

RESEARCH DEPARTMENT

**BAND III TRANSMITTING AERIAL FOR THE MOEL-Y-PARC V. H. F.
TELEVISION STATION**

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BAND III TRANSMITTING AERIAL FOR THE MOEL-Y-PARC V.H.F. TELEVISION STATION

INTRODUCTION

The Moel-y-Parc relay station came into operation on the 28th October 1965. It provides a service to an area including most of the north coast of Wales and to Denbigh, Wrexham and Ruthin to the south.

SUMMARY OF INSTALLATION

<u>Site:</u>	The site is approximately 6.4 km east north-east of Denbigh, grid reference SJ123704, height 335.3 m a.m.s.l.	
<u>Support Structure:</u>	The structure, which supports both BBC and ITA aerials, consists of a 229.7 m (753 ft 6 in.) triangular mast having side dimensions of 2.59 m (8 ft 6 in.) up to the 171.8 m (563 ft 6 in.) level and 1.98 m (6 ft 6 in.) over the remaining section. One stay lane is oriented along a bearing of 92° ETN. Provision is made for a cantilever u.h.f. aerial.	
<u>General Arrangement:</u>	See Fig. 1.	
Channel:	Channel 6, with vertical polarization is used.	
Aerial:	<p>The aerial consists of four tiers of 1λ dipoles, formed by two panel aerials mounted off each face of a square framework supported between the legs of the mast. The panels are oriented on bearings 20°, 113°, 200° and 285° ETN. A plan view of the panel aerial arrangement is shown in Fig. 2.</p> <p>Each panel consists of two tiers 1.425 m (56.1 in.) apart. Each tier has two vertical 1λ dipoles with a horizontal separation of 0.798 m (31.4 in.) mounted 0.51 m (20 in.) from a 1.34 m (52.8 in.) by 2.98 m (117 in.) rectangular wire mesh screen. The details of the panels as mounted on the mast are shown in Fig. 3. The panels on bearings 20°, 113°, 200° and 285° ETN are fed with relative current amplitudes and phases $0.61 / 57^\circ$, $1.0 / 0^\circ$, $0.7 / 260^\circ$ and $1.0 / 180^\circ$ respectively. The distribution feeder arrangement is shown in Fig. 4. There are independent main feeders to each half aerial. The mean aerial height is 195.4 m (641 ft) a.g.l.</p>	
Power:	Two 2.6 kW transmitters are used.	
Templet and horizontal radiation pattern (h.r.p.):	See Fig. 5 and Note	
Gain:	Mean intrinsic gain	6.2 dB
	<u>Deduct:</u> loss due to distribution feeder and possible misalignment	<u>0.1 dB</u>
	Mean net gain	6.1 dB
	<u>Deduct:</u> loss in main feeder, type F & G 3 1/8 in.	1.4 dB
	Network loss	<u>0.1 dB</u> 1.5 dB
	Mean effective gain	<u>4.6 dB</u>

Programme Source:

Programme is provided by s.h.f. link from Great Ormes Head, an intermediate site where the transmissions from Llanddona (Channel 1) are received.

Note:

The aerial design was carried out by contractors.

REFERENCE:

1. Detailed information on the construction and dimensions of the aerial are given on the following drawings held by BBC Transmitter Planning and Installation Department:

General Arrangement of Aerials

P.I.D. 6047.2.145A4

Schematic Layout and Details of
Transformer and Feeders

RACAL Drawing No. DD 33338

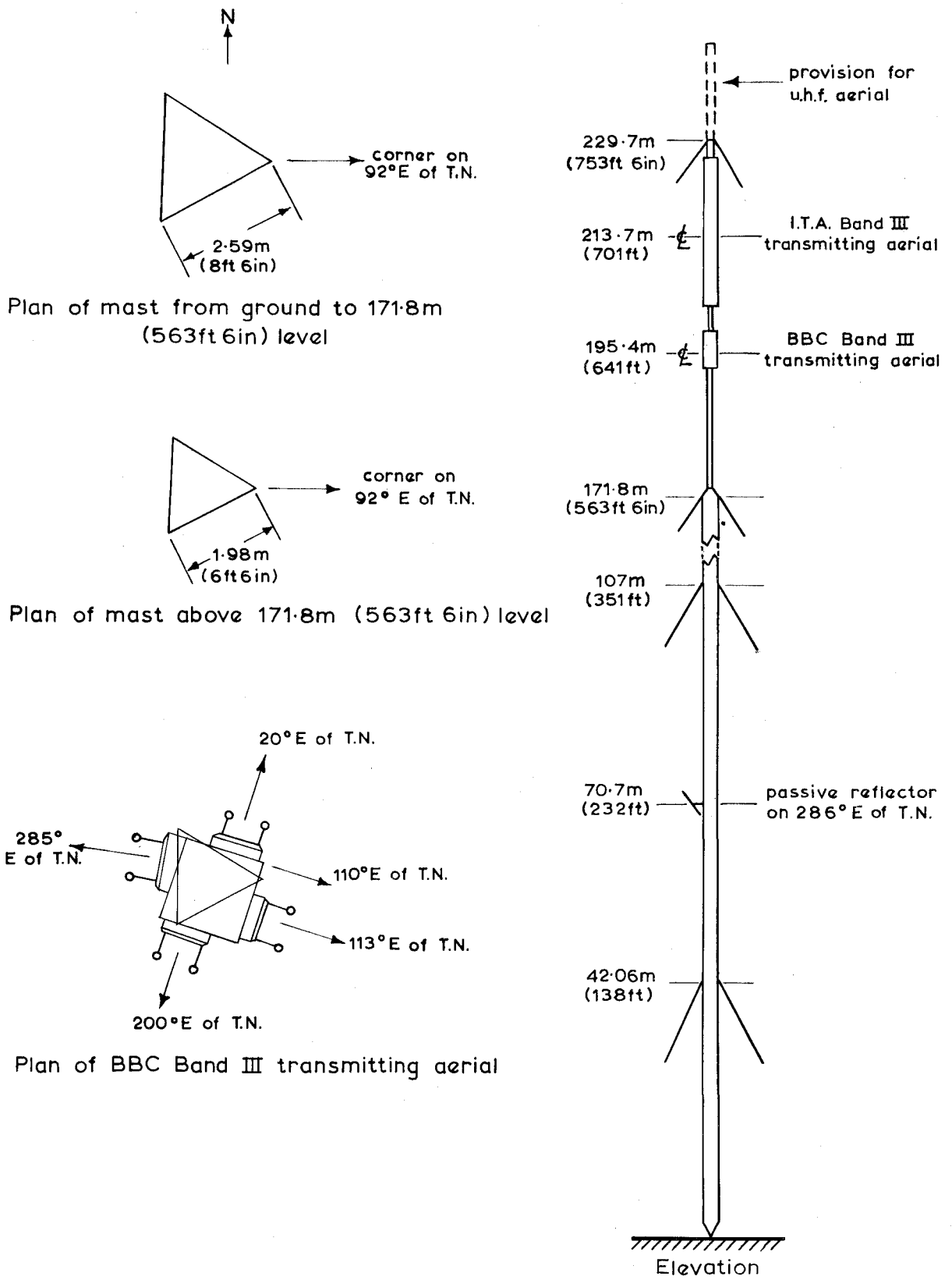


Fig.1. General arrangement of aerials on mast

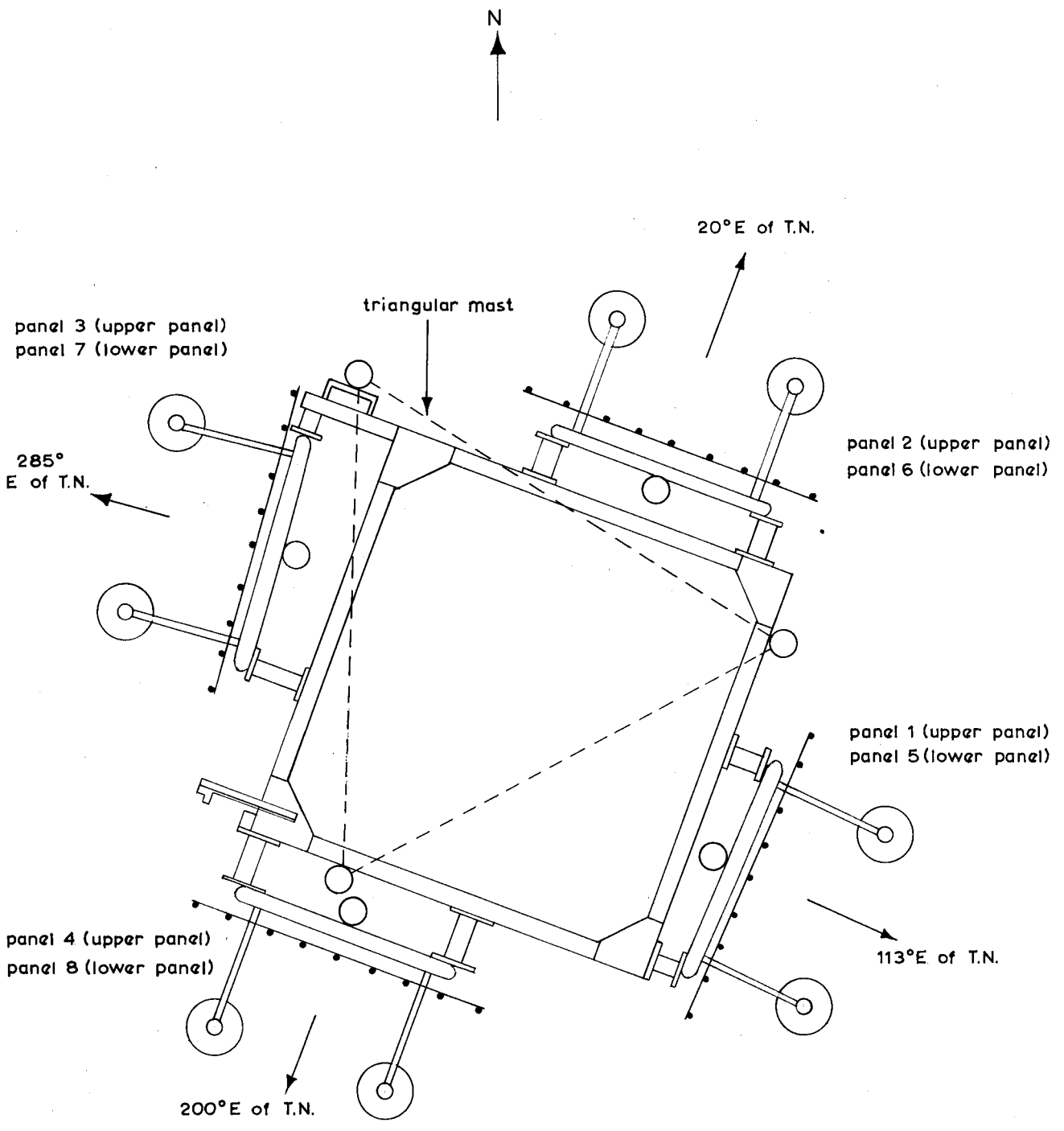


