

SUMMARY OF DATA

PURPOSE

To provide simultaneous two way communication with other Skynet stations and with stations using Interim Defence Communication Satellite Programme (I.D.C.S.P.) satellites.

BRIEF DESCRIPTION

The Skynet sub system incorporates transmission and reception equipment together with satellite acquisition and tracking facilities. The station consists essentially of two self-contained transportable compartments relying on a minimum of ship support services. The antenna mounting utilises a six foot parabolic reflector which handles circularly polarised communication and tracking signals in the frequency band 7.25-8.4 GHz. The three axis mount is stabilised and steered in roll, pitch and yaw by servo control systems employing a gyroscope and accelerometer cluster. Dry air and cooling are provided for the waveguide.

FACILITIES OF STATION

(a) F.D.M.E. capability, multiplex in:-

MODE 1 - One speech plus 3 x 75 baud f.s.k. telegraph channels
 MODE 2 - 6 x 100 baud plus 3 x 75 baud f.s.k. telegraph channels.

NOTE The 6 x 100 baud telegraph channels use the same frequency spectrum as the speech channel MODE 1.

(b) Terminal Equipment Availability:-

Limited to 3 x 75 baud telegraph transmit/receivers at the M.C.O. and 1 x 75 baud transmit receiver for an engineering link at the S.C.C.O.

(c) Satellite Power:-

Down link power sharing between the various Skynet terminals

TRANSMISSION

- (a) Input - baseband
- (b) Modulation - F.M.
- (c) Frequency - synthesised carrier 7.9-8.4 GHz
- (d) R.F. Power source 0-100 mW (Phase locked klystron oscillator).
- (e) Power output 0.1-5 kW

RECEPTION

- (a) Inputs - Communication and Beacon
- (b) R.F. Range 7.25-7.3 GHz (processed by Monopulse Comparator)
- (c) Amplification
 - (i) Sum signal uses low noise parametric amplifier and phase locked klystron local oscillator.
 - (ii) Azimuth and elevation signals use low noise tunnel diodes.
- (d) I.F. Range 45-95 MHz.

MAJOR UNITS & PHYSICAL DATA

| Description | NSN | Weight | Length | Width | Height |
|---|------------------|---------|------------|-----------|------------|
| Antenna Power Supply Office, Satellite Communication (comprises Antenna Mounting and Antenna Support Cabin) | 5820-99-520-5179 | 8½ tons | 12 ft 6 in | 8 ft 0 in | 7 ft 1½ in |
| Satellite Communications Control Office | 5820-99-520-5178 | 13 tons | 16 ft 6 in | 8 ft 0 in | 8 ft 9 in |

ANTENNA DETAILS

- (a) Training angle $\pm 270^{\circ}$ from Ship's Head
- (b) Elevation angle $+ 115^{\circ}$ to -25°
- (c) 3 dB point at $1\frac{1}{2}^{\circ}$ from centre beam
- (d) Side lobes 15 dB

POWER REQUIREMENTS

- (a) S.C.C.O.
 - (i) 440 V, 3 phase 60 Hz 55 kVA
 - (ii) 115 V, 3 phase 60 Hz 8 kVA
 - (iii) 115 V, 1 phase 400 Hz 1 kVA
- (b) M.C.O., Local Speech Position and Remote Speech Position each require via isolating transformer 115 V, 1 phase, 60 Hz.

SHIP SERVICES TO BE PROVIDED

- (a) Salt water coolant:
 - (i) S.C.C.O. $4\frac{1}{2}$ gal/min
 - (ii) M.S.C. 17 gal/min (max. temp. 95°F)
- (b) Fresh Water (small quantity for transmitter klystron)
- (c) Waveguide and Pannier air supply - 12 standard ft^3/min at $100 \text{ lb}/\text{in}^2$ minimum
- (d) Compass transmission to S.C.C.O., Bridge, Operations Room and Flying Control
- (e) Standard Frequency Outfit FSA 1 MHz to S.C.C.O.

HANDBOOKS

AP 116S-0204-1 Series

INSTALLATION SPECIFICATION

B1131(1) & (2).

ESTABLISHMENT LISTS

1320

