COMMUNICATIONS INSTRUCTIONS PROCEDURES FOR ALLIED FLEET RATT OPERATIONS (U)

ACP 127 SUPP-1(A)

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DECEMBER 1981

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5 January 1982

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1. The purpose of this National Letter of Promulgation is to implement ACP 127 Supplement No 1(A), COMMUNICATIONS INSTRUCTIONS PROCEDURES FOR ALLIED FLEET BATT OPERATIONS within the Armed Forces of the United Kingdom of Great Britain and Northern Ireland.

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5. Comments and recommendations concerning this publication should be forwarded through normal channels to the Ministry of Defence (Assistant Chief of Defence Staff (Signals).

BY COMMAND OF THE DEFENCE COUNCIL

Frank Cooper.

PERMANENT UNDER-SECRETARY

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

CHAPTER 1

GENERAL INSTRUCTIONS (U)

SECTION I

GENERAL INSTRUCTIONS FOR FLEET RATT OPERATIONS (U)

101. (U) PURPOSE

The purpose of this publication is to prescribe the methods and procedures to be used for naval radio-teletypewriter broadcasts, ship-shore, and inter-ship communications, in both on-line cipher and off-line working.

102. (U) PROCEDURES

Procedures are to be in accordance with ACP 127 as amplified in this publication.

103. (U) ROUTING INSTRUCTIONS

a. (U) Routing indicators from ACP 117 and supplements thereto will be used.

b. (U) If insufficient routing information is available, mobile units will route a message to the major or transfer station of the network to which the addressee(s) belong(s), with transmission instructions for addressees for whom routing is not known.

c. (U) Details of indefinite routing indicators to be used by ships on ship-shore and inter-ship circuits are listed in Chapters 3 and 4.

104. (U) MESSAGE FORMAT

The ACP 127 message format is to be strictly adhered to for all messages prepared for transmission by radio-teletypewriter, excepting certain types of inter-ship traffic as laid down in Chapter 4.

105. (R) TRANSMISSION STANDARDS

In all radio-teletypewriter operations, the following transmission characteristics must be known by all participating stations. The transmission standards listed below are to be used unless otherwise ordered:

CHARACTERISTICS	TRANSMISSION STANDARDS	
a. (R) Assigned frequency.		
b. (R) Type of emission:	LF:	A2J upper sideband OR F1
	MF/HF:	A2J upper sideband OR F1
	UHF:	DSB AM A2
c. (R) Frequency shift:	LF:	± 42.5Hz of sub-carrier nominated in the series 255 + 170N (N equals 1 to 8)
	MF/HF:	± 425 Hz on assigned frequency
	UHF:	Frequency exchange 500/700 Hz
d. (R) Signalling arrangements:	LF) MF) HF)	SPACE active start higher frequency MARK idle stop low frequency
	UHF:	500 Hz SPACE active start 700 Hz mark idle stop
e. (R) Speed:		75 baud

106. (U) METHOD OF TRANSMISSION

All radio-teletypewriter transmissions are to be by prepared tape, excepting only that on ship-shore and inter-ship circuits, keyboard transmissions may be authorized for coordination purposes only.

107-109. (U) RESERVED

SECTION II

GENERAL INSTRUCTIONS FOR FLEET ON-LINE CIPHER OPERATIONS (U)

110. (U) GENERAL

The following instructions apply to all on-line cipher RATT operations and are to be read in conjunction with the appropriate on-line cipher sections of this publication.

111. (R) TRANSMISSION STANDARDS

In addition to the transmission standards listed at paragraph 105, the following details must be known by all participating stations on on-line cipher circuits:

a. (R) Key list to be used and edition in force.

b. (R) Duration of cryptoperiod, if other than 24 hours (see paragraph 113).

c. (R) Cryptoperiod scheduled start time, if other than 0000Z (see paragraph 113).

112. (R) TRANSMISSION SECURITY

a. (R) All transmissions are to be in the cipher mode, using the appropriate keying material.

b. (R) Messages up to and including SECRET may be transmitted on on-line circuits without prior off-line encryption.

c. (R) Special Category Messages, TOP SECRET, CRYPTO SECURITY, EXCLUSIVE FOR, etc., are to be off-line encrypted in the appropriate system before transmission over on-line circuits. Subject to National, Service, or Command instructions, on-line transmission of Special Category Messages without prior off-line encryption may be authorized provided adequate arrangements exist to ensure that access to the plain text is restricted to specifically authorized personnel.

112. (Continued)

d. (R) Transmission of special handling required messages in automated systems will be as directed by the appropriate National, Service, or Command Authority responsible for the system.

e. (R) National Classified traffic may be transmitted on Allied on-line circuits, but, if privacy is required, the National Authority originating such traffic will be responsible for off-line encryption prior to transmission.

113. (R) CRYPTOPERIODS

a. (R) The cryptoperiod scheduled start time (crypto zero) is to be 0000Z, unless otherwise ordered.

b. (R) The length of the cryptoperiod is to be 24 hours. During periods of heavy traffic, the length of the cryptoperiod may be extended by NOT MORE THAN TWO HOURS. This is an exceptional circumstance, which should only be authorized when the operational situation makes it desirable. UNDER NO CIRCUMSTANCE IS A CRYPTOPERIOD TO EXCEED A TOTAL OF 26 HOURS.

114. (R) KEY LISTS

a. (R) Allied key lists are normally made up for 31 daily settings, plus several emergency settings for use when a normal daily setting is compromised. Emergency settings are normally marked either DAY 32, 33, and 34, or IE-7E. A new edition is to be started on the first day of each month.

b. (R) If, for any reason, the normal setting cannot be used or must be changed during a cryptoperiod (e.g., in the event of compromise), the first of the unused emergency settings is to be used. All stations are to be informed, using the appropriate Condition Message. The appropriate daily setting is to be used for the following cryptoperiod.

114. (Continued)

c. (R) If a spare setting is required, and the emergency settings of the current month's edition have already been used, the controlling station is to bring the reserve edition into force, informing all stations by the appropriate Condition Message.

d. (R) National Authorities are responsible for distributing the necessary key lists, with a normal scale of reserve editions, to the units requiring them.

e. (R) In order to meet contingency requirements, in the event of operations being mounted with little warning, it is necessary that all ships, shore stations, and Broadcast Control Stations be provided with the appropriate key lists, with a normal scale of reserve editions.

115. (R) CONDITION MESSAGES

a. (R) Condition Messages from the appropriate publication are to be used for communications regarding on-line cipher operation of Allied circuits.

b. (R) All messages concerning the operation of cipher equipment, or referring to associated crypto-material, are to be classified a minimum of CONFIDENTIAL.

CHAPTER 2

AREA PRIMARY RATT BROADCASTS (U)

SECTION I

GENERAL CONDUCT AND PROCEDURES (U)

201. (R) GENERAL

This chapter contains instructions for the operation of Area primary RATT broadcasts, arranged as follows:

Section I - General instructions applicable to all Area primary RATT broadcasts.

Section II - Instructions applicable to on-line cipher broadcasts only.

Section III - Instructions applicable to off-line broadcasts only.

202. (R) ORGANISATION

a. (R) Radio-teletypewriter broadcasts are operated continuously, with no single or double-operator periods. This does not preclude ships maintaining reduced watch where necessary, but no special message numbering will be provided. In these circumstances, it will be the responsibility of the Operational Commander to promulgate appropriate procedures to the Broadcast Control Authority and ships concerned.

b. (R) The Commander controlling the specific broadcasts should include in his directive:

(1) (R) Designation of the Broadcast Control Station (BCS).

(2) (R) Direction to activate a broadcast.

(3) (R) Assignment of control and operation.

(4) (R) Those units designated to copy specified broadcasts.

202. (Continued)

c. (R) All ships and afloat Commanders copy the applicable area broadcast directly, through guardship arrangements, or through guard arrangements with a local COMMCEN. The shift from one broadcast to another or a shift to or from a broadcast shall be accomplished at 0001Z, where practicable, with a minimum of 24-hour advance notification to Broadcast Control Authorities concerned, unless emergency conditions prevent compliance or the broadcast watch in ships' movement message indicates otherwise. This requirement is imposed for communication routing information purposes and in no way replaces the requirement for the normal method of broadcast shift notification. Broadcast Control Authorities shall promulgate maritime mobile routing information to all concerned vis appropriate Address Indicator Group.

203. (R) BROADCAST DESIGNATORS AND SERIAL NUMBERS

a. (R) Broadcast designators from ACP 176 are to be used when referring to, or identifying Allied broadcasts.

b. (R) The receipt of all messages will be assured by a system of numbering each message sent by the transmitting station. Continuity shall be checked by the recipients and any missing numbers are to be requested from other ships in company or alternatively, a service message request to the appropriate Area BCS may be used (See paragraph 206).

c. (R) Messages are to be numbered consecutively in order to allow the users to keep a close supervision on incoming messages and to have a quick and easy method of reference. Full details on the numbering method used by broadcast stations are to be included in appropriate ACP or Supplement.

d. (R) The general call and broadcast serial number are to be contained in format line 1.

Example:

Line 1 (5 LTRS)
NAWS
X11C064
(5 SPACES) UU

204. (U) MULTIPLE TRANSMISSIONS

a. (U) With the Exception of general meteorological messages, which are transmitted once only, each message bearing precedence FLASH or IMMEDIATE is to be transmitted twice initially, bearing the same serial number for each transmission. Under exceptional broadcast loading conditions, IMMEDIATE traffic may be limited to a single transmission.

b. (U) Words twice prodedure is NOT to be used in the heading of messages.

205. (U) RE-RUNS

a. (U) Traffic volume permitting, all messages transmitted on the broadcast are to be re-run within 1 to 12 hours after the original transmission. Re-runs are to carry the original broadcast serial number, and are to be transmitted in sequence of those numbers. Re-runs are not to be allowed to delay the transmission of new traffic.

b. (U) On a heavily loaded broadcast, it may not always be possible to re-run all messages, in which case priority for re-run should be given to FLASH and IMMEDIATE messages. The Broadcast Control Station should broadcast the current re-run procedure every 4 hours in the form:

"SVC. Only FLASH and IMMEDIATE precedence messages are being re-run."

c. (U) In addition to re-running only high FLASH and IMMEDIATE traffic, about every hour the broadcast station should send a list of all traffic transmitted, giving only the broadcast serial number, precedence, date-time-group, and address designations of mobile/units guarding the broadcast concerned.

Example:

NAWS
FM GYC
TRAFFIC LIST
630 R 161730Z HNLMS DE RUYTER
TG 406.1
631 R 161945Z A7BE/
632 R 1515037 HMS ACHILLES USS MCDONNELL
633 O 161946Z ATG 5585
634 O 162004Z ALL SHIPS
(etc.....)
NNNN

206. (U) PROCEDURE FOR RE-RUN REQUESTS

a. (U) Ships are to request re-runs, or to report missing numbers, by an Unclassified abbreviated plaindress message to the Broadcast Control Station. When it is definitely known that messages are of no concern, requests for re-runs are not to be initiated. Requests should be submitted only if the messages cannot be obtained from ships in company. If a ship is radio guard for others, guard responsibilities are to be included in the request.

Example 1: MISSING BROADCAST NUMBERS KNOWN TO BE ADDRESSED TO GUARD LIST

R 152315Z
FM USS NEVERSAIL
TO NAVCOMMSTA NORFOLK VA
BT
UNCLAS SVC
INT ZDK (Broadcast Channel Designator) 393, 405 606

BT

Example 2: BROADCAST NUMBERS MISSED COMPLETELY

R 152320Z
FM USS NEVERSAIL
TO NAVCOMMSTA NORFOLK VA
BT
UNCLAS SVC
INT ZFK/ZDK (Broadcast Channel Designator) 811, 812
ZKP USS NEVERSAIL, USS STAY AFLOAT,
AIG 5000, 5001, 5002
BT

b. (U) The Broadcast Control Station is to investigate the traffic missed and re-run as necessary, informing the ship by SVC message on the broadcast of details of the messages that were requested but did not concern the ship (or its guarding responsibilities).

c. (U) Messages re-run in response to a request from a ship are normally broadcast under the serial numbers of the original transmissions, preceded by the appropriate operating signal. If, however, certain automatic transmission systems are used, a new serial number is added to the original one, which is retained.

206.c. (Continued)

Example 1: NORMAL PROCEDURE

(5 LTRS)
NAWS
ZDK X11N397 (etc.)

Example 2: PROCEDURE WEEN CERTAIN AUTOMATIC TRANSMISSION SYSTEMS ARE USED

(5 LTRS)
NAWS
X11N549
X11N397 (etc.)

207. (U) NATIONAL TRAFFIC

The Broadcast Control Station may limit National traffic if an Allied broadcast becomes saturated. This limitation may be imposed without notice, in which event all National traffic awaiting transmission will be re-routed to appropriate National Authorities for delivery by other means.

208. (U) TRANSMISSION OF LONG MESSAGES

These messages are to be paged and sectioned in accordance with the rules in ACP 127.

209. (U) MESSAGES RECEIVED IN TAPE RELAY FORMAT

a. (U) Messages received in tape relay format may be transmitted without format lines 1,2,3, and 4 for plaindress and for codress lines 1 and 2 only.

b. (U) When the broadcast is lightly loaded, the original tape from the commencement of the 5 SPACES, with the addition of the broadcast serial number, may be transmitted.

c. (U) When errors in messages are detected and re-processing to correct errors prior to transmission is necessary, format lines 1, 2, 3 and 4 are to be removed.

