

MILITARY CADETS



COMMUNICATIONS MODULE

Surname: _____

First name: _____

Cadet Number: _____

Military Cadets

Communications Module Syllabus

GLOSSARY

Action Addressee. *The activity or individual to whom a message is directed by the originator for action.*

Address Group. A group of four letters assigned to represent command(s), authority(ies), activity(ies), unit(s), or geographic location(s) used primarily for the addressing of communications.

Addressee. *The activity or individual to whom a message is directed by the originator. Addressees are indicated as either ‘action’ or ‘information’.*

Alternate Frequency. *The spare frequency which is used when the primary frequency becomes unusable for any reason.*

Antenna. Any structure or device used to collect or radiate electro-magnetic waves.

Call. A transmission made for the purpose of identifying the transmitting station and the station for which the transmission is intended.

Call-sign. Any combination of characters or pronounceable words which identify a communication facility, a command, an authority, an activity, or a unit; used primarily for establishing and maintaining communications.

Challenge. Any process carried out by one unit or person with the objective of ascertaining the friendly or hostile character or identity of another. *The answer to a challenge is a reply.*

Clear Text. *Text or language which conveys an intelligible meaning in the language in which it is written with no hidden meaning: clear text is the intelligible text underlying encrypted text.*

Code-word. A word which has been assigned a classification and a classified meaning to safeguard intentions and information regarding a classified plan or operation. A cryptonym is used to identify sensitive intelligence data.

Communications Security. The protection resulting from the application of cryptographic security, transmission security and emission security measures to telecommunications and from the application of physical security measures to communications security (comsec) information. These measures are taken to deny information of value to unauthorised persons which might be derived from the possession and study of such telecommunications, or to ensure the authenticity of such telecommunications.

Directed Net. *In a directed net, stations obtain permission from the net control station prior to communicating with other stations in the net.*

Drill. *Drill messages are those intended for training communications personnel. Drill messages are identified by the inclusion of the word 'DRILL' at the beginning and end of the text.*

Electronic Silence. A period during which all or certain equipment which is capable of electromagnetic radiation are kept inoperative. The following equipment may be affected:

- a. communication equipment,
- b. radars and surveillance devices,
- c. infra-red and electronic countermeasure equipment, and
- d. beacons.

Exercise. *Messages sent during and relating to training exercises are exercise messages and are prepared and handled in the same manner as normal traffic except that the exercise identification, pre- ceded by the word 'EXERCISE', is to be inserted by the originator as the first word of the message.*

Formal Message. *A registered message written on a message form.*

Free Net. *The net control station authorises sub-stations to transmit traffic to other stations in the net without obtaining prior permission.*

Informal Message. *A short, unregistered message, either verbal or consisting only of written text, of which no file copy is kept.*

Listening Watch. A continuous receiver watch established for the reception of traffic addressed to, or of interest to, own unit, with complete log optional.

Message. Any thought or idea expressed briefly in a plain, coded or secret language, prepared in a form suitable for transmission by any means of communication.

Message Text. *That part of a message which contains the thoughts or ideas which the originator intends to convey to the addressee. It may also contain instructions for the receiving agency to ensure special handling or disposal of the message.*

Net Call-sign. A call-sign which represents all stations within a net.

Net. *An organisation of stations capable of direct communications on a common channel or frequency.*

Net Control Station. A station designated to control traffic and enforce circuit discipline within a given communications net.

Nickname. Words assigned formally or informally by any appropriate authority to an event, project, manoeuvre, exercise, test or other activity for purposes other than to provide security.

NODUF. The term used during exercises and training to denote a real incident rather than exercise play.

Operator's Log. (See Radio Log.)

Originator. *The command by whose authority a message is sent. The originator is also responsible for the functions of the drafter and releasing officer.*

Precedence. A designation assigned to a message by the originator to indicate to communications personnel the relative order of handling and to the addressee the order in which the message is to be noted.

Primary Frequency. *A frequency assigned for normal use on a particular net on which the net control station is operating and on which the net would operate if retransmission were not in use.*

Proword (Procedure Word). *A word or phrase limited to radio- telephone procedure and used in lieu of a prosign (used in ratg).*

Radio Direction Finding. The procedure by which only the direction of a station is determined by means of its emissions.

Radio Log. *A chronological record of events relating to the operation of a particular circuit.*

Radio Silence. A condition in which all or certain radio equipment capable of radiation is kept inoperative.

Retransmission. Signals received at a station are retransmitted simultaneously, on a different frequency, in a retransmission system. The connection between the receiver and the transmitter, at the retransmission location, is by line and may be automatically or manually controlled.

Signal Operating Instructions. Signal operating instructions contain frequently changing information of interest to operators and users of communication systems. Signal operating instructions include current call-signs, frequency assignments (including frequency designators), address groups and voice codes.

Station Authentication. *A security measure designed to establish the authenticity of a transmitting or receiving station, either by challenge and reply or transmission authentication method.*

Subordinate Station (sub-station). *This term refers to any station on a link which is controlled by a control station.*

User. *A person, organisation or other entity, who/that employs the services provided by a telecommunication system for transfer of information to others.*

LESSON 1 Security and Discipline

Section 1-1. Introduction

The successful use of radio communications requires standard radio telephone (RATEL) procedures, constant practice and good radio discipline.

This handbook has been designed to standardise the RATEL procedures for operators and users throughout the Military Cadets.

The procedures outlined in this manual are based on the principles of:

- a. security,
- b. accuracy, and
- c. discipline.

These principles can be remembered by the mnemonic SAD.

Section 1-2. Security

Radio transmissions are valuable sources of intelligence for the enemy. Information intercepted from radio nets could help opposing forces to discover friendly disposition and deduce plans.

Despite the comparatively short range of radio sets used by units in forward areas, their transmissions are liable to interception.

In addition, the enemy uses direction finding (DF) devices to locate friendly headquarters and units, and long transmissions make this task simpler.

Communications Security Procedures

If a user is uncertain whether the contents of a message will be of use to the enemy, the message must be encoded prior to transmission. The user should check with the originator of the message and confirm the security classification. The only exception occurs when the need for speed outweighs the need for security. In such circumstances, approval is required from the higher headquarters if the message is going to be sent in clear text.

It must be assumed that any indiscretion or slip will reach the enemy instantaneously, and counteraction may be almost immediate. Users must observe the following rules in the interests of security:

- a. Think before speaking. Is the transmission really necessary? Having produced the shortest possible message, think again about the details in the message which must be concealed from the enemy, for example:
 1. Levels or types of units must never be referred to in clear language, as frequently occurs through reference to sub-units, ranks

and appointments, or equipment peculiar to certain arms such as mortars or bridging.

2. Locations of troops must be guarded; names of officers or other ranks must never be given in clear language, as this would provide one of the best ways of following the movements of units and formations.

3. Never link nicknames for topographical features with encoded grid references.

b. Use correct procedure.

c. If the action involved in the message is immediate and there is no time to encode it, transmit in clear language.

Security Rules

The following basic rules, essential to transmission security, are to be strictly enforced on nets:

a. Only authorised transmissions are to be made.

b. The following practices are specifically forbidden:

(1) violations of communications silence (radio, electronic and emergency);

(2) unofficial conversation between operators;

(3) transmitting on a directed net without permission;

(4) excessive testing and tuning;

(5) transmitting the operator's personal sign or name;

(6) unauthorised use of plain language;

(7) use of unauthorised prowords;

(8) use of plain language in place of suitable prowords;

(9) use of jargon;

(10) compromising classified call-signs and address groups by association with plain language equivalents or unclassified (unclas) call-signs; and

(11) obscene language.

c. The following practices are to be avoided:

(1) use of excessive transmitting power;

- (2) excessive time spent in changing frequency or adjusting equipment; and
- (3) transmitting at speeds beyond the capability of the receiving operator(s).

Jargon. The use of jargon is not permitted. Jargon includes unofficial and clumsy references to:

- a. people by personal nicknames,
- b. equipment,
- c. an appointment to designate an individual, and
- d. organisations.

There is no security value in the use of colloquial expressions to describe other corps.

Any station noticing a violation of transmission security on the net is to notify the net control station (NCS) or the station concerned by other means or by encrypted message. Beadwindow procedure is only to be used during training and where approved on exercises.

Radio Interception

Radio interception is constant, in both peace and in war. Although in war the results may be more dramatic, interception of transmissions in peacetime can give away details of tactical doctrine, friendly forces' weapons and their wartime employment, and idiosyncrasies of operators and users.

The following practices are to be avoided:

- (1) use of excessive transmitting power;
- (2) excessive time spent in changing frequency or adjusting equipment; and
- (3) transmitting at speeds beyond the capability of the receiving operator(s).

Long-term Information

Long-term information is information gained from:

- a. direct breaches, and
- b. indirect breaches.

Direct Breaches. Direct breaches of security are related to the order of battle, movement of formations, and future intentions. The transmission of names of units or formations in plain language or any transmission made as to their nature, composition, employment or deployment constitutes a direct security breach. This

handbook discusses a number of measures to keep that information from the enemy. These measures prevent identification of a particular unit or formation by not allowing it to be associated with any unique feature, personality, or specialised function of the unit.

Indirect Breaches. The central feature of any intercept organisation is a comprehensive filing system, containing information about operators' and users' peculiarities and special operating techniques. For example, the operator or user who commences every transmission with 'HURRUP', or pronounces THREE as 'FREE' or who begins each sentence with 'AH', is easily identified. Idiosyncrasies can help to identify an operator and also a unit, much the same as fingerprints can identify individuals. Transmissions, each of which on their own appear harmless, may form a clear picture when put together by an intelligence agency.

Every possible measure must be taken to ensure that long-term intelligence is denied to the enemy. There must be no compromise of long-term security under any circumstances. Long-term information is **not** to be encoded in low-grade tactical code except under emergency circumstances and only after every other secure means of transmission, including those non-electronic such as dispatch rider (DR) or runner, have been considered. Given time, any low-grade tactical code can be broken.

Short-term Information

Short-term information is defined as that information sent during the actual battle, the possession of which would give the enemy an advantage.

Short-term security is concerned with matters relating to tactical operations already under way. The commander must weigh the need for speed against security. To strike the right balance between the need for security and speed is a tactical commander's responsibility. It must be assumed that anything transmitted in clear will immediately become known to the enemy. Anyone deciding to transmit in clear must accept this risk. Only the tactical commander can decide what the enemy reaction time will be in any given set of circumstances. If there is any doubt about the enemy's reaction time, current tactical codes must be used to deny the enemy tactical information.

Aids to Security

The proper use of the following measures will aid security in radio communications:

- a. code-words,
- b. nicknames,
- c. low-grade tactical codes,
- d. radio appointments titles,
- e. address groups and call-signs, and

f. veiled speech.

Code-words. A code-word is a single word which has been assigned a meaning. It is used to safeguard intentions and information regarding the establishment of a condition, an alert or the implementation of a plan or operation.

Nicknames. Nickname allocations may be issued by formation or units as appropriate. Signal operating instructions (SOI) are to include a number of nicknames for each purpose. Nicknames may be used for:

- a. communication drill for closing down, imposing/lifting or breaking radio silence, and for changing frequency;
- b. overcoming unpronounceable names, for example, CAT JEWEL in place of the town PEEDAMULLAGH; or
- c. provision of low-grade security cover for reference to geo- graphical features such as objectives, bounds, routes and report lines.

Nicknames are to consist of two distinct unassociated words. Once a nickname is used in conjunction with a procedure, it is **not** to be used again as it only provides limited short-term security and is easily compromised if used frequently.

Radio Appointment titles. To avoid disclosing the level of a headquarters by referring to specific appointments, standard radio appointment titles are used. These titles are not classified and only conceal the level of the headquarters. The titles used and their equivalent appointments are given in [annex A](#). The title designates the senior representative or appointment holder of the branch of the headquarters or unit concerned. The title is not to be qualified in any way except:

- a. to indicate appointments next in seniority, in which case MINOR may be added, for example PRONTO MINOR is the next most senior Signals Corps representative;
- b. when it is necessary to distinguish between similar appointment holders of different formations, MY, YOUR, HIS, OUR or THEIR, may be used before the title, for example, MY PRONTO, YOUR PRONTO or OUR WATCHDOG may be used before the title;
- c. when the call-sign may follow the title, for example, 'STARLIGHT call-sign Zulu Three Four'; and

Veiled Speech. Veiled speech is the art of referring to a future event by reference to the past and consists of reference to events of which the enemy has no knowledge. It is a **poor aid** to security and should be used sparingly. Operators and users can never be sure that an enemy has no knowledge of past events referred to in their transmission.

Section 1-3. Accuracy

Legibility of Letters and Figures

Legibility is important to ensure that messages are transmitted accurately and radio log books are neat, accurate and readable. Military printing of letters and figures is shown in [annex B](#).

Basic Rules

To avoid confusion of similar letters and figures the following rules are to be adopted:

- a. The figure one (1) has a line under it to differentiate it from the letter I.
- b. The letter Z has a short horizontal line through the middle to differentiate it from the figures two (2) and seven (7).
- c. The letter U has square corners to differentiate it from the letter V.
- d. The figure five (5) is to be printed carefully to avoid confusion with the letter S.
- e. The letter E is printed with one stroke.
- f. The figure zero (0) has a slant through it to differentiate it from the letter O.

Section 1-4. Radio Discipline

Discipline is essential for the efficient working of radio nets. The NCS operator, irrespective of rank, is in charge of the net and is responsible for radio discipline. Radio discipline includes:

- a. correct use of ratel procedure,
- b. use of the correct frequency, and
- c. constant radio watch by all stations on the net.

Only one station may transmit at a time. To prevent confusion, the following rules must be obeyed:

- a. Before speaking, listen to ensure that the frequency is clear to avoid cutting in on other transmissions. Allowances must be made for transmissions where only one of the participants in a conversation can be heard.
- b. Leave a short pause at the end of a conversation.
- c. Answer all calls immediately and in the correct order.

- d. Ensure that the radio set returns to RECEIVE MODE after each transmission.

Radio Operator's Log

Radio operators' logs are to be maintained, when practicable, by operators or users on all radio nets or circuits. Instructions for maintaining a radio operator's log are shown in [annex C](#). Instructions for keeping the log, including logging abbreviations, are usually provided inside the front cover of the *Radio Operator's Log*.

The message log book (small) may be used by mobile stations such as infantry sections, as it is more practical for manpack operations.

When circumstances are such that it is impractical to maintain radio logs at the operating position, consideration is to be given to monitoring such nets elsewhere.

Log Data

The log is to include the following data:

- a. the handover of the radio station from one operator or
- b. user to another;
- c. the time of opening and closing of the station;
- d. all procedural transmissions;
- e. causes of delays in the transmission or reception of a message;
- f. all difficulties of communication experienced and the steps taken to overcome them;
- g. frequency adjustments and changes (the entry is to be underlined);
- h. call-signs of other stations that cause interference (so that unsatisfactory frequency allocation may be corrected, if possible);
- i. unusual occurrences, such as procedural and security violations;
- j. handover/takeover of the radio shift;
- k. generator refuels;
- l. record of formal messages passed over the net (to serve as a message register if there is no communications centre);
- m. record of informal messages and voice conversations sent to other stations on the net (recorded as completely as possible); and
- n. where intrusion, jamming and interference is experienced or suspected.

Entries of unusual occurrences, security violations and electronic interference should be headed ENTRY and reported to the supervisor immediately they occur. Sample log entries are shown in annex D.

Reference

The relevant prosigns and operating signals are printed above each section in this handbook to avoid the need for constant reference to the annexes.

