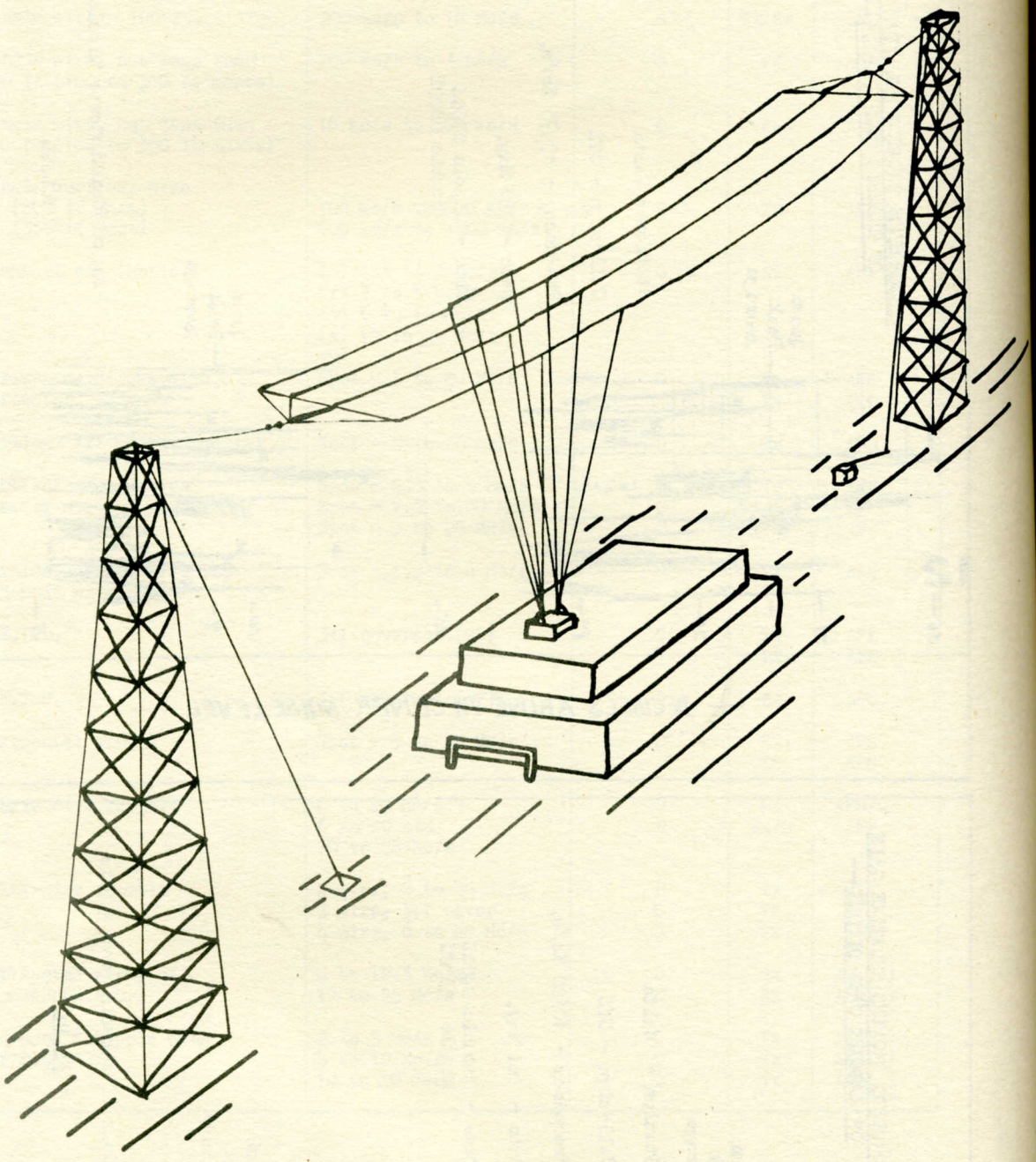
DESCRIPTION	FREQUENCY	DIRECT/OMNI	TX/RX	OUTFIT
Multi-wire roof aerials	L.F.	O	Tx	AEB/C/G/H
Single wire - 100 ft.	200 kc/s to 10 Mc/s	O	Tx/Rx	AED
Single wire, not less than 600 ft (100 to 300 ft masts)	200 kc/s to 3 Mc/s	O	Tx	AEF
Single wire, not less than 600 ft (100 to 300 ft masts)	16 kc/s to 500 kc/s	O	Rx	AEE
Single vertical wire (600 ft mast) (350 ft mast)	 100 kc/s to 600 kc/s 600 kc/s to 1200 kc/s	 O	 Tx	 AEJ
Quadrant cage aerial	(w) 1.5 to 3 Mc/s (x) 3 to 6 Mc/s (y) 6 to 12 Mc/s (z) 12 to 24 Mc/s	O	Rx	AFA
Horizontal dipole with reflector	Spot - 5 to 20 Mc/s	D	Rx Tx	AFB AFC
Vertical 'Y' matched aerial	Spot - 5 to 20 Mc/s	O	Tx	AFD
Vertical single wire quarter wave	Spot - 2.3 to 4 Mc/s Spot - 1.5 to 20 Mc/s Spot - 3 to 20 Mc/s	O O O	Tx Tx,Rx Tx	AFE AFF AFG
Vertical single wire end fed half wave	Spot - 1.5 to 4 Mc/s	O	Tx	AFH
V.F.T.D.	3:1 coverage (HF)	O	Tx Rx	AFK AFS
H.F.T.D.	3:1 coverage (HF)	D	Rx	AFO
Horizontal Dipole	Spot - 5 to 20 Mc/s	D	Rx Tx	AFL AFM
Single wire rhombic	6 to 20 Mc/s 6 to 20 and 10 to 26 Mc/s	D D	Rx Rx/2	AFN/Q AFT
Multi-wire rhombic	2 wire, 6 to 20 Mc/s 3 wire, 3:1 cover 4 wire, 6 to 20 Mc/s	D D D	Tx Tx Tx	AFJ AFR AFP
Horizontal Array of Dipoles (H.A.D.)	6 to 12.5 Mc/s 12 to 25 Mc/s	D D	Rx Rx	AGL( ) AGL( )
Wideband Monopole with Earthmat	2 to 5 Mc/s 4 to 10 Mc/s 10 to 26 Mc/s	O O O	Tx Tx Tx	AGA( ) AGA( ) AGA( )

AERIAL OUTFIT A.E.B.



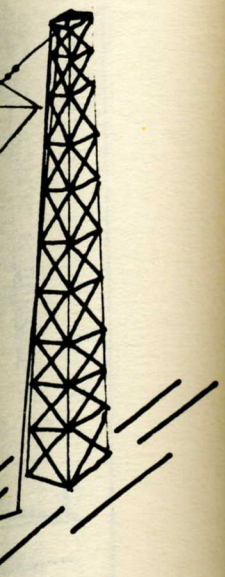
NOTES:

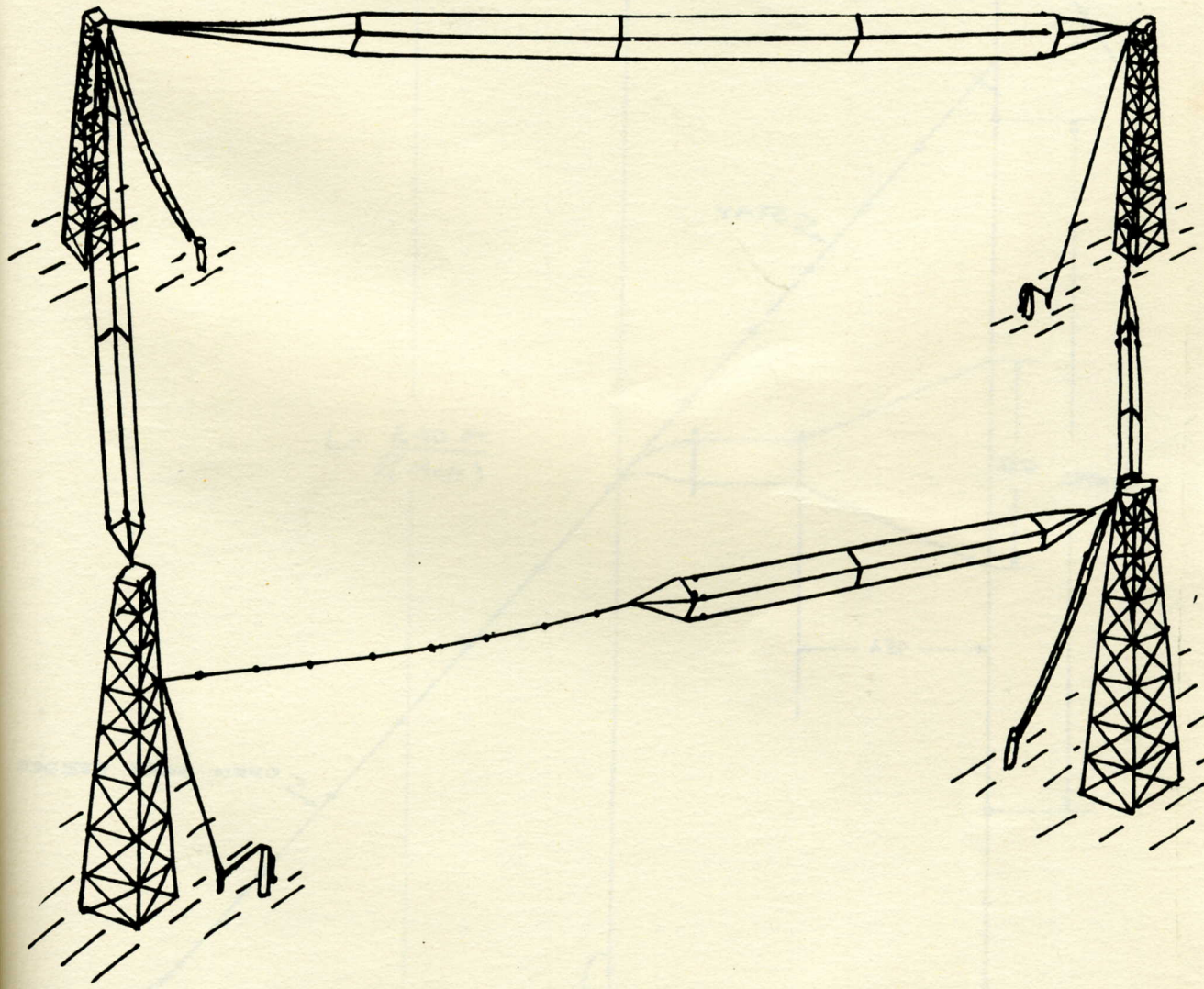
AN L.F. TRANSMITTING AERIAL.

DIMENSIONS AND RIGGING DETAILS CAN BE OBTAINED FROM A.S.W.E. DRAWING NO:30582.

Fig.6.4

AERIAL OUTFIT A.F.A.