210. (U) EXAMPLES

a. (1) (U) A French Naval Authority passes a message to a French ship known to be reading X11N radio-teletypewriter broadcast. As received at Broadcast Control Station RXDBFCF:

210.a.(1) (Continued)

```
VV (3 SPACES) FGA057 LFA025 (5 SPACES) UU
RR RXDBFCF
DE RFFLC 160 0171650
ZNR UUUUU
R 1716152 JAN
FM NAVAL COMMANDER TOULON
TO RXDBFCF/FS CASSARD
INFO RXFELC/COMGIBMED
BT
UNCLAS YOUR 1617152 JAN APPROVED
BT
NNNN
```

(2) (U) As transmitted on Broadcast X11M:

```
(5 LTRS)
NAWS
X11M039
(5 SPACES) UU
RR RXDBFCF
DE RFFLC 160 0171650
ZNR UUUUU
R 1716152 JAN
FM NAVAL COMMANDER TOULON
TO RXDBFCF/FS CASSARD
INFO RXFELC/COMGIBMED
BT
UNCLAS YOUR 1617152 JAN APPROVED
BT
NNNN
```

NOTE: Paragraph 209 refers.

b. (1) (U) A Netherlands Naval Authority passes a message to a Netherlands routing bureau for mobiles whose whereabouts are unknown. The Netherlands routing bureau re-routes the message to the station controlling the broadcast being read by the ships. As received at Broadcast Control Station (RNFLNCA):

210.b.(1) (Continued)

```
VV (3 SPACES) NCA064 NDA176 (5 SPACES) UU
RR RNFLNCA
ZNR UUUUU ZOV RNFLD
T HNLMS AMSTERDAM HMS SALISBURY
(5 SPACES) UU
RR RNFLD
DE RNFLH 104 0171957
ZNR UUUUU
R 171914Z JAN
FM ADMIRALNLHOME
TO RNFLD/HNLMS AMSTERDAM
INFO RNFLD/HMS SALISBURY
BT
UNCLAS
TEXT
BT
NNNN
```

(2) (U) As transmitted on Broadcast N11A (heavily loaded):

```
(5 LTRS)
NAWS
N11A056
R 171914Z JAN
FM ADMIRALNLHOME
TO RNFLD/HNLMS AMSTERDAM
INFO RNFLD/HMS SALISBURY
BT
UNCLAS
TEXT
BT
NNNN
```

211. (U) MESSAGES RE-FILED BY THE BROADCAST CONTROL STATION

Messages re-filed by the Broadcast Control Station should normally conform to the procedure designated in paragraph 210. In case of urgency, however, messages may be transmitted on a RATT broadcast without re-filing (e.g., enemy reports received in ACP 124 format; distress messages received in commercial format).

212. (U) COMMERCIAL RADIOTELEGRAMS

Radiotelegrams are to be re-filed into military format and the telegram contained in the text.

213. (R) BROADCAST GUARDS

a. (R) A ship guarding the primary Area broadcast and relaying traffic on a local or special radio-teletypewriter broadcast need not re-process traffic before realying on lightly loaded circuits. Broadcast traffic so relayed may contain serial numbers of both broadcasts.

b. (R) A ship guarding on-line primary Area broadcast and relaying traffic on an off-line local and special radio-teletypewriter broadcast must inform the Broadcast Control Station prior to accepting guard when encrypted versions of Classified messages are required for relay, otherwise the broadcast guard ship is responsible for off-line encryption prior to re-transmission:

EXAMPLE: R E S T R I C T E D SVC ZKP HMS ZULU ZVF

214. (R) ROUTING INFORMATION

a. (R) When National broadcasts are transferred to Allied control, either for exercises or on the implementation of Alert measures, some form of routing information becomes essential.

b. (R) Those countries operating an Allied broadcast should forward daily, to stations concerned, in the procedure and format outline below, all necessary routing information on the ships copying the broadcast.

214. (Continued)

c. (R) Nations should nominate the station(s) to whom information is to be forwarded.

(1) (R) If Broadcasts X11B and N13A were being used as NATO broadcasts, controlled by COMBENECHAN and serving Netherlands, French, and British ships, COMBENECHAN's Broadcast Control Station would release at 2359Z daily a routing message addressed to the naval Major Relay Stations of the three countries concerned.

(2) (R) This routing message would be passed in the form of a "ZOU" list, made up as follows:

(a) (R) Precedence - PRIORITY.

(b) (R) Classification - RESTRICTED.

(c) (R) In force 24 hours from midnight GMT.

(d) (R) References to forecast changes during the last 24-hour period being kept to a minimum.

(e) (R) Ships listed in alphabetical sequence within each separate routing section.

(f) (R) Separate section containing the following:

1. (R) On-line cipher broadcast facility.

2. (R) Other on-line cipher facilities, e.g., a ship may be alongside with secure line connections to the COMMCEN.

3. (R) Off-line facility.

(3) (R) Format Example:

```
PP RBDIC RFFIC RNFLD RNFLH RXDBC RXDBFC
DE RNFLNCA 003 0170Q04
ZNY RRRRR
P 162359Z JAN
BT
R E S T R I C T E D
SVC EFFECTIVE 170001Z
ZOU FS DUQUESNE FS LE BRETON HMS TIGET HMS
YARMOUTH (FROM 0930Z) HNLMS AMSTERDAM DRENTHE - X11B
ZOU FS ANTARES FS CASSIOPEE (UNTIL 1100Z) HMS
```

214.c.(3) (Continued)

LEWISTON HMS YARNTON HNLMS BEEMASTER - NL3A
ZOU FS LE BEARNAIS HMS HAMPSHIRE - RNFLH ON LINE
ZOU HNLMS NAARDEN - RNFLH OFF LINE
BT

215-219. (U) RESERVED

SECTION II

AREA ON-LINE CIPHER PRIMARY BROADCASTS (U)

220. (R) TYPE OF OPERATION

All on-line cipher primary broadcasts are continuous broadcasts with late start (catch-up) capability incorporated.

221. (R) TRANSMISSION STANDARDS

a. (R) The transmission standards listed at paragraph 105 are to be used unless otherwise ordered.

b. (R) When multi-channel technique is being employed, the following will apply:

(1) (R) Channel 3 of the multi-channel broadcast centred on 765 hertz and channel 11 centered on 2125 hertz may be copied in diversity.

(2) (R) Channels 3 and 11 will be transmitted in a 3 KHz SSB voice (3A3J) frequency assignment with ± 42.5 hertz shift per second.

222. (R) KEY CARDS

A separate series of key cards is used for each broadcast. These are listed in the appropriate Allied publication. In order to prevent duplicate key generation, the same card must not be used by more than one Broadcast Control Station.

223. (R) TRAFFIC SEGREGATION

Message traffic for on-line cipher broadcasts must be readily identifiable to permit segregation, manual or automatic, when transmitted within and between various National communications systems. Special code words, operation/exercise nicknames, and broadcast station routing indicators may all be used to accomplish the necessary segregation. Automatic segregation by Broadcast Control Stations will necessitate the use of broadcast station routing indicators.

224. (R) CRYPTOPERIOD START PROCEDURE

a. (R) A period of ten minutes is required at the end of a cryptoperiod in which to carry out mandatory crypto alarm checks, key card changes, and start procedure; during this period no transmission is possible.

b. (R) Transmission of traffic must stop in time for the equipment to be released for the full period required. No omission of any part of the crypto alarm check and start procedure is permitted, and any encroachment upon the allowed time will almost certainly result in either a false or a late start by KW-37 or BID 580 receivers.

c. (R) To allow time for ships to attain crypto synchronization, or to make one re-start in the event of a failure at the first attempt, operational traffic shall not be resumed until 10 minutes after the start time. A call tape shall be transmitted in the cipher mode during this period.

d. (R) Messages bearing precedence FLASH or IMMEDIATE shall, however, be transmitted during the period in c, above. This is to be considered a "Free Run," and such messages shall be repeated immediately after the 10-minute period has elapsed.

e. (R) It is essential that the cryptoperiod should start at exactly the right time.

f. (R) Stations, both shore and ship, should be synchronized with one of the officially recognised time-signals, e.g., Rugby, WWV, BBC, etc.

g. (R) Before initiating either initial or late start procedure and based on the time check received, transmitter or receiver terminals shall correct the built-in clock of the KW-37 transmitter, KW-37 receiver, or BID 580 receiver to enable crypto start at the right instant.

225. (R) LATE START PROCEDURE

a. (R) Should the cryptoperiod be extended (see paragraph 113), the scheduled start time is still to be 0000Z. Under these circumstances, late start procedure is to be used.

NOTE 1: The KW-37 transmitter can be started ten minutes, or a multiple of ten minutes, later than the scheduled start time.

NOTE 2: The BID 580 and KW-37 receivers can be started five minutes, or a multiple of five minutes, later than the scheduled start time.

b. (R) Late start shall be made:

(1) (R) If the cryptoperiod is extended.

(2) (R) If the KW-37 transmitter, KW-37 receiver, or BID 580 equipment fails to start correctly at the scheduled time.

(3) (R) If a fault occurs in the on-line cipher system necessitating a complete shut-down of the equipment.

226. (R) CONDITION MESSAGES

a. (R) Condition Messages contained in AMSP 598 may be used when it is necessary to communicate in plain language (order wire mode manually selected by the broadcast station) regarding the operation of the KW-37 transmitter. When the order wire mode is selected by the broadcast station, all KW-37 or BID 580 receivers are automatically shifted to plain text mode; cipher mode selection by the broadcast station will automatically return these receivers to the cipher mode. See also paragraph 115.

b. (R) Should the Area on-line cipher primary RATT broadcast fail, the appropriate Condition Message concerning the failure and re-start shall be transmitted on both the off-line RATT (where available) and the CW

226.b. (Continued)

broadcast. Should the failure last for a considerable time, these Condition Messages shall be repeated at intervals of 30 minutes and, in any case, ten minutes before resumption of on-line cipher working is expected.

c. (R) Condition Messages required while the on-line cipher broadcast is operational shall normally be transmitted only on that broadcast, but they may be repeated on other broadcasts as considered necessary.

d. (R) Condition Messages are to be transmitted as un-numbered service messages in the form. The text is to consist of the broadcast designator, followed by the Condition Message.

Example:

NAWS
P 230011Z
BT
B11A CHARLIE XRAY 0010Z
BT

e. (R) The following Condition Messages are to be used:

(1) (R) As the last transmission at the end of a cryptoguard, or before handing over the control of a broadcast to an alternative station:

"HOTEL JULIETT SET ..... (Number of next card to be used)"

(2) (R) To inform ships that a late start will be made, the following will be transmitted in the order wire mode:

"CHARLIE XRAY ..... (Time of late start)"

(3) (R) To inform ships that transmission has ceased because of an equipment fault:

226.e.(3) (Continued)

"HOTEL GOLF TWO"

(4) (R) To be transmitted one hour before handing control of a broadcast to an alternative station:

"BRAVO YANKEE ..... (Start time from alternative station" "SET ..... (Number of first card to be used by alternative station)."

227. (R) CRYPTO ALARM

a. (R) The KW-37 transmitter is provided with three identical encryption units, the outputs of which are automatically and continuously compared with each other. Should the output of one unit not agree with that of the other two, the crypto alarm will operate and the defective unit is locked out. Transmission continues on the remaining two good units.

b. (R) Should two or three units go into alarm, transmission must be stopped immediately since there is then a danger of compromise.

c. (R) Should two or more units go into alarm, the cryptographic equipment is to be immediately unpatched from the bay and the transmission of traffic interrupted.

d. (R) If only one unit goes into alarm, attempts may be made to re-start the unit. If this is un-successful, the unit is to be put out to maintenance. Provided two units remain in operation, there is no need to interrupt the broadcast.

e. (R) A full crypto alarm check is to be carried out at the end of each cryptoperiod. This check is to be carried out before the old key cards are removed from the cryptographic equipment.

f. (R) Should the off-the-air broadcast monitoring on-line cipher receiver go into alarm, any message in course of transmission should be completed.

227.f. (Continued)

It is to be re-run as soon as correct monitoring is re-established.

228. (R) TRANSFER OF CONTROL OF BROADCAST

If the control of an Area on-line cipher primary RATT broadcast is to be transferred to another station, e.g., from a primary to an alternate, the following procedure is to be followed:

a. (R) The scheduled start time for the station taking control of the broadcast shall be 0000Z. If possible, control should be transferred at the start of a cryptoperiod; if not, then late start procedure must be used by the station taking over control.

b. (R) A new key card (see paragraph 222) is to be used by the station taking control, as follows:

(1) (R) Control transferred at the start of a cryptoperiod - appropriate daily card.

(2) (R) Control transferred during a cryptoperiod - next spare card.

c. (R) The station handing over control is to promulgate the following:

(1) (R) The actual start time at which the second station will start transmitting.

(2) (R) The first key card that will be used by the second station.

d. (R) This information is to be transmitted to the ships reading the broadcast in the form of a Condition Message.

e. (R) A second Condition Message, telling ships to set the new cards, is to be made immediately before transmission from the first station ceases. This is to be the last transmission from that station.

229. (R) STATION IDENTIFICATION

The need to minimize wear of electro-mechanical equipment makes it no longer desirable to transmit conventional call tapes over on-line cipher broadcasts. During "no traffic" periods, the station collective call, broadcast identifier, and serial number of the next message are to be radiated at least every 20 minutes, or more frequently if required by the Broadcast Control Station. The interval between the serial number and the station call is to be filled by teleprinter mark/stop signal.

230. (R) ROUTING OF BROADCAST TRAFFIC

If, for any reason (e.g., broadcast failure), unencrypted Classified traffic is required to be transferred to an off-line broadcast, action is to be carried out by the broadcast station effecting this transfer, as follows:

a. (R) Messages of precedence IMMEDIATE and above are to be off-line encrypted and transferred to a RATT or CW broadcast for transmission.

b. (R) Messages of PRIORITY precedence may be held for 30 minutes before being off-line encrypted and transferred to the appropriate broadcast for transmission. This period may be extended by the Broadcast Control Station according to the circumstances then prevailing.

c. (R) In the event that the Broadcast Control Station cannot cope with the off-line encryption of traffic of lower precedence, or that a suitable off-line facility does not exist, the station of origin is to be advised that messages awaiting transmission on the on-line cipher broadcast must be off-line encrypted and re-transmitted in order to effect delivery to the addressee.

d. (R) Traffic transmitted on the off-line broadcast in accordance with the above is to be re-transmitted on the on-line broadcast when normal service is resumed.

230. (Continued)

e. (R) Other traffic is to be re-transmitted if traffic volume permits.

f. (R) When possible, re-transmitted traffic is to carry the broadcast designator and serial number of the original transmission, in addition to a new number on the on-line broadcast.

g. (R) Traffic which has had one transmission on the on-line cipher broadcast is not to be re-run on the off-line broadcast unless requested.

231-239. (U) RESERVED

SECTION III

AREA OFF-LINE PRIMARY RATT BROADCASTS (U)

240. (U) CALL TAPES

a. (U) During periods of "no traffic," and immediately prior to the commencement of scheduled transmissions, Broadcast Control Stations are to transmit a continuous call tape in the following form:

(1) (U) Ten letter shifts, two carriage returns, one line feed.

(2) (U) Call sign of broadcast stations (indicating frequencies being radiated by a numerical suffix).

(3) (U) One space.

(4) (U) Routing indicator of station controlling broadcast.

(5) (U) One space.

(6) (U) Broadcast designation.

(7) (U) One space.

(8) (U) Broadcast designation.

(9) (U) Ten figure shifts, ten letter shifts.

(10) (U) One space.

(11) (U) Five RYs.

(12) (U) One space.

(13) (U) Repeat items (2) to (10).

(14) (U) Five SGs.

(15) (U) Five spaces, two carriage returns.