Annexes:

- a. [Radio Appointment Titles](#)
- b. [Military Printing of Letters and Figures](#)
- c. [Instructions for Maintaining a Radio Operator's Log](#)
- d. [Sample Operator's Log Entries](#)

Annex A to Lesson 1: Radio Appointment Titles

Radio Appointment Titles

LWP-G 6-1-4

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1A — 3

<i>Serial (a)</i>	<i>Service (b)</i>	<i>Appointment (c)</i>	<i>Title (d)</i>
31.	Joint	Ordnance/Supply	RICKSHAW
32.	Army	Quartermaster Staff	NUTSHELL
33.	Joint	RAN Aviation Officer, Army Aviation	HAWKEYE
34.	RAN/Army	RAN Marine Engineers/ Army Electrical and Mechanical Engineers	BLUEBELL
35.	Joint	RAN Shore Patrol, RAN Police/Military Police/RAAF Police	WATCHDOG
36.	Joint	Signals	PRONTO
37.	Joint	Transport Support Operations Representative	ATOLL

Radio Communications
Procedures (AN Corps), 1999

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ANNEX B CHAPTER 1

Military Printing of Letters and Figures

1. The standard for printing military letters and figures is shown in the example in figure 1-1.

Military Printing of Letters and Figures

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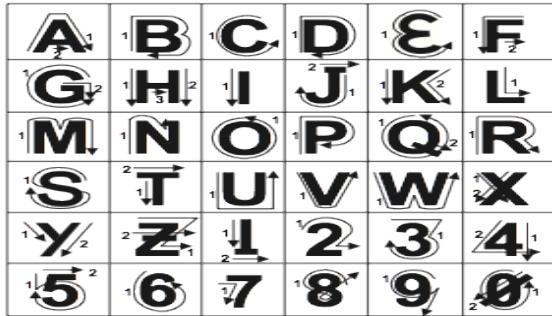


Figure 1-1. An Example of Military Printing of Letters and Figures

Radio Communications Procedures (All Corps), 1999

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Figure 1-1. An Example of Military Printing of Letters and Figures

Instructions for Maintaining a Radio Operator's Log**1. All entries are to be made in pencil.**

1. Log entries must not be erased. Any necessary changes are to be made by drawing a single line through the original entry and indicating the changed version adjacent to the lined-out entry. Such changes must be initialled by the radio operator.
2. The log is to show a complete and continuous record of transmitted and received traffic and operating conditions which occur during the day.
3. When operating conditions permit, every transmission heard by the radio operator, regardless of source or completeness, is to be recorded, and is termed 'single line logging'.
4. When a message is addressed to, or is to be relayed by, the receiving station, the message is to be written in full on a message form. The log should be brief and concise requiring only sufficient detail to identify the message.
5. During quiet periods, entries are to be made in the log at 15 minute intervals to ensure adequate circuit attention.
6. Occurrences other than transmissions that are important to the continuous operation of the radio net and are to be logged under the heading 'ENTRY'. Examples are:

- a. handover/takeover of shift including codes/SOIs,
 - b. generator change details, and
 - c. changes to antennas.
1. Signal strengths of each station heard are to be logged at the first opportunity after the operator comes on watch. Changes in signal strengths are also to be logged.
2. When opening a new circuit or starting a new day's log, the radio operator is to write his name and rank in full. When relieved or closing the circuit, he is to sign the log. The oncoming radio operator is to write his name and rank in full in the log.
3. The log entries include details as follows in the designated columns:
 - a. CALL FROM - the call-sign of the calling station;
 - b. CALL TO - the call-sign of the called station;
 - c. MESSAGE NUMBER IN - the incoming number from the calling station;
 - d. MESSAGE NUMBER OUT - the outgoing number to the called station, to include the message centre OUT register serial number for outgoing formal messages (if applicable);
 - e. OPERATOR'S NUMBER - to be recorded on all occasions, the operator's number is made up of the first letter of the operator's surname and the last two numbers from the regimental number;
 - f. MESSAGE TEXT/IDENTITY/EVENT - all message details, answers, operating signals, prosigns transmitted or received on the frequency in use;
 - g. TIME - the time of receipt and transmission of all actions taken pertaining to the circuit; all timings are to be in Zulu time; and
 - h. UNREGISTERED - unregistered messages are to be logged in full.
4. The log may be used for the registration of formal messages on a simplex circuit only. The operator's IN and OUT check sheet may, therefore, be dispensed with.
5. Where jamming is suspected, full details must be logged. Details should include time, nature of jamming signal, duration, strength, frequency spread and whether the jamming is continuous or intermittent. A competent authority must be notified immediately. Every effort should be made to continue working the frequency until directed otherwise.

1. The duty signals officer or supervisor communications is responsible for ensuring proper maintenance of radio logs.
2. The log must be held in a secure place until destruction is authorised.
3. To assist radio operators in keeping the log, the list of logging abbreviations in table 1-2 may be used.
- 4.

5. TABLE 1-2. Logging Abbreviations

<i>Serial (a)</i>	<i>Logging Term (b)</i>	<i>Abbreviation (c)</i>
1	Acknowledge	ACK
2	All After	AA
3	All Before	AB
4	Answer	ANS
5	Break	//
6	Correction	C
7	Disregard This Transmission	DISC
8	Distorted	D
9	Do Not Answer	F
10	Exempt	XMT
11	Groups	GR
12	Information	INFO
13	Interrogative	INT
14	Number	NR

<i>Serial (a)</i>	<i>Logging Term (b)</i>	<i>Abbreviation (c)</i>
15	Out	AR
16	Over	K
17	Read Back	G
18	Roger	R
19	Say Again	IMI
20	Service Message	SVC
21	Speak Slower	SSL
22	Through Me	THM
23	That Is Correct	C
24	Unknown Station	AA (barred)
25	Verify	J
26	Wait	AS
27	Wait Out	AS AR
28	Word After	WA
29	Wrong	WG
30	Word Before	WB

Sample Operator's Log Entries

1.

Table 1-3 provides a sample of log entries made by an operator.

TABLE 1-3. Operator's Log Entries

Sample Operator's Log Entries

1. Table 1-3 provides a sample of log entries made by an operator.

TABLE 1-3. Operator's Log Entries

Date	Call-sign		BP7	Place	DERBY	Frequency	46.550
Call		Message Number		Operator's Number	Message Text/Identity/Event		Time (Z)
From	To	In	Out				
		ENTRY		G48	SIG Gilbert on shift, sighted SOIs and Codes, using RC-292. M Gilbert		1730
BP7				G48	R/C K (ESTAB NET)		1733
DE3				G48	R K		1733
IMM				G48	R K		1734
T3Q				G48	LOUD WITH DISTORTION K		1734
ZBN				G48	R K		1734
BP7				G48	R AR		1735
		ENTRY		G48	Net Established, Generator Started.		1736
BP7				G48	Resup of Ammo will arrive at approx 1945 hr K		1741

Date	17 JUN 95		Call-sign	BP7	Place	DERBY	Frequency	46.550
Call		Message Number		Operator's Number	Message Text/Identity/Event		Time (Z)	
From	To	In	Out					
T3Q	BP7	011/17		G48	OPS 014 DTG 171630Z (P) R AR		1750	
		ENTRY		G48	Received msg 023/17 for transmission		1759	
BP7	IMM			G48	FETCH STARLIGHT K		1805	
IMM	BP7			G48	AS AR		1805	
IMM	BP7			G48	Conversation Sunray - Starlight ref medical resup			
BP7	SM 5		023/17	G48	OPS 009 DTG 171725Z (O) K (10 min delay due to other immediate traffic on net, staff informed).		1834	
DE4	BP7			G48	R AR		1834	
				G48	R AR		1835	
				G48	R AR		1835	
				G48	R AR		1836	

Note:

- Z and Q signals may be substituted for plain text where appropriate.
Z and Q signals can be found in the back of the radio operator's log book.

1. Z and Q signals may be substituted for plain text where appropriate.

Z and Q signals can be found in the back of the radio operator's log book.

CHAPTER 2

Electronic Warfare

Section 2-1. Introduction

2.1 An enemy in war and a potential adversary in peace will seek to discover everything possible from friendly tactical communication systems by intercept and analysis. In peace, there is time for analysis in great depth, providing the composition of forces, state of training, operational deployments and weapon systems. In war, an enemy will continue these activities and may, in addition, jam or confuse friendly communication systems when it will provide the most benefit.

2.2 The enemy can intercept and locate from well inside their own territory, from aircraft or from ships. Through the use of computers to break codes, the enemy can also intrude into a radio net and issue false orders.

Electronic Warfare Activities

2.3 Peacetime EW operations are designed to target friendly communications during training, which includes everything from detachment to formation exercises. It is vital therefore, that all operators of communications equipment are aware at all times of the EW threat, and take all practicable precautions to deny a potential adversary information which one day may be used against friendly forces.

EW is defined as: '*Any military action involving the use of electromagnetic and directed energy, to control the electromagnetic spectrum (EMS) or to attack the enemy*' (Australian Defence Force Publication [ADFP]24).

EW consists of three key components: exploitation, disruption and denial. These three components give rise to the following activities:

- a. ES, formerly electronic support measures (ESM), which involves intercept, DF and analysis;
- b. electronic attack (EA), formerly electronic countermeasures (ECM), which includes jamming and deception; and
- c. electronic protection (EP), formerly electronic protection measures (EPM), which involves the protection of friendly communications from exploitation by a potential adversary's use of ES and EA.

Conduct of Electronic Warfare Activities by the Australian Defence Force

Within the ADF, ES and EA are carried out by specialist units, while EP is the responsibility of all operators and users of electronic equipment. EP procedures should be included in unit SOPs.

Section 2-2. Electronic Support

2.7 A friendly operator or user will not know when a potential adversary is conducting ES activities. As a consequence, the operator **must** always assume the enemy is conducting the following activities:

- a. *Intercept.* Intercept involves a potential adversary conducting a search of the spectrum to find friendly nets and record transmissions.
- b. *Direction Finding.* The enemy can locate friendly forces by sourcing transmitters using DF equipment.
- c. *Analysis.* Enemy intelligence staff analyse intercepted traffic to establish:
 1. locations and deployment patterns;

2. intentions;
3. important communications;
4. frequencies and modes of operation;
5. traffic flow patterns; and
6. net structures, including the identification of control stations.

2.8 Through ES, a potential adversary can quickly gain intelligence about friendly activities. This information can then be used to target EA activities, in order to cause maximum disruption to communications.

Section 2-3. Electronic Attack

Electronic Disruption to Communications

2.9 Reception of radio signals is often hindered, confused, or prevented by interference from unwanted signals. Such interference may be unintentional or the result of deliberate enemy activity, in which case it would be classified an EA. Radio operators should not assume that disruption to their nets is the result of an enemy's EA, as there are often other more likely sources of electromagnetic interference. Disruption to a net may be caused by:

- a. *Electronic Attack*. EA involves the use of electromagnetic or directed energy to attack personnel, facilities or equipment with the intent of degrading, neutralising or destroying enemy combat capability. EA is the offensive component of EW which includes jamming and deception.
- b. *Interference*. Interference is caused by extraneous power from natural or man-made sources which disrupts the reception of desired signals. Electromagnetic radiation from local equipment such as generators and arc welders or other emitters can cause interference.

It is often difficult to distinguish between jamming and interference. As a result, it may take specialists to identify a source of interference or EA.

Electronic Attack

The aim of EA is to prevent or reduce an enemy's effective use of the EMS through the use of electromagnetic energy. Priority of effort is usually given to disrupting command and control, fire control and intelligence communication systems. This can be achieved by:

- a. *Jamming*. Jamming is the deliberate obliteration or disruption of the friendly use of a particular frequency or block of frequencies. Jamming is intended to prevent or limit the use of a friendly communications system or device at a critical time.
- b. *Deception*. Deception includes:

1. (1) *Meaconing*. Meaconing is the transmission of false navigational signals to aircraft, ships and ground stations (for example, Global Positioning Systems) to confuse or hinder navigation.
2. (2) *Intrusion*. Intrusion is the intentional insertion of radio signals into friendly transmissions to confuse or deceive friendly operations (for example, imitative communications deception [ICD]).

Jamming

Jamming is an effective way to disrupt control of the battle. To jam friendly communications, the enemy transmits a signal on a frequency being used by friendly forces, with sufficient power to block out the friendly signal. While jamming is extremely effective, this action denies the attacker use of the frequencies being jammed. The enemy will often jam secure or data transmissions in order to force the stations to change to clear voice or morse, as it is easier for the enemy to gather intelligence from clear voice or morse traffic than from data or encrypted traffic. Data and teletypewriter communication systems are most susceptible to jamming. Voice is less vulnerable than data systems, and morse code is the least affected.

2.13 The methods of jamming most often encountered are:

- a. *Spot Jamming*. Spot jamming occurs when the enemy jams one channel or frequency at a time, concentrating all of the power from the jammer onto the given frequency.
- b. *Sweep Jamming*. Sweep jamming, like spot jamming, only attacks one frequency at a time; however, the jammer rapidly steps from one frequency to the next within a given band.
- c. *Barrage Jamming*. Barrage jamming is conducted simultaneously over a broad band of frequencies. The distribution of the jammer's power across a number of frequencies may make it easier for friendly operators to work through the jamming signal.

Types of Jamming Signals

2.14 Before defensive measures can be taken, the interfering signal must be recognised as jamming. When reporting jamming, it is important that the type of jamming experienced is described accurately. The more commonly used types of jamming are described below:

a. *Intentional noise*. This may take one of the following forms:

(1) *Spark*. A spark signal of short duration and high intensity is repeatedly transmitted at a rapid rate. The time required for receiver circuitry and the human ear to recover after each spark burst makes this signal effective in disrupting all types of radio communications.

(2) *Wobbler*. The wobbler signal is a single frequency, modulated by a low and slowly varying tone. The result is a howling sound which causes a nuisance effect on voice communications.

(3) *Preamble Jamming*. The synchronisation tone of speech security equipment is continually broadcast over the operating frequency of secure radio nets locking the set into receive mode. Preamble jamming is especially effective against radio nets using the current series of speech security devices.

b. *Noise/Static*. Noise/static is synthetic radio noise, random in amplitude and frequency. The noise may sound like a very high frequency (VHF) receiver without squelch control or normal background noise. Operators often mistake it for receiver or atmospheric noise and fail to take counter-EA action.

c. *Tones*. A tone signal is a single frequency at constant tone. It is used to jam manually keyed continuous wave (CW), voice or radio carrier circuits.

d. *Bagpipes (Stepped Tones)*. Stepped tones are tones transmitted in increasing and decreasing pitch which resemble the sound of bagpipes. ‘Bagpipes’ are normally used against single-channel amplitude modulated (AM) or frequency modulated (FM) voice circuits.

e. *Continuous Wave/Random Pulse*. Random pulses of varying amplitude, duration and rate are transmitted to disrupt teletypewriter, radar and all types of data transmission systems.

f. *Analogue*. Recorded sounds are any audible sounds, of a variable nature, that can be used to distract operators and disrupt communications. Previously recorded traffic, music, propaganda speeches, screams, applause, whistles, machinery noise and laughter are some examples.

Imitative Communications Deception

2.15 In addition to jamming, the enemy may deceive operators and users of communication systems by intruding into their nets and introducing false information. ICD is likely to be most effective during periods of high activity or when communications difficulties are being experienced. ICD can be achieved in the following two ways:

- a. Previously recorded traffic may be transmitted by the enemy on a friendly frequency so that the transmission will appear either as a friendly net on the same frequency, or a friendly station trying to pass traffic.
- b. An enemy operator may pretend to be a friendly station and introduce false and misleading traffic onto the net. This requires linguists with a good knowledge of friendly forces’ slang and accents, and they must be highly competent with friendly forces’ communications procedures. Because of this, it is essential that authentication procedures are enforced.

Section 2-4. Electronic Protection

2.16 The greatest danger from enemy EW lies in the confusion, dismay and frustration it can induce in inexperienced or inadequately trained units and personnel. Lack of EW training leads to poor emission control (emcon) and excessive use of communications. This increases the risk of the enemy gaining intelligence through ES.

2.17 EP is designed to:

- a. minimise friendly vulnerability to enemy ES operations, therefore reducing the ability to derive intelligence from friendly emissions; and
- b. facilitate the continued effective operation of friendly electromagnetic systems by reducing friendly vulnerability to EA.

Divisions of Electronic Protection

2.18 EP is divided into two areas:

- a. *Active Electronic Protection.* With active EP, detectable measures, such as altering transmitter parameters (for example, War Mode), are employed to ensure friendly effective use of the EMS.
- b. *Passive Electronic Protection.* Passive EP are undetectable measures such as operating procedures and built-in technical features of the equipment (frequency hoppers, variable power settings) which are designed to ensure the friendly use of the EMS.

2.19 The counter-ES and EA procedures detailed in section 2-5 are passive EP techniques.

Section 2-5. Counter-electronic Support

2.20 The following measures are designed to reduce the amount of information an enemy may learn from friendly communications. To reduce the friendly risk from enemy ES, the following procedures should be adopted:

a. minimise transmissions by:

1. (1) using radio as least-preferred means of communication with signals dispatch service (SDS), line and liaison officer (LO) used where possible, particularly for long orders or instructions;
2. (2) avoiding unnecessary operator chit - chat and unauthorised transmissions;
3. (3) reducing transmission time to a minimum;
4. (4) minimising communications checks and equipment testing; and
5. (5) avoiding transmitting at speeds beyond the capability of the net, thus reducing the need to retransmit traffic.

- b. using approved rate procedures including the use of:
 - 1. (1) good frequency-changing drills in accordance with SOIs and unit SOPs;
 - 2. (2) codewords and nicknames;
 - 3. (3) tactical codes and cryptographic equipment;
 - 4. (4) radio appointment titles;
 - 5. (5) prowords; and
 - 6. (6) address groups and call-signs.
- c. avoiding operator idiosyncrasies;
- d. ensuring that traffic is not more highly classified than the encryption system is accredited to protect and never using unauthorised (home-made) codes;
- e. maintaining net discipline;
- f. keeping plain language to a minimum to avoid compromising:
 - 1. (1) call-signs, address groups, codewords, prowords, and nicknames by associating them with the plain language equivalents; and
 - 2. (2) the identity of specific personnel by referring to them by name or operator number; and
- g. considering technical factors such as:
 - 1. (1) using the minimum transmission power required to maintain communications with a net, for example, if communications with one or several call-signs on a net cannot be established at the minimum power level, the power level should only be increased when it is necessary to communicate with those particular call-signs;
 - 2. (2) using directional antennas;
 - 3. (3) using terrain features such as hills, vegetation and buildings to screen the transmissions from the enemy; and
 - 4. (4) regularly inspecting lines for signs of tampering.

Section 2-6. Counter-electronic Attack

Identification of Jamming Signals

2.21 Interference can be caused by deliberate enemy EW activity or other forms of natural or ‘man-made’ electrical interference. Prior to implementing anti-jamming procedures, it must be verified that EA is occurring. This can be confirmed by the following:

- a. *Disconnecting the Antenna.* If the signal continues after disconnecting the antenna, it is most likely that the interference is being caused by the radio itself.
- b. *Varying the Frequency Setting.* If interference is concentrated on the frequency of the net, it may be jamming. If it is more widespread and of the same type, it may still be jamming. The presence of local interference must still be eliminated.
- c. *Eliminating Local Interference.* To eliminate local interference, the operator should move to a new location. If the signal strength varies greatly, the radio may have been too close to power lines, generators or other emitters. If signal strength does not vary, jamming is a probable cause.
- d. *Recognising the Signal as a Jamming Signal.* To recognise the signal as a jamming signal requires a sound knowledge of such signals. Previous enemy use of such signals is a useful indicator.