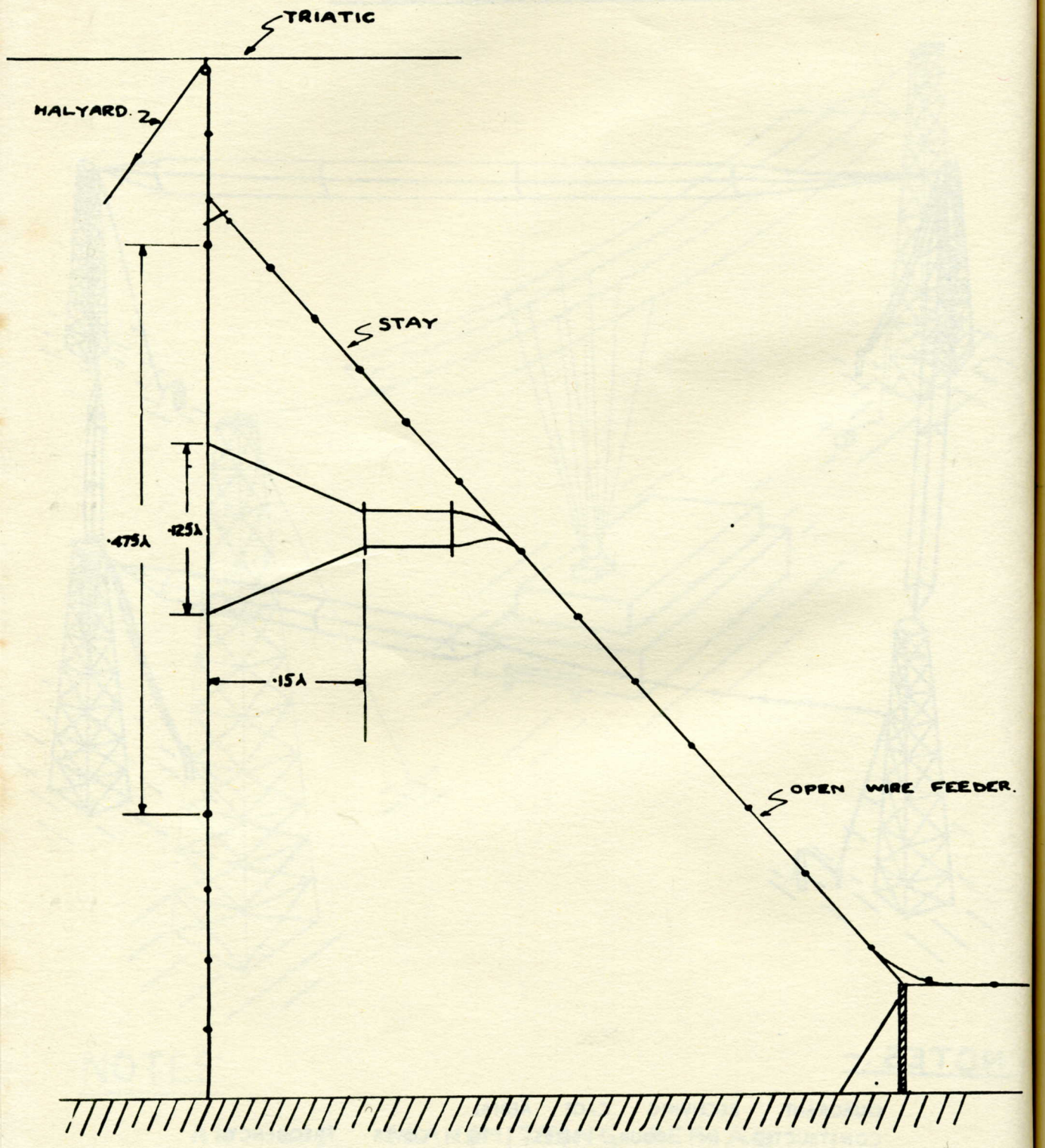


NOTES :-

QUADRANT RECEIVING CAGE AERIAL.
CONSTRUCTED IN FOUR SIZES TO COVER FREQUENCY RANGE 5 TO 20 Mc/s

Fig. 6.5

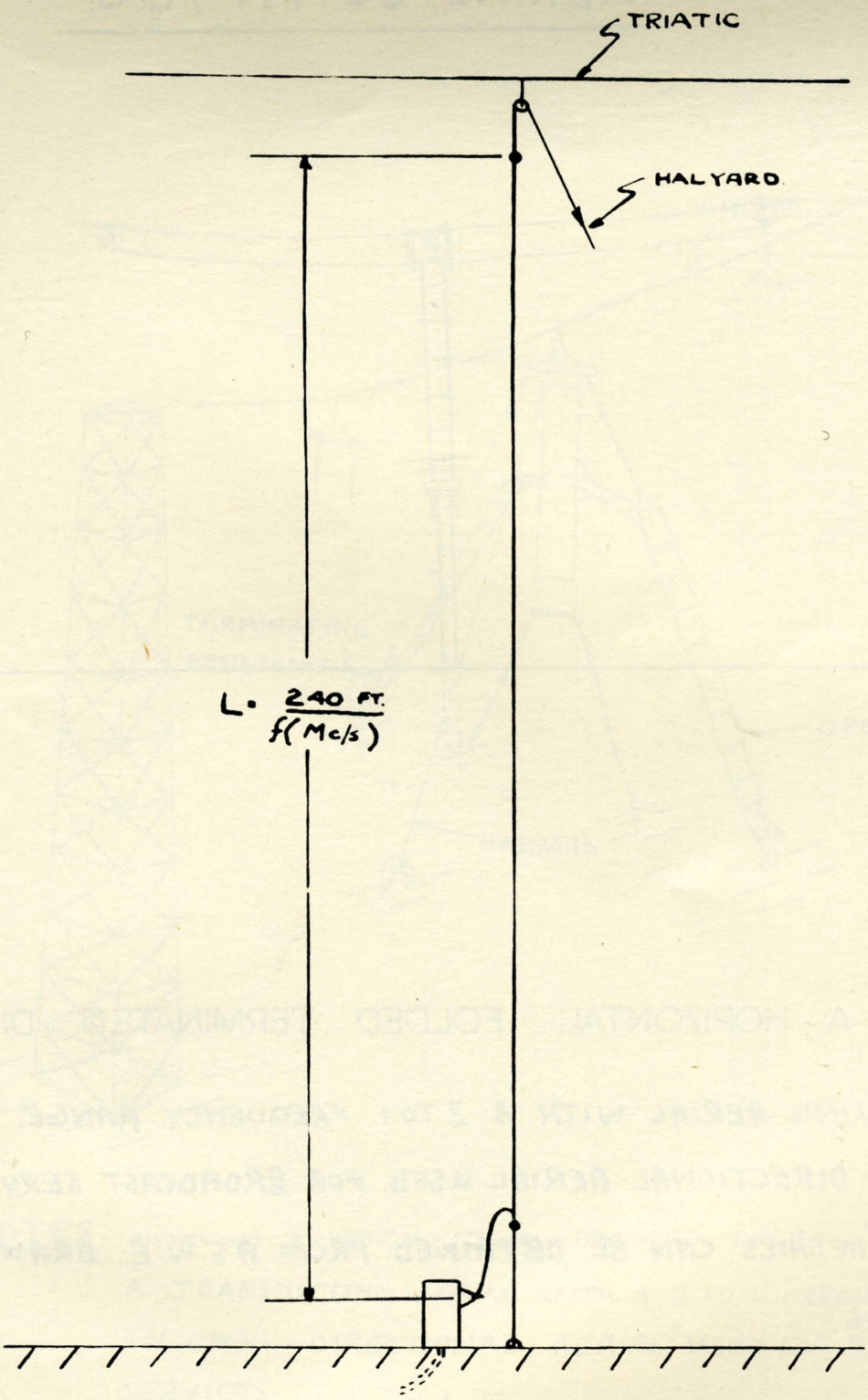
AERIAL OUTFIT AFD.



NOTES:-

AN OMNI-DIRECTIONAL TRANSMITTING AERIAL. A ½ DIPOLE.
USED ON BROADCAST CIRCUITS.
DIMENSIONS OF AERIAL AND RIGGING DETAILS CAN BE FOUND IN A.S.W.E.
DRAWING NO. D. 210516

Fig. 6.6

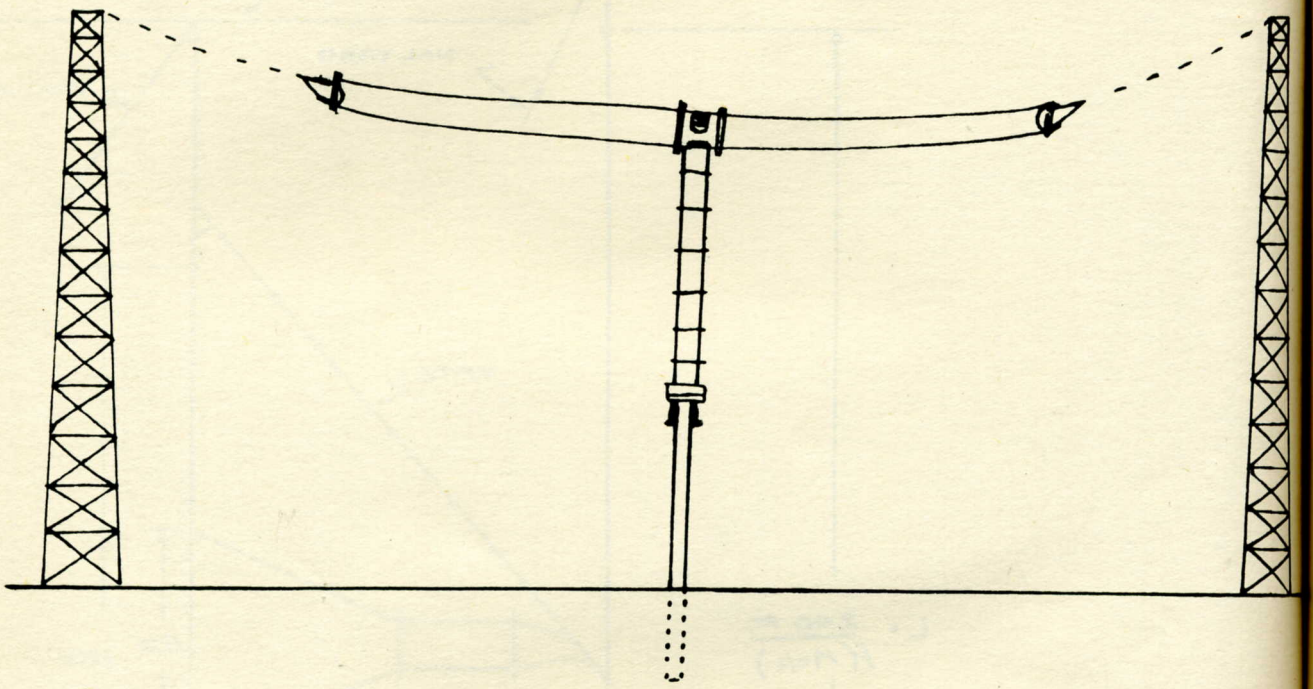


NOTES :-

AN OMNI-DIRECTIONAL RECEIVER AND LOW POWER TRANSMITTER AERIAL
A λ/4 END FED DIPOLE
USED FOR BROADCAST CIRCUITS.
DIMENSIONS OF AERIAL AND RIGGING DETAILS ARE CONTAINED IN
A.S.W.E DRAWING NO. 30163A/R10

Fig. 6.7

AERIAL OUTFIT A.F.O.



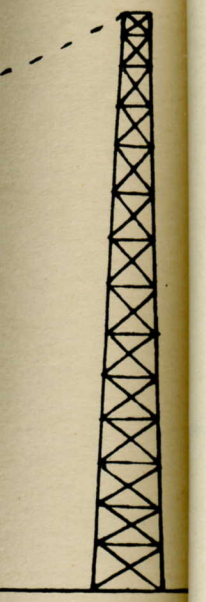
NOTES: A HORIZONTAL FOLDED TERMINATED DIPOLE.

A RECEIVING AERIAL WITH A 3 TO 1 FREQUENCY RANGE.

AN OMNI-DIRECTIONAL AERIAL USED FOR BROADCAST SERVICES.

RIGGING DETAILS CAN BE OBTAINED FROM A.S.W.E. DRAWING NO: 30406.