240.a. (Continued)

(16) (U) Repeat items (2) to (14).

(17) (U) Ten letter shifts.

Example:

GYC/3/4/5/6 RXDBF X11C X11C RYRYRYRYRY
GYC/2/3/4/5 RXDBF X11C X11C
SGSGSGSGSG (overprinting once to conserve paper)

b. (U) A number cycling emission may be used in lieu of call tape. The emission will consist of:

NAWS
BROADCAST IDENTIFICATION
NEXT SERIAL NO
END OF MESSAGE FUNCTION

NOTE: There will normally be a silence period of 150 seconds between transmissions.

CHAPTER 3

RATT SHIP-SHORE OPERATION (U)

SECTION I

GENERAL INSTRUCTIONS (U)

301. (R) GENERAL

Facilities for the reception of radio-teletypewriter ship-shore traffic, and the methods used, vary between ship-shore stations. The actual method to be used with a particular shore station is as indicated in the appropriate list and details of ship-shore stations. This chapter shows the methods available and procedures to be used, as follows:

Section I - General instructions applicable to all RATT ship-shore facilities.

Section II - Methods and procedures to be used only in on-line cipher RATT ship-shore operation.

Section III - Methods and procedures to be used only in off-line RATT ship-shore operation.

302. (R) CHOICE OF FACILITY

a. (R) Ship-shore facilities should, within the limits of availability and equipment, be used in the following order of precedence:

(1) (R) On-line cipher RATT.

(2) (R) Off-line RATT.

(3) (R) CW organisation.

b. (R) If no contact is made using on-line cipher RATT facilities, the ship should revert to off-line RATT and, if no contact is made using off-line RATT, to the CW Morse organisation. Great care must be taken to ensure that security is not violated when reverting from a cryptographically secure circuit to an insecure circuit.

303. (U) CIRCUIT DISCIPLINE

a. (U) The shore station is the circuit control station and shall rigorously enforce circuit discipline.

b. (U) Ships shall endeavour to determine that the selected frequency is not in use before transmitting.

c. (U) All transmissions are to be kept as short as possible.

304. (U) MESSAGE FORMAT

Messages passed on ship-shore circuits are to be prepared in ACP 127 format.

305. (R) USE OF CALL SIGNS AND ROUTING INDICATORS

Except where indicated otherwise in the instructions for the specific ship-shore facility being used, call signs and routing indicators are to be used as follows:

a. (R) Indefinite call signs are to be used by ships in the initial call and for procedure between ship and shore station only. When passing Unclassified traffic by off-line procedures, international call signs may be used.

b. (R) To enable traffic to be relayed directly over the tape relay network, ships are to use routing indicators in format line 3.

c. (R) Ship routing indicators are never to be used in format line 2 routing when addressing messages to ships.

306. (R) SHIP ROUTING INDICATORS

Ship routing indicators consist of a basic routing indicator with a two-letter suffix. National Authorities may prescribe a basic routing indicator for use with each shore station and an individual suffix for each ship. Where specific routing indicators are not allocated, indefinite routing indicators are to be used, made up as follows:

306. (Continued)

a. (R) Basic routing indicator: The routing indicator of the major or minor relay station associated with the control of the Area broadcast being copied by, or guarded for, the ship.

b. (R) Suffix:

(1) (R) Ship-shore circuits - XX.

(2) (R) Special purpose mobile-to-shore RATT services - CD, CG, or CH (as directed by controlling station).

c. (R) Examples:

(1) (R) A ship reading C11L (Halifax primary RATT broadcast) would use the indicator:

RCEOXX

(2) (R) A ship reading X11C (CENTLANT primary RATT broadcast) would use the indicator:

RXDBFXX

(3) (R) A ship working a RATT service with Naples may be ordered to use the routing indicator:

RXFECD

307. (U) GARBLING

A ship transmitting garbled messages is to be informed as soon as possible via the frequency in use, or the most expeditious means available (e.g., Area broadcast), that its transmissions are garbled and it is to perform off-the-air equipment checks and re-transmit the messages.

308. (U) RATT PROCEDURE

a. (U) The procedure contained in ACP 127, as amplified in this chapter, is to be used for RATT working.

308. (Continued)

b. (U) Line 3 is to consist of "DE," followed by the indefinite routing indicator, station serial number, and filing time.

c. (U) The requirements of ACP 127 are emphasized. Particular attention is to be paid to the use of functional keys. Incorrect preparation of a message causes the malfunction of the telegraphic automatic relay equipment, with consequent delays in transmission of the message as it passes through the tape relay network.

309. (U) TRANSMISSION OF MESSAGES IN BATCHES

a. (U) Ships having more than one message to transmit are to perforate them on one continuous tape ready for transmission. The total length of a batch shall not exceed five messages or transmission sections.

b. (U) If a shore station, for some reason, does not wish to receive messages in batches, it shall inform the ship by use of the operating signal QSG1.

c. (U) A ship passing messages in batches is to cease transmission for approximately 10 seconds after the transmission of each message to permit break-in procedure.

310. (U) SPECIAL PURPOSE MOBILE-TO-SHORE RATT SERVICES

a. (U) Details of these services will be promulgated in operation or local orders.

b. (U) In special cases, such as duplex RATT circuits between major subordinate commands and striking fleet units, where it is known that shore stations and participating ships can make use of high stability frequency synthesizer controlled transmitters and receivers, any requirement which may apply to normal ship-shore operation to open communications using CW manual Morse procedures may be waived.

310. (Continued)

c. (U) To eliminate re-processing at the shore communications centre, traffic from shore is to be passed to ships using broadcast procedure as shown in paragraphs 209 through 212, omitting the general call and using a RATT service transmission identity instead of a broadcast serial number.

311-319. (U) RESERVED

SECTION II

ON-LINE CIPHER SHIP-SHORE (U)

320. (R) GENERAL

This section contains four methods of on-line cipher RATT ship-shore operation, identified as Methods A, B, C, and D. The method to be used with a particular shore station is shown in the appropriate list and details of ship-shore stations.

321. (R) METHOD A

a. (R) This method is applicable to shore radio stations that have an on-line cipher RATT transmission capability and reply on the same frequency as the ship transmits on.

b. (R) When a shore station is not working ships, it is to transmit a one-minute phasing signal followed by the operating signal QRV on the frequencies in use every 15 minutes.

c. (R) The shore station will indicate on the Area on-line cipher primary RATT broadcast what frequencies are being guarded.

d. (R) SHIP	SHORE STATION
Listen on the frequency it is intended to use to ensure it is clear before transmitting.	
Transmit a 10-second phasing signal.	
Transmit a test tape, using ACP 127 procedure.	
	Transmit a 10-second phasing signal.

321.d. (Continued)

	If ship transmission was readable, direct ship to transmit message.
Transmit message in accordance with ACP 127. Transmit a 10-second phasing signal at each change of direction of transmission.	Receipt for message. If direct contact is not made, the shore station should answer the ship via the Area on-line cipher primary RATT broadcast.

e. (R) If no answer is received by the ship after the initial call-up and transmission of the test tape in 45 seconds, the phasing signal, call-up, and transmission of the test tape should be repeated.

f. (R) The first station to transmit will capture the net and inhibit emissions from all other teletypewriters on the circuit until the transmission ceases and the receiving terminal equipment resumes the standby condition.

g. (R) A shore station may be unable to identify a calling station due to garbling caused by wrong key setting. If use of on-line broadcast for the purpose of elimination is limited due to traffic load, the shore station may transmit (10-second phasing signal) (5 SPACES)(2 CR) twice through. This has the meaning: "The station which last transmitted is garbling and should check the key setting."

322. (R) METHOD B

a. (R) This method is applicable to shore stations which have ORESTES transmit and receive, or receive only, capabilities. The shore station replies, using either off-line RATT, CW, voice, or

322.a. (Continued)

all of these methods in answering on a separate dedicated answering frequency. The modes of transmission used by the shore station in answering, and the dedicated frequencies used, are listed in ACP 176 Supplements. Indefinite call signs will normally be used by ships.

b. (R) All transmissions by the ship are in the cipher mode.

SHIP	SHORE STATION
Tune receiver to appropriate working frequency; listen-out to ensure frequency is not in use.	
Tune transmitter on a non-interference basis.	
Tune additional receiver to shore station answering frequency.	
Set P-C-R switch on KW-7 equipment to CIPHER.	
*Transmit a 10-second phasing signal.	
*Indicate the number of messages awaiting transmission, the readability of the RATT or CW broadcast being copied, and the mode of the answering frequency. If a response other than the normal dedicated answering frequency is desired, this will be indicated by the ship in the preliminary call tape.	

322.5. (Continued)

Examples of calls:

(I) CFH DE CG ZBO 2P-4R ZBZ CFH-5 ZBV C131
RYRYRYRY (full line) RYRYRYRYRYRYRYRYRYK

(II) CFH DE CG ZBO 2P-4R ZBZ CFH-5 ZBV 6386.5 A3
RYRYRYRY (full line) RYRYRYRYRYRYRYRYRYK

(III) CFH DE CG ZBO 2P-4R ZBZ CFH-5 ZBV 6386.5 FI-ZNIL
RYRYRYRY (full line) RYRYRYRYRYRYRYRYRYK

If an acknowledgement of the initial call is not received within one minute, repeat the procedures preceded by an asterisk (*), above, until acknowledgement is received. Absence of ZBV operating signal indicates that ship is listening to the primary answering facility.

Option 1 (CW/OFF-LINE RATT). When correct start is indicated, ship is directed to proceed with message traffic, e.g., CG DE CFH K or ZAL4 K.
Option 2 (Voice). When correct start is indicated, ship is directed to proceed with message traffic, e.g., CHARLIE GOLF THIS IS CHARLIE FOXTROT HOTEL OVER

322.b. (Continued)

	or SEND YOUR MESSAGE OVER. Option 3 (ON-LINE RATT). When correct start is indicated, shore station will:
	Set P-C-R switch on KW-7 equipment to CIPHER.
	**Transmit a 10-second phasing signal.
	**Direct ship to proceed with message traffic, e.g., CG, DE CFH K or ZAL4 K.
	If acknowledgement of initial answer is not indicated within one minute, repeat procedures preceded by two asterisks (**), above, until acknowledgement is received.
Ship transmits one message at a time.	
	The shore station will:
	Receipt for each message,
	or
	direct ship to transmit in "strings," e.g., QSG5.

322.b. (Continued)

If a repetition is required, direct the ship to repeat the entire message.

NOTE: No Unclassified reference to a plain language portion of the text will be made by the shore station. If it is necessary to SVC or query the plain language text of a message, the shore station will do so on the secure broadcast that the ship is copying.

Example: CG DE CFH AS ZGJ C11L AR

(This does not apply when on-line RATT answering service is being used.)

323. (R) METHOD C

a. (1) (R) This method is available where ships are controlled and answered by an insecure Frequency Availability Broadcast (FAB).

(2) (R) All ship transmissions are in the secure mode, except where the ship calls in insecure mode to require the shore station to change cipher equipment to another mode.

b. (R) Having ascertained from the FAB transmission that the required ship-shore frequency is available:

(1) (R) Radiate a ten second INACTIVE CONDITION. This is required to alter automatically the FAB transmission by removing the channel indicator on which the ship's transmission is being received and to activate the shore station teleprinter.

(2) (R) Tap space bar twice. This is to initiate the phasing and message indicator sequence to capture the circuit. The function may be omitted if it can be performed by other local means, e.g., switch or button.

323.b. (Continued)

(3) (R) Radiate the call tape twice. A ship calling in insecure mode should include ZNI1 when requesting the shore station to change cipher equipment to another mode.

(4) (R) After transmitting the call tape twice, listen for the shore station's reply on the appropriate FAB frequency.

(5) (R) On receipt of the second call tape, the shore station shall reply on the FAB with the printability of the call tape and shall instruct the ship to transmit traffic or make necessary adjustments by operating signal/Condition Message. As soon as the reply is received, the ship is to transmit traffic or comply with the operating signal/Condition Message.

(6) (R) If no reply is heard within one minute, repeat the full calling cycle starting with the ten-second INACTIVE CONDITION.

(7) (R) The calling cycle should be repeated until a reply is received or until lack of response indicates another channel or facility should be tried.

(8) (R) In the remote circumstance of two or more ships commencing transmission on the same channel simultaneously, the operating signal ZAX3 will be transmitted on the corresponding availability broadcast component when ship's transmissions have ceased. ZAX3 will be followed by the numeral identity of the channel concerned, e.g., de GYA ZAX3-8 + (meaning two or more ships are transmitting simultaneously on the 8 MHz channel).

(9) (R) On receipt of this operating signal, ships on the channel concerned should listen out on the ship-to-shore frequency. When the frequency appears clear, a new Phasing and Message Indicator Programme is to be radiated, and a call tape radiated twice. The shore station, by use of the operating signal QRY, followed by a number, shall allocate ship's turn according to the precedence indicated in the call tape. Ships shall subsequently be controlled to transmit their traffic.

323.b.(9) (Continued)

Example:

SHIP

FREQUENCY AVAILABILITY BROADCAST (FAB)

Ship RBDIOKO (suffix XX may be used) holds a priority message for clearance on a recommended frequency.

Radiate ten-second inactive condition.

Two space bar transmissions.

Commence running call tape as follows:

3 LTRS 5 SPACES

AAA AAA AAA (antenna sector indicator) (see note)

DE GX GX GX

TEST THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG

1234567890 RYRYRYRYRYRY RYRYRYRYRYRYRYRY

PP K

3 LTRS 5 SPACES

AAA AAA AAA (see note)

DE GX GX GX

TEST THE QUCK BROWN FOX JUMPS OVER THE LAZY DOG

323.b.(9) (Continued)

SHIPS

1234567890 RYRYRYRYRY
RYRYRYRYRYRYRYRYRY

PP K

FREQUENCY AVAILABILITY BROADCAST (FAB)

GX 5 K or operating signal/Condition Message, as applicable. A figure indicating printability will always be transmitted immediately following the indefinite call sign. On completion of this transmission, the component reverts to the broadcast and continues radiating availability information.

3 LTRS 5 SPACES HE
PP RBDWC RBDNPB
DE RBDIOKO 001 3260844
ZNY RRRRR
P 220842Z NOV
FM HMS HERMES
TO RBDWC/MODUK NAVY
INFO RBDNPB/FOCAS
BT
RESTRICTED
TEXT
BT
NNNN

ZNI2 is made to a ship after the shore equipment has been changed to another mode, when appropriate.

323.b.(9) (Continued)

GX R 220842Z + or operating signal/ Condition Message, as applicable. On completion of this transmission, availability information will also be transmitted on this component.

