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# OPERATION SEGAS

## INTRODUCTION

The IX European Athletic Championships took place in Athens during September 1969. Extensive radio and television coverage of the events was made possible by the special organization set up for the purpose. Prior to this event, no television outside broadcast facilities were available within Greece and the entire television operation was planned, installed, operated and maintained as a project in isolation from a normal television broadcasting service.

The Hellenic Amateur Athletic Association, or SEGAS as it is usually known from the English translation of the Greek abbreviation, was responsible for the overall arrangements for the Games. They commissioned The Marconi Company as main contractors for the supply, installation and maintenance of all the necessary television and broadcasting equipment. The National Hellenic Institute of Radiodiffusion (EIR) together with the Department for Posts and Telegraphs (OTE) arranged with the European Broadcasting Union (EBU) for vision and sound circuits to relay the programme via Eurovision to some twenty countries. The Games lasted for six days and during this period over thirty-four hours of programme time was made available to Eurovision.

At the beginning of the proposed scheme, EIR asked EBU for the assistance of two advisers. These were provided by the Italian Television Service (RAI), who also made provision, together with French and German Television (ORTF and ZDF) for the services of technical and operational staff. After the initial planning meetings, the major items of equipment were ordered and these included three television OB vehicles, three video-tape recorders with slow motion facilities, eight microwave links, master control and presentation switchers and communications equipment for thirty radio and thirty television commentators.

It must be remembered that only a few experienced television technicians were available in Greece and the training of staff was a vital part of the installation programme. This training, which was essentially practical instruction on the operation of the equipment supplied, was given to about twenty-five technicians during the period between the completion of the installation and the start of the Games. Delivery of all equipment was required within six to eight months from the date of contract signature and, since some items were 'specials' and the OB vans had to be made, there was no time to spare. The three OB vehicles were of Marconi Mark V design and the total manufacturing time of eight

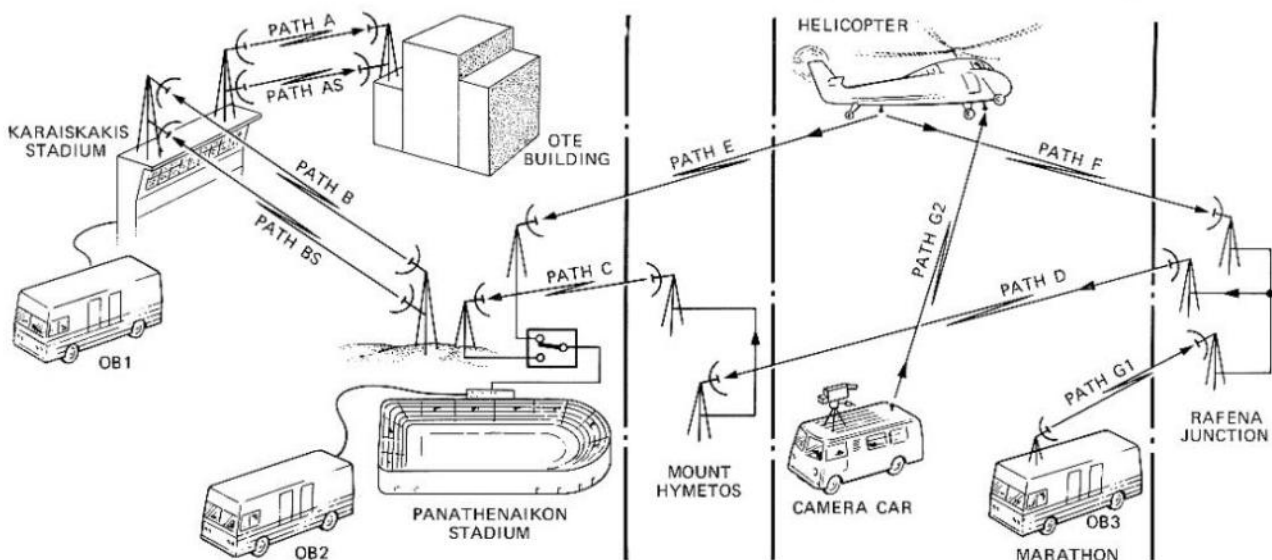


Fig.1 The overall system employed for televising the Games.