Counter-jamming Immediate Action Drill

2.22 The enemy can only gauge the effectiveness of his jamming by friendly reaction; therefore, the continuation of communications is essential. This is achieved best by trying to work through the jamming. The following immediate action drill will aid an operator to work through jamming:

- a. Carry on working if possible.
- b. Re-site or alter the antenna. In the case of VHF antennas, temporary relief can sometimes be obtained if the receiving antenna is kept as low as possible, or the antenna polarisation is changed from the vertical to the horizontal.
- c. Reduce operating speed by:
 - 1. (1) using the words twice procedure and making maximum use of the phonetic alphabet (consider implementing rate discipline as per [part 1, chapter 1](#)); and
 - 2. (2) changing to ratg if the facility exists (hand-speed morse can be read through considerable jamming levels).
- d. Increase transmitting power where possible. This may be the only method available for the NCS to inform the net an out-station is being jammed.
- e. Complete an SIJWR.

Counter-jamming Procedure

2.23 If all attempts to evade or work through jamming fail, using the immediate action drill, the following procedures may be successful:

- a. *Alternative Mode.* Change to a mode that is harder for the enemy to jam (for example, data to voice or voice to morse).
- b. *Alternate Means.* Change type of communications (for example VHF to high frequency (HF), to line or SDS).
- c. *Change Frequency.* Orders to change frequency may be directed in the following ways:
 - 1. (1) over alternative means;
 - 2. (2) by use of a nickname detailed in SOIs (the procedure should be detailed in unit SOPs); or
 - 3. (3) by pre-arranged plan (for example, change to alter-native frequency after 20 minutes of jamming).

Deception of the Enemy. Deception may be achieved by:

- 1. (1) *Use of Old Frequency.* Specified stations can remain on the old frequency (using spare equipment, if available) to pass dummy traffic thereby simulating an unaffected net.
- 2. (2) *Simultaneous Transmissions.* Simultaneous trans-missions can be effected by transmitting on the primary means (being jammed) and alternate means at the same time. Consequently, traffic may be passed down the alternate means while giving the enemy the impression that the primary net is unaffected by the jamming. This may cause the enemy to discontinue the jamming. The procedure may be done either by the complete net or by a single station when the jamming is not too severe,
- 3. (3) *Pre-arranged Plan.* A pre-arranged plan can be activated. When it is impossible to transmit the nick-name, cease transmission on the net long enough, approximately 10 minutes, to deceive the enemy into thinking that a frequency change has been made. Attempt to re-establish the net on the original frequency.

Counter-imitative Communications Deception

2.24 In the past, defence against ICD has relied on skilled operators being able to recognise the voices of all the other operators and thus detect intruders into the net. As the ADF is conducting more joint and combined operations, the chances of an operator knowing the voices of all the other operators on a net are diminishing. Consequently, it is vital that counter-ICD plans be prepared before deployment, to ensure effective counter-ICD measures are employed in the event of an attack. Code-words or nicknames should be prepared and these plans should indicate specified ICD states or counter-ICD plans to be initiated. The use of challenge/reply and transmission authentication procedures is an important tool to counter ICD attacks. Equipment constraints will place limitations on the type and complexity of

counter-ICD measures which can be employed; however, it is vital that operators practise counter-ICD plans to ensure their effectiveness.

2.25 Even if ICD activity has not been identified, an NCS should activate counter-ICD plans during exercises or operations to increase the chances of identifying enemy ICD activity (that is, if a plan is activated and a call-sign does not re-establish on the new net, the call-sign may have been an undetected intruder).

Counter-imitative Communications Deception Immediate Action Drill

2.26 Strict net discipline is the best way of preventing enemy intrusions onto friendly nets. Operators must be wary of any transmission that appears to be out of the ordinary, either in format or content. If an operator suspects a net is under ICD attack, the operator should conduct the following actions:

- a. authenticate the suspicious call-sign;
- b. ignore the intruding call-sign and warn the rest of the net (via other means if possible);
- c. carry out ICD plan (if directed by NCS); and
- d. complete an SIJWR.

2.27 Remember the objective of EA is to create **confusion**. It is imperative that all drills and procedures are practised regularly and are well coordinated.

Standard Interference and Jamming Warning Report

2.28 The individual who experiences radio interference or is subjected to an EA is responsible for ensuring an SIJWR is completed. Prompt, accurate and complete reporting is imperative to enable communications staff to evaluate and respond correctly to EA and interference incidents. All incidents must be reported to the parent formation headquarters as soon as possible. The report must be classified CONFIDENTIAL. Where possible, no reference to a jamming or deception attack is to be made in clear language over the radio, as it indicates to the enemy the effectiveness of the attack.

2.29 If there is to be a delay in compiling the SIJWR, an initial report is to be made and must include, as a minimum:

- a. the grid reference of the affected receiver;
- b. the frequency or channel subjected to deception;
- c. the type of EA (for example, jamming signal type or deception);
- d. the antenna being used; and
- e. any other information which is immediately available.

2.30 The format of the SIJWR is given in annex A. An example of a completed SIJWR is in annex B. Further information regarding SIJWR is available in *Joint Service Publication (JSP) 540*.

Annexes: [A. Standard Interference and Jamming Warning Report - Format Information](#)

[B. OC33 Example of a Standard Interference and Jamming Warning Report](#)

ANNEX A CHAPTER 2

Standard Interference and Jamming Warning Report - Format Information

1. The following information (Table 2-1) is to be used as necessary when constructing the SIJWR. It should be noted that unnecessary or inappropriate format items may be excluded from the report. The SIJWR is to be classified at least CONFIDENTIAL and have a PRIORITY or higher precedence:

TABLE 2-1. Standard Interference and Jamming Warning Report Format Information

<i>Serial (a)</i>	<i>Format (b)</i>
1	EA Type: a. Interference b. Jamming c. Intrusion d. Meaconing
2	Victim Unit or Net (C/S of ship, aircraft or unit identity)
3	Unit Location (grid)
4	Operator/Position/Equipment Identity
5	DTG EA Commenced/Terminated
6	RF/Channel Affected

<i>Serial (a)</i>	<i>Format (b)</i>

7	<p>Type ECM Modulation</p> <ul style="list-style-type: none"> a. Intentional Noise b. Noise/static c. Tones d. Bagpipes e. CW/Random f. Analog(Voice/Chatter/Music)
8	<p>Estimated Strength of Interference</p> <ul style="list-style-type: none"> a. Weak b. Medium c. Strong
9	<p>Effect of EA</p> <ul style="list-style-type: none"> a. Intermittent Disruption b. Denial c. Increased Handling Time d. Loss of Secure Mode e. Nuisance f. Other(Specify)
10	<p>EP Action Taken and Enemy Reaction (if known)</p> <ul style="list-style-type: none"> a. Working Through b. Change Location c. Cease Communication d. Change RF/Channel e. Increase Power f. Other(Specify)
11	<p>Additional Information</p> <ul style="list-style-type: none"> a. Bearing of Jamming or Deception Transmitter b. Source of Jamming (Airborne/Ground) c. Angle of Sight of Radar Crest d. Weather e. Terrain f. Other(Specify)

OC 33 Example of a Standard Interference and Jamming Warning Report

FROM: 1RAR

TO: 3BDE

INFO: 1 DIV ENOGGERA

2/4 RAR

7 SIG REGT

STANDARD INTERFERENCE AND JAMMING WARNING REPORT

1. B/D
2. BN COMD NCS
3. 856987
4. CPL JONES/NC OP/AN/PRC-77 WITH SECURE MODE
5. 150455Z OCT 91/150530Z OCT 91
6. 51.00 MHZ
7. E
8. B
9. D
10. A/B
11. A. 1600 MILS B. GROUND
12. E. OPEN GROUND LIGHT VEGETATION
13. F. JAMMER FOLLOWS FREQ CHANGES AND OPERATES IN
14. BURSTS TWO MINUTES ON THREE MINUTES OFF

CHAPTER 3

The Radio Net

Section 3-1. The Radio Net

Definition

3.1 A radio net is a group of radio stations operating on the same frequency for the purpose of communicating with one another. Stations being retransmitted to the net frequency are considered part of the net.

3.2 A net consists of:

- a. an NCS; and
- b. two or more subordinate stations (sub-stations).

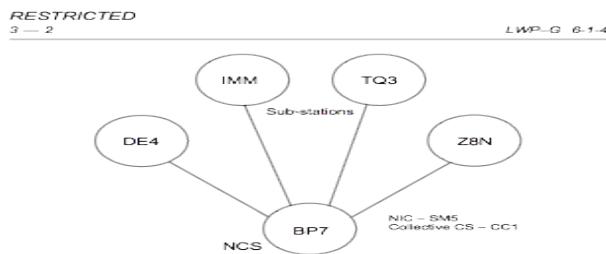


Figure 3-1. The Layout of a Simple Radio Net Consisting of the Net Control Station and Four Sub-stations

Net Control Station

3.4 The NCS is responsible for radio discipline and the efficient clearance of traffic on the net. The station collocated with the senior headquarters on the net is, under normal circumstances, deemed to be the NCS; however, any station which can carry out the responsibilities efficiently can be designated the NCS.

Sub-stations

3.5 The remaining stations on the net are called sub-stations. All sub-stations must comply with all communication instructions issued by the NCS.

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Radio Communications
Procedures (All Corps), 1999

3.3 The call-signs used throughout this handbook are identified in [figure 3-1](#).

Figure 3-1. The Layout of a Simple Radio Net Consisting of the Net Control Station and Four Sub-stations

Net Control Station

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Section 3-2. Call-signs, Net Identification Call-signs and Address Groups

Call-signs

3.6 Call-signs are a combination of **three** letters and figures (for example, T3Q) and are used by stations on a net to hide their plain language address (unit name), establish seniority (order of answering) and to establish and maintain communications on a net. When making reference to a call-sign, the call-sign itself may be preceded by the proword CALL-SIGN.

3.7 The following examples illustrate the use of the proword CALL-SIGN:

- a. Meet CALL-SIGN Bravo Papa Seven (BP7) at GRID Two Three Seven - Six Five Seven.
- b. CALL-SIGN Zulu Eight November (Z8N) is to meet CALL-SIGNS Delta Echo Four (DE4) and India Mike Mike (IMM) at GRID Six Five Seven - Seven Two Five.
- c. Relay to CALL-SIGN Tango Three Quebec (T3Q).

3.8 Figures used in call-signs are spoken digit by digit and letters are pronounced phonetically.

3.9 The following types of call-signs are authorised for use on land force nets:

- a. tactical,
- b. collective,
- c. net,
- d. fixed, and
- e. net identification.

Tactical Call-signs

3.10

A tactical call-sign generally consists of three characters in a combination of letters and figures, for example, CALL-SIGN Z8N. In joint service use, single-word, tactical call-signs (such as ARCHWAY) may also be used. Tactical call-signs for individual stations should be used at all levels; however, their use above unit level is compulsory. These call-signs are classified and are to be changed daily. Whenever possible, stations are to be issued a different tactical call-sign for each individual frequency allocated. Tactical call-signs may be abbreviated by using the first two characters only, for example, CALL-SIGN Z8N abbreviated will be Z8.

The complete tactical call-sign is used:

- a. when reporting into a previously established net;
- b. in the transmission instruction and address component of a message, when that message is required to be relayed to a station on a different net;

- c. when interference is experienced from another net using similar call-signs; and
- d. when directed by the NCS.

Fixed Call-signs

Fixed call-signs may be used at unit and sub-unit level at the commander's discretion; however, commanders should be aware of the escalation in ES threat. Fixed call-signs for particular corps and units, and the use of arms indicators are detailed in *Manual of Land Warfare* (MLW) Two 1.2, *Tactical Communications Net (All Corps)*.

Collective Call-signs

A collective call-sign, which may be either tactical or fixed, identifies a predetermined group of two or more, **but not all**, stations of a net. For example, it may identify the commanders and all subordinate commanders of a regiment.

3.14 When using the fixed call-sign system, the collective call-sign is prefixed by the letters CC followed by a figure call-sign.

Net Identification Call-signs

3.15 The net identification call-sign (NIC) is a tactical call-sign which is allotted to every unit and formation net. It changes daily at all levels. As the name implies, the NIC is used to identify the net and is also used to represent/identify all stations on a net. Stations on a net are to use the same NIC which may be abbreviated to the first two characters only. The NIC can be used by any station on a net when a response is required from all other stations. An NIC may also be used in conjunction with the proword EXEMPT followed by an individual call-sign to exclude those stations from the all-station call.

3.16 The NIC may be used in conjunction with a fixed call-sign:

- a. when establishing a unit net or as a means of identifying
- b. a unit net on the first transmission for the NCS,
- c. when interference is experienced from another net,
- d. when a station joins a previously established net, and
- e. after a period of electronic or radio silence.

3.17 Indiscriminate and unnecessary use of the NIC prejudices security.

Address Groups

3.18 An address group is a classified group of four letters used to disguise the plain language designation of a headquarters or unit and, in some cases, a sub-unit. Address groups are used in voice conversations and in the heading and/or text of messages which are addressed to, or make reference to, stations which are not on the net. When referring to sub-stations on the same net, call-signs are used and not address groups. When used for reference purposes, the address group may be preceded by the prowords ADDRESS GROUP. The following examples illustrate the use of the prowords ADDRESS GROUP:

- a.Information is to be passed to ADDRESS GROUP – Alfa Zulu X-ray Romeo.
- b.SUNRAY ADDRESS GROUP – Charlie Delta Echo Papa – is in my area.

Where no address group has been allotted, the call-sign is to be used.

Sequence of Call-signs and/or Address Groups

Call-signs and/or address groups used in a call should be arranged in alphabetical order in the form in which they are to be transmitted, either plain or encrypted. Figures 1 through 0 will be considered as the twenty-seventh to thirty-sixth letters of the alphabet (for example, DE4, IMM, T3Q, Z8N). When abbreviated call-signs are used, the order of answering remains the same as if the full call-signs were in use.

The Daily Change

The daily changes of call-signs, including NIC and address groups, are to be made at the same time. Operators should also change the message number daily. Numbers revert to zero at the same time in order to make it more difficult for the enemy to link together the old and new call-signs and address groups. These changes are to be coupled with frequency changes.

It is important to emphasise that all tactical frequencies, call-signs and address groups are to change simultaneously. In addition to the daily change, formations and units should endeavour to make additional changes to enhance security further.

PART TWO. RADIOTELEPHONE PROCEDURES

CHAPTER 4

Standard Radiotelephone Procedures

Section 4-1. Introduction

Aim

4.1 The aim of part 2 of this handbook is to standardise the ratel procedure for operators and users throughout the Australian Army, in a form which provides maximum compatibility with procedures used for joint and combined working, without seriously impairing the speed and efficiency of operation of Land Army nets.

4.2 The ratel procedure used is based on normal working conditions. The procedures for poor to bad working conditions are contained in [chapter 8](#).

4.3 In all examples, optional words and phrases are contained in brackets and a pause between phrases is represented by a dash (–).

Joint and Combined Procedures

4.4 The ratel procedures for joint and combined working are contained in *Allied Communications Publication (ACP) 125, Communication Instructions, Radiotelephone Procedure*.

The three types of radio (voice) communication are:

- a. voice conversations,
- b. informal messages, and
- c. formal messages.

Voice Conversation. A voice conversation is a series of alternate voice transmissions between two or more users in which subjects may be discussed, questions answered and information exchanged, subject to restrictions imposed by security.

Informal Messages. Frequently, a user may wish to ask a question and send information without discussion. This can be achieved through passage of a verbal message to the operator, or written message for transmission. An informal message consists simply of the user's text with an indication of the addressee(s).

Formal Messages. A formal message is one that is written down on a message form, (OC-33) signed by the releasing officer, registered, and passed to the operator for transmission and filing.

Radiotelephone Procedures

The successful use of voice radio requires a standard ratel procedure, constant practice and good radio discipline.

Ratel procedure is a set of simple rules based on the principles of:

- a. security,
- b. accuracy, and
- c. discipline.

4.11 The principles of security, accuracy and discipline can be remembered by the mnemonic SAD. Security and discipline procedures are described in detail in [chapter 1](#).

How to Speak Clearly

4.12 To avoid wasting time on repetitions and corrections, ratel messages must be sent clearly. Operators and users must remember the following points:

- a. Hold the microphone close to the mouth when transmitting.
- b. Use the correct manner of rhythm, speed, volume and pitch (RSVP) which is explained as follows:

(1) *Rhythm*. Keep a natural rhythm. Divide the message into sensible phrases.

(2) *Speed*. Speech should be slightly slower than for normal conversation.

(3) *Volume*. *Speak only as loudly as in normal conversation*. Shouting causes over-modulation which results in a distorted signal. If the set is fitted with voice-operated gain adjustment device (VOGAD), also known as whisper, the volume may be reduced.

(4) *Pitch*. The voice should be pitched higher than usual, but discomfort should be avoided.

Phonetic Alphabet

4.13 When it is necessary to identify any letter of the alphabet, the authorised phonetic alphabet as listed in [table 4-1](#) is to be used. The syllables shown in the table in bold type carry the accent. Difficult words or groups within the text of plain text messages may be spelled using the phonetic alphabet and preceded by the prowords I SPELL. If the operator can pronounce the word to be spelled, he will do so before and after the spelling to identify the word, for example: ‘Papadopoulos’ – I SPELL Papa Alpha Papa Alpha Delta Oscar Papa Oscar Uniform Lima Oscar Sierra – ‘Papadopoulos’.