Fig.2. Plan view of panel aerial arrangement

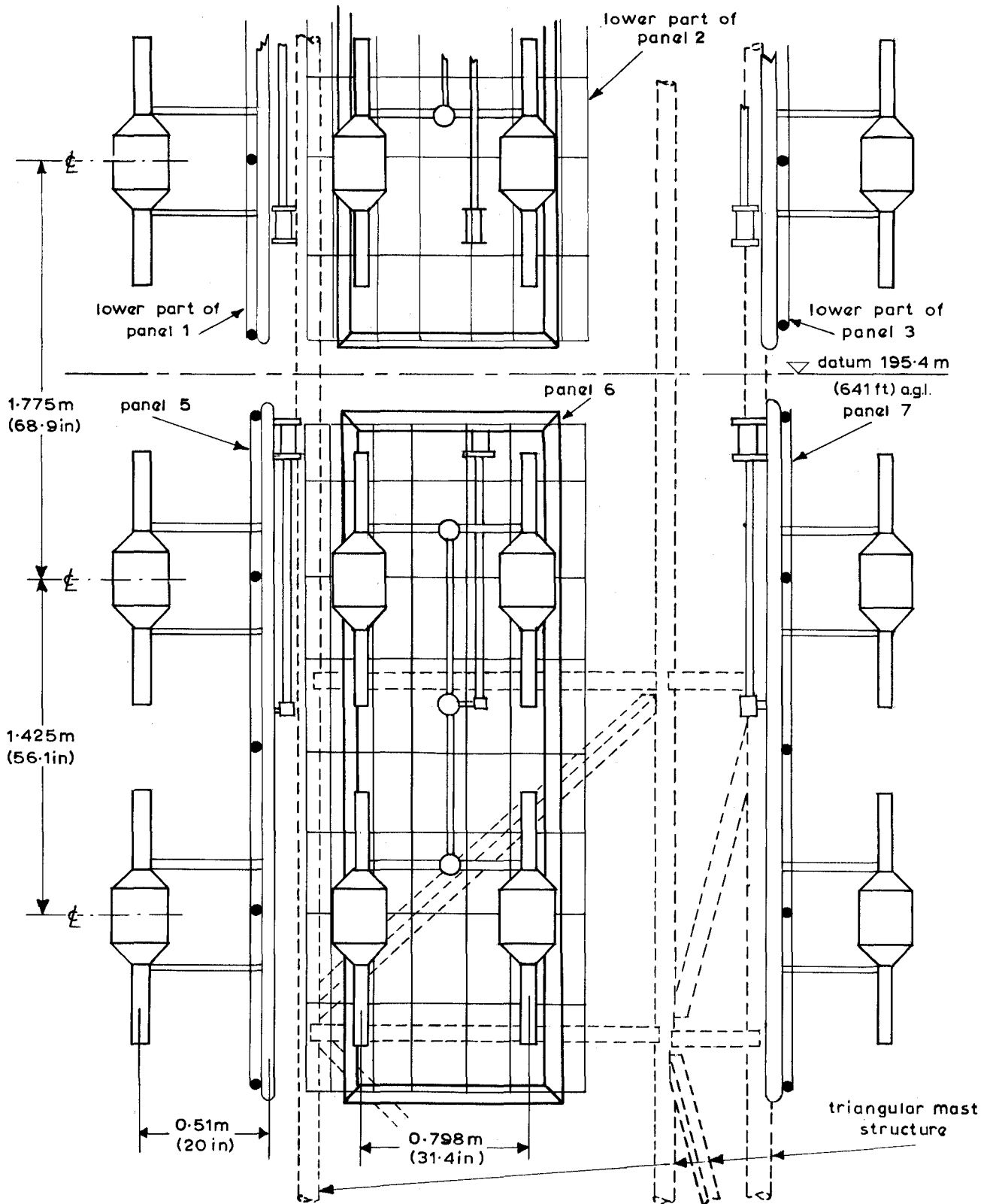


Fig.3. Details of panels on mast.