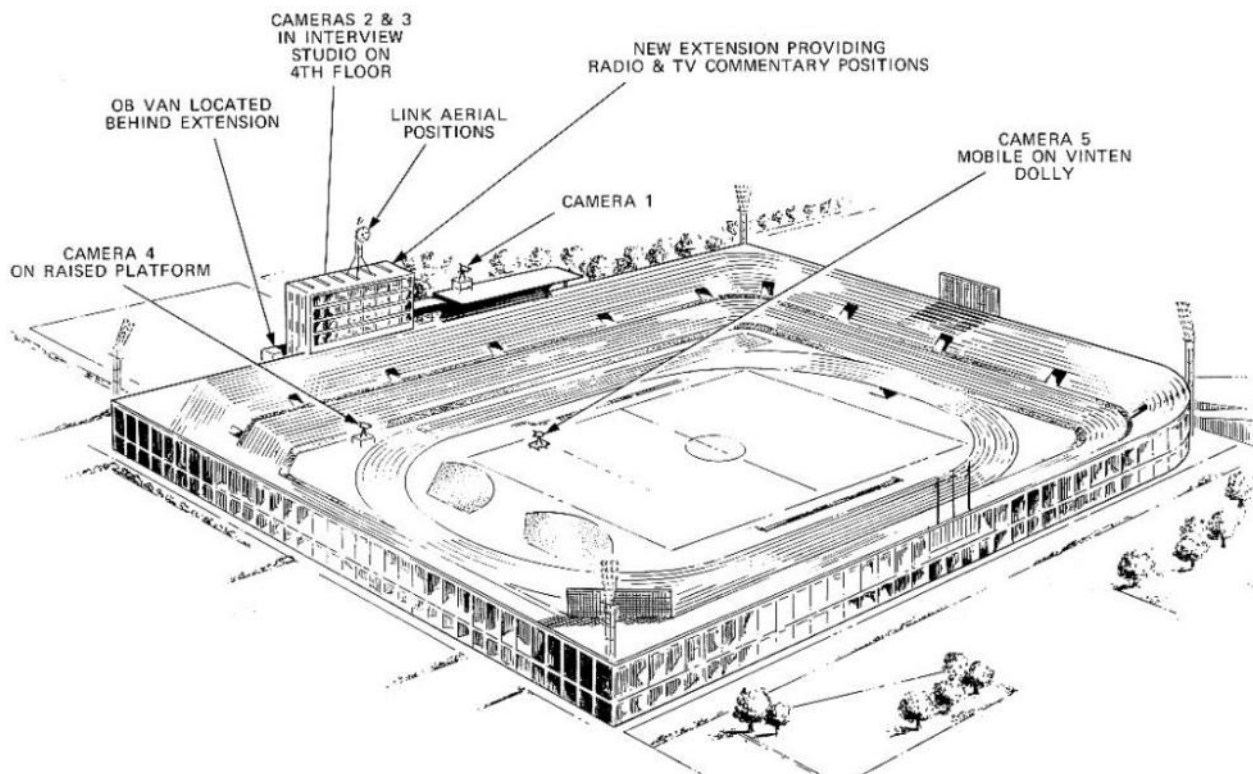


Fig.2 Layout of the Karaiskakis Stadium.

months covered the period from ordering the bare chassis to completion of the finished vehicles fitted out with equipment. The 2300-mile journey to Athens was undertaken by road without any undue incident apart from one puncture in Austria. The venue for the track and field events was the newly renovated Karaiskakis Stadium, situated near Piraeus on the impressive coastal road overlooking the Saronic Gulf. It had been decided that this would be the control centre for all radio and television and a new seven-storey extension complete with studio and cabling facilities for television had been built to accommodate staff and equipment. Figure 1 shows the overall system for televising the Games and figure 2 the layout of the Karaiskakis Stadium. The complete system was required on the last day of the Games for coverage of the Marathon and the closing ceremony at the Panathenaikon Stadium.