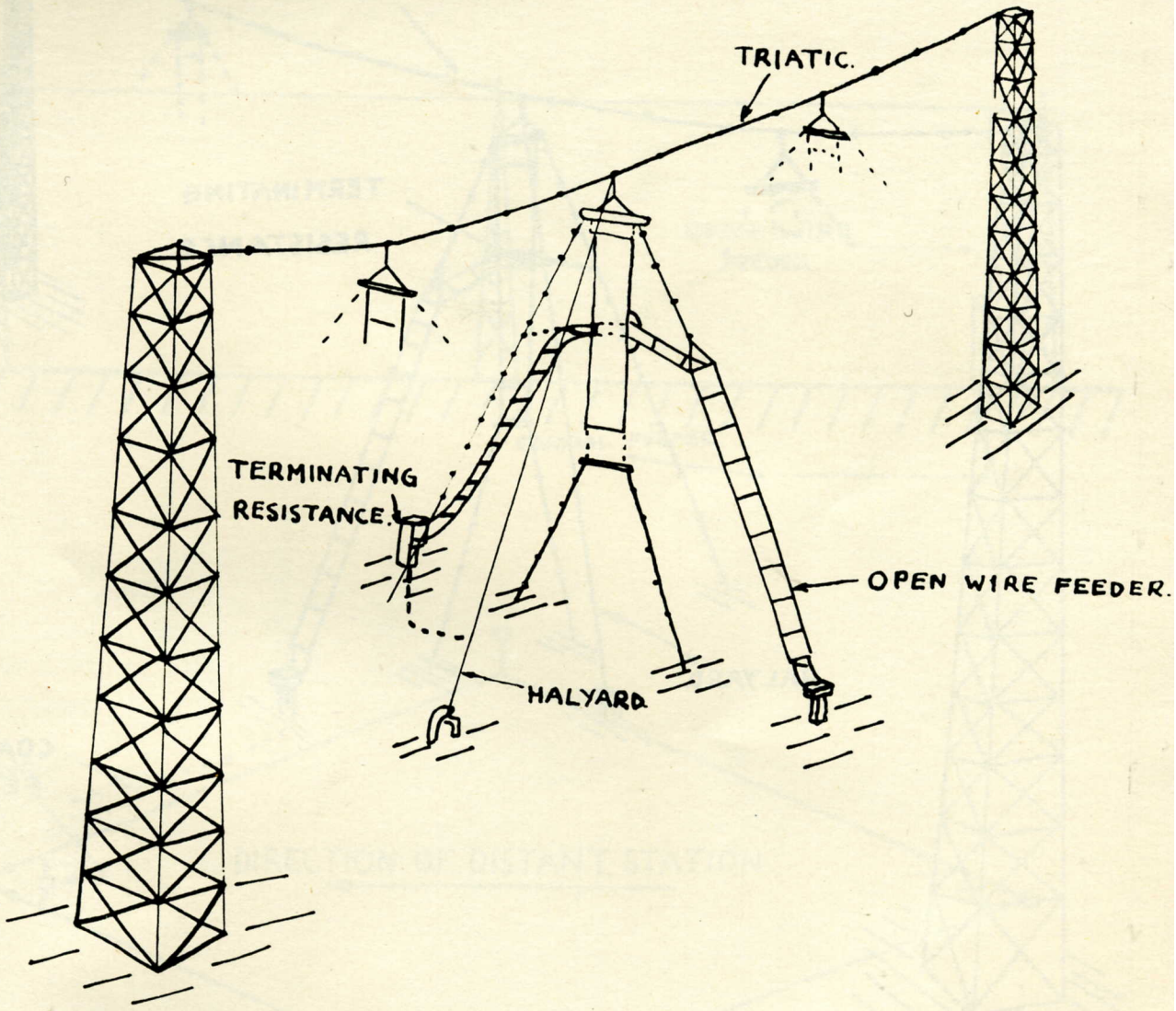
Fig. 6.8



DIPOLE.

VICES.

WING



NOTES: KNOWN AS A VERTICAL FOLDED TERMINATED DIPOLE. (V.F.T.D.)

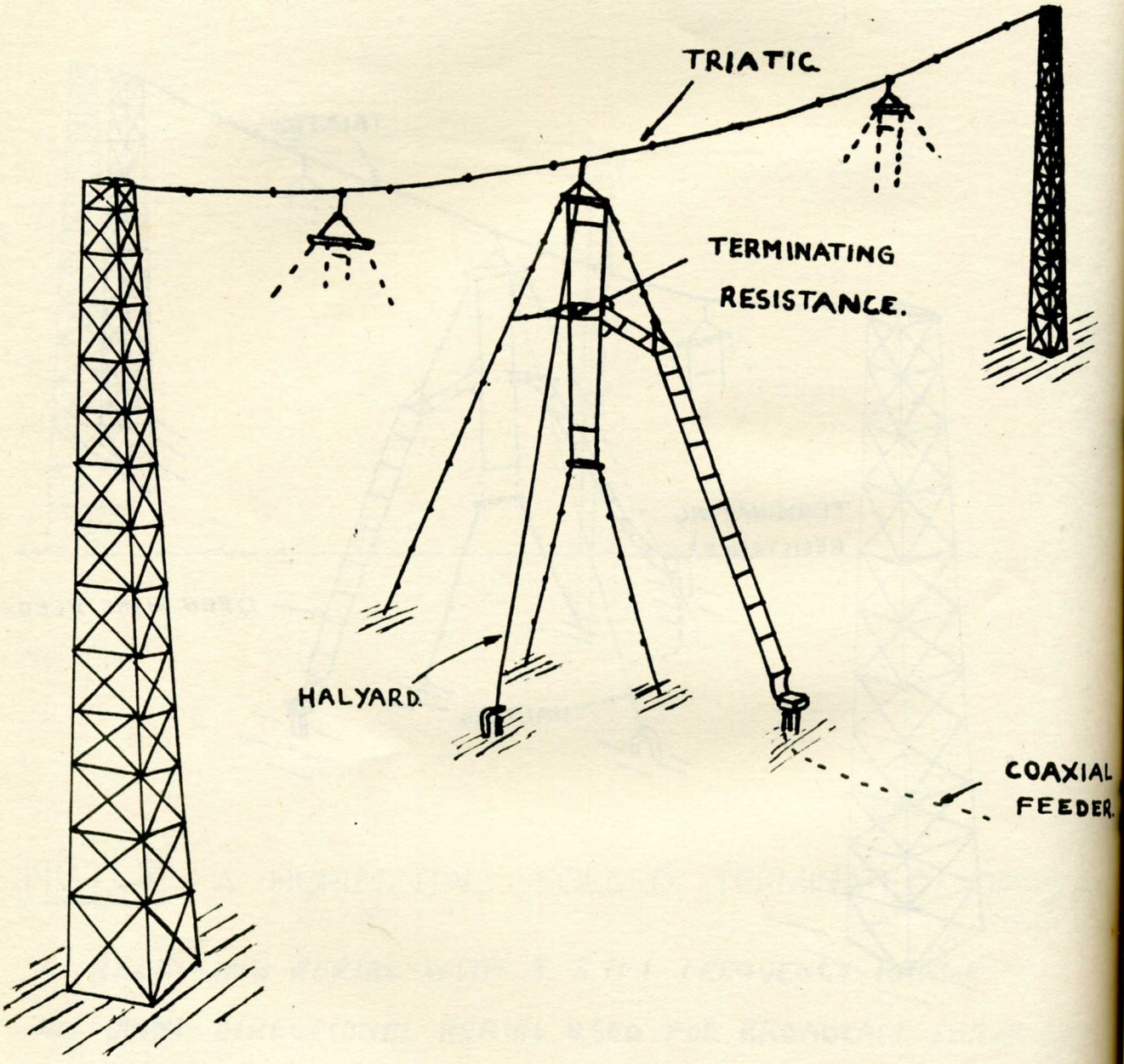
A TRANSMITTING AERIAL WITH A 3 TO 1 FREQUENCY COVERAGE.

AN OMNI-DIRECTIONAL AERIAL USED FOR BROAD CAST SERVICES.

RIGGING DETAILS CAN BE OBTAINED FROM A.S.W.E. DRAWING NUMBER.

Fig. 6.9

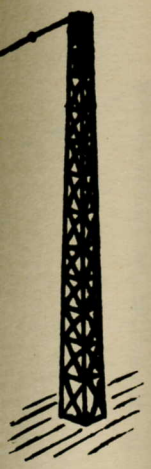
AERIAL OUTFIT A.F.S.