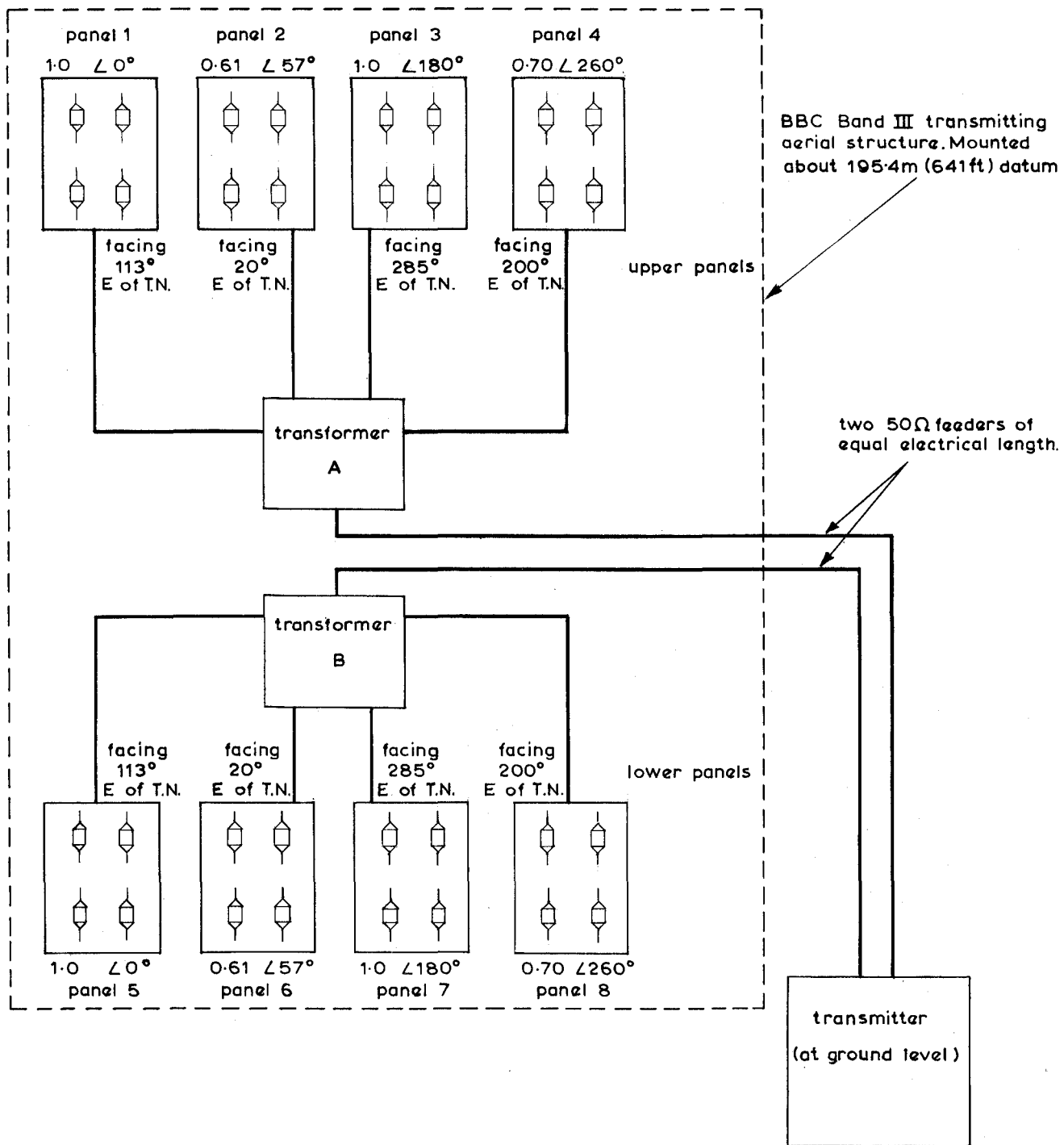


Fig.4. Schematic of distribution feeder arrangement.