The technical areas within the Karaiskakis Stadium included a Mark V OB van equipped with five camera channels, a sound interview studio, a television interview studio, a VTR room, a maintenance area, sixty commentary booths and a technical co-ordination room (TCR) to integrate the whole system.

#### VISION FACILITIES

Conventional camera positions were used for all five cameras covering the field and track events at Karaiskakis as can be seen in figure 2. Camera 5 was mounted on a Vinten lightweight dolly and had sufficient camera cable to move around over the whole field area. This worked well until the third day when an athlete trod on the cable with spiked shoes and created an interesting fault condition.

Cameras 2 and 3 were fitted with Varotal XIV Zoom Lenses and were normally used to cover the track events. They were positioned in an area at the end of the interview studio so that they could also be used as studio cameras for interviews after the finish of each day's events. Several organizations required this facility and each interview was transmitted unilaterally to the single country concerned.

Cameras were directed from the OB van and the output was then fed to the Presentation Mixer in TCR. Here a sixth Mark V camera channel was used for viewing captions and a digital clock display so that accurate race times could be inserted at any point in any event. Separate synchronizing pulse generators were installed in the OB van and TCR, the two systems being genlocked together.

Pulses for the VTR machines were fed from the OB van and recordings were made of all events and played back through the OB van mixer as required. Two Ampex VR-1200 machines provided the main facility for this and an Ampex HS-100 was in constant use for slow-motion playback of each event. This type of coverage of races is particularly effective and the equipment performed perfectly.

Each of the sixty commentators was provided with a 14-in monitor displaying the transmission picture.

Full monitoring and patching facilities were installed in TCR including a continuity desk for sound and vision, a telephone exchange, distribution amplifiers and all necessary ancillary equipment for overall control of the complete operation.

