2.0 1 in 1.7

THE SOLARTRON ELECTRONIC GROUP LIMITED
Farnborough Hampshire GU14 7PW
Telephone Farnborough 44433 Telex 858245 Solartron Farnborough

In the wake of modern technology comes the maintenance department using an ever-growing number of skilled engineers, until the operational side of the force begins to make sour comments about 'the tail wagging the dog'.

Modern test sets that provide all facilities in a single unit enable service engineers to work more effectively by allowing them to concentrate their skills on fault diagnosis and component replacement. Automatic test sets further increase their efficiency by removing the burden of routine and repetitive testing.

On the Solartron stand you can see a number of ways of increasing the efficiency of your radio servicing department. There is automatic radio-telephone test equipment (the 4930) and integrated radio-telephone test sets (the 4010 and 4710 Series).

Modern technology also enables you to process multiple streams of data; sifting, recording and presenting it so that the critical aspects are not lost in the flood of minutiae. The new Solartron Portable Data Logger exemplifies this family of instruments.

Automatic test equipment

In two minutes the 4930 can make a complete test of a radio-telephone; typically the tests would take 60 minutes on a conventional set of manual test equipment. The Metropolitan Police have recently bought one of these test sets for use in their service department at Thornton Heath. The set can test all portable radio-telephones, mobile radios and base stations provided that they operate below 520 MHz, and their transmitter output power is less than 25 W.

In use it is simply a matter of connecting the radio to the test set, starting the programme run, and then taking the test certificate from the teleprinter at the end of the test.

The basic equipment consists of a microprocessor control unit with radio test routines stored in memory, a programmable high quality synthesiser designed for heavy duty use in automatic test equipment; a programmable measuring head; and a teleprinter. The user compiles his own programmes from the teleprinter keyboard (storing them on the integral tape unit), calls up measurement routines from the microprocessor, and adds explanatory text in his own language. The average radio technician takes about one day to learn to programme the instrument.

Integrated radio test sets

Most radio technicians work at a test bench operating a battery of six or seven instruments, connecting, reconfiguring and generally driving this console. This takes time and skill, and can lead to ambiguous results. The modern method is to integrate the instruments into a single unit, changing functions at the touch of a switch.

This approach is exemplified by the 'Stabilock' series of instruments, which literally cut test times in half.

The 4010 series of instruments are synthesiser based test sets with differing frequency ranges. A single instrument contains: Frequency Synthesiser; Audio Frequency Generator; Frequency Counter; AF Millivoltmeter; Modulation Meter; Distortion Meter; RF Power Meter; Noise Meter.

The 4910 Analyser supplements the 4010 Series, allowing analysis of transmitter outputs, as well as full test facilities for single side band (SSB) radios.

Portable data loggers

In any modern control centre, whether for a burglary prevention system or a blast furnace, there is always more information being fed in than can be used at that time. It needs to be digested, significant changes need to be brought to the operator's attention, and everything recorded for subsequent post mortem. In other words, you need an intelligent equivalent of the multi-point chart recorder.

The 3430 Compact data recorder is a mains/battery powered recorder which monitors and records up to 30 channels of analogue data, together with 20 on/off information channels. A microprocessor-supported keyboard gives easy control of off-limits, alarms, and time control. The output can be recorded on the built-in strip recorder or magnetic cassette.

ACCESS TO CENTRE

Road

Two of Britain's main motorways, the M1 (from London, Luton Airport, the Midlands and the North) and the M4 (from London Airport Heathrow, South Wales and the West) are both easily accessible. The M40 (to Oxford) and the North Circular Road which connects Wembley with South London, Gatwick Airport and, via other motorways, to the South Coast sea-ports are only minutes away.

The centre of London is about 20 minutes away.

Car parks (multi-storey and open air) are available at Wembley close to the Centre.

Rail and Underground

Two Underground lines link Wembley with Central London: the Metropolitan and Bakerloo (Stanmore branch). The nearest station to the Conference Centre is Wembley Park, about five minutes away. The faster line is the Metropolitan (12 minutes from Baker Street Station with only two stops). Wembley is also accessible from two of London's main line termini, Euston and Marylebone. From Euston, certain trains to Birmingham stop at Wembley Central, while Marylebone trains to High Wycombe stop at Wembley Hill.

TRAVEL AND HOTEL ACCOMMODATION

Rankin Kuhn is a member of the Rankin Kuhn International Group — a wholly owned subsidiary of British Petroleum Limited. They are members of the Association of British Travel Agents and all their offices hold IATA licences. Thus they are agents for all IATA airlines and also for domestic airlines in the United Kingdom. They are also agents for British Rail and international and British hotel groups and for car hire firms worldwide.

The Southampton office of Rankin Kuhn Travel has been appointed to act as travel agents for this Symposium and will have a stand in the exhibition to assist visitors with travel arrangements. They are also handling hotel arrangements for the exhibition and have accommodation reserved at the London Esso Hotel (Eurocrest) adjacent to the Wembley Conference Centre. If rooms are required at this hotel — or at any other major hotel — please contact the agents at their Southampton office at 65 London Road, Southampton. Telephone: 26941, Telex: 477605. A limousine car can be arranged to meet incoming passengers at Heathrow provided good notice is given.

All limousine and hotel costs should be settled direct with the firms providing the service. The cost of any travel requested at the Exhibition must be settled at the time of receipt of tickets. The Agency will, of course, revalidate any travel tickets on a complimentary basis providing any additional costing involved is settled at the time.

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