NOTE: Antenna sector indicators - Shore station receivers are initially connected to omni-directional antennas. In order that the shore station may be able to receive the best possible signal from a ship, directional antennas are available. The appropriate antenna for the ship's geographical position being ascertained by the ship from the appropriate instructions and transmitted nine times in groups of three in the form of an antenna sector letter at the commencement of the call tape. This enables the shore station operator to select this directional antenna when the initial call is made.

324. (R) METHOD D

a. (R) Application. This method is used where shore stations have a receive only on-line cipher capability, remain on CW Morese throughout, and the ships are required to make a preliminary CW call.

b. (R) Sequence of events:

SHIP	SHORE STATION (CW answering frequency)
Calls on CW calling frequency.	Answers.
Having shifted to a working frequency, ship makes initial transmission in on-line	Reports printability and assigns next channel number.

324.b. (Continued)

cipher RATT mode on working frequency requesting printability.

Transmits traffic. Receipts for traffic.

c. (R) Mode of transmission.

(1) (R) The ship is to use CW on the calling frequency and shift to the on-line cipher RATT mode concurrently with the shift to the working frequency. Ship is to remain in cipher thereafter.

(2) (R) The shore station remains on CW Morse and the answering frequency throughout, but if this is un-workable will answer via the broadcast being copied by the ship as indicated in preliminary call.

(3) (R) If conditions necessitate reversion to CW Morse, the ship is to discontinue efforts to communicate in the on-line cipher RATT mode and return to the CW calling frequency and normal CW Morse procedures for plain working. No further reference to on-line cipher RATT working is to be made by either ship or shore station.

d. (R) Call signs. The ship is to use an indefinite call sign until satisfactory ship-to-shore on-line cipher RATT communications are established. Thereafter, the ship is to use its international call sign for procedure messages and ships' names in the normal manner in formal messages. The shore station is to address the ship by the indefinite call sign throughout.

e. (R) Reference to messages. Whilst using this procedure, the shore station is to use the channel number only when referring to message(s) passed by covered RATT.

f. (R) Repetitions. The shore station is to limit requests for repetitions to requests for re-transmission of complete messages, and is not to refer to words or portions of any message.

324. (Continued)

g. (R) Receipting for messages. The shore station is always to give a receipt for a message, using the channel number. In batch working, one receipt only is required - but it must contain the channel numbers of all messages for which the receipt is being given.

h. (R) Example. Ship passing a message on on-line cipher RATT ship-shore via NAVCOMMSTA CANBERRA:

(1) (R) Ship using CW Morse on CW Morse calling frequency:

VHK4 VHK4 de GL GL 6P-QJB4-ZBZ VHB-5 K

(2) (R) Shore station using CW Morse on CW Morse answering throughout:

GL GL de VHK4 VHK4 QRK5 K

(3) (R) Ship using CW Morse on CW Morse calling frequency:

VHK4 de GL ZBW ZNI1 K

(4) (R) Shore station:

GL de VHK4 R AR

(5) (R) Ship using on-line cipher RATT on working frequency:

(a) (R) Depress send button for 10 seconds synch pulse.

(b) (R) Send standard ACP 127 test tape, excluding TI.

(c) (R) Break carrier, re-synchronizing. (Note - Phase prior to every transmission, whether in batch working or not.)

(6) (R) Shore station:

GL de VHK4 ZBZ5 ZIB CAA041 K

324.h. (Continued)

(7) (R) Ship using on-line cipher RATT on working frequency:

```
VEK4 de VKLP R AS
VV (3 SPACES) CAA041 (5 SPACES) HH
PP RAYNSW RAYNSC RAYNSG RAYPFD
DE RAYNBF 0120420
ZNY RRRRR
P 120406Z JAN 71
FM HMAS MELBOURNE
TO RAYNSC/COMAUSFLT
INFO RAYNSW/HMAS WATSON
RAYNSC/FOCEA
RAYPFD/HMAS CERBERUS
BT
R E S T R I C T E D
TEXT
BT                    2 CR 8LF
NNNN                  12 LTR
```

(8) (R) Shore station:

GL de VEK4 R CAA041 K

325-329. (U) RESERVED

SECTION III

OFF-LINE RATT SHIP-SHORE (U)

330. (U) ESTABLISHING COMMUNICATION - NORMAL PROCEDURE

a. (U) Communication is to be established initially by CW Morse. Normal ship-shore radio-telegraph procedure contained in ACP 124 is to be used, with the operating signal QJB4 added to the preliminary call.

b. (U) In special cases, such as duplex RATT circuits between major subordinate commands and striking fleet units, where it is known that the shore stations and the participating ships can make use of high stability frequency synthesizer controlled transmitters and receivers, the requirement to open communication using CW manual Morse procedures may be waived.

331. (U) ESTABLISHING COMMUNICATION - ALTERNATIVE PROCEDURE

a. (U) The following alternative procedure for establishing communication may be ordered by those nations in a position to adopt it.

b. (U) The ship will attempt to establish RATT (F1) communication on the appropriate ship RATT working frequency.

c. (U) The shore radio station will answer using either CW Morse (A1) on the answering frequency or making the necessary transmissions on the Area broadcast being copied.

d. (U) Examples:

(1) (U) A ship CGJD successfully establishes communication by RATT.

(a) (U) RATT working frequency.

CFH6 CFH6 DE CGJD CGJD ZBO4 P ZBZ CFH - 5
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY K

331.d.(1)(a) (Continued)

(This call is repeated as necessary.)

(b) (U) CW Morse answering frequency or appropriate broadcast:

CGJD CGJD DE CFH6 CFH5 ZBZ5 K

(c) (U) RATT working frequency:

CGJD transmits his traffic as illustrated in paragraph 333.

(2) (U) A ship CZLE unsuccessfully attempts to establish RATT communication on 8 MHz. No transmission is heard by the shore radio station.

(a) (U) RATT working frequency:

CFH8 CFH8 DE CZLE CZLE ZBO1 P ZBZ CFH - 5
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY K

(b) (U) CW Morse answering frequency or appropriate broadcast: Nil heard.

(c) (U) CW Morse calling frequency:

CZLE now reverts to CW method.

e. (U) Unless the shore radio station is able to identify the calling ship, no transmission will be made on the CW Morse answering frequency or appropriate broadcast. Should the calling ship be identified but the received signal be un-acceptable for RATT reception, the shore radio station will answer on the CW Morse answering frequency or appropriate broadcast, and direct the calling ship to transmit on another RATT working frequency or to revert to CW Morse transmission on the appropriate CW Morse calling frequency in accordance with paragraph 330.

332. (U) POOR RECEPTION AT SHIP-SHORE STATIONS

a. (U) In cases where the receiving shore station cannot print the test tape of the transmitting ship with sufficient accuracy to ensure a reasonable tape, the shore station is to order the ship to revert to CW Morse working.

b. (U) Where the ship has prepared the message in ACP 127 format, and RATT working is subsequently not possible, the message may be transmitted in this format by CW Morse if agreed between stations.

333. (U) EXAMPLES

a. (U) Example 1: Showing good conditions and messages passed in batches:

FGS Hessen is copying X11B Broadcast. FGS Hessen establishes communication with The Hague on ship-shore to pass 3 messages. Having indicated in her initial call that she has 3 messages, Hessen runs a test tape:

RATT working PBC PBC DE DBZN

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG
1234567890 RYRYRYRYRYRYRYRYRYRYRYRYRY
INT ZBZ K

(Test tape repeated until answered.)

S/S answering DBZN DE PBC ZBZ5 QSG3 K

RATT working (5 SPACES) UU

PP RNFLD RXFMH
DE RNFLNXX 002 0171931
ZNR UUUUU
P 171920Z JAN
FM FGS HESSEN
TO RNFLD/COMBENECHAN
INFO RXFMH/COMGERNORSEA
BT
UNCLAS
TEXT

333.a. (Continued)

```
BT
NNNN                    10 second pause
(5 SPACES) UU
RR RXFMH RNFLD
DE RNFNXX 003 0171850
ZNR UUUUU
R 171937Z JAN

FM FGS HESSEN
TO RXFMH/COMGERNORSEA
INFO RNFLD/EMNLMS AMSTERDAM
BT
UNCLAS
TEXT
BT
NNNN                    10 second pause
(5 SPACES) UU
RR RXDBC RXDBFC
DE RNFLNXX 004 0171735
ZNR UUUUU
R 171645Z JAN
FM FGS HESSEN
TO RXDBFC/COMCENTLANT
INFO RXDBC/CINCEASTLANT
BT
UNCLAS
TEXT
BT
NNNN

S/S answering DBZN DE PBC R AR
```

b. (U) Example 2: HMCS MICMAC is reading C11L Broadcast:

HMCS MICMAC establishes communication with Halifax on ship-shore to pass a ROUTINE message addressed to MARCOM HQ Halifax info COMSTRIKFLTLANT. On the working frequency, MICMAC runs a test tape:

```
RATT working CFH CFH DE CYVN CYVN
```

333.b. (Continued)

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG
1234567890 RYRYRYRYRYRYRYRYRYRYRYRYRY
INT ZBZ K

(Test tape repeated until Halifax answers.)

S/S answering CYVN DE CFH ZBZ5 K

RATT working (5 SPACES) UU

RR RCEOC RXCAF
DE RCEOXX 002 0171034
ZNR UUUUU
R 171020Z JAN
FM HMCS MICMAC
TO RCEOC/MARCOM HQ HALIFAX
INFO RXCAF/COMSTRIKFLTLANT
BT
UNCLAS
TEXT
BT (ship pauses to listen for Halifax)

S/S answering CYVN DE CFH K

RATT working (2CR)(8LF) NNNN (12 LTRS)

S/S answering CYVN DE CFH R AR

c. (U) Example 3: FS CASSARD is reading X11M Broadcast. Using an indefinite call sign, FS CASSARD establishes communication with Malta on ship-shore to pass PRIORITY encrypted message addressed to COMNAVSOUTH info CECMED. On the working frequency, CASSARD runs a test tape:

RATT working GYZ DE FA

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG
1234567890 RYRYRYRYRYRYRYRYRYRYRYRYRY
INT ZBZ K

(Test tape repeated until Malta answers.)

333.c. (Continued)

S/S answering FA DE GYZ ZBZS K

RATT working

(5 SPACES) UU
PP RFFLCR RXFECR
DE RXTGXX 17/1504
ZNR UUUUU
P 171450Z JAN
GR 279
BT

(First hundred groups (2CR)(4LF). (During transmission of (2CR)(4LF), CASSARD pauses to allow Malta to break in or ask for repetitions.))

S/S answering FA DE GYZ K

RATT working

PAGE 2 RXTGXX 171450Z JAN

(Final 179 groups)

BT (ship pauses to listen for Malta)

S/S answering FA DE GYZ IMI 117 168 K

RATT working

(2CR)(1LF)
C117 ABDCE 168 FGIBJ (2CR)(8LF)
NNNN (12 LTRS)

S/S answering FA DE GYZ R AR

CHAPTER 4

INTER-SHIP AND MATELO PROCEDURES (U)

SECTION I

GENERAL INSTRUCTIONS (U)

401. (U) TYPE OF OPERATION

a. (U) Either simplex or duplex mode may be used, dependent upon equipment availability.

b. (U) Radio-teletypewriter inter-ship nets are directed nets, unless otherwise ordered.

c. (U) The primary method of communication in the Maritime Telecommunications Organization (MATELO) is on-line encrypted teletypewriters on simplex HF circuits.

402. (U) CIRCUIT DISCIPLINE

a. (U) A rigorously enforced circuit discipline is essential. A net control station should be designated, which should be able to receive all other stations on the net.

b. (U) No transmission may be made unless the net is clear, and all transmissions are to be kept as short as possible.

c. (U) All transmissions are to be keyed by tape, except short procedural messages which may be made by hand.

d. (U) Receipts are to be sent for all messages transmitted on the net, unless the control station directs otherwise during good circuit conditions. In a multi-call message, stations are to be directed to receipt after end-of-message functions. When stations are in good communication, it is normally unnecessary for more than one station to be directed to receipt. When a task group broadcast is in operation, receipts may be passed on the broadcast.

403. (R) CALL SIGNS

a. (R) Call Signs are to be used for inter-ship working.

b. (R) The addresses of plain language messages may be expressed in plain language on on-line cipher circuits and on off-line circuits when call-sign encryption is not in force. Ship names are to be prefixed USS, HMS, FS, etc., to avoid ambiguity.

c. (R) Call signs are to be used in MATELO.

404. (U) MESSAGE FORMAT

a. (U) Normally, abbreviated service messages and procedural messages are to be transmitted on one line beginning with start-of-message functions, and are to end with the pro-sign "K" or "AR".

b. (U) Messages for ships on the net are to be transmitted in the format shown in the examples in Section IV.

c. (U) All other messages, including service messages bearing a date-time-group, are to be transmitted in accordance with ACP 127 format, beginning and ending with the start-of-message and end-of-message functions. Filing time is to be omitted from messages which will not be transmitted outside the force.

d. (U) All messages on MATELO air/ground/air nets are to be in the format shown in Section IV, paragraph 434.

405. (U) TRANSMISSION OF LONG MESSAGES AND OF MESSAGES IN BATCHES

When transmitting long messages, or transmitting messages in batches, a pause of approximately 10 seconds is to be made after transmission of each page or message to allow a station with higher precedence traffic to break in.

406. (U) BREAK-IN PROCEDURE

a. (U) During pauses in transmission of a long message, or whenever the circuit reverts to the standby condition, stations may break in under the following circumstances:

406.a. (Continued)

(1) (U) To inform the control station that high precedence traffic is awaiting transmission.

(2) (U) To call the control station on initially joining the network.

(3) (U) To inform the control station that message is garbled.

b. (U) A station breaking in under the circumstances in sub-paragraph a.(1) or (2), above, is to make an initial call to the control station, followed by the precedence of the traffic on hand and the call sign of the addressee concerned if other than the control station. The control station will then instruct whichever station he selects to transmit.

407. (U) GARBLES

a. (U) Any station that, through faulty equipment, causes a garble on the network is to be informed immediately by the control station via another circuit. The offending station is then to leave the network until the fault is rectified.

b. (U) A case may occur where the control station is unable to identify the garbling station and the subsequent process of elimination, particularly on a large network, would consume an excessive amount of time. A Condition Message is to be transmitted on the inter-ship circuit or an alternative circuit.

408. (R) AUTHENTICATION

When authentication is used, the authentication is to precede the end-of-message functions.

409. (U) SHIP-SHORE GUARD

a. (U) When messages are to be sent ashore, ships in a group must forward their messages in the correct format shown in ACP 127 to eliminate the necessity for the guardship having to re-process the messages for onward transmission. Such a message is to have a pilot separated from the message for onward transmission by 12 letter shifts.