#### SOUND AND COMMUNICATIONS

The success of any outside broadcast depends

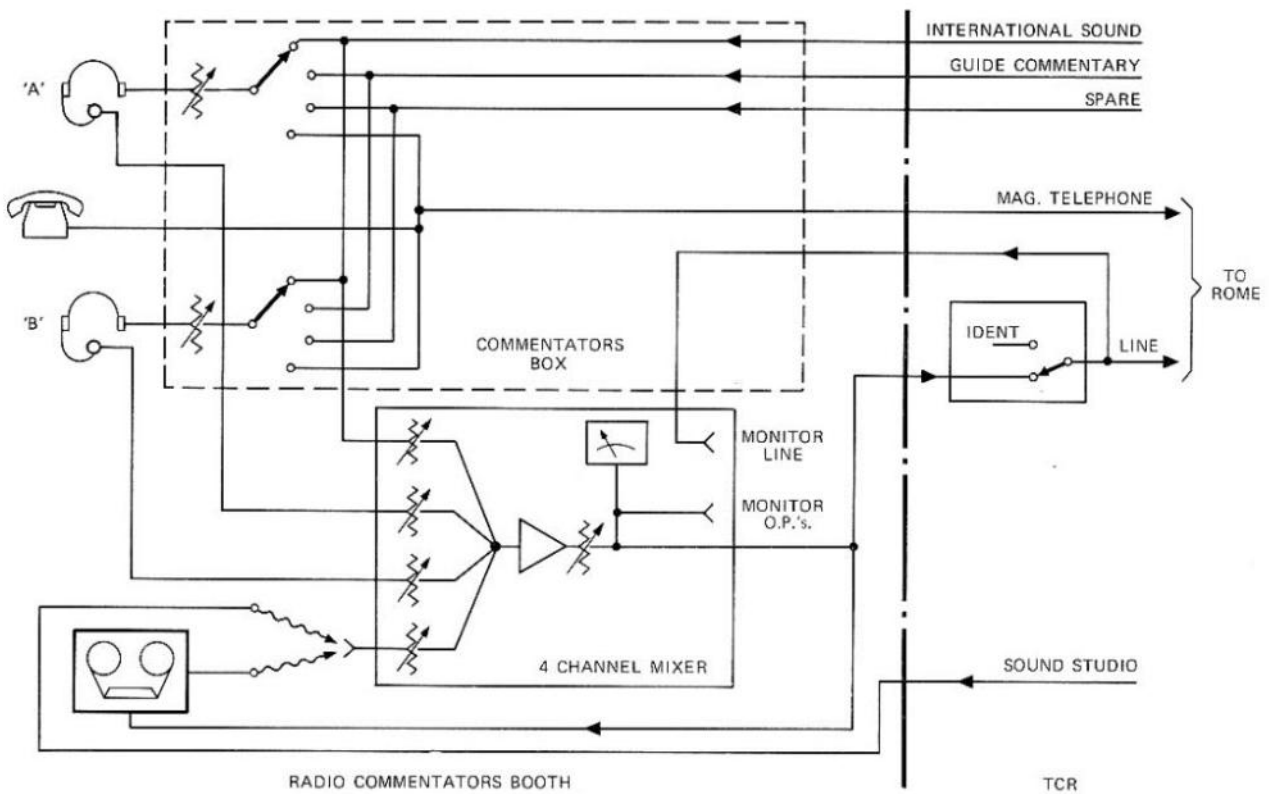


Fig.3 Facilities of a radio commentator's booth.

almost entirely on good communications. For this particular operation, where a minimum of three languages was in use at any one time, a reliable communication system was absolutely essential.

The thirty radio commentator's booths were effectively self-contained radio studios, each being equipped with a four-channel mixer, tape recorder, communication unit and a magneto telephone as shown in figure 3. In order to allow insertion of radio interviews into outgoing programmes, a radio interview studio was installed on the ground floor. This contained an eight-channel mixer, disc and tape equipments and provided facilities for mixing, dubbing and sending direct to line. A feed of the output of the radio interview studio was available

in each booth together with a separate feed of sound effects. Effects microphones were controlled from the twelve-channel mixer in the OB van and this output was the only sound feed common to all countries receiving the programme. Hence, it was usually referred to as 'International Sound'.

The thirty television commentators required a slightly more complex system to ensure that sound and vision were 'married'. Installed in each television booth was a communication unit with facilities originally specified by EBU. There are several versions of this unit, and the shape and general appearance depend on the individual manufacturer; figure 4 shows the Marconi product. Television commentators also required immediate information from the competition areas. Two liaison booths, with similar equipment, were provided for this purpose and liaison officers operating the booths were able to feed information singly or to any selected number of commentators as required. They could also communicate with the OB van, VTR, television interview studio, liaison agents, with competitors and the Eurovision Network.

Before each broadcast, it was necessary to send separate identifying audio signals ('ident') to all countries taking the programme. The 'ident' signals were recorded and played back on sixty-two cassette tape-playing equipments accommodated in TCR.



Fig.4 A television commentator's box.