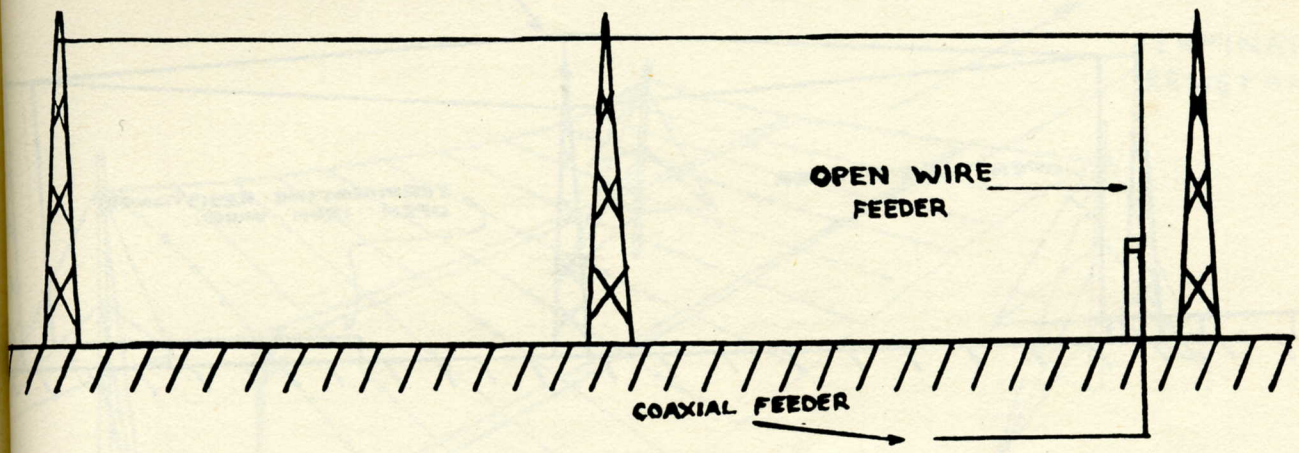


NOTES:

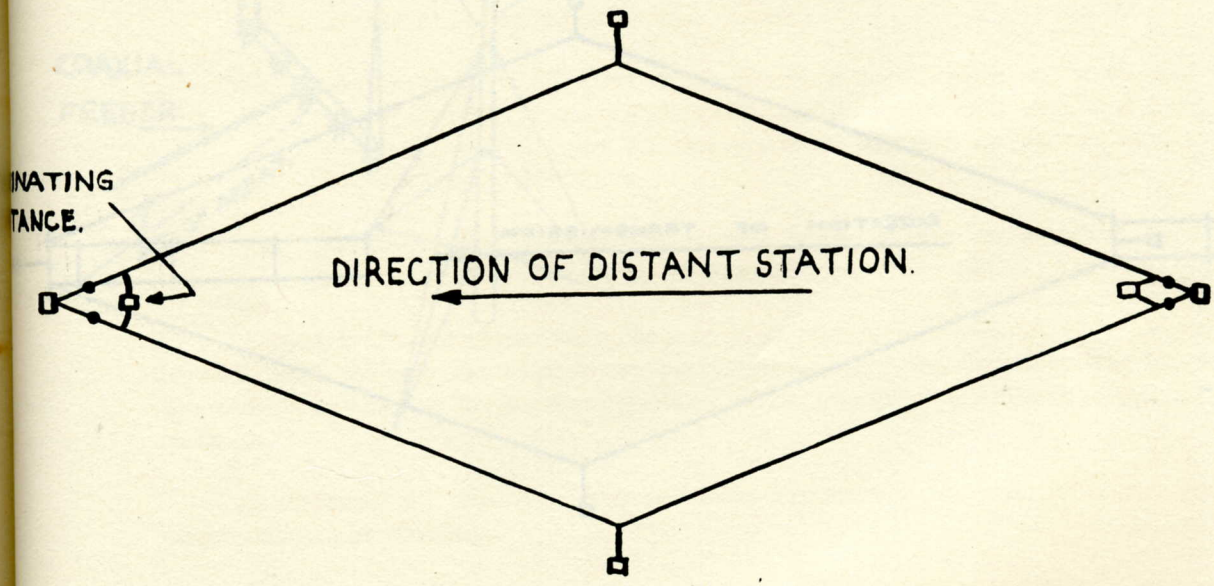
A RECEIVING AERIAL WITH A 3 TO 1 FREQUENCY COVERAGE.
AN OMNI-DIRECTIONAL AERIAL USED FOR BROADCAST SERVICES.
RIGGING DETAILS CAN BE OBTAINED FROM A.S.W.E. DRAWING NUMBER 41434/R4.

Fig.6.10





COAXIAL
FEEDER.



COVERAGE.
AST SERVICES.
DRAWING

TES:— A RHOMBIC AERIAL.

A DIRECTIONAL RECEIVER AERIAL.

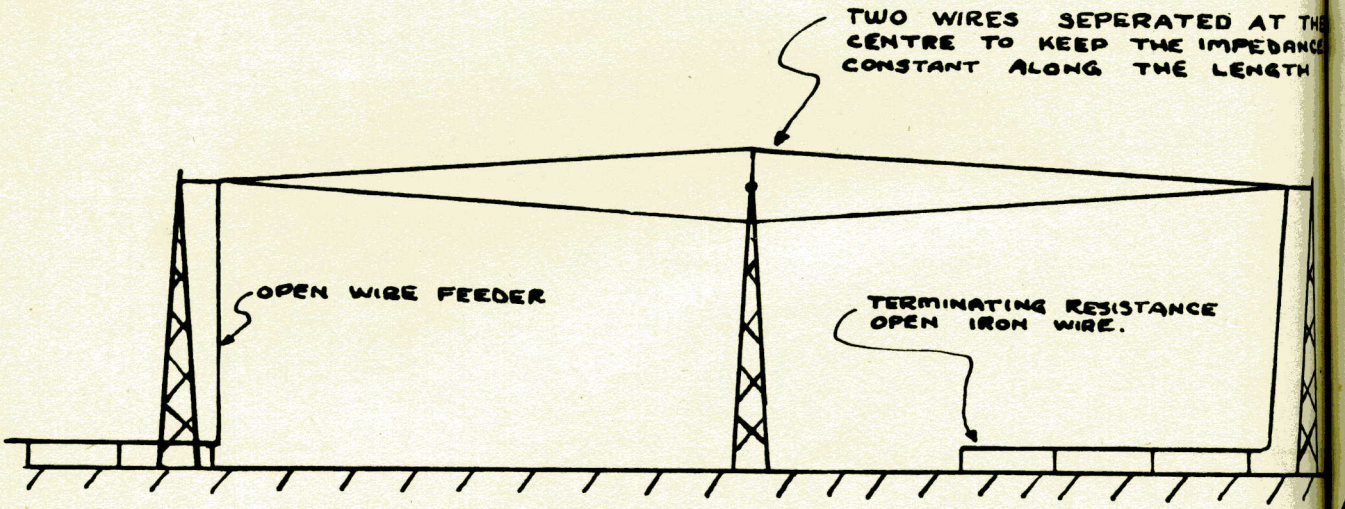
USUALLY A 3 TO 1 FREQUENCY COVERAGE.

IMENSIONS AND ANGLES FOR A PARTICULAR STATION
N BE OBTAINED ON APPLICATION TO A.S.W.E.

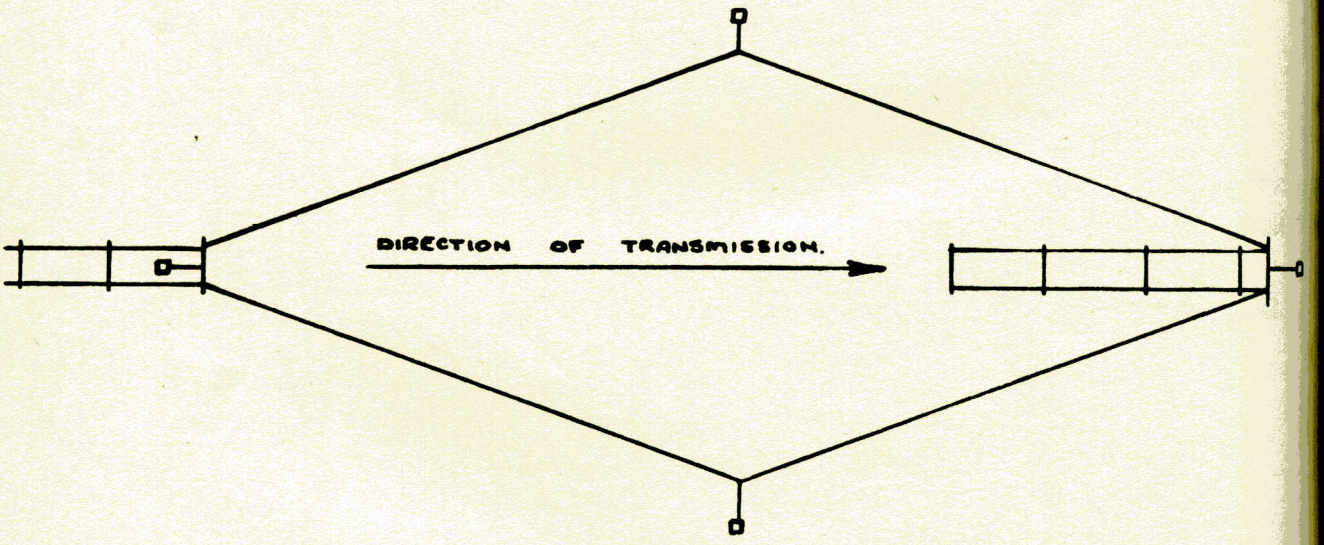
GING DETAILS ARE CONTAINED IN A.S.W.E.
DRAWING, E 210649.