TABLE 4-1. The Phonetic Alphabet

TABLE 4-1. The Phonetic Alphabet

Serial (a)	Letter (b)	Phonetic (c)	Spoken As (d)
1.	A	ALPHA	Al-fah
2.	B	BRAVO	Brah-voh
3.	C	CHARLIE	Char-lee
4.	D	DELTA	Dell-tah
5.	E	ECHO	Eck-oh
6.	F	FOXTROT	Foks-trot
7.	G	GOLF	Golf
8.	H	HOTEL	Hoh-tell
9.	I	INDIA	In-dee-ah
10.	J	JULIET	Jew-lee-ett
11.	K	KILO	Key-loh
12.	L	LIMA	Lee-mah
13.	M	MIKE	Mike
14.	N	NOVEMBER	No-vem-ber
15.	O	OSCAR	Oss-cah
16.	P	PAPA	Pah-Pah
17.	Q	QUEBEC	Keh-beck
18.	R	ROMEO	Ro-me-o
19.	S	SIERRA	See-air-rah
20.	T	TANGO	Tang-go
21.	U	UNIFORM	You-nee-form
22.	V	VICTOR	Vik-tah

CWP-G 0-1-4				RESTRICTED 4 — 5
Serial □(a)	Letter □(b)	Phonetic □(c)	Spoken As □(d)	
23.	W	WHISKEY	Wiss-key	
24.	X	XRAY	Ecks-ray	
25.	Y	YANKEE	Yang-key	
26.	Z	ZULU	Zoo-loo	

4.14 Where a text is composed of pronounceable words, they will be spoken as such. Where a text is encrypted, the groups, even though occasionally pronounceable, are to be transmitted by the phonetic equivalents of the individual letters and without the proword I SPELL. For example, the encrypted group AGRSU is spoken as Alfa Golf Romeo Sierra Uniform, and counted as one group.

Pronunciation of Figures

4.15 To distinguish numerals from words that are similarly pronounced in the text, the proword FIGURES is used preceding such numbers.

4.16 When numerals are transmitted by ratel, the rules given in table 4-2 for their pronunciation are to be observed. Accented syllables are shown in the table in bold type.

TABLE 4-2. Pronouncing Numerals			
Serial □(a)	Numerical □(b)	Spoken As □(c)	
1	1	Wun (with emphasis on N)	
2	2	Too (with sharp T and long O as in MOO)	
3	3	Thuh-ree (with short U, slight rolling of R and long E)	
4	4	Fo-wer (with long O as in FOE)	
5	5	Fi-yiv (emphasising the consonants, with a long i for the first syllable [as in PIE] and a short one for the second [as in GIVE])	
6	6	Six (with emphasis on X)	
7	7	Seven	
8	8	Ate (with long A as in MATE)	
9	9	Niner (with long i [as in PIE] and emphasising each N)	

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3	3	Thuh-ree (with short U, slight rolling of R and long E)
4	4	Fo-wer (with long O as in FOE)
5	5	Fi-yiv (emphasising the consonants, with a long i for the first syllable [as in PIE] and a short one for the second [as in GIVE])
6	6	Six (with emphasis on X)
7	7	Seven
8	8	Ate (with long A as in MATE)
9	9	Niner (with long i [as in PIE] and emphasising each N)

10	10	Zero
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4.17 Numbers are transmitted digit by digit; however, exact multiples of hundreds and thousands may be spoken as such under good conditions. Figures in the text of a message, except grid references and target indications, may be spoken as in normal speech. Under poor or difficult conditions, figures are sent digit by digit preceded by the proword FIGURES. Examples of the use of the proword FIGURES are given in table 4-3.

TABLE 4-3. Examples of Numeral Transmissions

<i>Serial □(a)</i>	<i>Numeral □(b)</i>	<i>Good Conditions □(c)</i>	<i>Poor Conditions □(d)</i>
1	44	Forty-four	FIGURES Four Four
2	57	Fifty-seven	FIGURES Five Seven
3	90	Ninety	FIGURES Nine Zero
4	136	One hundred and thirty-six	FIGURES One Three Six
5	500	Five hundred	FIGURES Five Zero Zero
6	1478	Fourteen seventy-eight	FIGURES One Four Seven Eight
7	2008	Two thousand and eight	FIGURES Two Zero Zero Eight
8	2359 hours	Twenty-three fifty-nine hours	FIGURES Two Three Five Nine Hours

<i>Serial □(a)</i>	<i>Numeral □(b)</i>	<i>Good Conditions □(c)</i>	<i>Poor Conditions □(d)</i>
9	2700	Two seven hundred	FIGURES Two Seven Zero Zero
10	16000	Sixteen thousand	FIGURES One Six Zero Zero Zero
11	812681	Eight one two six eight one	FIGURES Eight One Two Six Eight One

4.18 The proword FIGURES is not used with call-signs, address groups, grid references, time checks, date time groups (DTGs) or time groups. Call-signs and

address groups contained in the heading of a formal message are always sent character by character.

4.19 The decimal point is written as POINT but is to be spoken as DECIMAL (pronounced DAY-SEE-MAL). For example, 123.4 should be written as such, however, is spoken as One Two Three DECIMAL Four.

4.20 Dates are to be spoken digit by digit (in bad or good conditions), with the months in full. For example, 20 Aug is spoken as Two Zero August (this procedure places an emphasis on the transmission of dates which may be of tactical importance). Roman numerals are transmitted as the corresponding Arabic numerals preceded by the proword ROMAN, for example, VII is spoken as ROMAN Seven.

Rules for Grid References

4.21 All grid references, including those encoded in numeral code, are preceded by the proword GRID. They are sent digit by digit and letters are pronounced phonetically. A grid reference is easier to interpret if a natural pause is allowed between the eastings and northings. Examples of the use of the proword GRID are as follows:

- a. *Example A.* A grid reference in clear language is: 'Enemy at GRID Three Two Six – Eight Four Seven'.
- b. *Example B.* A grid reference encoded is: 'In location at GRID Bravo Yankee – Mike Charlie Bravo – Oscar Tango Mike'.

Rules for Mixed Groups

In good conditions, mixed groups are sent as normal speech. The following are examples:

- a. generators 5 kVA is sent as 'Generators Five kay-vee-ay';
- b. 21/2m by 1/2m is sent as 'Two and a half metres by half a metre'; and
- c. 12 V bty is sent as 'Twelve volt battery'.

In poor or difficult conditions, the same information in paragraph 4-22 is sent as:

- a. 'Generators FIGURES Five I SPELL Kilo Victor Alfa';
- b. 'FIGURES Two Hyphen One Slant Two metres by FIG- URES One Slant Two metre'; and
- c. 'FIGURES One Two volt battery'.

Abbreviations in the Text

Abbreviations in the text are transmitted as follows:

a. Letters used alone or in conjunction with short titles are spoken phonetically, except under the circumstances detailed in [paragraph 4.27](#). For example:

1. (1) Para A is sent as Para Alfa, and
2. (2) ACP may be sent as Alfa Charlie Papa.

Personal initials are to be spoken phonetically prefixed by the proword INITIALS, but note that such transmissions should be made in the secure mode only. For example, G. M. Smith is sent as 'INITIALS Golf Mike Smith'.

Abbreviations. Although designed to save writing time, abbreviations can also save time in speech. Some commonly spoken abbreviations frequently used in normal speech may be used in the same manner when transmitted by voice, for example, HQ, NCO, NATO, ACP, SOI and SOP. The use of

4.24 Abbreviations in the text are transmitted as follows:

a. Letters used alone or in conjunction with short titles are spoken phonetically, except under the circumstances detailed in [paragraph 4.27](#). For example:

1. (1) Para A is sent as Para Alfa, and
2. (2) ACP may be sent as Alfa Charlie Papa.

4.25 Personal initials are to be spoken phonetically prefixed by the proword INITIALS, but note that such transmissions should be made in the secure mode only. For example, G. M. Smith is sent as 'INITIALS Golf Mike Smith'.

4.26 Abbreviations. Although designed to save writing time, abbreviations can also save time in speech. Some commonly spoken abbreviations frequently used in normal speech may be used in the same manner when transmitted by voice, for example, HQ, NCO, NATO, ACP, SOI and SOP. The use of abbreviations as part of ratel conversations and transmissions is encouraged, providing there is no possibility of confusion. To avoid any misunderstanding, the following common sense rules should be applied:

a. *In Good Conditions.* In good conditions, common abbreviations are spoken as in normal conversation, for example, 'recon' instead of 'I SPELL Romeo Echo Charlie Oscar November'.

b. *In Poor or Difficult Conditions.* In poor or difficult conditions abbreviations should only be used when they save considerable transmission time. In all other cases the abbreviations should be pronounced in full. For example:

1. HQ as headquarters is shorter than I SPELL Hotel Quebec, and
2. TOT as time over target is shorter than I SPELL Tango Oscar Tango.

Expanding Abbreviations

4.27 A radio operator transmitting a message under poor conditions, on behalf of the originator, may expand common abbreviations appearing in the text if he is in no doubt as to the originator's intention. For example, he may expand 'bty' to battery and 'hr' to hours. If in any doubt, the abbreviation is not to be expanded but is to be spelt phonetically, for example, EW might mean EW or early warning. Unless it is obvious from the text which one is meant, it should be transmitted as 'I SPELL Echo Whisky', leaving the addressee to decide the meaning.

Prowords

4.28 Prowords are pronounceable words or phrases which have been assigned a meaning for the purpose of expediting message handling on circuits between users. This enables one word or phrase to be used in place of a complete sentence. For example:

- a. ROGER is used to signify, 'I have received your last transmission satisfactorily';
- SEND is used to signify, 'I am ready to receive your message'; and
- OUT is used to signify, 'This is the end of my transmission to you and no answer is required or expected'.

4.29 A proword or a combination of prowords is not to be substituted for the text of a message. A complete list of commonly used prowords and their meanings is at [annex A](#).

Punctuation

4.30 Punctuation is rarely necessary in normal voice communications but may be required in formal messages ([chapter 10](#)) or to clarify a difficult point. The following prowords are used to describe punctuation:

- a. FULL STOP is used for a period.
- b. PAREN and UNPAREN are used for left-hand and right-hand brackets.
- c. SLANT is used for an oblique stroke.
- d. QUOTE and UNQUOTE are used for quotation marks.
- e. HYPHEN is used for a hyphen (used to connect words or part of words).
- f. DASH is used for a dash (indicates a break or pause in a sentence).

[Annex: A. Commonly Used Prowords](#)

Commonly Used Prowords

1. Prowords are pronounceable words or phrases which have been assigned a meaning for the purpose of expediting message handling on circuits between users. The commonly used prowords are shown in table 4-4.

TABLE 4-4. Prowords

<i>Serial □(a)</i>	<i>Proword □(b)</i>	<i>Meaning □(c)</i>
1	ACKNOWLEDGE	Instruction to a station on the net to acknowledge that it has heard a message which may not have been specifically addressed to it. When used in the text of a message, instruction to the addressees that message must be acknowledged.
2	ADDRESS GROUP	That which follows is an address group.
3	ALL AFTER ALL BEFORE	Used with reference to a catchword or phrase when requesting or giving repetitions or corrections.
4	ANSWER AFTER	Used to instruct a station that joins an established net, the order in which to answer calls.
5	ASSUME CONTROL	Order a sub-station to assume control of a net.
6	AUTHENTICATE	The station called is to reply to the challenge which follows.

<i>Serial □(a)</i>	<i>Proword □(b)</i>	<i>Meaning □(c)</i>
19	DO NOT ANSWER	Used when it is imperative that the called stations do not answer a transmission. When this proword is used, the transmission is to end with the proword OUT.
20	EXEMPT	The call-signs that follow are excluded from a collective or all-stations call.
21	FETCH	Used in conjunction with an appointment title to indicate to whom the caller wishes to speak.

22	FIGURES	Used before sending groups of figures digit by digit. Not used for call-signs, grid references, time checks, authentication and DTG.
23	FORMAL MESSAGE	Offer of a formal message. Must be qualified by the precedence and may be qualified by LONG (message).
24	FROM	Used by a relaying station to indicate the station originating the message. The originator of this message is indicated by the address designator immediately following.
25	GRID	Used before any grid reference, encoded or in clear.
26	I AM ASSUMING CONTROL	Used when a sub-station takes over all the duties of the NCS.
27	I AUTHENTICATE	The group that follows is a reply to your challenge to authenticate.
28	IN PLAIN	Used when a station does not have cipher equipment or when it has broken down.
29	I READ BACK	Used by receiving station to satisfy himself that he has received a transmission, or portion of it, correctly introduces a response to instruction to read back.

<i>Serial □(a)</i>	<i>Proword □(b)</i>	<i>Meaning □(c)</i>
43	RETRANSMIT CALL-SIGN(S)	Control orders a retransmission station to retransmit the call-signs named.
44	RELAY THROUGH	Instruction to a station to relay through another.
45	REPORT STRENGTHS AND READABILITY	Call by NCS for sub-stations to report how they hear one another.
46	ROGER	I have received your last transmission satisfactorily.
47	SAY AGAIN	Request for repetition of all, or portions indicated, of a message.

48	SEND	I am ready to receive your message.
49	SHELREP	A standardised message follows, reporting shelling.
50	SILENCE LIFTED	Silence has lifted.
51	SILENCE SILENCE SILENCE	Cease transmission on this net immediately.
52	SPEAKING	Used in conjunction with an appointment title, to indicate who is speaking.
53	STOP TRANSMISSION	Originator orders a retransmission station to stop retransmission.
54	THIS IS	Indicates identity of calling station.
55	THIS IS A DIRECTED NET	All calls must be offered through control.
56	THIS IS A FREE NET	Used to cancel a directed net.
57	THIS IS A RETRANS NET	A retransmission station tells all stations that he is starting a retransmission.

<i>Serial □(a)</i>	<i>Proword □(b)</i>	<i>Meaning □(c)</i>
58	THROUGH ME	Invitation by a station to relay through him.
59	TIME	Used when passing a formal message. That which immediately follows is the time or DTG of the message. For example, when synchronising time: 'The time now is ...'
60	TIME CHECK AT	An exact (on the minute) time signal follows.
61	...TO...	Used to identify part of a message.
62	UNKNOWN STATION	The identity of the station I am calling is unknown to me.

63	USE ABBREVIATED CALL-SIGNS	Abbreviated call-signs are to be used.
64	USE ABBREVIATED PROCEDURE	Abbreviated procedure is to be used.
65	USE FULL CALL-SIGNS	Full call-signs are to be used.
66	USE FULL PROCEDURE	Full procedure is to be used.
67	VERIFY	Verify portion indicated with originator and send correct version.
68	WAIT	I must pause for up to five seconds before replying. No other station is to transmit during this period even if my set is not transmitting.
69	WAIT OUT	Your transmission is received; a further transmission on the same subject will follow later. Other stations may continue transmitting as normal.
70	WILCO	Message received, understood and will be complied with.

<i>Serial □(a)</i>	<i>Proword □(b)</i>	<i>Meaning □(c)</i>
71	WORD BEFORE WORD AFTER	Used to identify part of message.
72	WORDS TWICE	Communication is difficult. Transmit each phrase or code group twice. This proword may be used as an order, a request, or as information.
73	WRONG	What has been said is wrong; the correct version is...
74	YOUR CALL-SIGN IS	Allocation of a call-sign to a station which has newly joined a working net, and which has asked for a call-sign.

CHAPTER 5

Calls on Radio Nets

Section 5-1. Calling and Answering

Calling

5.1 A station wishing to communicate on a net is to make an initial transmission which consists of the following sections:

- a. *Initial Call.* The initial call indicates which station(s) is being called and which is the calling station. The call consists of:
 1. the initial CALL-SIGN which identifies the station(s) being called;
 2. the prowords THIS IS, used to indicate that the CALL-SIGN of the calling station follows; and
 3. the last CALL-SIGN which identifies the station calling.
- b. *Text.* The text is the information to be passed.
- c. *Ending.* One of the following prowords is used to denote
- d. that the transmission has ended:
 1. *OVER.* OVER means, ‘This is the end of my transmission to you and a reply or acknowledgement is required. Go ahead and transmit’.
 2. *OUT.* OUT means, ‘This is the end of my transmission. No reply is required or expected’.

Answering

5.2 Should the initial transmission require an immediate answer, (that is, it ends with the proword OVER), the stations called reply with an answering transmission consisting of the following:

- a. *Answering Call.* The answering call consists of the following three parts:
 1. *CALL-SIGN.* CALL-SIGN identifies the station which requires a response.
 2. *THIS IS.* The proword THIS IS is used to indicate that the call-sign of the station answering follows. This is compulsory in the initial reply.
 3. *CALL-SIGN.* The CALL-SIGN identifies the station answering. This is compulsory in initial reply.

- b. *Text: Answer or Receipt.* One of the following prowords may be used to indicate that the message has been received:
1. *ROGER.* ROGER means, 'I have received your last transmission'.
 2. *WILCO.* WILCO means, 'I have received your last transmission, understand it and will comply'. ('ROGER' is included in WILCO; therefore, the two prowords are not to be used together.)
 3. *WAIT.* WAIT means, 'I must pause for up to five seconds before replying. No other station is to transmit during this period'.
- c. *Ending.* In addition to the prowords OVER and OUT, the following may be used to indicate the end of the transmission:

WAIT OUT. WAIT OUT means, 'I must pause longer than five seconds, your transmission has been received; a further transmission on the same subject will follow later'.

OUT TO YOU. OUT TO YOU means, 'This is the end of my transmission to you and no answer is required or expected and a call to another station follows immediately'.

5.3 In the event that the answering transmission ends with the prowords OUT, WAIT OUT, or OUT TO YOU, that series of transmission is completed and further intercommunication on the net is achieved by a new initial transmission. When the answering call ends with the proword OVER, then the subsequent transmissions will follow the format of the answering call until the conversation or message is terminated by OUT, WAIT OUT or OUT TO YOU.

Order of Answering

5.4 Formation Nets. Where tactical call-signs are used, the order of answering is in alphabetical and/or numerical sequence in the format detailed in [chapter 3, paragraph 3.20](#).