### OPENING CEREMONY

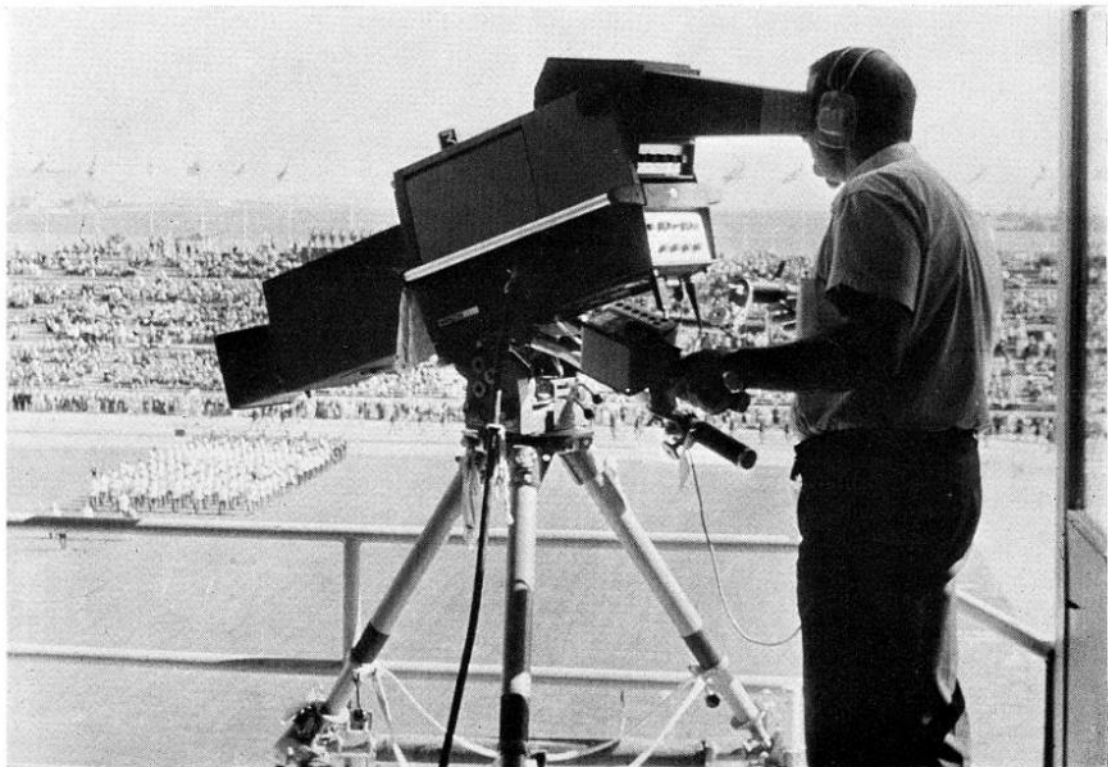
It was a hot and humid day for the opening of the Games. As is well known, the conditions prevailing in the technical area during the period immediately before a major outside broadcast can usually be



*Fig.5 The pole vault with a Mark V camera in the foreground.*

described as hectic and this was the situation in Athens. To a certain extent this was inevitable owing to the complex nature of the operation. Not only was such a large scale outside broadcast a new experience in Greece but also there were a large number of organizations and languages involved.

Nevertheless, the television and radio coverage of the opening ceremony went ahead as planned and continued throughout the first day and remaining five days of events with excellent results. The camera crew, vision control and production staff were provided by RAI and other operational posi-



*Fig.6 The opening ceremony.*



tions were manned by staff from EIR. Marconi engineers ensured that all equipment functioned to specification.