Fig. 6. 11

AERIAL OUTFIT AFJ.



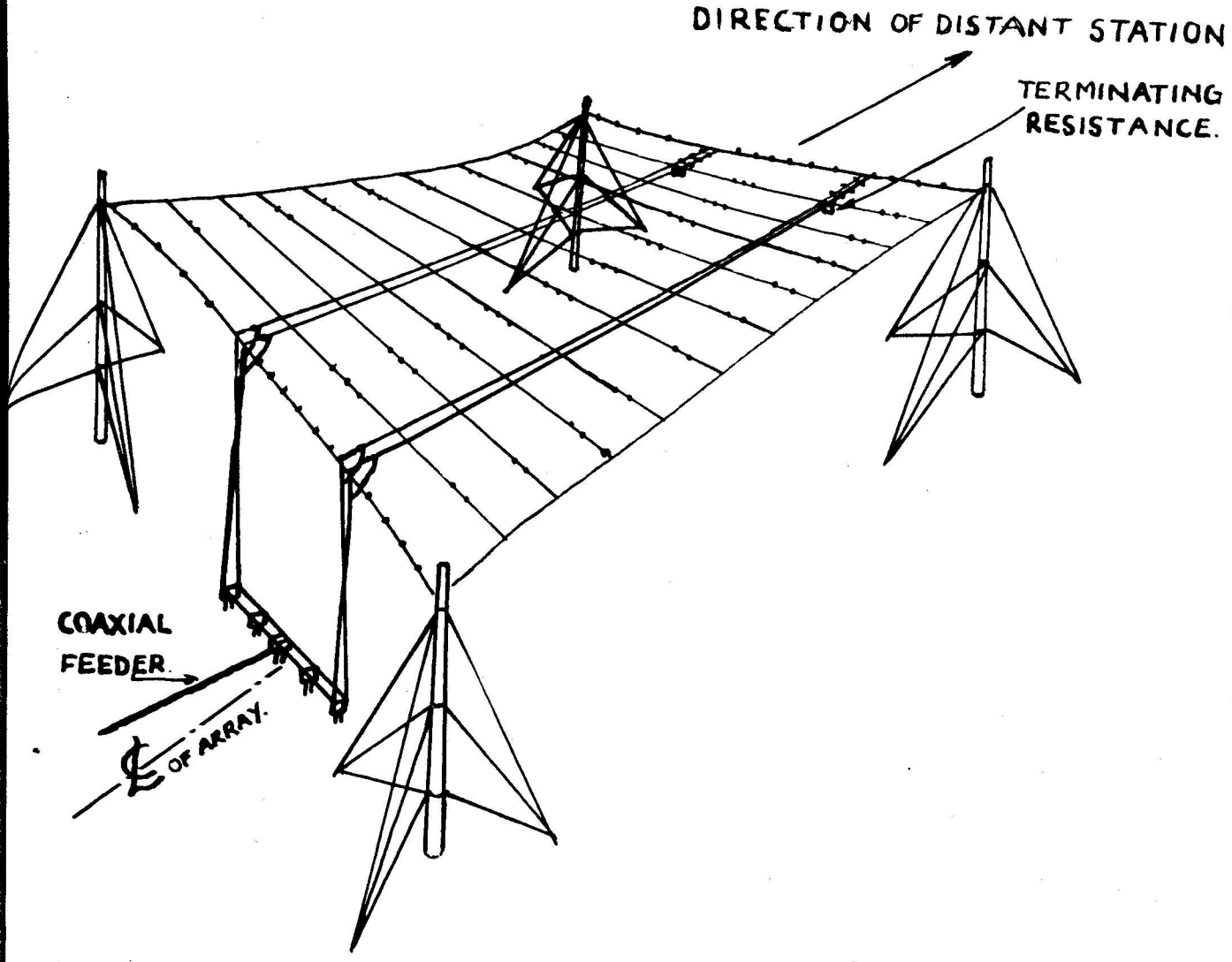
PLAN VIEW OF AERIAL



NOTES:- A RHOMBIC AERIAL.

A DIRECTIONAL AERIAL, FOR TRANSMITTING.
USUALLY A 3 TO 1 FREQUENCY COVERAGE.
DIMENSIONS AND ANGLES FOR A PARTICULAR STATION CAN BE OBTAINED ON APPLICATION TO A.S.W.E.
RIGGING DETAILS ARE CONTAINED IN ASWE. DRAWING NO. E.210261

Fig. 6.12



NOTES:

A HORIZONTAL ARRAY OF DIPOLES. (H.A.D.)

USED FOR RECEIVING, AND CAN BE DOUBLE-ENDED.

MADE IN TWO DIMENSIONS TO COVER:

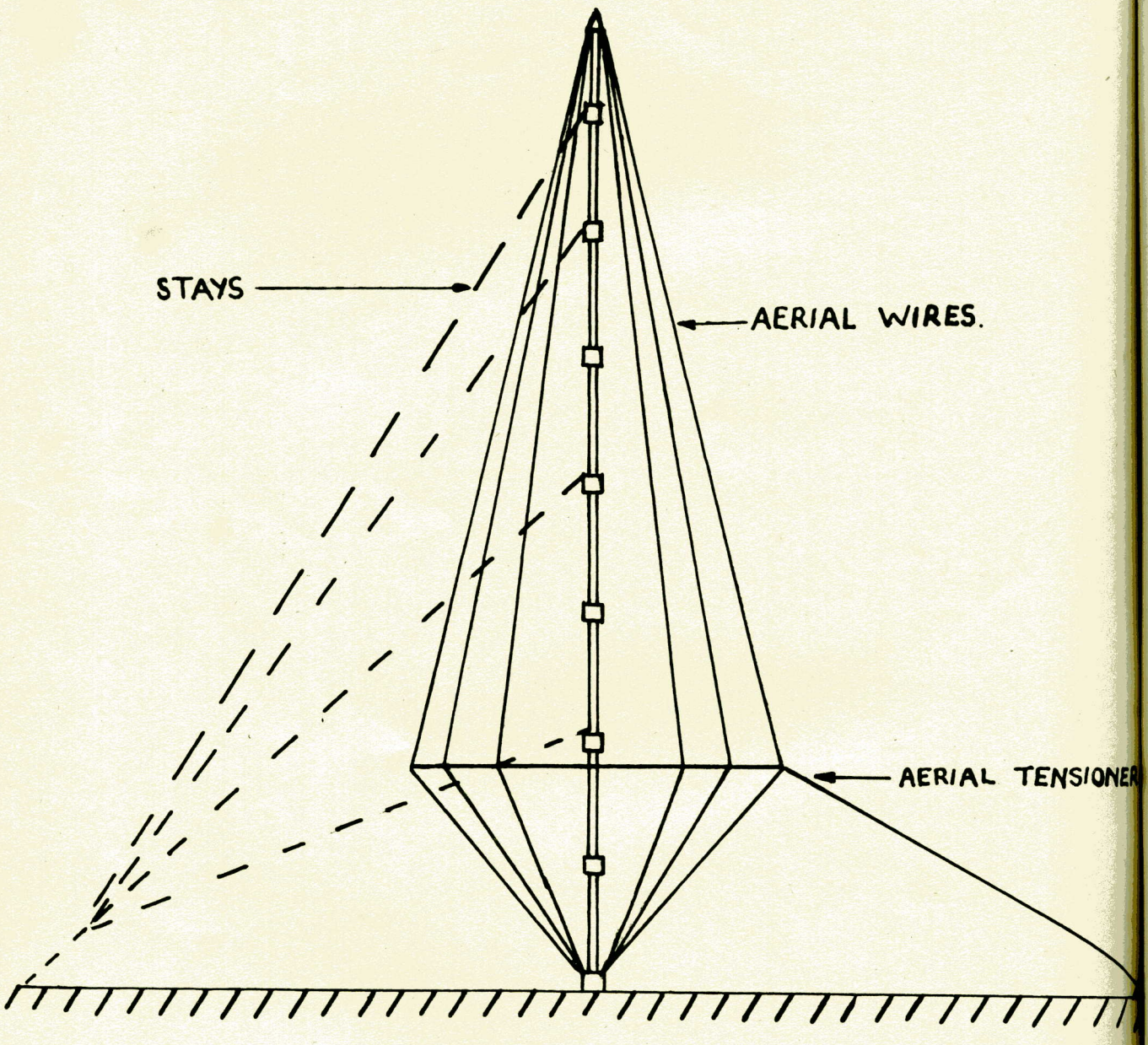
(a) 10 Mc/s.