5.5 Unit Nets. On unit or sub-unit nets where there may or may not be other arms representatives attached, stations are to answer in the following order:

- a. Unit elements answer in numerical and alphabetical sequence (for example, 11, 11A, 11B, 12 and 12A).
- b. Representatives of other arms using arms indicators, answer in alphabetical order of arms indicators.
- c. Stations using NIC to qualify their call-signs, answer in the order in which they join the net.

5.6 If a station in order waits five seconds and then answers. The station which failed to answer in proper sequence must then wait until all other stations have answered and it then answers. A period of five seconds, for each station which

failed to answer the initial call, is allocated after the last station has answered in order, before any further action is taken by NCS.

5.7 If a station still does not respond, the NCS waits a further five seconds, after the last response, and then initiates a new initial call to that station.

Unknown Station

5.8 A station may hear another station calling but fail to hear the call-sign of the calling station. If this occurs, the procedure in the following example is to be used:

DE4 – THIS IS – BP7 – Convoy departed – OVER.

UNKNOWN STATION – THIS IS – DE4 – SAY AGAIN CALL- SIGN – OVER.

DE4 – THIS IS – BP7 – OVER.

BP7 – THIS IS – DE4 – ROGER OUT.

Section 5-2. Types of Calls

5.9 The following are the five main types of calls:

- a. the single call,
- b. the multiple call,
- c. the net call,
- d. the collective call, and
- e. the exempt call.

Single Call

5.10 A single call is made by any station to any other station on the same net. The following example illustrates the single call between the NCS and a sub-station:

IMM – THIS IS – BP7 – Move now – OVER.

BP7 – THIS IS – IMM – Cannot move for ten minutes – OVER. IMM – THIS IS – BP7 – ROGER – OUT.

Multiple Call

5.11 A multiple call is a call to two or more stations, but not all stations on the net. The individual call-signs are separated by a distinct pause, as in normal speech. The following example illustrates the multiple call procedure:

IMM – T3Q – Z8N – THIS IS – DE4 – I am moving now – OVER.

DE4 – THIS IS – IMM – ROGER – OUT.

DE4 – THIS IS – T3Q – ROGER – OUT.

DE4 – THIS IS – Z8N – ROGER – OUT.

Net Call

5.12 A net call is a call to all stations on the net from either the NCS or a sub-station. The following example illustrates a net call when the NCS of a formation net is calling all stations. The NIC is SM5:

SM5 – THIS IS – BP7 – Convoy departed – OVER. BP7 – THIS IS – DE4 – ROGER – OUT.

BP7 – THIS IS – IMM – ROGER – OUT.

BP7 – THIS IS – T3Q – ROGER – OUT.

BP7 – THIS IS – Z8N – ROGER – OUT.

Collective Call

5.13 A collective call is a call to certain designated stations on the net. This combination of stations is arranged prior to the net deploying. It is not essential for all nets to have a collective call-sign.

5.14 On a formation net, a tactical call-sign is allocated for each collective call designation.

5.15 On unit nets using fixed call-signs, this type of call is commonly made when the commander wishes to speak to all his sub-unit commanders without using their individual call-signs. The prowords CHARLIE CHARLIE are used to denote this type of call. Where there is a requirement for an additional collective call, the prowords CHARLIE CHARLIE are qualified by a figure (for example, CHARLIE CHARLIE One). Although collective calls are normally made by the NCS, they may be initiated by any sub-station on the net. The NCS always answers first, unless instructions for the net exclude him from answering. The following example shows the NCS making a collective call (DE4, T3Q and Z8N have been designated to answer the CHARLIE CHARLIE One call):

CC1 – THIS IS – BP7 – Moving now – OVER.

BP7 – THIS IS – DE4- ROGER OUT.

BP7 – THIS IS – T3Q – ROGER OUT.

BP7 – THIS IS – Z8N – ROGER OUT.

Exempt Call

5.16 An exempt call is the call made when all the stations normally concerned with the net or collective call are not required. The proword EXEMPT is used to denote

this type of call. The following example illustrates an exempt call where the NCS using the NIC (SM5) wishes to contact all sub-stations other than call-sign T3Q:

SM5—EXEMPT T3Q—THISIS—BP7—Movenow—OVER. BP7 – THIS IS – DE4 – ROGER – OUT.

BP7 – THIS IS – IMM – ROGER – OUT.

BP7 – THIS IS – Z8N – ROGER – OUT.

Section 5-3. Normal and Adverse Working Conditions

Abbreviated Procedure

5.17 Under normal working conditions, use is made of abbreviated procedure to save time and improve security by omitting the call-sign of the called station other than in the initial call, and any non-essential prowords. In a single call, all call-signs may be omitted after the initial call and reply.

5.18 Those parts of a call or prowords which may be omitted are shown in brackets through the remainder of the handbook, except when deliberately retained or deleted for illustrative purposes. The following example of a call from an NCS to a sub-station illustrates the abbreviated procedure:

DE4 – THIS IS – BP7 – Move now – OVER.

(BP7) – (THIS IS) – DE4 – Cannot move for 10 minutes – OVER.

(DE4) – (THIS IS) – (BP7) – ROGER – OUT.

The next example of a call from a sub-station to a sub-station further illustrates the abbreviated procedure:

IMM – THIS IS – Z8N – Is my SUNRAY with you – OVER.

(Z8N) – (THIS IS) – IMM – No – He left five minutes ago – OVER.

(IMM) – (THIS IS) – (Z8N) – Has he gone to CALL-SIGN Delta Echo Four – OVER.

(Z8N) – (THIS IS) – (IMM) – Yes – OUT.

5.19 When conditions deteriorate to such a degree that the use of abbreviated procedure is causing unnecessary repetitions, the NCS is to order the use of full procedure. The use of call-signs and prowords that were previously optional, then becomes mandatory. The following example illustrates the method used to order the use of full procedure on a net:

SM5 – THIS IS – BP7 – USE FULL PROCEDURE – OUT.

Reverting to Abbreviated Procedure

When conditions return to normal, the NCS is to order that the net revert to abbreviated procedure. The following example illustrates the method used to order a net to revert to abbreviated procedure:

SM5 – THIS IS – BP7 – USE ABBREVIATED PROCEDURE – OUT.

Abbreviated Call-signs

Provided no confusion arises, the NCS may order the net to use abbreviated call-signs. Nets using tactical and fixed call-signs are to use abbreviated call-signs (abbreviated to the first two characters). The net must continue to use either full or abbreviated procedure, whichever is in force. To order the use of abbreviated call-signs when full call-signs are in force, the following is transmitted by the NCS:

SM – THIS IS BP – USE ABBREVIATED CALL-SIGNS – OUT.

Full Call-signs

When conditions deteriorate and/or confusion arises through the use of abbreviated call-signs, the NCS may order that full call-signs be used. Full call-signs may be used with either full or abbreviated procedure. The following example illustrates the use of full call-signs:

SM5 – THIS IS – BP7 – USE FULL CALL-SIGNS – OUT.

5.23 Conditions may be such that the NCS considers the use of both full procedure and full call-signs is necessary for the efficient working of the net. In this case, the NCS is to direct the net by the prowords USE FULL CALL-SIGNS AND PROCEDURE.

5.24 When conditions warrant it, the NCS may subsequently order the net to use abbreviated procedure or abbreviated call-signs. The NCS may order the net to abbreviate entirely by using the prowords USE ABBREVIATED CALL-SIGNS AND PROCEDURE.

CHAPTER 6

Establishing a Net

Section 6-1. General Instructions

6.1 The establishment of a net is carried out in the form of a set preliminary procedure drill. It ensures that all stations on a radio net are able to set up communications with one another on the same frequency. The importance of this drill cannot be over-emphasised. If the preliminary instructions and procedure are not adhered to, excessive tuning may result, which makes the task of enemy interception and DF so much easier.

6.2 The procedure prescribed in this section is to be followed either when opening a net for the first time or when reopening a net. Proper control by the NCS and adherence to operating rules by the stations within the net will enable the net to commence operating with minimum delay. The NCS is responsible for maintaining security on the net.

6.3 Establishing a net is conducted in the following four distinct phases:

- a. preliminary instructions;
- b. tuning of the radio (if applicable);
- c. initial calls; and
- d. amplifying reports.

Preliminary Instructions

It is essential that operators are supplied with all the preliminary instructions regarding the working of the net. The instructions are to contain the following information:

- a. the net organisation in the form of a diagram which identifies all the stations on the net and a strength and readability chart;
- b. the frequencies assigned to the net, lost communications procedures, and the frequency calling schedule (FCS) for HF operation;
- c. the call-signs, including collective call-signs, address groups and other net identification information;
- d. the operations codes, numeral codes and authentication tables;
- e. code-words and nicknames;
- f. the time the net is to open; and

g. the net security measures.

The operator is to ensure that he has adequate stationery such as message forms, radio log-books and user handbooks prior to establishing communications.

Tuning the Radio

The tuning procedure varies with each type of radio and is laid down in the appropriate handbook. The majority of radios in the Army fall into one of the following categories:

- a. *Pre-tuned Radios.* Pre-tuned radios are automatically tuned to a specified frequency or channel by the action of a selector switch.
- b. *Manually Tuned Radios.* Manually tuned radios incorporate their own crystal calibrators, which enable accurate tuning to any frequency within the range of the radio.
- c. *Automatically Tuned Radios.* The tuning process for the automatically tuned radios is, as the name implies, carried out automatically within the radio and requires no operator interface.

Selecting the Frequency

6.7 Very High Frequency. Unless otherwise specified prior to deployment, VHF nets, under normal circumstances, will commence operation on the primary frequency. The primary frequency is identified in the information supplied as part of the preliminary instructions.

6.8 High Frequency. The frequency to be selected for commencement of operation on an HF net is dependent upon many factors; these may include, time of day, terrain, distance or direction. There are circumstances (for example, short distance day or night working over a short period of time) where opening on a primary frequency can be achieved; however, in most cases, the frequency that should be used at a given time will be identified in the FCS supplied as part of the preliminary instructions.

Initial Call

6.9 As soon as the radio is adjusted, the NCS is to determine whether its transmissions are being received by the sub-stations on the net.

6.10 The NCS initially orders sub-stations to report the strength and readability of its signal by using the prowords RADIO CHECK, which means 'What is my signal strength and readability?'; that is, the NCS is asking the sub-stations, 'How do you hear me?' The sub-stations answer the call in turn, giving their report of signal strength and readability of the NCS. If the answer is 'LOUD AND CLEAR', the proword ROGER will suffice to indicate that reception. A full description of prowords used to report signal strength and readability is at paragraph [6.17](#) and [6.18](#).

When the NCS wishes to know the clarity of communications between its station and the sub-stations, it initiates an initial call to all stations, followed by an amplifying report (paragraph 6.26), thus obtaining a clear picture of the communications state of the net.

At the designated time, or when ready to establish/re-establish a net, the NCS initiates the following procedures:

SM5 – THIS IS – BP7 – RADIO CHECK – OVER. (BP7) – (THIS IS) – DE4 – (ROGER) – OVER. (BP7) – (THIS IS) – IMM – (ROGER) – OVER. (BP7) – (THIS IS) – T3Q – (ROGER) – OVER. (BP7) – (THIS IS) – Z8N – (ROGER) – OVER. (SM5) – (THIS IS) – BP7 – (ROGER) – OUT.

or

(SM5) – (THIS IS) – BP7 – (ROGER) USE ABBREVIATED CALL-SIGNS – OUT.

When a sub-station fails to answer a net call in proper sequence, the sub-station must wait until all other sub-stations answer before transmitting. If a sub-station fails to answer after the last response, the NCS will wait five seconds and then initiate a new preliminary call specifically to that sub-station. If the NCS does not receive a reply from a sub-station to his final request for a report, he indicates this fact by using the prowords NOTHING HEARD.

6.14 In this example, call-sign IMM is unable to answer the net call:

SM5 – THIS IS – BP7 – RADIO CHECK – OVER. (BP7) – (THIS IS) – DE4 – (ROGER) – OVER.

(T3Q hearing no reply from call-sign IMM waits five seconds then transmits.)

(BP7) – (THIS IS) – T3Q – (ROGER) – OVER. (BP7) – (THIS IS) – Z8N – (ROGER) – OVER.

(SM5) – (THIS IS) – BP7 -(ROGER) – IMM – NOTHING HEARD – OUT.

(Call-sign IMM, when able to join the net, does so using the procedure outlined in chapter 9.)

6.15 When a station reports late into a net, this station is to be challenged to authenticate, unless transmission authentication has been used.

6.16 After the net is established and before conducting regular traffic over the net, it may be necessary to make contact with the station or other stations involved to ascertain that communication is possible.

6.17 The prowords used to report signal strength are:

- a. *LOUD*. LOUD indicates that the sender's signal strength is excellent.
- b. *GOOD*. GOOD indicates that the sender's signal strength is good.

- c. *WEAK*. WEAK indicates that the sender's signal strength is weak.
- d. *VERY WEAK*. VERY WEAK indicates that the sender's signal strength is very weak.

6.18 FADING. *FADING* indicates that at times the signal strength fades to such an extent that continuous reception cannot be relied upon.

The prowords used to report readability are:

- a. *CLEAR*. CLEAR indicates that the transmission is of excellent quality.
- b. *READABLE*. READABLE indicates that the quality of transmission is good.
- c. *UNREADABLE*. UNREADABLE indicates that the quality of the sender's transmission is so bad that the receiver cannot read the sender.
- d. *DISTORTED*. DISTORTED indicates that there is trouble understanding the transmission due to distortion.
- e. *WITH INTERFERENCE*. WITH INTERFERENCE indicates that there is trouble understanding the transmission due to interference.

The NCS waits for all stations on the net to reply before giving its reports to sub-stations.

The NCS always acknowledges the report of the sub-stations by indicating, in its transmission, the strength of the unsatisfactory stations.

A summary of sample transmissions to establish a net (figure 6-1), is provided in [table 6-1](#).

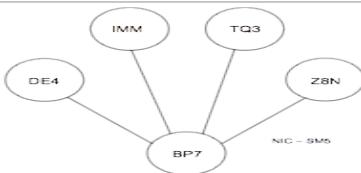


Figure 6-1. Radio Net Diagram

TABLE 6-1. Establishing a Net (Initial Call)

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
1.	Example A: on a satisfactory net.	NCS	SM5 – THIS IS – BP7 – RADIO CHECK – OVER.	
		DE4	(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.	The NCS is loud and clear.
		IMM	(BP7) – (THIS IS) – IMM – WEAK BUT READABLE – OVER.	
		T3Q	(BP7) – (THIS IS) – T3Q – (ROGER) – OVER.	The NCS is loud and clear.
		Z8N	(BP7) – (THIS IS) – Z8N – LOUD WITH INTERFERENCE – OVER.	

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Figure 6-1. Radio Net Diagram

TABLE 6-1. Establishing a Net (Initial Call)

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
1	Example A: on a satisfactory net.	NCS	SM5 – THIS IS – BP7 – RADIO CHECK – OVER.	
		DE4	(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.	The NCS is loud and clear.
		IMM	(BP7) – (THIS IS) – IMM – WEAK BUT READABLE – OVER.	
		T3Q	(BP7) – (THIS IS) – T3Q – (ROGER) – OVER.	The NCS is loud and clear.
		Z8N	(BP7) – (THIS IS) – Z8N – LOUD WITH INTERFERENCE – OVER.	

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>

		NCS	(SM5) – (THIS IS) – BP7 – IMM – WEAK WITH INTERFERENCE – OUT.	The NCS hears all stations loud and clear except IMM.
2	Example B: A sub-station on a unit net fails to answer in the correct sequence.	NCS	SM5 – THISIS – BP7 – RADIO CHECK – OVER.	
		DE4	(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.	
		IMM	(BP7) – (THIS IS) – IMM – (ROGER) – OVER.	
		T3Q	(-----)	(no reply)
		Z8N	(5 seconds pause) (BP7) – (THIS IS) – Z8N – LOUD WITH SLIGHT INTERFERENCE – OVER.	
		T3Q	(BP7) – (THIS IS) – T3Q – WEAK BUT READABLE – OVER.	Answers last.
		NCS	SM5 – (THIS IS) – BP7 – (ROGER) – OUT.	NCS hears all stations loud and clear.

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
3	Example C: A sub-station on a net fails to answer a preliminary call.	NCS	SM5 – THISIS – BP7 – RADIO CHECK – OVER.	
		DE4	(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.	
		IMM	(BP7) – (THIS IS) – IMM – (ROGER) – OVER.	
		T3Q	(-----)	(no reply)

		Z8N	(5 second pause) (BP7) – (THIS IS) – Z8N – LOUD WITH SLIGHT INTERFERENCE – OVER.	
		T3Q	(-----)	(no reply)
		NCS	(5 second pause) T3Q – THISIS–BP7– RADIO CHECK – OVER.	NCS makes another call to T3Q.
		T3Q	(BP7) – (THIS IS) – T3Q – WEAK BUT READABLE – OVER.	
		NCS	SM5 – (THIS IS) – BP7 – (ROGER) – OUT.	

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
4	Example D: A sub-station on a unit net fails to answer the NCS final request for a report.	NCS	(5 second pause) T3Q – THISIS–BP7– RADIO CHECK – OVER.	
		T3Q	(-----)	(no reply)
		NCS	T3Q – (THIS IS) – BP7 – NOTHING HEARD – OUT.	NCS indicates that it did not hear T3Q and advises remaining stations of their strengths.
		NCS	SM5 – EXEMPT T3Q – THISIS–BP7– ROGER – OUT.	
5	Example E: A sub-station reports late into the net.	T3Q	BP7–THISIS–T3Q – REPORTING INTO NET – OVER.	

