

13005

STATION MANUAL  
CROUGHTON  
(Map No. 145 Ref. SP. 562.328)  
Communication Equipment Vehicle  
Serial No. 3025  
Ref. T. 4660 (25)

U.K. MICROWAVE SYSTEM  
U.S.A.F. CONTRACT NO. DA-91-591-EUC-874

© Copyright Reserved

MANUFACTURED  
and

PUBLISHED BY:

MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED,  
CHELMSFORD, ESSEX, ENGLAND.  
TELEPHONE NO. CHELMSFORD, 3221, TELEX: 1953  
TELEGRAMS: - EXPANSE, CHELMSFORD, TELEX.

STATION MANUAL

PART 2

1 INTRODUCTION

The purpose of the scheme is to provide multichannel speech and telegraph communications, using SHF wideband radio relay equipment, between U.S.A.F. stations.

The system is designed for maximum flexibility and the radio, the channeling equipment and the standby generating equipment are normally housed in semi-trailer type vehicles. (In some instances, the radio and channeling equipments have been transferred to a permanent building).

The scheme comprises a number of SHF wideband multichannel communications links, each link providing up to 240 telephone channels some of which may carry voice frequency telegraph carrier channels dependent on the equipment in use.

The radio links provided are as follows: - (refer to Block diagram T.1668 Sh.1 in the Installation Folder).

Hillingdon - Bovington - Barkway.

Hillingdon - High Wycombe.

Hillingdon - Woldingham - Cold Blow.

Barkway - High Garrett.

Barkway - Lakenheath.

Barkway - Alconbury.

High Wycombe - Christmas Common.

Cold Blow - Dunkirk - Swingate - Longfosse.

High Garrett - Great Bromley - Martlesham Heath.

Lakenheath - Wendling - Southorpe.

Alconbury - Chicksands.

Alconbury - Chelveston.

Christmas Common - Croughton.

~~Christmas Common~~ - Daventry.

T.16660

Chelveston - Davenport.

The baseband equipment allows interconnection of Groups (12 channels) or Supergroups (60 channels), using appropriate filters, between terminal equipments serving separate links at the same station.

The communications equipments used throughout this scheme are Marconi (MWT) SHE Wideband Multichannel Equipment HM 510/560 Series, Automatic Telephone and Electric Company Limited (ATE) Telephone Carrier Channeling Equipment and the Telephone Manufacturing Company Limited (TMC) Voice Frequency Telegraph Equipment.

### 1.1 POWER EQUIPMENT

The power equipment (installed in the semi-trailers) used on this scheme are Macfarlane Alternators driven by Rushton-Horsby Diesel engines, with the control equipment provided by Austinite. The control equipment allows connection to the mains power supplies, the alternators being brought into use on failure of the mains supply.

### 1.2 RADIO EQUIPMENT

The radio equipment throughout the system is duplicated, one set of equipment is known as OPERATIONAL and the other as STANDBY. The STANDBY equipment operates on the same frequencies as the OPERATIONAL equipment and is held in readiness at full power.

On breakdown of the OPERATIONAL equipment the baseband output is taken from the STANDBY receiver and the aerial is switched to the standby equipment. This changeover takes place automatically only at the faulty station; group changeover may however be effected manually from the terminal stations.

Changeover of the equipments is initiated on the occurrence of the following faults:

- (a) Fault in the radio receiver.
- (b) Fault in the radio transmitter.
- (c) Failure of the radio pilot carrier signal.

If however a fault already exists on the STANDBY equipment interlock circuits prevent changeover from taking place.

The automatic changeover equipment forms part of the supervisory rack; failure of power supplies to this rack causes a warning lamp to light and the aerials and traffic to be switched to the OPERATIONAL equipment, regardless of its condition.