(b) 20 Mc/s.

DIMENSIONS AND RIGGING DETAILS CAN BE OBTAINED FROM A.S.W.E. ON APPLICATION.

Fig. 6.13

AERIAL OUTFIT, A.G.A.



NOTES:

AN OMNI-DIRECTIONAL RECEIVING AERIAL.

THERE ARE THREE DIFFERENT DIMENSIONS FOR AERIALS:

2·5 — 5 Mc/s.

4 — 10 Mc/s.

10 — 26 Mc/s.

DIMENSIONS AND RIGGING DETAILS ARE CONTAINED IN A.S.W.E. DRAWING NO: E.322316.

Fig. 6.14

PHOTOGRAPHIC ANALYSIS

The accompanying photographs are included to show how photographic methods are essential for correct analysis of keying waveforms.

The actual pictures are very old but they do demonstrate various defects in the structure of the signal transmitted over the radio path.

It should be remembered that films show not only the transmitted waveform but also distortion caused by propagation effects, QRM, QRN and locally generated noise and distortion caused by the receiver itself.

Thus, although the film gives a permanent record, the information has to be carefully sifted.

Photo 1. Spacing bias (space duration of 24 milliseconds instead of 20 milliseconds) with two relay bounces at 3.3 millisecond intervals.

Photo 2. Series of letter "V", showing a split in the character at a point 6.7 milliseconds along the third unit, possibly due to worn tape or faulty auto-transmitter head.

Photo 3. Series of "RY's" with relay bounces, slight mark bias and speed slow.

Photo 4. Photo taken at 0530 on 24th March, when it was impossible to print from the teleprinter keyboard transmission. The very severe distortion renders identification of the characters transmitted when the film was taken extremely difficult, but there is a resemblance of "RY" characters.
The auto head transmission at 0515 was quite satisfactory.

Photo 5. Perfect time duration of mark and space units. However, a 100 c/s ripple is very noticeable.

Photo 6. A series of letter-shift characters with irregular splits which may have been produced by dirty contact ring of the teletype auto head or a poor connection.

Photo 7. Photo of H.M.S. VANGUARD's Radio Teletype transmission, showing trace of Multipath and a split in the letter shift character.

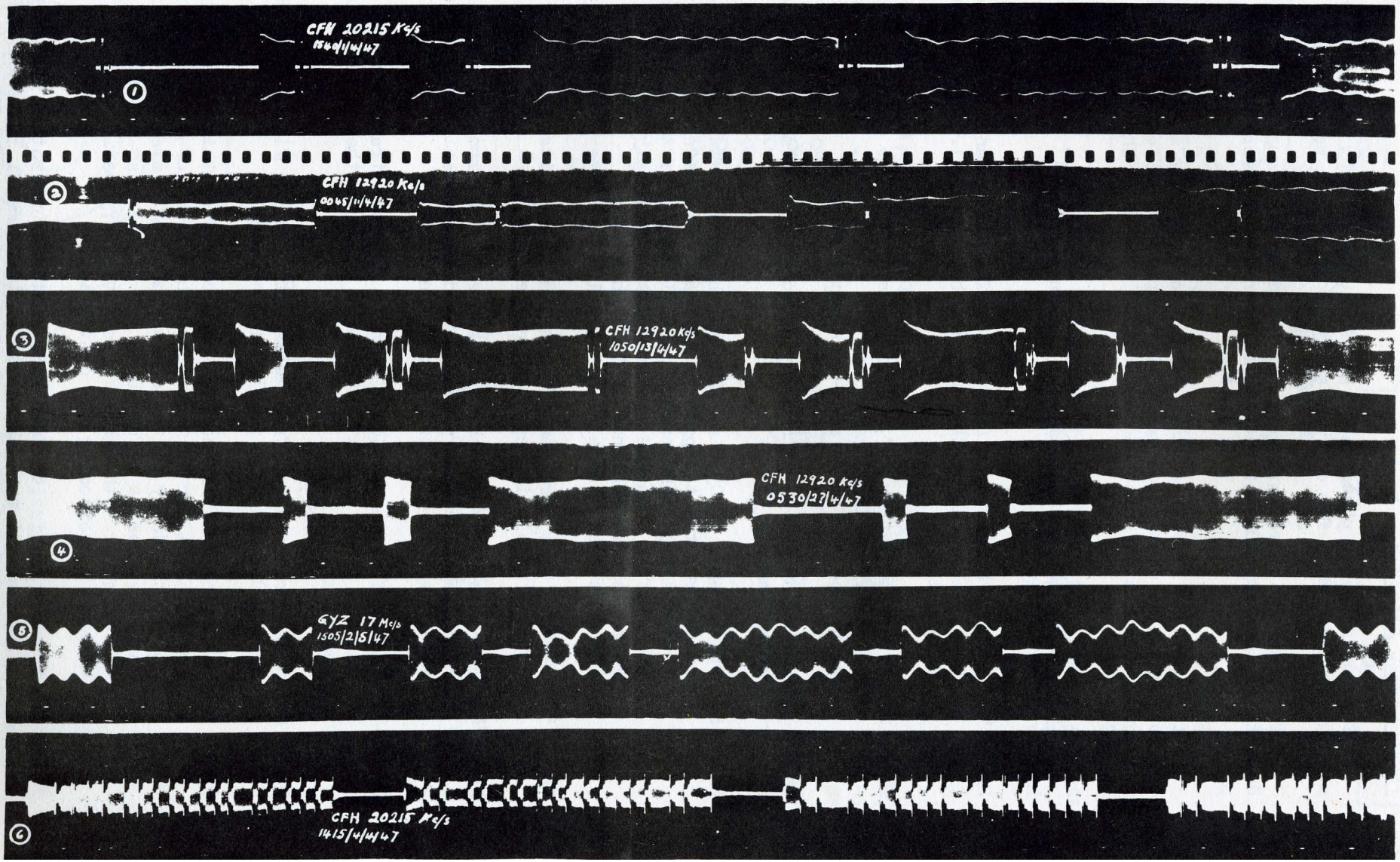
Photo 8. Morse transmission from Malta after keying filter inserted. Deep 100 c/s supply ripple also evident.

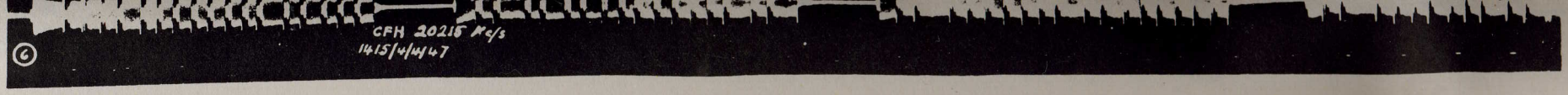
Photo 9. Series of "N's" in morse. The effect of this particular key click filter is to produce the effect of a spacing bias due to the delay at the commencement of radiation. This can sometimes be reformed by the signal bias adjustment at the receiver - though this is not a very satisfactory method of overcoming the distortion.

Photo 10. Morse transmission from VHP. It was understood that the master oscillator was in use at the time. It is possible that the heavy power supply ripple affected the M.O. Evidence of this ripple is also furnished by Photo 11.