			(T3Q) – (THIS IS) – BP7 – AUTHENTICATE AB – OVER. (Short pause while authentication is calculated)	NCS requests T3Q to authenticate.
		T3Q	(BP7) – (THIS IS) – T3Q-I AUTHENTICATE CHARLIE – OVER.	T3Q authenticates correctly.

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
		NCS	(T3Q) – (THIS IS) – BP7 – ANSWER AFTER – IMM – OUT.	
6	Example F: NCS replies to sub-stations of varying strengths and readability.	NCS	(SM5)–(THISIS)– BP7–DE4–WEAK WITH INTERFERENCE – T3Q – WEAK BUT READABLE – OUT.	

6.22 When a calling station requests a radio check with one or more stations, the calling station will, in its reply, give a signal strength and readability to the other stations called.

6.23 The following example illustrates a radio check when good conditions prevail:

DE4 – (THIS IS) – BP7 – RADIO CHECK – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.

(DE4) – (THIS IS) – (BP7) – (ROGER) – OUT.

6.24 The next example illustrates a radio check in poor conditions:

Z8N – THIS IS – BP7 – RADIO CHECK – OVER.

BP7 – THIS IS – Z8N – WEAK BUT READABLE – OVER.

Z8N – THIS IS – BP7 – WEAK BUT READABLE – WITH INTERFERENCE – OUT.

6.25

The final example illustrates a radio check during difficult conditions:

DE4–DE4–THIS IS BP7–THIS IS BP7–RADIO CHECK– RADIO CHECK – OVER.

BP7–BP7–THIS IS DE4–THIS IS DE4–VERY WEAK BUT READABLE – VERY WEAK BUT READABLE – OVER.

DE4 – DE4 – THIS IS BP7 – THIS IS BP7 – WEAK BUT READABLE – WEAK BUT READABLE – WITH INTERFERENCE – WITH INTERFERENCE – OUT.

Amplifying Report

Once the net has been established and the NCS wishes to know how sub-stations are hearing one another, the NCS requests signal strengths and readability by use of the prowords REPORT STRENGTHS AND READABILITY. Such reporting on an established net should only be necessary when conditions are bad or after communications silence as shown in table 6-2.

TABLE 6-2. Establishing a Net (Amplifying Report)

6.26

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made (d)</i>	<i>Remarks (e)</i>
1	Example A: Satisfactory reports from all stations on a formation net. Initial call RADIO CHECK has been made.	NCS	SM5–THISIS–BP7– IMM – WEAK BUT READABLE – REPORT STRENGTHS AND READABILITY – OVER.	NCS hears all stations loud and clear except IMM and then requests all stations to report strengths of all other stations.
		DE4	(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.	

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made (d)</i>	<i>Remarks (e)</i>
		IMM	(BP7) – (THIS IS) – IMM – (ROGER) – OUT.	
		T3Q	(BP7) – (THIS IS) – T3Q – DE4 WEAK BUT READABLE – OUT.	

			(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.	After final response NCS may authorise use of abbreviated call-signs.
		NCS	SM5 – THISIS – BP7 – USE ABBREVIATED CALL-SIGNS – OUT.	
2	Example B: Unsatisfactory combined report on a unit net.	NCS	SM5 – THISIS – BP7 – RADIO CHECK – OVER.	
		DE4	(BP7) – (THIS IS) – DE4 – LOUD BUT DISTORTED – OVER.	
		IMM	(BP7) – (THIS IS) – IMM – (ROGER) – OVER.	
		T3Q	(BP7) – (THISIS) – T3Q – WEAK BUT READABLE – OVER.	
		Z8N	(BP7) – (THIS IS) – Z8N – LOUD WITH INTERFERENCE – OVER.	

<i>Serial (a)</i>	<i>Sample Station (b)</i>	<i>Calling (c)</i>	<i>Call Made (d)</i>	<i>Remarks (e)</i>
		NCS	(SM5) – (THIS IS) – BP7 – LOUD WITH DISTORTION – T3Q – WEAK BUT READABLE – REPORT STRENGTHS AND READABILITY – OVER.	NCS hears IMM and Z8N loud and clear but signals from all other stations are varying in strength.
		DE4	(BP7) – (THIS IS) – DE4 – Z8N NOTHING HEARD – T3Q LOUD BUT DISTORTED – OUT.	

		IMM	(BP7) – (THIS IS) – IMM– DE4–WEAK BUT READABLE – T3Q – LOUD BUT DISTORTED – OUT.	
		T3Q	(BP7) – (THIS IS) – T3Q– DE4–WEAK BUT READABLE – OUT.	
		Z8N	(BP7) – (THIS IS) – Z8N – WEAK – WITH INTERFERENCE – OUT.	Z8N hears all stations fairly well with interference.

6.27 A sub-station reports only those stations which are not LOUD AND CLEAR. When another station cannot be heard, the prowords NOTHING HEARD, preceded by the call-sign of that station, is used.

6.28 A station wishing to indicate that it is experiencing interference, or that the incoming signal is fading or distorted may amplify its report by use of the prowords:

- a. *WITH (strength of interference) INTERFERENCE.* WITH INTERFERENCE indicates that a station is having trouble reading transmissions due to slight, moderate, severe or extreme interference.
- b. *FADING.* FADING indicates that at times the signal strength fades to such an extent that continuous reception cannot be relied upon.
- c. *DISTORTION.* DISTORTION indicates that a station is having trouble reading a transmission because the signal is distorted.

6.29 Where the NCS is not satisfied with the signal strength and/or readability of a sub-station, and believes that it can be improved by ordering the sub-station to retune, the NCS orders the defaulting station to retune or relocate the set. This is followed by a call from the NCS to the defaulting station for a radio check.

Section 6-2. No Contact Procedure

6.30 No contact procedure is designed to obtain or regain communications on a radio net when a sub-station(s) cannot be contacted by the NCS or any other sub-station. This procedure is used when:

- a. establishing a net, and
- b. a net is established and communications are lost with all stations.

Immediate Action Drill

6.31 When initially trying to establish communications, all stations are to adopt the following measures to obtain contact:

- use the most efficient antenna,
- resite the antenna if required,
 - test radio equipment for serviceability,
 - use a higher power setting, and
 - use alternate means to inform the NCS of any problems.

Procedure

6.32 If communications with a station are not established within 15 minutes, the no contact procedure is to be initiated using the time and frequency schedule detailed in table 6-3.

TABLE 6-3. Time and Frequency

Serial (a)	Time Past the Hour (b)	Number of Frequencies Allotted		
		Two (c)	Three (d)	Four (e)
1.	00-15 minutes	Primary	Primary	Primary
2.	15-30 minutes	Alternate	Alternate 1	Alternate 1
3.	30-45 minutes	Primary	Alternate 2	Alternate 2
4.	45-60 minutes	Alternate	Primary	Alternate 3

6.33 Depending on the operational situation and equipment availability, the NCS may:

- use alternate means if available, to determine the cause of the loss of contact;
- commence calling using spare radio equipment on the appropriate frequency as per the time and frequency schedule detailed in table 6-3;
- direct one of the sub-stations to commence calling using spare equipment on the appropriate frequency as detailed in table 6-3;
- direct one of the sub-stations to leave the net in search of lost stations allocating a time period in which the sub- station must return to the net; or

e. leave the net in search of lost stations. If leaving the net, the NCS is to delegate control of the net to another station.

6.34 At the same time, the no contact procedure is to be adopted by the lost sub-station(s). Depending on the time, the sub-station starts calling on the appropriate frequency using the time and frequency schedule detailed in [table 6-3](#). This is to continue until communications are re-established. This is an example of what may be contained in SOIs; however, the FCS can be modified to suit the required conditions (extra frequencies require a different time schedule).

Section 6-3. Authentication

6.35 One of the disadvantages of using radio as a means of communication is that there is no way of keeping a frequency exclusively for one's own use. The enemy will attempt to join friendly radio nets for the purpose of giving orders or inducing the disclosure of important information.

6.36 The enemy will not normally attempt to intrude on a net unless he is confident that he can succeed. This entails the use of correct call-signs and detailed knowledge of friendly procedures. Everything possible will be done to make the intruding station appear genuine, and great care must be taken to ensure that friendly nets are protected from this type of interference.

6.37 Communication systems can be protected by strict discipline, good training and efficient operation. In addition, a number of authentication systems are available for use when confirmation is required as to the identity of a station, or if suspicion is aroused in any way.

Authentication Systems

6.38 An authentication system is a communications security (comsec) aid and is designed to serve as a secure means of challenging the identity of a station or establishing the authenticity of a station, transmission or message. There are two methods of authentication:

- a. challenge and reply, and
- b. transmission.

6.39 The operating instructions of the authentication system will specify the method of use and the transmission procedure to be used.

Challenge and Reply

6.40 Challenge and Reply is a method of authentication whereby one station requests authentication (the challenge – AUTHENTICATE) of another station and the latter, by a correct reply, establishes its authenticity (the reply – I AUTHENTICATE). Challenge and reply authentication requires the use of two elements selected at random. Each challenge is to be counter-challenged when there is doubt of authenticity.

6.41 The authentication systems used on Land Army nets are those set out in the ANZKAC/AMD code series.

6.42 A challenge may be made by any station and the challenged station replies with the appropriate letter. The challenged station may then counter-challenge in the same manner if it so wishes, but a counter-challenge should only be made when there is doubt regarding the identity of the challenging station. Letters and/or bigrams are not to be used twice and are to be deleted by all stations as used. If letters and/or bigrams are used twice the call is to be counter-challenged.

6.43 In order to avoid a compromise, the following rules should be observed:

- a. stations should not be challenged unnecessarily, and
- b. a station should only be allowed a limited period of time to answer a challenge.

6.44 The correct authentication procedure is given in the following example of a challenge. A challenge is used by the called station or the NCS when the authenticity of the calling station is in doubt. The NCS initiates the call:

DE4 – THIS IS – BP7 – Move now – OVER.

(DE4 doubting the authenticity of the transmission, then transmits.)

(BP7) – (THIS IS) – DE4 – AUTHENTICATE Bravo Charlie – OVER.

(DE4) – (THIS IS) – BP7 – WAIT – (short pause while authentication is calculated) – I AUTHENTICATE Delta – OVER.

(BP7) – (THIS IS) – DE4 – OUT.

(If the challenged station authenticates incorrectly, the challenging station re-challenges and, if the challenged station is incorrect once again, the challenging station is to ignore the challenged station).

6.45 Another illustration of the correct authentication procedure is given in the following counter-challenge example. A counter-challenge is used by the challenged station when the authenticity of the challenging station is in doubt. (Anyone can initiate a challenge without the relevant codes in their possession.) In this example IMM transmits to Z8N:

Z8N – THIS IS – IMM – Move now – OVER.

(IMM) – (THIS IS) – Z8N – AUTHENTICATE Whisky November – OVER.

(Z8N) – (THIS IS) – (IMM) – WAIT – (short pause while authentication is calculated) – I AUTHENTICATE Bravo – AUTHENTICATE Hotel Delta – OVER.

(IMM) – (THIS IS) – (Z8N) – WAIT – (short pause while authentication is calculated) – I AUTHENTICATE Echo – OVER.

(Z8N) – (THIS IS) – (IMM) – OUT.

Transmission Authentication

6.46 Transmission authentication is a method of authentication whereby a calling station establishes the authenticity of its own transmission or of a message and no reply by the called station(s) is necessary to determine the validity of the transmission or message. Transmission authentication includes station and self-authentication (which is a one-time check off using a time group as determined by the instructions contained in the authentication tables). The following example illustrates a transmission authentication used by the calling station to prove authenticity of the message:

T3Q – (THIS IS) – BP7 – Move now – AUTHENTICATION IS – X-ray Delta – OVER.

(T3Q after establishing the authenticity of the message, re- plies.)

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

6.47 As another example, the following type of transmission authentication is used by the calling station to provide authenticity of message and is normally used during communications silence or DO NOT ANSWER procedure:

SM5 – (THIS IS) BP7 – Moving now – AUTHENTICATION IS Lima Foxtrot – OUT.

When to Authenticate

6.48 If you are not sure that authentication is required, challenge. If a station takes more than 30 seconds to authenticate, re-challenge. Enemy operators will try to contact another station on a different net and have it respond to that same challenge. Authentication is mandatory when:

- a. making initial radio contact (for example, joining a working net) or resuming radio contact (after a temporary closure or prolonged interruptions or long periods of silence);
- b. a station suspects a fraudulent transmission (ICD);
- c. challenged or requested to authenticate by another station (communications silence is not to be broken for the sole purpose of completing authentication);
- d. transmitting a plain language cancellation of a message;
- e. making contact and amplifying reports in plain language (for example, talking about enemy contact, giving an early warning report, or issuing any follow-up report);
- f. lifting or breaking communications silence or imposing emergency silence where a code-word or a nickname is not used;

- g. transmitting operating instructions which affect the tactical situation (for example, closing down a station, directing a change in frequency, imposing emergency silence when code-words are not available and the relocation of units and sub-units);
- h. transmitting to a station which is under radio silence; and
- i. transmitting a classified message in clear over insecure radio net.

CHAPTER 7

Normal Procedure

Section 7-1. Introduction

7.1 Information requiring expeditious delivery is prepared for transmission in the form of brief and concise messages.

7.2 There are two main types of messages:

- a. informal or unregistered messages, and
- b. formal or registered messages.

Informal Messages

7.3 Informal messages provide the simplest and quickest means of sending orders and short-term information in the field. These are short operational messages in either verbal or written form. The written version needs only to contain the address and the text.

Formal Messages

7.4 Formal message procedures are detailed in [chapter 10](#).

Section 7-2. Arranging a Voice Conversation

Procedure

7.5 The user can speak to a specific individual at another station by calling the person concerned to the set. The user will arrange this by advising the operator that he wishes to speak to a particular person by use of the radio appointment title ([annex A to chapter 1](#)); for example, ‘I want to speak to SUNRAY 6 RAR’. The operator calls the station concerned using the proword FETCH followed by the appointment title. However, in the case of fixed call-sign nets, the use of radio appointments titles is not necessary, as the fixed call-sign is sufficient. The receiving operator replies ‘WAIT – OUT’ and he fetches the nominated individual. When the nominated individual has come to the radio set and is ready to begin conversation, he is to give his identity using the appointment title followed by the proword SPEAKING. The user at the calling station will then give his identity using his appointment title followed by the proword SPEAKING and then carry on with his message or conversation.

7.6 The following example illustrates the use of the proword FETCH. The Operations Officer of a formation headquarters wishes to speak to the RSO of DE4:

DE4 – (THIS IS) BP7 – FETCH PRONTO – OVER. BP7 – (THIS IS) DE4 – WAIT OUT.

(As the RSO is not immediately available – on arrival, the RSO transmits.)

BP7 – (THIS IS) DE4 – PRONTO SPEAKING – OVER.

DE4 – (THIS IS) BP7 – SEAGULL SPEAKING – Can you pro- vide (etc) . . .

Section 7-3. Transmission of Messages

Offering a Message

7.7 An offer is a short transmission made to warn a station that a message follows. An offer is to be made when:

- a. the calling station wishes to ascertain whether the called station is ready to receive a message;
- b. in poor and difficult conditions, it is necessary for the sender to satisfy himself that communications are sufficiently good for the entire message to be received;
- c. it is necessary for the message to be written down;
- d. the net is directed;
- e. when orders are to be given over the radio, they must be received by a detachment commander (or equivalent); and
- f. the information to be passed is in a standardised form requiring the completion of a proforma (for example, an OC – 33 Message Form or Sitrep).

7.8 A message may be offered by means of the prowords:

- g. **MESSAGE.** MESSAGE is used for informal plain text
- h. **message.**
- i. **CRYPTO MESSAGE.** CRYPTO MESSAGE is used for formal or informal message encoded using tactical codes.
- j. **BOMREP, MORTREP, SITREP and SHELREP.** BOM- REP, MORTREP, SITREP AND SHELREP are used for a warning of the type of message and proforma.
- k. **FORMAL MESSAGE.** FORMAL MESSAGE is used for plaindress and codress messages.

7.9 The offer may take one of the forms illustrated in the example below. To ascertain whether the called station is ready to receive an informal message which is not required to be written down, a normal call without the use of the above prowords is then made as shown in the following example:

T3Q – THIS IS BP7 – OVER.

(BP7) – (THIS IS) – T3Q – (SEND) – OVER.

(T3Q) – (THIS IS) – (BP7) – Have you received fresh batteries – OVER.

(BP7) – (THIS IS) – (T3Q) – No – We need them urgently – OVER.

(T3Q) – (THIS IS) – (BP7) – Will check and let you know – Can you last for thirty minutes – OVER.

(BP7) – (THIS IS) – (T3Q) – Yes – OVER. (T3Q) – (THIS IS) – (BP7) – (ROGER) – OUT.

7.10 The prowords FORMAL MESSAGE are not used for joint or combined working, all messages are offered using the proword MESSAGE to indicate to the recipient that he will have to take down an informal message. This is shown in the following example of a plain text informal message:

Z8N – THIS IS – BP7 – MESSAGE – OVER.

(BP7) – (THIS IS) – Z8N – (SEND) – OVER.

(Z8N) – (THIS IS) – (BP7) – Move to GRID Alfa Echo – Mike Sierra Alfa – Juliett Bravo X-ray – TIME One Zero Two Four Zulu – AUTHENTICATION IS Echo Zulu OVER.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

7.11 Another illustration of this is in the following example of an encoded informal message:

IMM – THIS IS – BP7 – CRYPTO MESSAGE – OVER.

(BP7) – (THIS IS) – IMM – (SEND) – OVER.