1.7660

SITE	SITE PLAN (PE & ID)	REFLECTOR MOUNTING STEELWORK (M.D.S.)	SUPPORT STRUCTURE	LINE OF SHOOT TO E OF N	HEIGHT OF REFLECTOR (FT.)	SIZE & TYPE OF REFLECTOR
CHRISTMAS COMMON	LT5777		120 FT.	DAVENTRY 347%	80'	6' x 8% - M. W. T.
			STAIRWAY TOWER	CROUGHTON 339	120	6' x 8% - M. W. T.
ALCONBURY	HE30-0415 HE40-0406 HE40-0406	L18155 L18462 LSK30179 5SP4985/3 LSK30398	145'-6" BICC TOWER	CROWLAND 11'-51" CHELVESTON 247'-45" CHICKSANDS 193'-15" BARKWAY 157'-15"	140 FT. 120 FT. 120 FT. 120 FT.	12' x 8' - GLOS. 6' x 8% - M. W. T. 6' x 8% - M. W. T. 6' x 8% - M. W. T.
BARKWAY	LT7593 L15328	L16791 LSK28725	350 FT. GROUP I TOWER	LAKENHEATH 40% HIGH GARRETT 104' BOVINGDON 229' ALCONBURY 337%	200 245 130 150	12' x 8' - GLOS. 12' x 8' - GLOS. 6' x 8% - M. W. T. 6' x 8% - M. W. T.
HIGH WYCOMBE	LT7578 L15313	L15621 LSK26210	150 FT. MARCONI H. D.	CHRISTMAS COMMON 279% HILLINGDON 112%	130 130	6' x 8% - M. W. T. 6' x 8% - M. W. T.
DAVENTRY	LT7584 L15319	L16785 LSK28188	200 FT. BICC H. D.	CHELVESTON 76% CHRISTMAS COMMON 167%	175 176	12' x 8' - GLOS. 12' x 8' - GLOS.
HIGH GARRETT	LT7592 L15327	L16756 LSK28118	200 FT. BICC H. D.	GT. BROMLEY 93% BARKWAY 284%	200 200	12' x 8' - GLOS. 12' x 8' - GLOS.
HILLINGDON	LT7579 L15314	L16733 LSK28080	144 FT. MARCONI H. D.	HIGH WYCOMBE 292' WOLDINGHAM 133% BOVINGDON 343%	130 140 140	6' x 8% - M. W. T. 6' x 8% - M. W. T. 6' x 8% - M. W. T.
CHICKSANDS	LT7586 L15321	L15630 LSK26326	240 FT. A.M. WOODEN TOWER	ALCONBURY 12%	205	12' x 8' - GLOS.
COLD BLOW	L16575	L17126 LSK28400	150 FT. MARCONI H. D.	DUNKIRK 90% WOLDINGHAM 267%	120 80	6' x 8% - M. W. T. 6' x 8% - M. W. T.
WOLDINGHAM	LT7580 L15315	L15612 LSK27085	150 FT. MARCONI H. D.	COLD BLOW 87% HILLINGDON 313%	135 135	6' x 8% - M. W. T. 6' x 8% - M. W. T.

h	x	±y	θ	REFL. BEARING OF N	REFL. ELEV.	S	ω	v
72	3.333	-1.293	2° 42'	350° 12'	44° 33'	2° 46'	0° 54'	2° 39'
112	7.833	-4.792	4° 10'	334° 50'	43° 55'	4° 02'	2° 08'	4° 06'
131.0	0	-9.25	0	11°-50-37.6"	47°-1'	0	4°-2'	0
112.145	5.895	+18.187	2°-34'	245°-11'	49°-39'	2°-57'	9°-19'	2°-31'
111.5	0	+10.562	0	193°-15'	47°-42'	0	5°-26'	0
112.145	4.729	+18.104	2°-3'	159°-18'	49°-38'	2°-23'	9°-17'	2°-2'
183	28.5	-5.75	9° 01'	49° 31'	44° 49'	8° 59'	3° 44'	9° 01'
240	24.83	-1.66	5° 55'	109° 55'	45° 07'	1° 44'	3° 47'	16° 23'
120	17.1	+16	7° 02'	221° 57'	49° 16'	8° 08'	8° 41'	7° 03'
146	38.75	-14.5	15° 46'	321° 44'	44° 20'	16° 51'	9° 34'	16° 08'
119	0	+4.5	0	279° 30'	46° 03'	0	2° 12'	0
119	0	+4.5	0	112° 00'	46° 03'	0	2° 12'	0
166	0	+20.5	0	76° 45'	48° 30'	0	7° 3'	0
166	0	+20.5	0	167° 45'	48° 30'	0	7° 3'	0
187	0	+12.25	0	93° 45'	46° 54'	0	3° 53'	0
187	15.75	+5.00	4° 40'	279° 50'	45° 57'	4° 49'	1° 52'	4° 32'
120	0.75	+8.00	0° 18'	291° 42'	46° 55'	0° 19'	3° 46'	0° 20'
130	9.75	+3.75	4° 9'	137° 24'	45° 55'	4° 17'	1° 58'	4° 15'
130	1.1	+13.5	0° 26'	343° 19'	47° 58'	0° 28'	5° 53'	0° 27'
195	8.833	+17.25	2° 23'	10° 22'	47° 28'	2° 30'	5° 23'	2° 28'
110	0	+5	0	90° 15'	46° 17'	0	2° 36'	0
70	0	+3	0	267° 30'	46° 13'	0	2° 27'	0
110	8.083	+6.583	3° 56'	91° 26'	46° 51'	4° 12'	3° 38'	3° 51'
95	14.75	-10.93	9° 45'	303° 45'	42° 31'	6° 39'	7° 30'	9° 42'