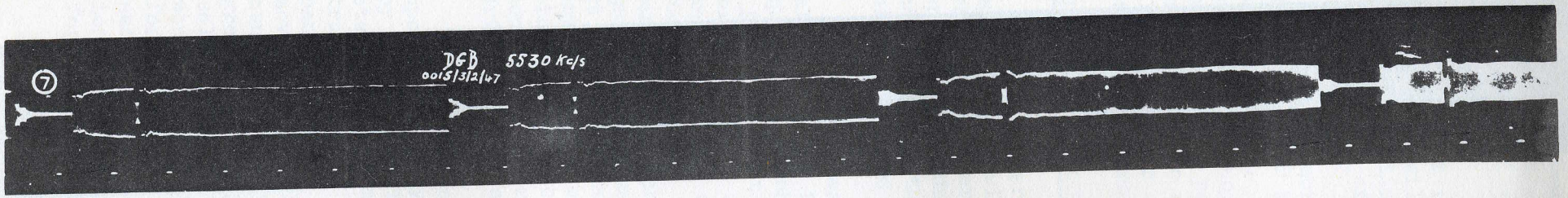
Photo 11. Shows 100 c/s ripple of power supply along with a single relay bounce.

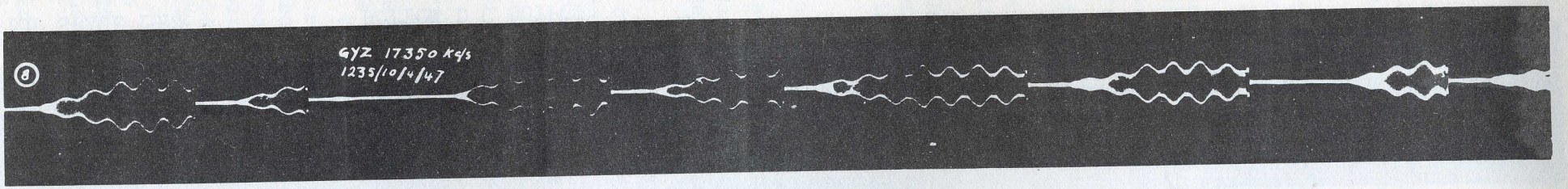
TRANSMITTER FAULTS

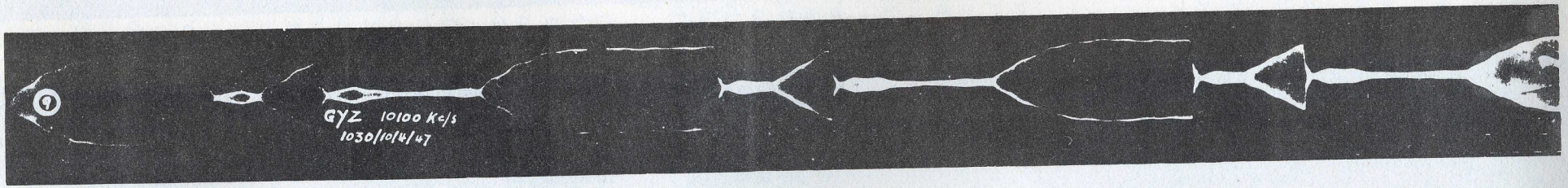


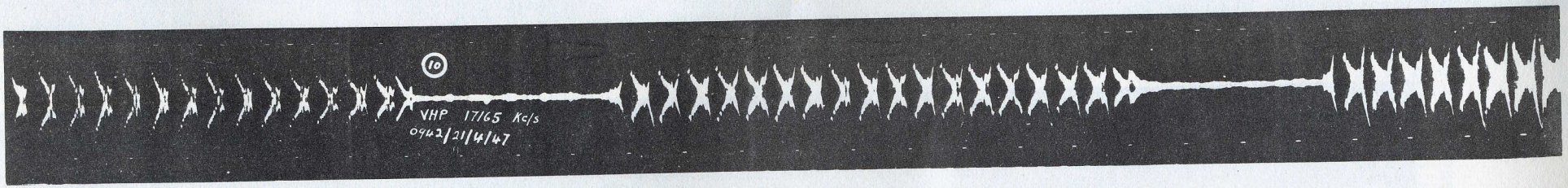


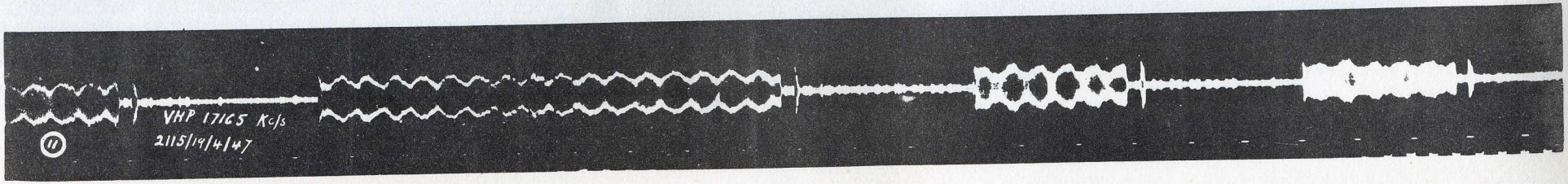
TRANSMITTER FAULTS.





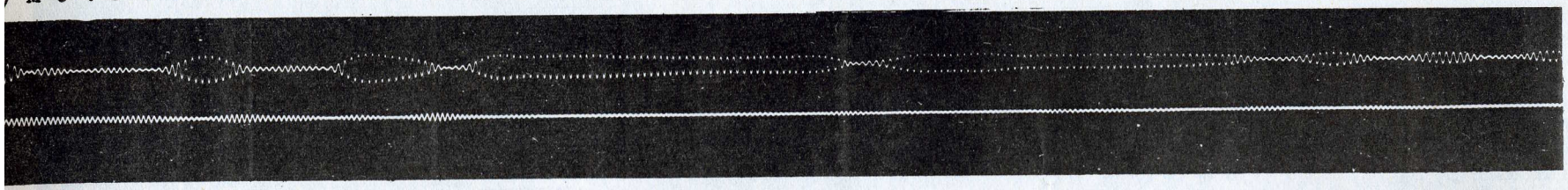




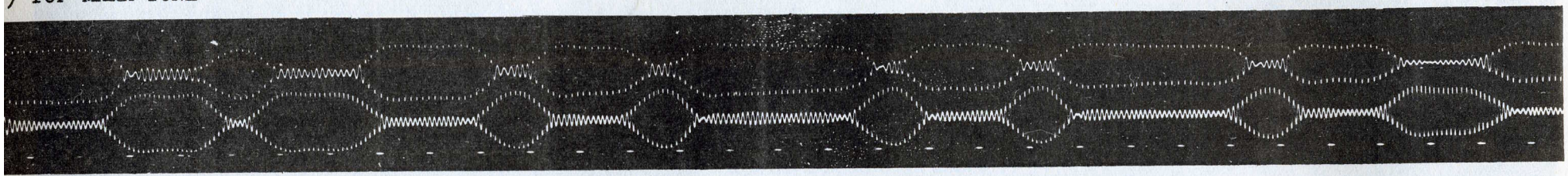


SINGAPORE 22795 KCS SSB OUTFIT C G L 27 - 4 - 59 1110 to 1124 OMNI AERIAL 13 - 26 MCS

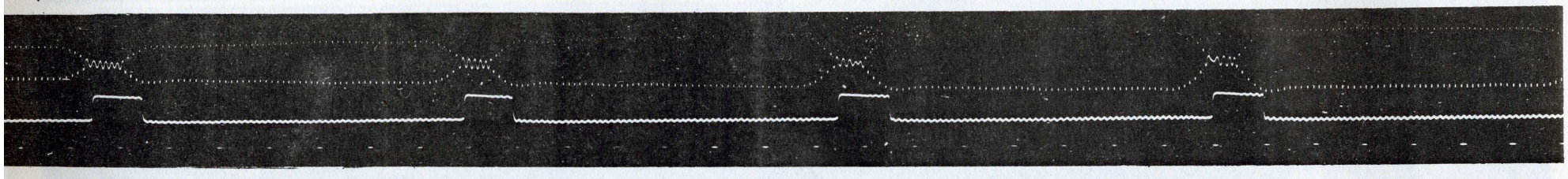
) M C V F CHANNEL 1 TOP MARK TONE SELECTIVE FADING BOTTOM SPACE TONE



) TOP MARK TONE BOTTOM SPACE TONE



EE) TOP MARK TONE BOTTOM D C OUTPUT



R) TOP SPACE TONE BOTTOM D C OUTPUT