(IMM) – (THIS IS) – (BP7) – Alfa Delta Golf – Yankee Echo Papa – X-ray Uniform Victor – Tango November Delta – Victor Victor India – Uniform Papa Uniform – Romeo Sierra Golf – Lima Victor Echo – Mike Tango Yankee – Sierra Yankee Echo – Figures One Zero Slant One Two – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

7.12 A receipt is employed in direct station-to-station traffic handling. No message is considered delivered until a receipt is obtained. A receipt is effected by the receiving station transmitting the proword ROGER or WILCO. In the interests of good communications, the use of the proword is optional. Should either the

transmitting or receiving station wish to indicate that it has further messages to transmit to the other station, this may be done by using the prowords MORE TO FOLLOW in the message ending or receipt, as shown in the example below. In the sample collective call CC1 designates call-signs DE4, IMM and T3Q. NCS has one message for all CC1 stations and one message for IMM and T3Q:

CC1 – THIS IS – BP7 – Batteries have been dispatched – MORE TO FOLLOW – for IMM and T3Q – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(BP7) – (THIS IS) – IMM – (ROGER) – OVER.

(BP7) – (THIS IS) – T3Q – (ROGER) – OVER.

IMM – T3Q – (THIS IS) – BP7 – Direct Support Specified in VIOLIN now available – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT. (BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(If the called station was not prepared to accept the message immediately, it would have transmitted, 'WAIT OUT'.)

Indicating Precedence in an Offer

Precedence may be indicated in an offer as shown in the following example:

Z8N – THIS IS BP7 – PRIORITY MESSAGE – OVER.

To indicate a number of messages of one or more precedence in an offer, the number of messages is followed by the precedence proword as per the following example:

Z8N – THIS IS – BP7 – One PRIORITY and One ROUTINE MESSAGE – OVER.

(BP7) – (THIS IS) – Z8N – (SEND) – OVER.

(Z8N) – (THIS IS) – (BP7) – PRIORITY –ENDOFMES – SAGE – MORE TO FOLLOW – OVER.

(BP7) – (THIS IS) – (Z8N) – (ROGER) – OVER.

(Z8N) – (THIS IS) – (BP7) – ROUTINE . . . – OVER.

Prior to the transmission of each message, the NCS should pause for five seconds to allow any other station to transmit a message of higher precedence.

Pause in Transmission

7.16 The proword WAIT made during a transmission and without an ending sign (proword OUT) indicates a short pause. A station having received 'WAIT' is to wait

for 'OVER' before transmitting, unless it has been given a message of higher precedence to transmit, or it appears to have been overlooked. When ready to resume, the station completes the transmission commencing with a repetition of the last word, phrase or groups of prowords transmitted, as shown in the following example:

IMM – THIS IS – BP7 – MESSAGE – OVER.

(BP7) – (THIS IS) – IMM – (SEND) – OVER.

(IMM) – (THIS IS) – (BP7) – Join convoy at rendezvous point at WAIT (pause – 5 sec) at FIGURES Ten Hundred hours – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

7.17 The proword WAIT followed by the proword OUT means, 'You are to wait' or 'I am obliged to wait', as applicable. A station resuming transmission of a message after transmitting 'WAIT – OUT' will, after the call, identify the message, transmit the prowords ALL AFTER and the last word, phrase, group or proword transmitted, and resume transmission of the original message, as shown in the following example:

IMM – THIS IS – BP7 – Join convoy at rendezvous point at – WAIT OUT.

IMM – THIS IS – BP7 – Ref my last transmission – ALL AF- TER point – point FIGURES Ten Hundred hours – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

Section 7-4. Long Message Procedure

Procedure

7.18 A long transmission is one which will take more than 30 seconds to transmit. As long transmissions usually require writing down, the following procedure is to be used:

- a. The message is to be sent in sections, each lasting not more than 30 seconds and each section, except for the last section, is to be terminated with the prowords MORE TO FOLLOW.
- b. The receiving stations are to receipt each section and if necessary, request repetitions.
- c. After receiving a receipt for each section from all or selected receiving stations, the sender is to pause for five seconds to allow any other station to transmit an urgent message.
- d. The transmitting station may interrupt its own message to send a more urgent one. If there is no interruption the next section will be transmitted by using the prowords ALL AFTER followed by the last

word or phrase of the section previously transmitted. This procedure is continued until the complete message is transmitted.

7.19 The following example illustrates the procedure for a message transmission where there is no interruption by the transmitting station:

DE4 – T3Q – THIS IS – BP7 – MESSAGE – OVER. (BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(BP7) – (THIS IS) – T3Q – (SEND) – OVER.

(DE4 – T3Q) – (THIS IS) – BP7 – Tanks advancing from scrub supported by infantry – Mortar firing on buildings with smoke – MORE TO FOLLOW – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.

(BP7) – (THIS IS) – T3Q – (ROGER) – OVER.

(NCS pauses for five seconds to allow for higher precedence traffic.)

(DE4 – T3Q) – (THIS IS) – BP7 – ALL AFTER – Smoke – Smoke no indication of attack from that direction but advise SUNRAY CALL-SIGN DE4 to move with caution – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT. (BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

7.20 The following example illustrates the procedure for a message transmission where there is an interruption by the transmitting station:

DE4 – T3Q – THIS IS – BP7 – SDS delayed due to mechanical problem – WAIT OUT TO YOU.

(NCS initiates a transmission with higher priority.)

Z8N – THIS IS – BP7 – Move to ACE HIGH – AUTHENTICATION IS Kilo Golf – OVER.

(BP7) – (THIS IS) – Z8N – WILCO – OUT.

(The NCS pauses for five seconds to allow for higher precedence traffic.)

DE4 – T3Q – THIS IS – BP7 ALL AFTER problem – problem will arrive your loc in ten minutes – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT. (BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

7.21 The following example illustrates the procedure for message transmission where there is an interruption by another station:

IMM – Z8N – THIS IS – BP7 – All supplies will be delivered by road – MORE TO FOLLOW – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OVER. (BP7) – (THIS IS) – Z8N – (ROGER) – OVER. (DE4 transmits a message of higher priority.) BP7 – THIS IS – DE4 – Moving now – OVER.

DE4)–(THISIS))–BP7 –(ROGER)–OUT TO YOU IMM– Z8N – THIS IS BP7 – ALL AFTER – All supplies will be delivered by road – Blue route expected be to used . . . – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

(Call-sign 1 could authenticate its message by transmission authentication or the NCS would challenge 1 if it was in any doubt.)

Section 7-5. Corrections and Repetitions

7.22 A sender may make a mistake in a transmission and have to correct it. Similarly, the receiver may have to ask the sender to repeat some part or all of the message.

Correction During Transmission

7.23 When an error is made by a sender the proword CORRECTION will be transmitted followed by the last word, phrase group or proword correctly transmitted, and the transmission then continues as shown in the following example:

BP7 – THIS IS – Z8N – Enemy tanks advancing from tree line – CORRECTION – ALL BEFORE Advancing – Enemy armoured cars advancing – OVER.

(Z8N) – (THIS IS) – BP7 (ROGER) – OUT.

7.24 If the methods explained in paragraphs [7.22](#) and 7.23 are liable to be confusing or ambiguous, then the proword CORRECTION may be qualified by one of the following prowords such as CALL-SIGN, GRID or TIME.

Repetitions

7.25 In the text of a plain language message, difficult portions may, at the discretion of the sender, be repeated for emphasis or to ensure correct reception of a word, phrase or group that has just been transmitted by using the prowords I SAY AGAIN. This means, ‘I am going to repeat the difficult portion just transmitted’, as shown in the following example:

Z8N – THIS IS – BP7 – Move via LUCKY STRIKE – CALL- SIGN 2 – Will guide you through to AUGATHELIA – I SAY AGAIN – AUGATHELIA – OVER.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

7.26 When a station fails to receive all or part of a message or doubts words received, repetitions are requested by that station before receipting the message by using the prowords SAY AGAIN. The prowords SAY AGAIN are used alone or in conjunction with a suitable proword as listed in paragraph [7.25](#). In complying with the request(s) for repetition(s), the sender is to identify that portion which is being repeated as shown in the following example:

SM5 – THIS IS – BP7 – Enemy tanks entering at GRID One Six Seven – Nine Five Three – supported by infantry – area to the north-west reported clear – OVER.

(BP7) – (THIS IS) – DE4 – SAY AGAIN – OVER.

(SM5) – (THIS IS) – BP7 – I SAY AGAIN – Enemy tanks enter- ing at GRID One Six Seven – Nine Five Three – supported by infantry – area to the north-west reported clear – OVER.

(BP7) – (THIS IS) – DE4 (ROGER) – OUT.

(BP7) – (THIS IS) – IMM – SAY AGAIN ALL BEFORE enter- ing – OVER.

(IMM) – (THIS IS) – BP7 – I SAY AGAIN ALL BEFORE enter- ing – enemy tanks entering – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT. (BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – SAY AGAIN WORD AFTER sup- ported by – ALL AFTER west – OVER.

(Z8N) – (THIS IS) – BP7 – I SAY AGAIN – WORD AFTER sup- ported by – Supported by infantry – ALL AFTER west – west reported clear – OVER.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

(BP7) – (THIS IS) – DE4 – SAY AGAIN FM supported TO area – WORD BEFORE clear – OVER.

(DE4) – (THIS IS) – BP7 – I SAY AGAIN – FM supported TO area – supported by infantry area – WORD BEFORE clear – reported clear – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

Section 7-6. Checking the Group Count, Questioning Doubtful Portions and

Verifications

Checking the Group Count

7.27 When an encoded message is being received and the number of groups actually received does not correspond with the group count of the message, the receiving station requests a check by transmitting the phrase 'CHECK GROUPS . . .', stating the number of groups actually received. The transmitting station will then check and indicate that the number of groups received is correct by using the proword CORRECT. If the number of groups received is incorrect the transmitting station will notify the receiving station which must then alter the group count accordingly, as shown in the example below. The NCS transmits an encoded informal message and DE4 notices that the group count and the number of groups received are at variance:

DE4 – THIS IS – BP7 – CRYPTO MESSAGE – OVER.

(BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(DE4) – (THIS IS) – (BP7) – Delta Golf India – Lima Oscar Papa – Juliett Tango X-ray – Romeo Oscar Tango – Foxtrot Mike X-ray – Oscar Papa India – Tango Romeo Sierra – Mike Delta Golf – Delta Echo India – Sierra Tango Delta – Golf Bravo X-ray – Oscar Mike Bravo – FIGURES One Three Slant Two Four – OVER.

(The group count indicates the actual number of code groups in the message followed by the date of encoding.)

(BP7) – (THIS IS) – (DE4) – CHECK GROUPS One Two – OVER.

(The NCS operator checks and finds that the code group count should be 12.)

(DE4) – (THIS IS) – (BP7) – CORRECT – OVER. (BP7) – (THIS IS) – DE4 (ROGER) – OUT.

7.28 If, after checking, the receiving station finds that the number of groups received differs from the group count or there is an indication that groups have not been transmitted or have not been received, the transmitting station repeats the group count followed by the first letter of each group. This will enable the receiving station to discover which groups are missing and request a repetition of them as per the following example:

DE4 – THIS IS – BP7 – CRYPTO MESSAGE – OVER.

(BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(DE4) – (THIS IS) – (BP7) – [Kilo] Echo November – [Golf] Uniform November – [Sierra] Tango Oscar – [November] Echo India – [Sierra] Bravo Oscar – [Romeo] Echo Delta – [Sierra] Hotel India – [Tango] Lima Echo – [Sierra] Sierra Delta – [Oscar] India November – [Golf] Tango Hotel – [India] Sierra Sierra – FIGURES One Two Slant Two Four – OVER.

(BP7) – (THIS IS) – (DE4) – CHECK GROUPS One One – OVER.

(The NCS operator checks and finds that the code group count (12) is correct.)

(DE4) – (THIS IS) – (BP7) – GROUPS One Two – Kilo – Golf – Sierra – November – Sierra – Romeo – Sierra – Tango – Sierra – Oscar – Golf – India – OVER.

(The DE4 operator can now see which group he has missed and would change the code group count to read 12/24.)

(BP7) – (THIS IS) – (DE4) – SAY AGAIN GROUP Five – OVER.

(DE4) – (THIS IS) – (BP7) – I SAY AGAIN – GROUP Five – Si- erra Bravo Oscar – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

7.29 In all messages with a group count exceeding 30 groups, if the receiving station considers the group count to be incorrect, the transmitting station repeats the original group count and transmits the identity of the first, eleventh, and every subsequent tenth group followed by the initial letter of that group as shown in the following example:

DE4 – THIS IS – BP7 – CHECK GROUPS Five Five – OVER.

(BP7) – (THIS IS) – DE4 – GROUPS Five Five – One Echo – Eleven Zulu – Twenty One Sierra – Thirty One Charlie – Forty One Hotel – Fifty One Alfa – OVER.

(The NCS then may request the first letter of each group within the range of 10 or request a repetition of the ten groups in which it has a miscount.)

(DE4) – (THIS IS) – (BP7) – SAY AGAIN Forty One TO Fifty – OVER.

(BP7) – (THIS IS) – (DE4) – I SAY AGAIN Forty One TO Fifty – Hotel Charlie X-ray – etc etc – OVER.

(DE4) – (THIS IS) – BP7 – (ROGER) – OUT.

Questioning Doubtful Portions

7.30 A station may question the reception of doubtful portions of a message by means of the proword CHECK, with identifying data as shown in the following example:

DE4 – THIS IS – BP7 – CHECK GROUP Forty One – Hotel Charlie X-ray – OVER.

(BP7) – (THIS IS) – DE4 – CORRECT – OVER.

(DE4) – (THIS IS) – BP7 – (ROGER) – OUT. or

(DE4) – (THIS IS) – BP7 – CHECK GROUP Forty One – Hotel Charlie X-ray – OVER.

(BP7) – (THIS IS) – DE4 – CORRECTION – GROUP Forty One Hotel Oscar X-ray – OVER.

(DE4) – (THIS IS) – BP7 – (ROGER) – OUT.

Verifications

7.31 At times, it is necessary to query a message some time after it has been received; and this frequently occurs in an encoded informal message or messages containing code-words, numeral codes or figures such as grid references. An error may have been introduced into a message by:

- a. incorrect initial data,
- b. incorrect encoding,
- c. incorrect decoding,
- d. incomplete or incorrect transmission, or
- e. incomplete or incorrect reception.

7.32 When an error has occurred and the message fails to make sense, it must be checked by all concerned in the transmission. The process of verifying the sense of the message must not be confused with the procedure for requesting a repetition where only the reception of the message is in doubt. **Only the originator can verify the text of a message.**

7.33 In carrying out the verifying process, the originator must be given the opportunity to check whether the receiving station has taken down the message correctly in the first instance. The receiving station, therefore, refers to the message by use of the proword VERIFY. When used after a call without identifying data, the proword VERIFY means, ‘Verify with originator and say again your last message’. VERIFY, followed by identification data means, ‘Verify with originator and say again your last message’ or ‘verify with originator and say again message or portion thereof as indicated’, as shown in the following example:

SM5 – THIS IS – BP7 – Alfa Bravo Charlie – Foxtrot Golf Alfa – Lima Charlie Delta – Xray Yankee Delta – Charlie Delta Xray – Foxtrot Lima Golf – Charlie Oscar Lima – Mike Papa Golf – FIGURES Eight Slant One Two – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

(Later DE4 requests a verification of group 1.)

BP7 – THIS IS – DE4 – VERIFY Your Groups Eight Slant One Two – GROUP One (Alfa Bravo Charlie) – OVER.

(DE4) – (THIS IS) – BP7 – WAIT – OUT.

(The BP7 operator verifies with the originator and, the group being correct, transmits.)

DE4 – THIS IS – BP7 – I VERIFY – My Groups Eight Slant One Two GROUP One – Alfa Bravo Charlie – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

or

(The DE4 operator has transposed Group 1 in error to read ACB instead of ABC. In this case, verification with the originator would not be necessary.)

BP7 – THIS IS – DE4 – VERIFY – Your Groups Eight Slant One Two GROUP One Alfa Charlie Bravo – OVER.

(DE4) – (THIS IS) – BP7 – WAIT – OUT.

(The BP7 operator checks and finds that an error was made in reception by the DE4 operator.)

DE4 – THIS IS – BP7 – Reference – My Groups Eight Slant One Two – CORRECTION Group One – Alfa Bravo Charlie – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

7.34 When verification of a message, or a portion thereof, has been requested, the originating station operator is to verify with the originator. If the message is found to be incorrect, the correct version must be sent. If the message is to a number of addressees, the corrected version must be sent to all addressees as shown in the example below. In this case, DE4 requests a verification, and the transmission by the NCS is found to be incorrect; that is, Group 1 (ABC) had been transmitted as ABG in the original message:

BP7 – THIS IS – DE4 – VERIFY – YOUR Groups Eight Slant One Two Group One – Alfa Bravo Golf – OVER.

(DE4) – (THIS IS) – BP7 – WAIT – OUT.

(The BP7 operator verifies with the originator that the group is incorrect and should read ABC. The operator then transmits a correction to all stations.)

SM5 – THIS IS – BP7 – CORRECTION – My Groups Eight Slant OneTwo GROUP One – Alfa Bravo Charlie – OVER.

All stations receipt the transmission (ROGER) – OUT.

7.35 In some circumstances, the addressee may be collocated with the operator and therefore able to initiate a request for a verification before a receipt is given.

Section 7-7. Acknowledging, Cancelling of Messages and Do Not Answer

Acknowledgement of Messages

7.36 An acknowledgement is a message from the addressee informing the originator that the message has been received. An acknowledgement should not be confused with a reply or receipt. A prompt reply referring to the message may serve in lieu of an acknowledgement. It is the prerogative of the originator to request an acknowledgement to a message from any or all addressees of that message, by using the proword ACKNOWLEDGE. The request for an acknowledgement is normally included in the text of that message. If the message has already been transmitted, the request for an acknowledgement will constitute a new message. Acknowledgements are originated only by the addressee to whom the request was made:

IMM – THIS IS – DE4 – Search area Delta ACKNOWLEDGE – OVER.