409. (Continued)

b. (U) In the case where a message is also addressed to a ship in company, the ship in company is to ignore the routing indicators and operating signals inserted in the heading of the message. It will be necessary to indicate to the shore station that the message has been delivered to the ship in company. This is done by use of the operating signal ZEN in lieu of a routing indicator when format line 7 and 8 routing is used, and by line 4 transmission instructions when format line 7 and 8 routing is not used. Paragraph 514 refers.

410. (U) RESERVED

SECTION II

ON-LINE CIPHER CIRCUITS (U)

411. (R) ESTABLISHING COMMUNICATION

When equipment has been set up correctly and checked by using tests prescribed by National Authorities, a station wishing to establish communication should proceed as follows:

a. (R) Establish that the net is clear.

b. (R) Transmit a phasing signal, letter shifts, and message indicator program.

c. (R) Call, using the RATT procedure shown at paragraph 433.

412. (R) TRANSMISSION

a. (R) After the check that the circuit is clear, a station transmits a 15-second phasing signal followed by letter shift and calls up ensuring that the transmitter carrier is off immediately at the conclusion of each transmission. If no answer is received in 45 seconds, the phasing signal and call up should be repeated.

b. (R) It must be clearly understood that the first station to break net silence and transmit will capture the net and inhibit emissions from all other teletypewriters in the network until the transmission ceases and receiving terminal equipment resumes the standby condition.

c. (R) In view of this, it is mandatory that a pause of about 10 seconds be made, after standby condition has been achieved, before making a routine reply.

413. (R) PAUSES IN TRANSMISSION

After a pause in transmission, a new phasing signal followed by letter shifts should be transmitted before continuing traffic.

414. (R) "NO TRAFFIC" PERIODS

During long periods of "no traffic," the net control station is to rephase the network at regular intervals when radio emission policy permits, as follows:

a. (R) Good circuit conditions - every 30 minutes.

b. (R) Poor circuit conditions - every 5 minutes.

415-420. (U) RESERVED

SECTION III

OFF-LINE RATT CIRCUITS (U)

421. (U) MACHINE FUNCTIONS

a. (U) Teletypewriters are fitted with a stop/start switch, which automatically operates if a pause occurs in transmission or reception of longer than 40 seconds. (The actual period varies with individual machines, but the minimum is 40 seconds.)

b. (U) In addition, the associated terminal equipment will automatically revert to the standby condition if there is a pause in transmission or reception of more than 3 seconds.

c. (U) The machine functions in paragraphs 403 to 405 are therefore necessary, in addition to the normal operation of the teletypewriter functional keys, during the transmission of messages.

422. (U) INITIAL TRANSMISSIONS

When establishing communication, or when commencing transmission after a pause of working on the net of 40 seconds or more (i.e., when own teletypewriter motor is stopped), functional keys as necessary for different makes of teletypewriters are to be operated to ensure that:

a. (U) The transmitting teletypewriter is switched on.

b. (U) The transmitting terminal set is conditioned to transmit.

c. (U) Distant terminal equipment is conditioned to receive, and

d. (U) Distant teletypewriters are switched on.

423. (U) SUBSEQUENT TRANSMISSIONS

423. (U) SUBSEQUENT TRANSMISSIONS

All subsequent transmissions after delays of less than 40 seconds (i.e., when own motor is already running) are to be preceded by:

(5 SPACES) (2CR) (1LF)

424. (U) SHORT PAUSES IN TRANSMISSION

If a pause of more than 3 seconds, but less than 40 seconds, occurs during a transmission, distant stations' terminal equipment must be re-conditioned to receive by making 2 letter or figure shifts as appropriate to the characters being transmitted.

425. (R) INITIAL ALIGNMENT OF TERMINAL EQUIPMENT

Prior to establishing a net, it is essential to align terminal equipment of all stations (paragraph 411):

a. (R) The control station is to transmit a continuous space bar signal, during which time the ships are to adjust their terminal sets to the transmission.

b. (R) On completion, a second similar transmission is to be made by another ship, when ordered, so that the control station may adjust his own terminal set.

Examples:

(1) (R) All stations have been instructed to set watch at 1200Z:

At 1200Z NCS (Call Sign NBOS), calls all stations and transmits space bar signal.
(Functional keys as necessary to condition net)
(5 SPACES) (2CR) (1LF)
NAWS DE NBOS
(Presses space bar and repeat/runout key for two complete teletypewriter lines)
AR (2CR) (1LF)

425.b. (Continued)

(2) (R) NCS now instructs FS CLEMENCEAU (Call sign FCLE) to carry out a similar transmission:

(5 SPACES) (2CR) (1LF)
FCLE DE NBOS ZAI8 K (2CR) (1LF)
(ZAI8-run space bar transmission)

(3) (R) FS CLEMENCEAU transmits:

(5 SPACES) (2CR) (1LF)
NBOS DE FCLE
(Presses space bar and repeat/runout key for two complete teletypewriter lines)
AR (2CR) (1LF)

426-430. (U) RESERVED

SECTION IV

EXAMPLES (U)

431. (U) KEY FUNCTIONS

In the following examples, the functional keys and phasing signal transmissions necessary to condition the net are omitted.

432. (U) CALL SIGNS

Call signs in the examples are used as follows:

FBOU	FS BOUVET
FCAS	FS CASSARD
FCLE	FS CLEMENCEAU
GARK	HMS ARK ROYAL
NBOS	USS BOSTON (NCS)
NAWS	ALL NATO WARSHIPS ON THIS NET

433. (U) EXAMPLES

a. (1) (U) Establishing a net and transmitting a short abbreviated plaindress message:

NCS calls all stations and asks what traffic they have on hand.
(5 SPACES) (2CR) (1LF)
NAWS DE NBOS INT ZBO K (2CR) (1LF)
Stations answer in alphabetical sequence of call signs.
FS BOUVET indicates that she has no traffic.
(5 SPACES) (2CR) (1LF)
DE FBOU QRU AR (2CR) (1LF)
FS CASSARD indicates that she has no traffic.
(5 SPACES) (2CR) (1LF)
DE FCAS QRU AR (2CR) (1LF)
FS CLEMENCEAU indicates that she has a PRIORITY message for HMS ARK ROYAL.
(5 SPACES) (2CR) (1LF)
DE FCLE P GARK K (2CR) (1LF)
HMS ARK ROYAL indicates that she has not traffic.

433.a.(1) (Continued)

(5 SPACES)(2CR)(1LF)
DE GARK QRU AR (2CR)(1LF)
NCS instructs FS CLEMENCEAU to transmit her message.
(5 SPACES)(2CR)(1LF)
FCLE DE NBOS K AR (2CR)(1LF)
FS CLEMENCEAU transmits her message to HMS ARK ROYAL.
(5 SPACES)
GARK DE FCLE
P 171145Z JAN
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)
HMS ARK ROYAL receipts for the message.
(5 SPACES)
DE GARK R AR

(2) (U) The control station broadcasting to all stations on the net, and directing one station to receipt:

(5 SPACES)(2CR)(1LF)
NAWS DE NBOS
R 171150Z JAN
FM CTF 401
TO TF 401
BT
UNCLAS
TEXT
BT (2CR)(8LF)
NNNN (12 LTRS)(2CR)(1LF)
FBOU K (2CR (1LF)
FS BOUVET receipts for the message.
(5 SPACES)(2CR)(1LF)
DE FBOU R AR (2CR)(1LF)

(3) (U) Transmission of a codress message addressed to a ship in company only on an off-line circuit:

433.a.(3) (Continued)

FS CASSARD informs control that she has a PRIORITY message for NAWS.
(5 SPACES)(2CR)(1LF)
NBOS DE KC P NAWS K (2CR)(1LF)
NCS instructs FS CASSARD to transmit message.
(5 SPACES)(2CR)(1LF)
DE NBOS K AR (2CR)(1LF)
FS CASSARD transmits her message in codress procedure.
(5 SPACES)(2CR)(1LF)
NAWS DE FCAS
OUBF/
P 171623Z JAN
GR 25
BT
(Text encrypted)
BT (2CR)(8LF)
NNNN (12 LTRS)
All ships receipt for the message.

(4) (U) Ship-shore guard:

FS CLEMENCEAU has message for COMBRESTCHAN and FS CASSARD (in company). USS BOSTON is ship-shore guardship, reading Broadcast X11N.

Having been given permission to transmit, FS CLEMENCEAU passes her message:

(5 SPACES)(2CR)(1LF)
FCAS NBOS DE FCLE
NBOS (5 SPACES) UU (2CR)(1LF)
RR RFFKC
DE RXDBBXX 17/2151
ZNR UUUUU
R 172127Z JAN
FM FS CLEMENCEAU
TO RFFKC/CECLANT
INFO ZEN/FS CASSARD
BT
UNCLAS

433.a.(4) (Continued)

TEXT
BT (2CR)(1LF)
NNNN (12 LTRS)
Both ships receipt.
USS BOSTON will then relay the tape,
having torn off all before (5 SPACES) UU.

434. (U) EXAMPLES OF MATELO RATT PROCEDURES

a. (U) Initial call.

(1) (U) The aircraft (H6GT) transmits a brief phasing signal followed by a call tape to REITAN (LBJ):

FORMAT LINE	CONTENTS	END OF LINE FUNCTION
1	(5 SPACES)	(2 CR 1 LF)
	LBJ DE H6GT O K	

(2) (U) REITAN replies by transmitting a brief phasing signal and invites the aircraft to pass its message:

FORMAT LINE	CONTENTS	END OF LINE FUNCTION
1	(5 SPACES)	(2 CR 1 LF)
2	H6GT DE LBJ K	

NOTE: If the ground station is already working, or has traffic of a higher priority, the aircraft will be ordered to wait, i.e., AS 5 (wait 5 minutes).

b. (U) Abbreviated plaindress messages.

(1) (U) Air-ground messages are normally to be abbreviated plaindress, e.g., the aircraft passes its message to REITAN after a brief phasing signal:

FORMAT LINE	CONTENTS	END OF LINE FUNCTION
1	(5 SPACES)	(2 CR 1 LF)
2.3	LBJ DE H6GT	(2 CR 1 LF)

434.b.(1) (Continued)

5	O 291350Z	(2 CR 1 LF)
11	BT	(2 CR 1 LF)
12	CONFIDENTIAL TEXT	(2 CR 1 LF)
13	BT	(2 CR 8 LF)
15	NNNN	(12 LTRS)

(2) (U) REITAN gives a brief phasing signal and acknowledges receipt of the aircraft message:

FORMAT LINE	CONTENTS	END OF LINE FUNCTION
1	(5 SPACES)	(2 CR 1 LF)
	H6GT DE LBJ R AR	

c. (U) FLASH messages. FLASH precedence shall be indicated by inserting the bell signal at the beginning of line 2 of both the call and the message. The line 2 of an aircraft FLASH call or message will be:

(FIGS)JJJJJSSSSS(LTS)LBJ DE H6GT - etc.

d. (U) Relay of air-ground message.

(1) (U) Any ground station within MATELO may accept an air/ground message for relay if it is obvious that the message addressee is not receiving the aircraft transmission. The relaying station will need to insert a line 1 pilot before the message received from the aircraft, e.g. WALCHEREN (RNFLW) receives a message for relay to REITAN (RYFXI).

FORMAT LINE	CONTENTS	END OF LINE FUNCTION
1	(5 SPACES HH)	(2 CR 1 LF)
	OO RYFXI	(2 CR 1 LF)
	ZNY CCCCC ZOV RNFLW	(2 CR 1 LF)
2	LBJ DE H6GT, etc.	(2 CR 1 LF)

434.d. (Continued)

(2) (U) An occasion may arise when the ground station originating a ground/air message is not in direct contact with the aircraft. On this occasion, the message may be relayed via another MATELO ground station which is known to be in contact with the aircraft, e.g., WALCHEREN is in contact with the aircraft; REITAN is unable to contact the aircraft direct and so relays a message to WALCHEREN for transmission to the aircraft:

FORMAT LINE	CONTENTS	END OF LINE FUNCTION
1	(5 SPACES HE)	(2 CR 1 LF)
2	OO RNFLW	(2 CR 1 LF)
3	DE RYFXI	(2 CR 1 LF)
4	ZNY CCCCC	(2 CR 1 LF)
	T H6GT	(2 CR 1 LF)
5	O 291645Z	(2 CR 1 LF)
11	BT	(2 CR 1 LF)
12	H6GT DE LBJ	(2 CR 1 LF)
	O 291630Z	(2 CR 1 LF)
	BT	(2 CR 1 LF)
	CONFIDENTIAL	(2 CR 1 LF)
	TEXT	(2 CR 1 LF)
13	BT	(2 CR 8 LF)
	NNNN	(12 LTRS)

On receipt of this message, WALCHEREN calls the aircraft and, having established contact, transmits the complete message as received from REITAN.

CHAPTER 5

HARBOUR, LOCAL, OR TF/TG ON-LINE CIPHER BROADCASTS (U)

SECTION I

GENERAL INSTRUCTIONS (U)

501. (R) OPERATION

a. (R) All on-line cipher harbour, local, or TF/TG RATT broadcasts fitted with equipment employing the ORESTES cryptographic system may be continuous or noncontinuous, i.e., other than a full 24-hour continuous emission without continuous traffic flow. There are no special single operator, two operator, or general periods.

b. (R) Single channel (non-multiplex) techniques will be used.

c. (R) Should the cryptoperiod be extended beyond 24 hours, the next scheduled cryptoperiod start time will be designated by the BCA. The fact that the cryptoperiod is being extended should not be transmitted in the clear.

d. (R) A period of 10 minutes is required at the end of a cryptoperiod in which to carry out key list setting changes and equipment crypto alarm checks; during this period no cipher transmissions should be made by the BCA unless of an urgent nature. If made, cipher transmissions will be repeated after the start of the new cryptoperiod to ensure receipt of such information by all receiving units within range.

e. (R) Individual messages or strings of messages will always be preceded by phasing and indicator (P & I) signals generated by the cryptographic equipments. These must be transmitted in order to automatically synchronize all authorised receiving units.

f. (R) Unless prohibited temporarily by electromagnetic emissions control (EMCON) conditions, and whenever on-line RATT broadcast transmissions do not occur for over 20 minutes between traffic periods, an

501.f. (Continued)

enciphered teletypewriter call tape, preceded by the P & I signals, will be emitted by the BCA to retain broadcast net synchronization.

(1) (R) P & I signals are emitted by the cryptographic equipment whenever the SEND button on its front panel or on its remote control unit is depressed and released, whether by manual or automatic means.