#### **OUTSIDE BROADCASTS FROM PANATHENAÏKON STADIUM AND MARATHON**

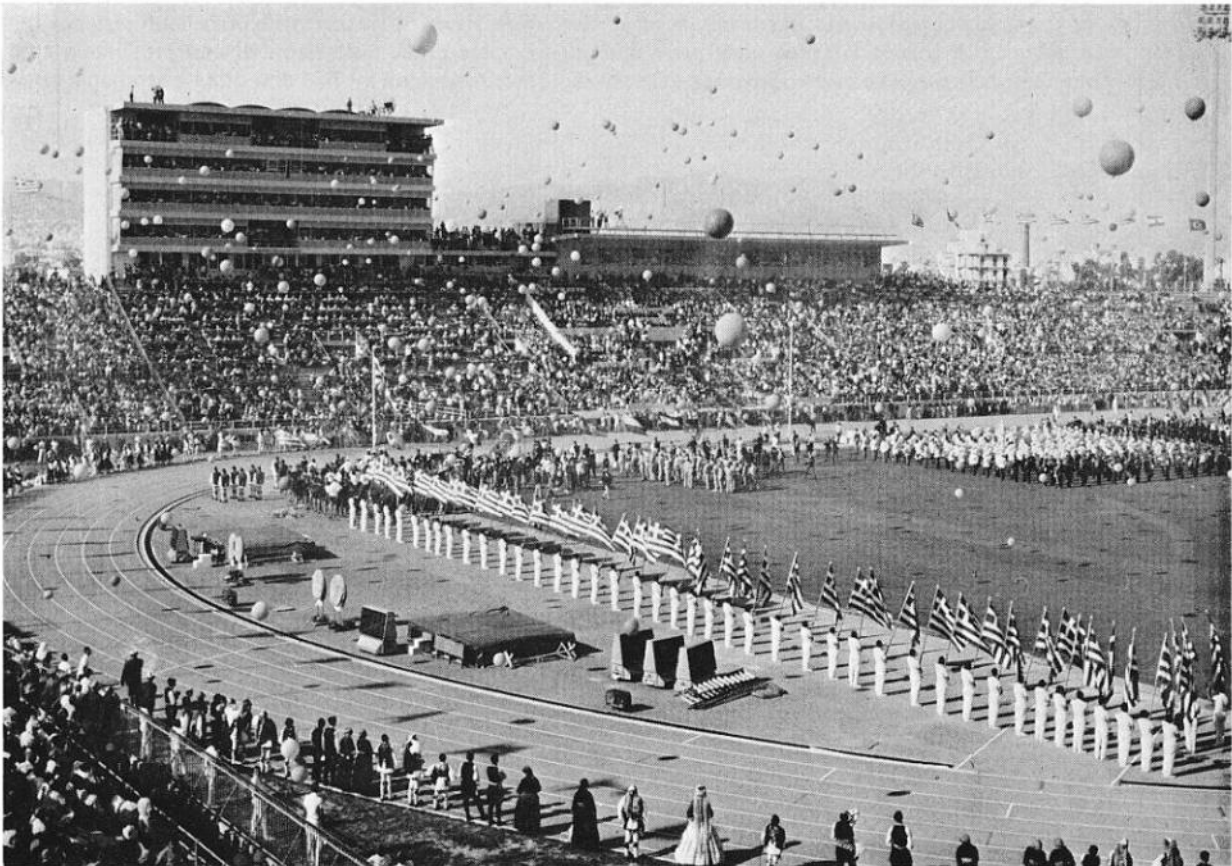
The Marathon race was held on the classical route from Marathon to the Panathenaïkon Stadium in the centre of Athens. A Mk V OB van equipped with four cameras was used at Marathon to cover the start of the race and a helicopter linked to a camera car, with staff and equipment supplied by ORTF, provided coverage along the route of the race. Another four camera Mark V OB van installed at Panathenaïkon Stadium covered the finish and closing ceremony. Figure 1 shows the transmission paths for each part of the race. As soon as the competitors were beyond the range of the static Mark V cameras, vision was switched to the output of the helicopter. This transmitted either a picture from the camera installed in the helicopter itself, or a picture received from the camera installed in the car travelling in front of or at the side of the race leaders. Good quality pictures were received from both of these cameras and it was possible for the commentators at Karaiskakis, about twenty-five miles away, to comment direct from the pictures on their monitors. This arrangement was satisfactory over the first part of the race when competitors were running in relatively close formation, but as the leaders

separated additional sound coverage was provided by a car with a commentator and radio telephone sending information in a single language via relay stations at Rafena and Mount Hymetos to three guide commentators at Panathenaïkon Stadium. These commentators, equipped with picture monitors and television commentators' boxes, translated this commentary into three languages which were relayed to Karaiskakis over land lines. After amplification they were preselectively distributed to all sixty commentators for retranslation with the aid of the transmission picture on their monitors to give the final commentary abroad in the required language. They were thus able to cover the whole of the twenty-six mile race from Marathon to Athens.

When the leader of the race approached Panathenaïkon Stadium, vision and sound was switched to the Mark V OB van for the finish and following presentations. This marked the end of the transmission to Eurovision and the successful conclusion to a unique project and an interesting experience for all concerned with the technical operation for SEGAS.

#### **ACKNOWLEDGMENT**

The authors are indebted to Messrs. R. Sharp, R. White and J. McFarlane, the installation engineers most involved in the complete project, for providing detailed information and for their help generally in discussion.



*Fig.7 The Karaiskakis Stadium.*