



## Planning and Surveying of Microwave Radio Systems

EVERY MICROWAVE RADIO SCHEME should be carefully planned from the outset in order to achieve in the end the most reliable and economical system. This involves the selection of the most suitable sites for the radio stations, taking into consideration *all* the relevant factors (both technical and economic), the drafting of an overall frequency plan and the recommendation of the equipment that should be installed. Such planning requires considerable skill and extensive experience.

### PLANNING SERVICE

The Marconi Company is able to offer Administrations and other clients a comprehensive radio survey and planning service. This service is based on the wealth of experience the Company has gained in engineering and installing microwave networks in every continent. Furthermore, as the only company which maintains a group working entirely on basic research into wave propagation, its engineers are particularly well-qualified to advise on proposed schemes.

When a proposal for a new multi-channel radio system is received from a client the Company's planning engineers make a map survey of the region concerned. As the engineers are often forced by economic factors and lack of available roads to use station sites which are not ideal from the propagation standpoint the major problem is then to secure optimum performance from the radio system despite marginal propagation paths. Using their specialised knowledge in this field the planners can draw up an initial scheme for the system. Based on this preliminary scheme an initial estimate can be submitted usually accompanied by a quotation for making



*A planning engineer preparing a map survey.*

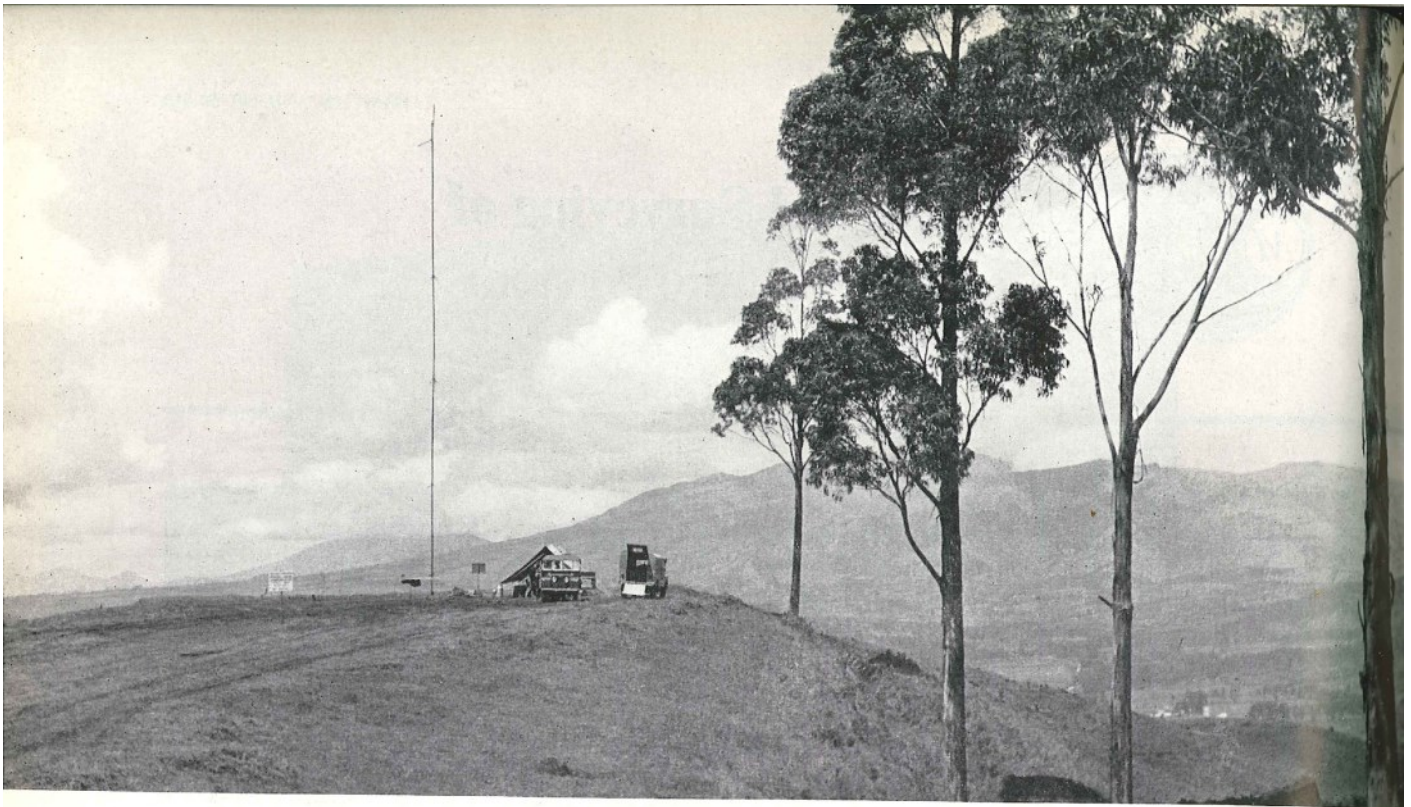
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an actual field survey of the proposed route.

In most cases a field survey is advisable as it may reveal unforeseeable technical factors peculiar to the locality under consideration. It is often possible to plan economies as a result of a field survey which on many occasions outweigh the cost of the survey itself. The information gained remains available for use if extensions are undertaken at a later date.

### SURVEY TEAMS

Marconi survey teams consist of specially trained engineers with experience of this work in many parts of the world. Places as contrasting as the Home Counties of England and the



*A survey team at work in Ecuador.*

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tropical jungle of Nigeria, the deserts of the Middle East and the mountains of South America have seen Marconi survey teams in action.

In addition to the radio recording gear and generating plant the survey teams take meteorological and optical measuring instruments, vehicles and camping equipment. They compile comprehensive reports on all the local conditions bearing on the radio problems, making accurate maps where necessary, in addition to the main task of signal strength recording on the proposed routes. The availability of suitable water and power supplies and the condition of tracks and roads are investigated thoroughly.

Administrations can send members of their staff to accompany the survey teams to gain experience of this work and survey equipment can be supplied to clients wishing to conduct their own surveys. The Company offers the

facilities of its propagation research group in the evaluation of recordings sent in by Administrations using this equipment.

#### **FINAL PLANNING**

Following the study of the survey report by the Company's propagation team, the detailed scheme and frequency plan are submitted to the client for approval and discussion. In preparing the frequency plan, possible local interference from services working in the vicinity is taken into consideration.

As a result of such thorough overall planning the client will be assured of a microwave radio system of guaranteed performance, giving the most reliable long term service in the most economical way. Furthermore a well-planned network can be economically extended to meet the heavy increase of traffic that often follows the establishment of a new radio system.

**Marconi**

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