(2) (R) Operators should never depress the SEND button of their cryptographic equipment receiver when its P & I indicator lamp is ON or they will interrupt reception.

g. (R) To allow receivers to attain system and crypto synchronization with the BCA, broadcast of operational traffic will not be resumed until 10 minutes after the start time of the cryptoperiod. A call tape, preceded by the P & I signals, will be repeated in the cipher mode during the initial 10 minute period of the cryptoperiod.

h. (R) Messages bearing FLASH or IMMEDIATE precedence will, however, be transmitted during the period in g, above. This is to be considered a "Free Run" and such messages will be re-transmitted immediately after the initial 10-minute period of the cryptoperiod has elapsed.

502. (R) CONDITION MESSAGES

a. (R) Condition Messages are used as in Chapter 2, paragraph 226.

b. (R) Condition Messages are transmitted as unnumbered service messages in the format:

TF/TG collective call sign
P..... DTG
BT
HOTEL GOLF TWO (CONDITION MESSAGE)
BT

503. (R) TRANSFER OF CONTROL OF A HARBOUR, LOCAL, OR TF/TG BROADCAST

If the control of a harbour, local, or TF/TG on-line cipher RATT broadcast is to be transferred, the following procedure is to be followed:

a. (R) The scheduled start time for the harbour, local, or TF/TG broadcast shall remain as 0000Z, or as otherwise designated by the BCA. If possible, control should be transferred just prior to the start of cryptoperiod.

b. (R) At the start of the normal cryptoperiod, a new key list setting is to be used by all concerned, i.e., the appropriate daily key setting.

c. (R) When control is transferred after the start time of a new cryptoperiod, the existing key list and normal daily key setting will continue in use for the remainder of the cryptoperiod.

d. (R) The BCA handing over control is to promulgate the following:

(1) (R) The actual time at which the alternate control will start transmitting.

(2) (R) The key list and date setting that will be used by the alternate control.

e. (R) The information in d, in the form of a Condition Message, is to be transmitted to all actual and anticipated units copying the broadcast prior to the last 5-minute period of the cryptoperiod.

f. (R) A second Condition Message, telling units to make the new key list settings, is to be broadcast immediately before transmission from the BCA ceases, normally at the expiration of 23 hours 55 minutes of the cryptoperiod. This is to be the last transmission by BCA.

504. (R) STATION IDENTIFICATION

The need to minimize wear of teletypewriter and other electro-mechanical equipment makes it no longer

504. (Continued)

desirable to transmit call tapes continuously over on-line RATT broadcasts. During "no traffic" periods, if electro-magnetic emissions control (EMCON) conditions permit, the P & I synchronizing signals, BCA call sign, broadcast net identity, and serial number of the next message, in that sequence, are to be radiated at least once every 20 minutes. The call tape, preceded by P & I signals, may be radiated more frequently if required by the BCA because of noisy radio circuit conditions or to enable easy tuning of radio equipment or terminal equipment adjustments by receiving units. The interval between the serial number and the next repetition of P & I signals and call tape is to be filled by a lengthy teletypewriter MARK/stop signal. This lengthy signal can be usefully used for radio frequency measurements and radio transmitter or receiver frequency adjustments, as necessary.

505. (R) ROUTING OF UN-TRANSMITTED BROADCAST TRAFFIC

Un-encrypted Classified traffic which cannot be transmitted over a harbour, local, or TF/TG on-line cipher RATT broadcast for any reason; e.g., BCA broadcast failure, will be transmitted to addressees over cryptographically secure on-line TF/TG working nets or by other means.

a. (R) If cryptographically secure on-line cipher RATT nets or channels are not available to reach an addressee, action is to be carried out by the BCA as follows:

(1) (R) Messages of IMMEDIATE precedence and above are to be off-line encrypted immediately and transmitted on the TF/TG RATT or CW working nets.

(2) (R) Messages of PRIORITY precedence are to be held for 30 minutes before being off-line encrypted and transmitted on the TF/TG RATT or CW working nets.

(3) (R) The BCA may not be able to cope with the off-line encryption load for traffic of lower precedence, or may not have a suitable off-line facility

505.a.(3) (Continued)

or compatible crypto key, or may not be able to contact an addressee. In this event, the station(s) of origin is to be notified which messages await broadcast transmission and advised that the messages must be re-transmitted by the originator by other means to effect delivery.

(4) (R) Traffic encrypted in off-line cryptosystems and transmitted on TF/TG working nets in accordance with the above is to be re-transmitted in plain text form on the on-line cipher RATT broadcast at the first opportunity when normal service is resumed.

b. (R) For identification purposes, broadcast traffic which, for whatever reason, is to be repeated on the broadcast will carry the broadcast designator and serial number of the original transmission in addition to a new sequence number for the cryptoperiod.

506-509. (U) RESERVED

SECTION II

TF/TG BROADCASTS, COMBINED TF/TG AND SHIP-SHORE (U)

510. (R) GENERAL INSTRUCTIONS

a. (R) The OTC of a force at sea may wish to replace the simplex TF working with a RATT TF broadcast - normally HF in a dispersed formation - on which he may transmit tactical, operational, administrative, and guard traffic. This system has the advantage of close control of the force, and denial to the enemy of a great deal of COMSEC information of value since normally only one station is radiating. Those small ships which can read only one RATT broadcast will normally read Task Force broadcast in preference to the Fleet broadcast, the OTC relaying traffic as necessary. It is often convenient for the Area headquarters to copy the TF broadcast, in which case ship-shore traffic may also be transmitted for onward relay by the Area headquarters.

b. (R) A net is provided for units to pass messages in to the CTF for onward relay to shore or other units if necessary.

c. (R) Broadcasts are conducted in accordance with the instructions for RATT broadcasts.

511. (R) COMBINED TF/TG BROADCAST AND SHIP-SHORE

a. (R) The combined TF/TG broadcast/ship-shore will serve the following purposes:

(1) (R) To relay traffic received from a shore station over a RATT or other shore-ship circuit to other ships and units, thereby saving transmission on normal broadcasts.

(2) (R) To address all units (or all units so equipped) with tactical and administrative messages of concern to all units or a majority of units.

(3) (R) To preclude establishment or maintenance of several functional circuits.

511.a. (Continued)

(4) (R) To provide closer direction by OTC for EMCON, circuit control, and other reasons for task force communications.

(5) (R) To transmit messages for copying and/or onward relay by a designated shore station.

512. (R) TASK FORCE/TASK GROUP BROADCAST

a. (R) A RATT TF/TG broadcast may be activated by the CTF/CTG (in principle, OTC as well) at sea, in harbour, or at anchor.

(1) (R) Broadcast title (ACP 176).

(2) (R) Serial numbers are to be from 001 to 999.

(3) (R) Automatic transmission is mandatory, except FLASH and IMMEDIATE TRAFFIC WHICH MAY BE TRANSMITTED BY KEYBOARD.

(4) (R) Each message will be transmitted once, except FLASE messages which will be transmitted twice.

(5) (R) A call tape will be transmitted during idle periods.

(6) (R) The CTF/CTG becomes responsible for the routing of traffic received from broadcast, the assignment of serial numbers, and the transmission of messages to addressees. The duties of conducting the TF/TG broadcast, controlling the TF/TG working net, and, if required, guarding the Area broadcast for the TF/TG, are most conveniently carried out in one ship, referred to hereafter as the Broadcast Control Ship. This will normally be the OTC's flagship.

b. (R) Traffic passed on the TF/TG broadcast will be in one or more of the following categories:

(1) (R) Guard and local traffic for ships reading the TF/TG broadcast.

512.b. (Continued)

(2) (R) Ship-shore traffic for the shore authority reading the TF/TG broadcast.

(3) (R) Ship-shore traffic for automatic onward relay by the shore station reading the TF/TG broadcast.

(4) (R) Ship-shore traffic for intercept and automatic relay by the ship-shore guard ship when (3), above, is in-applicable.

513. (R) TASK FORCE/TASK GROUP WORKING NET

a. (R) Watch on this net is kept by the CTF/CTG continuously. Watch is kept by other ships by order or on their own initiative in the following circumstances:

(1) (R) To be used by ships and units of the TF/TG for passing messages to the CTF/CTG and for relay on the TF/TG broadcast if necessary.

(2) (R) To receipt for a message, if directed to do so.

(3) (R) To ask for repetition of one or several messages not received on the broadcast.

(4) (R) To inform Broadcast Control Station of the first or last serial number, as applicable.

(5) (R) To exchange operating signals with the Broadcast Control Ship. Except when authorized by the CTF/CTG, this circuit is never used to transmit messages between ships and units of the TF/TG.

514. (R) SPECIAL INSTRUCTIONS

a. (R) Traffic under paragraph 512.b.(1) is to be prepared by the originating ship in RATT format for inter-ship working as contained in Chapter 4 and amplified in this chapter.

514. (Continued)

b. (R) Traffic under paragraph 512.b.(2), (3), and (4), above, is to be prepared by the originating ship in tape relay format as amplified in this chapter. Indefinite routing indicators are to be used in format line 3.

Example:

A ship belonging to TF 406 whose guardship is reading X11N Broadcast (controlled by the naval shore radio station at Rosyth), having a message for onward relay through the tape relay network, would use the indicator RXDBDXX.

c. (R) Any ship which, for any reason, ceases to receive the TF/TG broadcast, should report this to the OTC together with the last number received. Should the OTC consider it to be necessary, another ship receiving the broadcast may be detailed as a relay. Ships, on re-entering the broadcast, should report the first number received.

d. (R) Ships unable to pass traffic to the Broadcast Control Ship on RATT circuits should prepare traffic under normal ACP 124 (series) rules. Such traffic will be re-filed by the guard ship as necessary.

e. (R) Call signs and address groups will be used as prescribed.

515-519. (U) RESERVED

SECTION III

EXAMPLES (U)

520. (R) GENERAL

a. (R) HMS ARK ROYAL is guarding Broadcast X11N for the whole Task Force. HMS ARK ROYAL is radiating Broadcast X81N, which is being copied by the whole Task Force and the naval shore radio at Rosyth. Radio silence is not in force. Encrypted call signs are to be used when ordered. The Task Force is in a dispersed disposition. Destroyers and Frigates are using TF working net (CW) for traffic to the OTC. Cruisers and Carriers are using TF working net (RATT) for traffic to the OTC.

b. (R) Plain call signs used in the examples are as follows:

SHIP AUTHORITY	PLAIN CALL SIGNS	TYPE OF SHIP
CTF 406	MCTF	
TF 406	GTFT	
HMS ARK ROYAL (CTF 406)	GARK	AIRCRAFT CARRIER
HMS TIGER	GTIG	CRUISER
FS BOUVET	FBOU	DESTROYER
FS CLEMENCEAU	FCLE	AIRCRAFT CARRIER
USS BOSTON	NBOS	CRUISER
USS COTTON	NCOT	DESTROYER
FGS HESSEN	DHES	DESTROYER
MHQ ROSYTH	MTO	

c. (R) In ALL examples, end of line functional keys are (2CR)(1LF) unless otherwise shown in brackets.

521. (R) READABILITY OF THE TASK FORCE BROADCAST

HMS ARK ROYAL asks FS CLEMENCEAU and the naval shore radio station at Pitreavie, by abbreviated service message, to report readability of the broadcast:

(5 LTRS)
NAWS

521. (Continued)

X81N
FM GARK
TO FCLE
MTO
INT ZBZ K
NNNN (12 LTRS)

NOTE: Broadcast number suppressed.

FS CLEMENCEAU replies on Task Force working net (after being directed to transmit):

CLARK DE FCLE ZBZ 5K
(5 SPACES)
DE GARK R AR

The naval shore radio station at Rosyth makes a similar reply via the Fleet Broadcast.

RATIONALE: Ships need not report how they print each frequency on a multi-channel broadcast.

522. (R) UNCLASSIFIED MESSAGE ORIGINATED BY THE BROADCAST CONTROL SHIP (BCS)

HMS ARK ROYAL transmits a ROUTINE Unclassified message from CTF 406 to TF 406:

(5 LTRS)
NAWS
X81N001
R 240956Z JAN
FM CTF 406
TO TF 406
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)

523. (R) ROUTINE UNCLASSIFIED MESSAGE FROM CTF 406 ADDRESSED TO USS BOSTON INFO COMNORLANT AT ROSYTH

(5 LTRS)
NAWS
X81N002
(12 LTRS) (5 SPACES) UU
RR RXDBDC
DE RXDBDXX 005 0241000
ZNR UUUUU
R 240956Z JAN
FM CTF 406
TO ZEN/USS BOSTON
INFO RXDBDC/COMNORLANT
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)

NOTE 1: USS BOSTON ignores the ZEN and accepts the message.

NOTE 2: Rosyth takes forwarding action to COMNORLANT.

524. (R) PRIORITY UNCLASSIFIED MESSAGE FROM HMS ARK ROYAL TO COMAIRCENT INFO CINCNORTH AND FS CLEMENCEAU

(5 LTRS)
NAWS
X81N003 (12 LTRS) (5 SPACES) UU
PP RXFDGB RXFNB
DE RXDBDSS 092 0241050
XX
ZNR UUUUU
P 241035Z JAN
FM HMS ARK ROYAL
TO RXFDGB/COMAIRCENT
INFO RXFNB/CINCNORTH
ZEN/FS CLEMENCEAU
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)

524. (Continued)

NOTE 1: Indefinite routing indicator used.

2: FS CLEMENCEAU would take action on this message as with normal broadcast message, disregarding line 7 and 8 routing instructions.

3: Message processed in accordance with instructions for ship-shore traffic.

525. (R) RE-TRANSMISSION OF AN UNCLASSIFIED MESSAGE RECEIVED BY BCS ON AREA BROADCAST

HMS ARK ROYAL transmits a ROUTINE Unclassified message received on X11N Broadcast addressed to USS COTTON:

(5 LTRS)
NAWS
X11N793
X81N004 (5 LTRS)
(5 SPACES) UU
RR RXDBDCF
ZNR UUUUU ZOV RUDASCC
T USS COTTON
(5 SPACES) UU
RR RUDASCC
DE RULESAA 217 0171101
ZNR UUUUU
R 171004Z JAN
FM CINCLANT
TO RUDASCC/USS COTTON
INFO RXCAF/COMSTRIKFLTLANT
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)

526. (R) TRANSMISSION OF ENCRYPTED MESSAGE ORIGINATED BY THE BCS

HMS ARK ROYAL transmits a ROUTINE encrypted message from HMS ARK ROYAL to CINCEASTLANT:

526. (Continued)

(5 LTRS)
NAWS
X81N004 (5 SPACES) UU
RR RXDBCR
DE RXDBDSS 113 0241215
XX
ZNR UUUUU
R 241200Z JAN
GR 73
BT
(73 GROUPS)
BT
NNNN (12 LTRS)

NOTE: Indefinite routing indicator used.