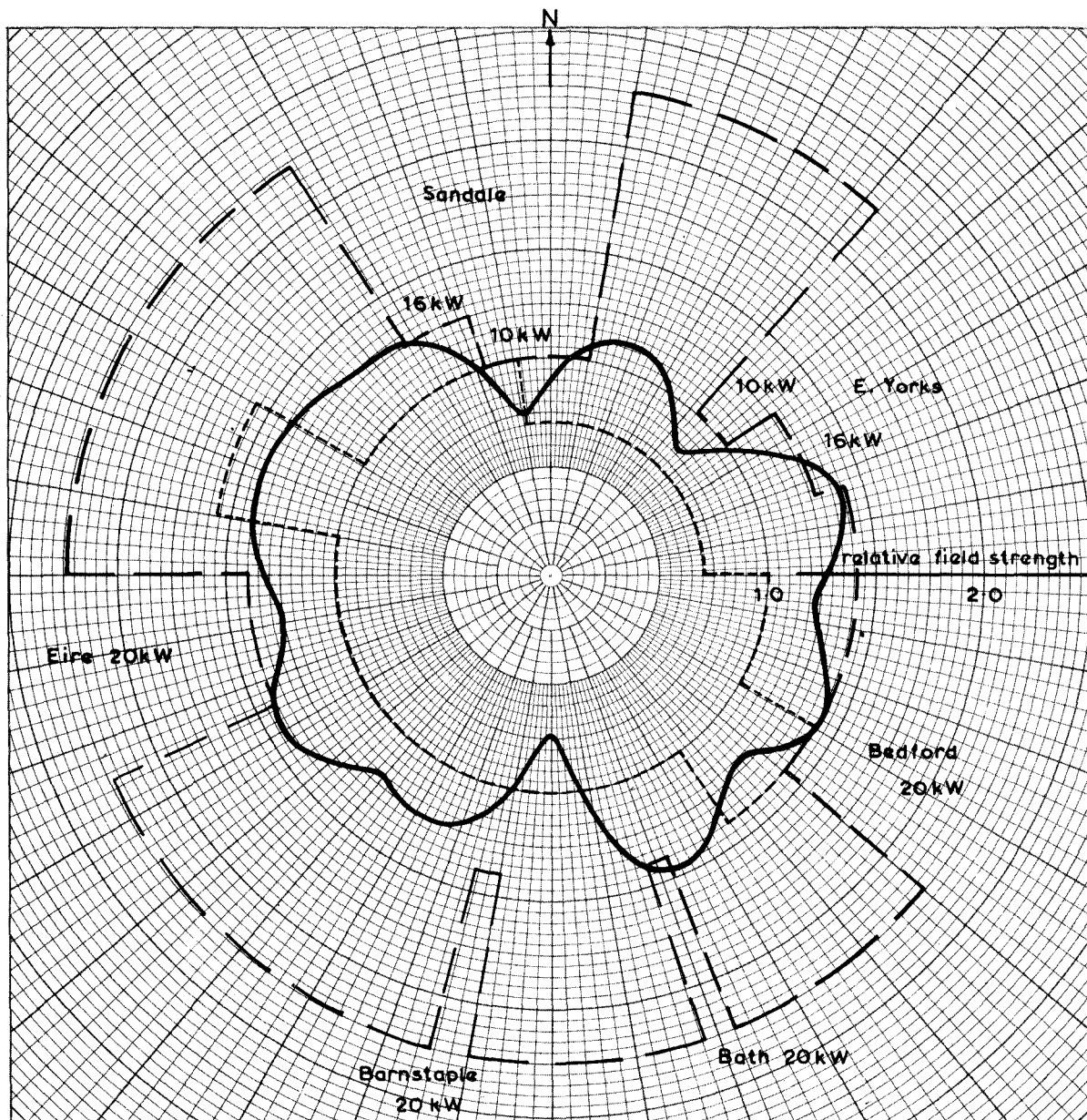


Fig.5. Templet and horizontal radiation pattern.
VERTICAL POLARIZATION

Channel 6 (Vision carrier 179.75MHz, Sound carrier 176.25MHz)
 Mean effective gain: 4.6dB ——— Maximum permissible E.R.P.
 Transmitter power: 5.2kW - - - - - Minimum desirable E.R.P.
 Mean E.R.P.: 15kW

Unit field corresponds to an E.R.P. of 10kW