1.466

SITE	SITE PLAN (PE & ID)	REFLECTOR MOUNTING (M.D.S.)	SUPPORT STRUCTURE	LINE OF SHOOT TO ° OF N.	HEIGHT OF REFLECTOR (FT)	SIZE & TYPE OF REFLECTOR
DUNKIRK	L77581	L15638	350 FT. COLD BLOW GROUP III TOWER	270° SWINGATE 124°	120	6' x 8 1/2" - M.W.T.
DUNKIRK	L15316	LSK26265	350 FT. GROUP III TOWER	SWINGATE	120	6' x 8 1/2" - M.W.T.
SWINGATE	L77583	L15657	350 FT. GROUP III TOWER	DUNKIRK 304°	200	12' x 8' GLOS.
SWINGATE	L15318	LSK26299	350 FT. GROUP III TOWER	LONGPOSSE 150°	200	12' x 8' GLOS.
GT. BROMLEY	L77600	L17306	350 FT. GROUP II TOWER	MARLTESHAM HEATH 36°	120	6' x 8 1/2" M.W.T.
GT. BROMLEY	L15335	LSK28768	350 FT. GROUP II TOWER	HIGH GARRETT 273°	96	6' x 8 1/2" M.W.T.
CROUGHTON	L77576	L15956	250 FT. BLAW-KNOX TOWER	CHRISTMAS COMMON 158°	110	6' x 8 1/2" M.W.T.
LONG POSSE LT	L18110	LFL30054	100 FT. TOWER	SWINGATE 330°	95	12' x 8' GLOS.
ALCONBURY						
DAVENTRY						
BARKWAY						
WENDLING						
LAKENHEATH						
WENDLING						
LAKENHEATH						
WENDLING						
SCULTHORPE						
BOVINGDON						
MARLTESHAM HEATH						

h																		
x																		
±y																		
θ																		
REFL. BEARING OF N E																		
REFL. ELEV. &																		
S																		
w																		
v																		
113'	4.5'	+22.5'	1° 52'	268° 38'	50° 40'	2° 04'	11° 15'	1° 48'	113'	18.8'	-22.8'	11° 19'	135° 19'	40° 18'	9° 27'	9° 34'	11° 8'	199'
199'	55.3'	-2'	15° 9'	289° 21'	46° 48'	16° 10'	3° 44'	15° 3'	199'	54.5'	-13.5'	15° 45'		45° 15'	15° 49'	0° 30'	15° 42'	112'
112'	37'	0	17° 25'	19° 05'	47° 49'	19° 55'	5° 55'	18° 17'	112'	.125'	+15.92'	0	273° 45'	50° 13'	0° 02'	10° 21'	0	87'
87'	.125'	+15.92'	0	273° 45'	50° 13'	0° 02'	10° 21'	0	87'	0.5'	+4.75'	0° 15'	158° 30'	46° 14'	0° 15'	2° 29'	0° 16'	110'
86'	2.292'	-2.166'	1° 34'	331° 34'	44° 30'	1° 47'	1° 29'	1° 28'	86'	2.292'	-2.166'	1° 34'	331° 34'	44° 30'	1° 47'	1° 29'	1° 28'	