527. (R) PRIORITY ENCRYPTED MESSAGE FROM CTF 406 TO FOSNI AT MEQ ROSYTH

(5 LTRS)
NAWS
X81N007
(12 LTRS)(5 SPACES) UU
PP RBDIRCR
DE RXDBDXX 008 0241300
ZNR UUUUU
P 241221Z JAN
GR 65
BT
(65 GROUPS)
BT
NNNN (12 LTRS)

NOTE: Rosyth takes forwarding action to FOSNI.

528. (R) PRIORITY ENCRYPTED MESSAGE FROM CTF 406 to TF 406 INFO COMNORLANT AND COMSTRIKFLTLANT

(5 LTRS)
NAWS
X81N008 (5 SPACES)
GTFT (12 LTRS)(5 SPACES) UU
PP RXDBDC RXCAF

528. (Continued)

```
DE RXDBDXX 003 0241239
ZNR UUUUU
P 241232Z JAN
GR83
BT
(83 GROUPS)
BT
NNNN (12 LTRS)
```

NOTE 1: Indefinite routing indicator used.

NOTE 2: Rosyth passes the message into the tape relay network, having torn the tape off at the 12 LTRS.

529. (R) TRANSMISSION OF UNCLASSIFIED MESSAGES ORIGINATED IN SHIPS OF THE TASK FORCE

a. (1) (R) HMS TIGER has a ROUTINE Unclassified message for FS BOUVET and HMS ARK ROYAL. She passes the message to HMS ARK ROYAL on Task Force Working, who relays the message via Broadcast X81N for FS BOUVET. HMS ARK ROYAL also takes the message for information.

(2) (R) On Task Force Working (after being directed to transmit):

```
(5 SPACES)
RR GARK
DE GTIG
(5 SPACES) UU
R 241248Z JAN
FM HMS TIGER
TO FS BOUVET
INFO HMS ARK ROYAL
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)
DE GARK R AR
```

(3) (R) On Task Force broadcast:

529.a.(3) (Continued)

(5 LTRS)
NAWS
X81N009
R 2412482 JAN
FM HMS TIGER
TO FS BOUVET
INFO HMS ARK ROYAL
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)

b. (1) (R) USS BOSTON has a PRIORITY Unclassified message for CTF 406. This message is passed to HMS ARK ROYAL on Task Force Working.

(2) (R) On Task Force Working (after being directed to transmit):

(5 SPACES)
PP GARK
DE NBOS
P 2414012 JAN
FM USS BOSTON
TO CTF 406
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)
(5 SPACES)
DE GARK R AR

c. (1) (R) FGS HESSEN passes a ROUTINE Unclassified message on Task Force Working from FGS HESSEN addressed to HMNORS SLEIPNER (whereabouts unknown) info CINCNORTH and USS COTTON.

(2) (R) On Task Force Working (after being directed to transmit):

529.c.(2) (Continued)

```
(5 SPACES) UU
RR GARK
DE DHES
(12 LTRS) (5 SPACES) UU
RR RYFXI/RXFNB
DE RXDBDXX 039 0231645
ZNR UUUUU
R 241602Z JAN
FM FGS HESSEN
TO RYFXI/HMNORS SLEIPNER
INFO ZEN/USS COTTON
RXFNB/CINCNORTH
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)
(5 SPACES)
DE GARK R AR
```

(3) (R) On Task Force Broadcast:

```
(5 LTRS)
NAWS
X81N010
(12 LTRS) (5 SPACES) UU
RR RYFXI RXFNB
DE RXDBDXX 039 0231645
ZNR UUUUU
R 241602Z JAN
FM FGS HESSEN
TO RYFXI/HMNORS SLEIPNER
INFO ZEN/USS COTTON
RXFNB/CINCNORTH
BT
NATO UNCLAS
TEXT
BT
NNNN (12 LTRS)
```

NOTE: Rosyth automatically passes the message into the tape relay network, having torn off the tape all before (5 SPACES) UU.

530. (R) TRANSMISSION OF AN INITIAL ENEMY REPORT

a. (R) USS BOSTON, of necessity, passes an intial enemy report on Task Force Working to HMS ARK ROYAL, who immediately takes it for action and re-broadcasts on the Task Force Broadcast:

b. (R) On Task Force Working:

(5 SPACES) UU
(FIGS) JJJJJSSSSS (LTRS) ZZ GARK
DE NBOS
Z
FM NBOS
TO MCTF
BT
LR1/1
3DD
165LL35
135-30
BT
1630Z ZNB YZ
NNNN (12 LTRS)

HMS ARK ROYAL receipts and then transmits, using the received tape on the Task Force Broadcast:

c. (R) On Task Force Broadcast:

(5 LTRS)
NAWS
X81N011 (5 SPACES)
(FIGS) JJJJJSSSSS (LTRS) DE GARK
DE NBOS
Z
FM NBOS
TO MCTF
BT
LR1/1
3DD
165LL35
135-30
BT
1630 ZNB YZ
IMI
an exact repetition of the transmission
NNNN (12 LTRS)

531. (R) TRANSMISSION OF AN ENCRYPTED MESSAGE ORIGINATED IN A SHIP OF THE TASK FORCE

a. (R) FS CLEMENCEAU passes a ROUTINE encrypted message on Task Force Working addressed to CTF 406, FS BOUVET, and naval Commander Brest.

b. (R) On Task Force Working (after being directed to transmit):

(5 SPACES)
RR GARK
DE FM
T MCTF
FBOU (5 SPACES) UU
RR RXFKCR
DE RXDBDXX 042 0241527
ZNR UUUUU
R 241510Z JAN
GR57
BT
(57 GROUPS)
BT
NNNN (12 LTRS)
(5 SPACES)
DE GARK R AR

HMS ARK ROYAL now takes the message for action for CTF 406 (MCTF) and passes the message exactly as received on Task Force Broadcast for BOUVET (FBOU) and the shore relay station.

c. (R) On Task Force Broadcast:

(5 LTRS)
NAWS
HE GARK
DE FM
T MCTF
FBOU (5 SPACES) UU
RR RFFKCR
DE RXDBDXX 0241527
ZNR UUUUU
R 241510Z JAN
GR57
BT
(57 GROUPS)
BT
NNNN (12 LTRS)

531.c. (Continued)

NOTE 1: Rosyth automatically passes the message into the tape relay network, having torn off the tape all before (5 SPACES) UU.

NOTE 2: FS BOUVET takes the message for action.

CHAPTER 6

ALLIED SUBMARINE BROADCAST OPERATING PROCEDURES (U)

601. (U) CONDUCT OF SUBMARINE BROADCASTS

a. (U) The terms "schedule" and "routine" used in the following paragraphs are defined as follows:

(1) (U) Schedule: A series of broadcast routines devoted to a particular Submarine broadcast service.

(2) (U) Routine: A period of broadcast time.

b. (U) Submarine on-line RATT broadcasts are operated on a continuous basis; however, each broadcast may be divided into different schedules, serving separate subscribers which may be controlled by different Submarine Operating Authorities (SUBOPAUTH). RATT operation may be interrupted by CW operations, depending upon the specific allocation of transmitter time and subscribers' capability for copying RATT. Schedule control for Submarine broadcasts is carried out by the SUBOPAUTH. Broadcast keying control normally rests with the SUBOPAUTH; however, transfer circuits may be used to pass traffic to a broadcast keying station.

c. (U) Submarine CW Morse broadcasts are operated in accordance with ACP 176, Chapter 9.

d. (U) Technical details for RATT broadcasts are outlined in Article 223 of ACP 176.

e. (U) Messages classified up to and including SECRET may be passed on a cryptographic on-line broadcast without pre-encryption. Messages requiring special handling, e.g., TOP SECRET, CRYPTOSECURITY, EXCLUSIVE, etc., must be off-line encrypted in the appropriate system before transmission over cryptographic on-line broadcast, except as provided for in paragraph 112.c.

f. (U) It will be the responsibility of the appropriate National distribution agencies to distribute

601.f. (Continued)

the necessary keying material for the broadcast stations and ships which may be expected to participate in operations or exercises.

g. (U) The Commander conducting the specific operation or exercise should include in his directive:

(1) (U) Designation of the Broadcast Control Station.

(2) (U) Direction to activate a broadcast.

(3) (U) Assignment of control and operation.

(4) (U) Those units designated to copy specified broadcasts.

(5) (U) Appropriate routing indicator of the Broadcast Control Station.

h. (U) Message traffic for Submarine broadcasts must be identified by the operating signal ZOX, followed by the broadcast routing indicator, to permit segregation, either manual or automatic, when transmitted within and between various National communications systems. Special code words, operation/exercise nicknames, and broadcast station routing indicators may all be used to accomplish the necessary segregation. Automatic segregation by Broadcast Control Stations will necessitate the use of broadcast station routing indicators.

i. (U) National Classified traffic may be transmitted on the cryptographic on-line RATT broadcast when this broadcast is allocated for Allied use or is using Allied key lists. Introduction of National Classified traffic should be restricted to urgent operational matters since it may cause serious difficulty to broadcast controller in vetting (screening) broadcast traffic. If privacy is desired or required, the traffic must be off-line encrypted. The National Authority originating the traffic will be responsible for off-line encryption prior to its introduction into non-National communications channels.

601. (Continued)

j. (U) The Broadcast Control Station will off-line encrypt traffic for CW broadcast transmission. National Authorities will encrypt National traffic prior to passing it to the Broadcast Control Station.

k. (U) The SUBOPAUTH will review all signals, determine the order of transmission (ZBO), and complete check decryption of all off-line encrypted traffic, except FLASH traffic, prior to placing on the Submarine broadcast.

l. (U) Broadcast designators for CW and on-line Submarine broadcasts will be in accordance with ACP 176.

m. (U) The receipt of all messages will be assured by a system of numbering messages sent by the transmitting station. Continuity will be checked by the recipients, and any missing numbers will be requested in accordance with applicable Operational Commanders' directives. Broadcast numbers will commence with 001 and run sequentially through 999.

n. (U) The normal procedure for Submarines to indicate their intention to set a watch or close down on any broadcast is the filing of SUBNOTES. The Broadcast Control Station must be notified by an IMMEDIATE precedence signal of intentions to set watch or close down on any broadcast if the use of SUBNOTES does not apply to the situation.

602. (U) BROADCAST STATE

a. (U) Submarine operation orders and war plans will establish a system for shifting from broadcast to broadcast in the event of breakdown or failure of the intended primary broadcast for any given group of subscribers. Information as to what transmitter facilities are available will be provided to the subscribers as broadcast states. Broadcast states will be varied as required to:

(1) (U) Provide the sufficient broadcast capacity for each area.

602.a. (Continued)

(2) (U) Keep broadcast routines as short as possible to minimize the time a Submarine must remain shallow to receive traffic.

b. (U) The traffic lists will always show the broadcast state in force, e.g.,

NAWS NAWS NAWS BCST STATE TWO ZEO 3 ..... etc.

c. (U) In the event of KW37 failure at the transmitter, the mode will be changed to off-line RATT or CW immediately.

603. (U) SUBMARINE BROADCAST SCHEDULES

a. (U) Each Submarine broadcast will normally be divided into three schedules. Each schedule would then consist of eight one hour routines, alternated every third hour throughout the 24-hour day. Normally, each schedule is operated independently from the other two; however, two schedules may be combined or all three joined together for a continuous broadcast. Any one or all three schedules may be keyed as on-line RATT or CW depending on the requirements of the subscribers or the capabilities of the transmitting station. A schedule listing for each broadcast is given in appropriate Supplement to ACP 176.

b. (U) Traffic introduced on a Submarine broadcast is normally given three transmissions on successive routines. A Submarine should copy a routine at least once every nine hours in order to maintain broadcast serial number accountability. Additional transmissions may be authorized in order to provide a longer time interval between copy periods for the Submarine. If the SUBOPAUTH is other than the Broadcast Control Station, these arrangements must be signalled separately by the SUPOPAUTH to ensure understanding by the Submarine and Broadcast Control Station.

c. (U) Each Submarine broadcast schedule will start with enemy reports, followed by a traffic list. The traffic list will be compiled as follows:

603.c. (Continued)

(1) (U) Broadcast state.

(2) (U) ZBO number of new signals to be transmitted. This will be followed by the following information:

(a) (U) Serial number.

(b) (U) Forecast time of transmission (if required).

(c) (U) Precedence.

(d) (U) Address.

(3) (U) Number of signals being repeated (ZFL), with the following information:

(a) (U) Serial number.

(b) (U) Forecast time of transmission (if required).

(c) (U) Precedence.

(d) (U) Re-run number.

(e) (U) Address.

(4) (U) Numbers of signals which have been removed because they are no longer of interest (ZFJ).

(5) (U) The serial numbers of signals removed from the broadcast but which, if they have been missed (ZRR), must be obtained by the Submarine indicated.

(6) (U) Un-numbered signals to be transmitted on the routine.

EXAMPLE RATT TRAFFIC LIST	EXAMPLE CW TRAFFIC LIST
0 232100Z APR 72 FM COMSUBWESTLANT	NAWS BCST STATE TWO

603.c.(6) (Continued)

```
TO ALL SHIPS COPYING
THIS BCST
BT
NATO CONFIDENTIAL
BROADCAST STATE TWO
ZBO 04
012 A O HMS GRAMPUS
013 A P USS NAUTILUS
014 B R HNMLS POTVIS
015 B R HMCS OJIBWA
ZFL 02
009 B P/3 USS NAUTILUS
010 C R/2 HMS GRAMPUS
ZFJ 007 011
ZRR 008 HMS GRAMPUS
NEWS
BT

ZBO 04

012 A 5HBT/
013 A HTYL/
014 B A9LD/
015 B M62C/
ZFL 02
009 B 3 HTYL/
010 C 2 5HBT/
ZFJ 007 011
ZRR 008 5HBT/
NEWS
BT
```

d. (U) CW schedules will contain high speed Morse and hand speed Morse sections. High speed sections of CW routines will be interrupted at the end of new traffic for the transmission of the operating signal ZFL three times at hand speed. This will enable Submarines who have received traffic on the previous routine to recognize that they now have all new traffic on their tape recorders and may now dive. The traffic list at hand speed, followed by traffic at high speed, will be repeated as necessary to fill the whole period.

e. (U) On the on-line RATT broadcasts, the traffic list will be run repeatedly for the first five minutes of each routine, which will not necessarily start on the hour. This will give Submarines ample opportunity to obtain synchronization, and will enable them to determine early whether they require the remainder of the routine. The first official transmission will commence with enemy reports, followed by the traffic list. This transmission will occur at five minutes past the scheduled time. Traffic will be re-run as necessary to fill the entire routine.

f. (U) When considered necessary by the SUBOPAUTH, a system of variable schedule start times will be promulgated to eliminate the operational pattern of Submarines being at communications depth on the hour.

604. (U) INFORMATION ESSENTIAL TO THE OPERATION OF ON-LINE RATT SUBMARINE BROADCAST - GENERAL

The Broadcast Control Station and receiving stations must be guided by the following:

a. (U) The Submarine on-line broadcast will be cryptographically protected using the appropriate keying material.

b. (U) The schedule start time (crypto zero) shall be 0000Z daily.

c. (U) The length of the cryptoperiod is 24 hours. All cryptoperiods will start at 0000Z, unless otherwise ordered. During periods of heavy traffic, the length of the cryptoperiod may be extended by NOT MORE THAN TWO HOURS. This is an exceptional circumstance which should be authorized only when the operational situation makes it desirable. UNDER NO CIRCUMSTANCE IS A CRYPTOPERIOD TO EXCEED A TOTAL OF 26 HOURS.

d. (U) Should the cryptoperiod be extended, the scheduled start time is still to be 0000Z. Under these circumstances, late start procedures are to be used.

NOTE 1: The KW37 transmitter can be started ten minutes, or a multiple of ten minutes, later than the scheduled start time.

2: The KW37 or BID 580 receivers can be started five minutes, or a multiple of five minutes, later than the scheduled start time.

e. (U) Late start will be made:

(1) (U) If the cryptoperiod is extended.

(2) (U) If the KW37 transmitter or KW37 or BID 580 receiver fails to start correctly at the scheduled time.

(3) (U) If a fault occurs in the on-line system necessitating a complete shut-down of the equipment.

604. (Continued)

f. (U) Condition Messages contained in appropriate publication will be used when it is necessary to communicate in plain language regarding the operation of KW37 or BID 580 receivers. Order wire mode or CW may be used to pass plain language Condition Messages.

g. (U) All other messages concerning the operation of the equipment or referring to associated crypto-material will be Classified.

h. (U) Should the Submarine on-line RATT broadcast fail, the appropriate Condition Message concerning the failure and re-start will be transmitted on both the off-line RATT (where available) and the Morse broadcast. Should the failure last for a considerable time, these Condition Messages will be repeated at intervals of 30 minutes and, in any case, ten minutes before resumption of on-line operation.

i. (U) Condition Messages required while the on-line broadcast is operational will normally be transmitted only on the broadcast, but they may be repeated on other broadcasts as considered necessary.

j. (U) Condition Messages are to be transmitted as un-numbered service messages in the form:

NAWS
P_____(DTG)
BT
X32EA (CONDITION MESSAGE)
BT

k. (U) Condition Messages from appropriate publication will be used.

l. (U) A period of five minutes is required immediately before the end of a cryptoperiod in which to carry out mandatory crypto alarm checks, key card changes, and start procedures. During this period, no transmission is possible.

604. (Continued)

m. (U) Transmission of traffic must stop in time for the equipment to be released for the full period required. No omission of any part of the crypto alarm check and start procedure is permitted, and any encroachment upon the allowed time will almost certainly result in either a false or a late start by KW37 or BID 580 receivers.

n. (U) It is essential that the cryptoperiod should start at exactly the right time.

o. (U) Stations, both shore and ship, should be synchronized with one of the officially recognized time-signals, e.g., Rugby, WWV, BBC, etc. In addition to the synchronization of the stations, the on-line broadcast station should carry out, where applicable, a phasing procedure sending a time signal every minute from, say, 2355Z to 2359Z, in order wire mode.

p. (U) Before initiating either initial or late start procedure, and based on the time check received, transmitter or receiver terminals will correct the built-in clock of the KW37 transmitter or KW37/BID 580 receiver to enable crypto start at the right instant.

q. (U) The KW37 transmitter is provided with three identical encryption units, the outputs of which are automatically and continuously compared with each other. Should the output of one unit not agree with that of the other two, the crypto alarm will operate and the defective unit is locked out. Transmission continues on the remaining two good units.

r. (U) Should two of three units go into alarm, transmission must be stopped immediately since there is then a danger of compromise. The cryptographic equipment is to be immediately unpatched from the bay, and the transmission of traffic interrupted.

604. (Continued)

s. (U) If only one unit goes into alarm, attempts may be made to re-start the unit. If this is un-successful, the unit is to be put out to maintenance. Provided two units remain in operation, there is no need to interrupt the broadcast.

t. (U) A full crypto alarm check is to be carried out at the end of each cryptoperiod and should be done before the old key cards are removed from the cryptographic equipment.

u. (U) Should the off-the-air broadcast monitoring on-line receiver go into alarm, any message in the course of transmission should be completed. It is to be re-run as soon as correct monitoring is re-established.

605. (U) SHORE STATION RESPONSIBILITIES

a. (U) Key card.

(1) (U) A separate series of key cards is used for each broadcast. These are listed in the appropriate publication.

(2) (U) Key cards are made up in packs of 31 daily cards, plus three separate cards marked DAY 32, 33, and 34. A new edition is to be started on the first day of each month.

(3) (U) If, for any reason, the normal key card cannot be used, or must be changed during a cryptoperiod, the spare cards are to be used in lieu, starting with card 32. Ships reading or setting watch on the broadcast are to be informed by using the appropriate Condition Message. The appropriate daily card is to be used for the following cryptoperiod.

(4) (U) If a spare card is required and cards 32, 33, and 34 of current month's edition have already been used, the Broadcast Control Station is to bring the first unused spare card of the reserve edition into force, informing all units copying the broadcast.

605.a. (Continued)

(5) (U) To enable a small scale or limited combined operation to be mounted with little warning, it is necessary that all Submarines and Broadcast Control Stations be provided with the appropriate keying material with a normal scale of reserve editions. Requirements for keying material will be forwarded through normal channels to the appropriate production authorities.

b. (U) Routing of broadcast traffic. If, for any reason (e.g., broadcast failure), un-encrypted Classified traffic is required to be transferred to a CW broadcast, action is to be carried out by the broadcast station effecting the transfer, as follows:

(1) (U) Messages of precedence IMMEDIATE and above are to be off-line encrypted and transferred to a CW broadcast for transmission.

(2) (U) Messages of PRIORITY precedence may be held for 30 minutes before being off-line encrypted and transferred to the appropriate broadcast for transmission. This period may be extended by the Broadcast Control Station according to the circumstances then prevailing.

(3) (U) In the event that the Broadcast Control Station cannot cope with the off-line encryption of traffic of lower precedence, the station of origin is to be advised that messages awaiting transmission on the on-line broadcast must be off-line encrypted and transmitted via CW broadcast in order to effect delivery to the addressee.

CHAPTER 7

MARITIME REAR LINK PROCEDURES (U)

GENERAL INSTRUCTIONS FOR MARITIME REAR LINK (MRL) OPERATIONS (U)

701. (U) PURPOSE

To provide maritime Commanders and ships with a reliable communications link to AREa headquarters and, also, to provide an outlet for units which have a sufficient amount of traffic to warrant a full duplex 24-hour a day circuit.

702. (U) PROCEDURES

The procedures of ACP 127 concerning message format, the preparation of messages for transmission, channel serial numbers, and traffic continuity responsibilities all apply to maritime rear links.

703. (U) ROUTING INDICATORS

The routing indicator will be derived from the shore station basic routing indicator. For example, a ship working into COMIBERLANT COMMCEN would be given the basic routing indicator RXFIC plus a two letter suffix. The routing indicator RXFIXX would be assigned where this does not conflict with other permanently assigned routing indicators.

704. (U) RECEIVING OPERATOR'S RESPONSIBILITY

It is the receiving operator's responsibility to ensure that the receive side of the circuit is of sufficient quality to allow the passing of traffic. This is to be accomplished by controlling the transmit frequency of the distant station.

705. (U) SERVICE MESSAGES

Service messages utilizing appropriate operating signals, precedence, and prescribed format will be used to maintain communications. Service messages will be transmitted by the most direct means available, i.e., MRL, broadcast, voice circuits, or other available communications links.

706. (U) CIRCUIT PARAMETERS AND FREQUENCIES

a. (U) Parameters of operation: Always to be F1/850/1/75.

b. (U) Frequencies: As ordered in MRL ALFA.

707. (U) ACTIVATION PROCEDURES

The following messages must be exchanged in order to coordinate the activation of an MRL. The messages must be formatted as shown, using the below listed formats and examples:

a. (U) MRL request:

FORMAT		EXAMPLE	
FM	(Mobile Authority)	FM	COMSTANAVFORLANT
TO	Area Commander	TO	COMIBERLANT
INFO	(As required)	INFO	SACLANT
RESTRICTED		RESTRICTED	
MRL REQUEST		MRL REQUEST	
A	NATO MRL required	A	COMIBERLANT
B	Mobile terminal/ Authority	B	COMSTANAVFORLANT
C	Shore terminal/ Authority	C	COMMCEN COMIBERLANT
D	Nature of requirement	D	Traffic Circuit
E	Start time and estimated position of ship	E	231800Z MAY STRAITS OF GIBRALTAR
F	Estimated duration of requirement	F	010001Z JUN
G	Activation method	G	ALFA

b. (U) MRL ALFA:

707.b. (Continued)

FORMAT

FM Shore terminal/ Authority
TO Mobile station
(To Authorities responsible for routing messages to mobile commands)
RESTRICTED
MRL ALFA
A Start time
B Shore transmit frequencies
C Ship transmit frequencies
D Suggested shore start frequency
E Ship start frequency
F On-line keying material
G Dual route for engineering instructions
H Whether T.F.S. will be used
I Any special instructions RI's/TI's)

EXAMPLE

FM COMMCEN COMIBERLANT

TO COMSTANAVFORLANT
AIG 5538

RESTRICTED
MRL ALFA
A 231800Z MAY
B 4021 6853 8310 12875 KHZ
C 4874 6022 8920 12048 KHZ
D 8310 KHZ
E 8920 KHZ
F (As appropriate)
G W11B (or appropriate broadcast)
H NO
I SHIPS RI RXFICYZ
TI SHIP TO SHORE YZA
TI SHORE TO SHIP ZYA

c. (U) MRL BRAVO:

FORMAT

FM Shore terminal/ Authority
TO Mobile station
RESTRICTED
MRL BRAVO

EXAMPLE

FM COMMCEN COMIBERLANT

TO COMSTANAVFORLANT
RESTRICTED
MRL BRAVO

707.c. (Continued)

	FORMAT		EXAMPLE
A	Ship-shore out of touch frequencies	A	0600Z 6.0; 1800Z 12.0; 2200Z 4.8
B	Suggested shore ship out of touch frequencies	B	0600Z 6.8; 1800Z 12.8; 2200Z 4.0

If mobile command agrees with MRL BRAVO:

FM COMSTANAVFORLANT
TO COMMCEN COMIBERLANT
RESTRICTED
YOUR (DTG) MRL BRAVO AGREE

If mobile command disagrees:

FM COMSTANAVFORLANT
TO COMMCEN COMIBERLANT
RESTRICTED
YOUR (DTG) MRL BRAVO
B 0600Z 4.C; 1600Z 8.3;
2000Z 6.8

708. (U) ACTIVATION METHODS

a. (U) Method A.

(1) (U) Activate ORESTES MRL in the secure mode by transmitting 10-second phasing signals, followed by short test tape not to exceed 5 lines of "R" and "Y" alternately. Re-phase after each test. If Traffic Flow Security is in use, transmission of further phasing and message indicator signals is not necessary (see paragraph 709.b.). If T.F.S is not in use, however, all messages are to be preceded by a new phasing signal to ensure synchrony after the call tape is stopped (see paragraph 709.a.).

(2) (U) Receiving station is responsible for notifying the transmitting station of signal quality and reliability. The test tape may be stopped to pass this information or it may be passed on another established

708.a.(2) (Continued)

circuit. A USB voice or CW circuit for such communications engineering is recommended if no other communications exist between commands concerned.

b. (U) Method B.

(1) (U) At start time, both stations are to meet in the off-line mode transmitting a continuous test tape in accordance with ACP 127, paragraph 411.a., interrupting as required to pass engineering instructions, i.e., printability reports.

(2) (U) When satisfactory communications have been made in the off-line mode, the shore station is to control the ship into the on-line mode, using the operating signal ZNI1. Once the ship has made satisfactory on-line communications, the ship will then control the shore station into the on-line mode using operating signal ZNI1.

c. (U) Operating signals. Proper operating signals from ACP 131 and Condition Messages from appropriate publications are to be used.

709. (U) TRAFFIC FLOW SECURITY (T.F.S.)

a. (U) Non-fitted terminals: A call tape is to be radiated by shore station when traffic is not being passed. Ship stations may do the same according to EMCON plan in force. The use of a continuous phase signal is not to be employed.

b. (U) Fitted terminals: T.F.S. is to be used. It will not be necessary to radiate a call tape when traffic is not being passed, however, channel checks are required to ensure circuit is of usable quality.

NOTE: Traffic Flow Security is achieved by the transmission of an uninterrupted flow of random text on a circuit, with no indication to an interceptor what portions of this steady stream comprise encrypted message and what portions are merely random filler.

710. (U) SPECIAL CASE MRL

Some ships are capable of operating multi-channel full period terminations with shore communications stations. In the event of a requirement to establish an MRL with a distant shore headquarters, one channel of this multi-channel package may be offered by the Mobile Authority. In this case, it becomes the shore headquarters' responsibility to provide the circuit between that headquarters and the terminating shore communications station. In addition, the shore headquarters will state the on-line keying material and any special instructions, i.e., RI's/TI's.

ORIGINAL
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LIST OF EFFECTIVE PAGES

Subject Matter	Page Numbers	Change in Effect
Title Page	I (Reverse Blank)	Original
Foreword	III, IV	Original
Letter of Promulgation dated December 81	V (Reverse Blank)	Original
Record of Changes and Corrections	VII to X	Original
Table of Contents	XI to XV (Reverse Blank)	Original
Chapter 1	1-1 to 1-6	Original
Chapter 2	2-1 to 2-20	Original
Chapter 3	3-1 to 3-24	Original
Chapter 4	4-1 to 4-15 (Reverse Blank)	Original
Chapter 5	5-1 to 5-20	Original
Chapter 6	6-1 to 6-11 (Reverse Blank)	Original
Chapter 7	7-1 to 7-6	Original
List of Effective Pages	LEP-1 (Reverse Blank)	Original