(DE4) – (THIS IS) – IMM – ROGER – WAIT OUT.

(The IMM operator, having shown the message to the commander or duly authorised representative, and having been ordered to acknowledge the message by him, transmits.)

DE4 – THIS IS – IMM Reference your last – ACKNOWLEDGED – OVER.

(IMM) – (THIS IS) – DE4 – (ROGER) – OUT.

Cancelling Messages

7.37 During the transmission of a message and prior to the transmission of the proword OVER or OUT, the transmission may be cancelled by use of the prowords DISREGARD THIS TRANSMISSION – OUT. For example during the transmission of a message, the NCS realises that the transmission is being sent in error and therefore cancels it:

IMM – THIS IS – BP7 – CRYPTO MESSAGE – OVER.

(BP7) – (THIS IS) – IMM – (SEND) – OVER.

(IMM) – (THIS IS) – BP7 – Delta Golf India – Lima Oscar Papa – Juliett Tango X-ray – DISREGARD THIS TRANSMISSION – OUT.

7.38 A message which has been completely transmitted can only be cancelled by another message. For example, the NCS realises that the transmission was in error and wishes to cancel the message; transmission authentication is to be used:

IMM – THIS IS – BP7 – CANCEL My Message FIGURES One Three Slant One Two – AUTHENTICATION IS Kilo Golf – OVER.

(BP7) – (THIS IS) – IMM – (WILCO) – OUT.

Do Not Answer

7.39 When it is imperative that the called station(s) does not answer a transmission, the prowords DO NOT ANSWER will be transmitted immediately following the call. The complete transmission is then repeated; the full transmission ending with the proword OUT. It is mandatory that these transmissions be authenticated:

SM5–THISIS –BP7–DO NOT ANSWER – Act in accordance with Plan Charlie – AUTHENTICATION IS Kilo Golf – I SAY AGAIN–SM5–THISIS–BP7–DO NOT ANSWER – Act in accordance with Plan Charlie – AUTHENTICATION IS Kilo Golf – OUT.

Clear Procedure

7.40 In tactical operations, simulated or actual, when speed of delivery is so essential that time cannot be spared for encryption and the transmitted information cannot be acted upon by the enemy in time to influence current operations, messages of any classification except TOP SECRET may be transmitted in plain language (clear) over any circuit. In such cases, transmission in clear must be authorised separately for each message by the commanding officer or his authorised representative. Linkage to previously encrypted messages should be avoided. These messages will not be given a security classification but will be identified by the prowords IN CLEAR transmitted at the beginning of the text. This is an indication that the message contains classified information and has been authorised to be sent in clear. Original copies marked CLEAR shall be handled as confidential material by the operator. The message, when received, should be marked with the phrase 'RECEIVED IN CLEAR, TREAT AS CONFIDENTIAL' prior to delivery to the addressee. Messages so marked are not to be readdressed. Should the addressee desire the information to be forwarded to another addressee, a new message must be originated, appropriately classified and handled as the situation dictates.

CHAPTER 8

Procedures for Bad Working Conditions

Section 8-1. Free and Directed Net

Free Net

8.1 Under normal conditions, once a net has been established it is **free** and the NCS will not usually intervene in communications between sub-stations.

Directed Net

8.2 When conditions are difficult and the flow of traffic is heavy, the NCS may order the net to be directed. Thereafter, all messages between sub-stations must be offered. The NCS is the first to answer their offers and thus is able to regulate all traffic on the net. Permission is not required for the transmission of FLASH messages which are to be sent direct.

8.3 The use of directed net procedure must be kept to a minimum as directions slow down net working. In bad conditions, the first consideration must be to improve or eliminate those conditions rather than to make the net a directed one. A net should not be declared directed as a means of correcting bad net discipline.

Prowords

8.4 The prowords used to change the state of the net are as follows:

- a. THIS IS A DIRECTED NET, and
- b. THIS IS A FREE NET.

Examples of the NCS ordering a directed net and a free net are as follows:

SM5 – THIS IS – BP7 – THIS IS A DIRECTED NET – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(BP7 – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

Free Net. When conditions on the net improve, the NCS transmits:

SM5 – THIS IS – BP7 – THIS IS A FREE NET – OVER. All stations answer ROGER – OUT.

Directed Net – Replies by Control

When a message has been offered by one sub-station to another on a directed net, the NCS can use the following prowords:

- a. SEND YOUR MESSAGE (SITREP, BOMREP, etc);
- b. WAIT OUT;
- c. THROUGH ME – OVER;
- d. RELAY THROUGH.....–OUT.

8.8 SEND YOUR...–OUT. SEND YOUR...–OUT indicates that the NCS has given permission for the particular message to be sent and will take no part in the transmission. This is illustrated in the following example, where IMM has a sitrep for Z8N, and transmits the following:

Z8N – THIS IS – IMM – SITREP OVER.

IMM – (THIS IS) – BP7(NCS) – SEND YOUR SITREP – OUT.

(IMM) – (THIS IS) – Z8N – (SEND YOUR SITREP) – OVER.

(Z8N) – (THIS IS) – IMM – SITREP etc.

8.9 WAIT OUT. WAIT OUT indicates that the sub-station must wait until permission is given by the NCS to continue with its transmission. This is illustrated in the following example, where DE4 initiates the call:

IMM – THIS IS – DE4 – (MESSAGE) – OVER.

(As more urgent traffic is to be passed, the NCS transmits:)

DE4 – THIS IS – BP7 – WAIT OUT.

(When the more urgent traffic has been sent, the NCS transmits:)

DE4 – THIS IS – BP7 – SEND YOUR MESSAGE – OUT. IMM – THIS IS – DE4 – (MESSAGE) – OVER.

(DE4) – (THIS IS) – IMM – (SEND) – OVER.

(DE4 continues until the message is completed).

8.10 THROUGH ME. THROUGH ME procedure is used when conditions between sub-stations are unsatisfactory, although the NCS is in contact with all stations. Once the NCS has ordered this procedure, it assumes complete responsibility for disposal of the message, and may send it by any means available. The NCS is to:

- a. provide a receipt for the message;
- b. check whether the addressee has received the message;

- c. retransmit the message if it was not received by the addressee, or, if the addressee has received part of the message, send corrections as requested; and
- d. ensure delivery by other means if communications are not possible.

8.11 An example of THROUGH ME procedure is as follows. Z8N offers a message to T3Q, NCS knows that T3Q receives Z8N weak with interference, and offers to relay:

T3Q – THIS IS – Z8N – (MESSAGE) – OVER. Z8N – THIS IS – BP7 – THROUGH ME – OVER.

(BP7) – (THIS IS) – Z8N – FOR T3Q – Have reached BIG AP- PLE – OVER.

(Z8N) – (THIS IS) – BP7 – ROGER OUT TO YOU – T3Q – THIS IS BP7 – Did you receive the message from Z8N – OVER.

(BP7) – (THIS IS) – T3Q – NO – OVER.

(T3Q) – (THIS IS) – BP7 – FROM Z8N – Have reached BIG APPLE – OVER.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

8.12 RELAY THROUGH. RELAY THROUGH procedure is used when a sub-station offers the NCS a message for another sub-station which has lost contact with both the calling station and the NCS, but is in contact with another station. For example, DE4 offers a message to IMM:

IMM – THIS IS – DE4 – (MESSAGE) – OVER.

(DE4) – (THIS IS) – BP7 – RELAY THROUGH T3Q – OUT.

T3Q – THIS IS – DE4 – RELAY TO IMM – (Message... etc....)

(DE4 sends the message to IMM via T3Q using normal relay procedure.)

Formal Traffic

8.13 A net passing a high volume of formal traffic will require an additional control when the net is directed to ensure the smooth flow of precedence messages. The following example shows how the NCS organises the net traffic for transmission. NCS initiates the call to the net:

SM5 – THIS IS – BP7 – Of what precedence, and for whom are your messages – OVER.

(BP7) – (THIS IS) – DE4 – One immediate and one routine for you – OVER.

(BP7) – (THIS IS) – IMM – No traffic – OVER.

(BP7) – (THIS IS) – T3Q – Routine for DE4 – OVER. (BP7) – (THIS IS) – Z8N – Priority for IMM – OVER.

(The NCS informs all stations that it has heard their transmissions and then commences handling traffic in order of precedence.)

SM5 – THIS IS – BP7 – ROGER – DE4 – Send your immediate – OVER.

(When DE4 has cleared his IMMEDIATE message, the NCS orders the station with the highest precedence message to send that message, and so on until all formal messages are cleared.)

Section 8-2. Delegating, Assuming and Resuming Control

8.14 All instructions dealing with the assumption and passing of control should, where possible, be passed by secure means. Where this is not possible the procedures in this section are to be used. The examples quoted in this section include transmission authentication; but, if it is not available and there is any suspicion that the orders to delegate or assume control may not be genuine, challenge-reply authentication is to be employed by the next senior sub-station.

Delegating Control

8.15 It may be necessary for the NCS to delegate control of the net to a sub-station or an alternative headquarters station when effective control cannot be maintained by the NCS, or when the NCS has to leave the net for any reason. In this case the prowords ASSUME CONTROL are to be used. The NCS may, or may not, give an explanation for relinquishing control of the net. For example, if the NCS is unable to maintain effective control of the net and decides that DE4 is in the best position to assume control of the net, the NCS transmits:

SM5 – THIS IS – BP7 – DE4 – ASSUME CONTROL – AUTHENTICATION IS Kilo Golf – OVER.

(BP7) – (THIS IS) – DE4 – WILCO – OUT.

(BP7) – (THIS IS) – IMM – ROGER – OUT.

(BP7) – (THIS IS) – T3Q – ROGER – OUT.

(BP7) – (THIS IS) – Z8N – ROGER – OUT.

Assuming Control

8.16 Other occasions may arise when the NCS may break down or otherwise cease to function. In this event, control of the net then reverts to the previously designated sub-station or, if none, the senior sub-station on the net. Before the senior sub-station assumes control, it must confirm that the NCS cannot be heard by the other stations on the net. On formation nets, seniority may be laid down or derived by the alphabetical sequence of the call-signs. The senior sub-station, if

necessary, may delegate control to another sub-station which would have more effective control of the net.

8.17 In the following example, nothing has been heard from the NCS for some time:

SM5 – THIS IS – DE4 – Have you heard anything from CALL- SIGN BP7 – OVER.

(five second pause for the NCS to answer, if able) (DE4) – (THIS IS) – IMM – No – OVER.

(DE4) – (THIS IS) – T3Q – No – OVER.

(DE4) – (THIS IS) – Z8N – No – OVER.

(All stations wait for five seconds to allow the NCS to answer, if able.)

SM5 – (THIS IS) – DE4 – I AM ASSUMING CONTROL – AUTHENTICATION IS Kilo Golf – OUT.

8.18 If a sub-station with authority on the net wishes to assume control (for example, CO or OC) he may do so and retain his normal call-sign.

8.19 In the following example, a commander has temporarily moved from his old location serviced by the NCS and moved to the area serviced by CALL-SIGN T3Q and wishes to maintain control of the net:

SM5 – THIS IS – T3Q – I AM ASSUMING CONTROL – (RA- DIO CHECK) – AUTHENTICATION IS Kilo Golf – OVER.

(T3Q) – (THIS IS) – BP7 – (ROGER) – OUT.

(T3Q) – (THIS IS) – DE4 – (ROGER) – OUT. (T3Q – (THIS IS) – IMM – (ROGER) – OUT.

(T3Q – (THIS IS) – Z8N – (ROGER) – OUT.

(The NCS would normally be advised that the above is to oc- cur.)

Resuming Control

8.20 The prowords I AM ASSUMING CONTROL are to be used when the normal NCS reports into the net after an absence or when conditions improve and it wishes to resume control of the net. The following examples illustrate this.

8.21 Serving as one example, BP7 reports into the net after an absence and wishes to resume control of the net:

SM5–THISIS–BP7–REPORTING INTO NET – I AM ASSUMING CONTROL – AUTHENTICATION IS Kilo Golf – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT. (BP7) – (THIS IS) – IMM – (ROGER) – OUT. (BP7) – (THIS IS) – T3Q – (ROGER) – OUT. (BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

(Transmission authentication would normally be used; but, if it is not, DE4 would challenge BP7 to authenticate. All other sub-stations would then answer in turn ‘(ROGER) – OUT’.)

8.22 Serving as another example, when conditions improve, BP7 decides that effective control of the net can now be maintained. BP7 initiates the call but omits to give transmission authentication:

SM5 – THIS IS – BP7 – I AM ASSUMING CONTROL – OVER.

(BP7) – (THIS IS) – DE4 – AUTHENTICATE Zulu Yankee – OVER.

(DE4) – (THIS IS) – BP7 – I AUTHENTICATE – Tango – OVER.

(Authentication given by BP7 is correct; DE4 continues.) (BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

Formation Nets

8.23 When a formation is moving its headquarters and has sent out a step-up headquarters station, a permanent change of the NCS takes place when command passes from the old to the new location. The executive order for the change is normally given by secure means or nickname. The step-up station then assumes the tactical call-sign previously used by the NCS.

Leaving the Radio

8.24 At times, emergency situations may occur where it is necessary for the operator to be away from the radio, for example, when a generator fails or to carry out antenna changes. When this occurs the NCS is to be notified. The following procedure is to be used:

BP7 – THIS IS – DE4 – This call-sign will be unmanned for FIGURES Five minutes – OVER.

(DE4) – (THIS IS) – BP7 – (ROGER) – OUT.

8.25 When the operator returns to the radio, contact is re-established with the NCS in the following manner:

BP7 – THIS IS – DE4 – (RADIO CHECK) – AUTHENTICATION IS Kilo Golf – OVER.

(DE4) – (THIS IS) – BP7 – (ROGER) – OUT.

Section 8-3. Read Back Procedure

8.26 Read back procedure is used when:

- e. the sending station wishes to ensure that the message has been received correctly, or
- f. the receiving station wishes to make sure that it has received the message.

Procedure

8.27 If a transmission, message or portion thereof is to be read back, the prowords READ BACK and identifying data will be transmitted following the call. If a collective or net call is used, but only some of the stations represented in the call are required to read back, that station or those stations will be specified by transmitting the appropriate call-sign(s) preceding the prowords READ BACK. When the order to read back is given, only those stations directed to do so are to read back. The remaining stations called are to keep silent until the read back is completed and then answer, in order, giving a normal receipt.

8.28 The following four examples illustrate the read back procedure. In this first example, the NCS requests call-sign IMM to read back the complete transmission:

SM5 – THIS IS – BP7 – MESSAGE – OVER. (BP7) – (THIS IS) – DE4 – (SEND) – OVER. (BP7) – (THIS IS) – IMM – (SEND) – OVER. (BP7) – (THIS IS) – T3Q – (SEND) – OVER. (BP7) – (THIS IS) – Z8N – (SEND) – OVER.

(SM5) – (THIS IS) – BP7 – IMM READ BACK – Convoy has arrived at GRID Bravo Yankee – Mike Charlie Bravo – Oscar Tango Mike – OVER.

(BP7) – (THIS IS) – IMM – I READ BACK – (SM5) – (THIS IS) BP7 – IMM READ BACK – Convoy has arrived at GRID Bravo Yankee – Mike Charlie Bravo – Oscar Tango Mike – OVER.

(IMM) – (THIS IS) – BP7 – CORRECT – OUT.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

8.29 In this second example of the read back procedure, the NCS requests T3Q to read back the text:

SM5 – THIS IS – BP7 – T3Q READ BACK TEXT – Convoy arrived at 1800 hr – OVER.

(BP7) – (THIS IS) – T3Q – I READ BACK TEXT – Convoy arrived at 1800 hr – OVER.

(T3Q) – (THIS IS) – BP7 – CORRECT – OUT.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

8.30 In this third example of the read back procedure, the NCS requests DE4 to read back the grid reference:

SM5 – THIS IS – BP7 – DE4 READ BACK GRID – Convoy has arrived GRID Bravo Yankee – Mike Charlie Bravo – Oscar Tango Mike – OVER.

(BP7) – (THIS IS) – DE4 – I READ BACK GRID – GRID Bravo Yankee – Mike Charlie Bravo – Oscar Tango Mike – OVER.

(DE4) – (THIS IS) – BP7 – CORRECT – OUT.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

8.31 In this final example of the read back procedure (illustrating the use of the proword WRONG) the NCS requests DE4 to read back the grid reference:

SM5 – THIS IS – BP7 – DE4 READ BACK GRID – Convoy has arrived at GRID – Bravo Yankee – Mike Charlie Bravo – Oscar Tango Mike – OVER.

(BP7) – (THIS IS) – DE4 – I READ BACK GRID – GRID Bravo Yankee – Mike Charlie Bravo – Oscar Alpha – OVER.

(DE4) – (THIS IS) – BP7 – WRONG – GRID Bravo Yankee – Mike Charlie Bravo – Oscar Tango Mike – OVER.

kee – Mike Charlie Bravo – Oscar Tango Mike – OVER. (DE4) – (THIS IS) – BP7 – CORRECT – OUT.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

8.32 Read back procedure may be used at any time by a receiving station to ensure that the message it has received is correct. The receiving station would start reading back by saying, ‘I READ BACK’.

Section 8-4. Words Twice Procedure

8.33 When communications are poor or difficult, phrases, words or groups may be transmitted twice by using the proword WORDS TWICE. The calling station may transmit 'WORDS TWICE' or the called station may request the calling station to transmit 'WORDS TWICE'.

8.34 The following two examples illustrate the words twice procedure. In this first example, conditions are difficult and BP7 decides to transmit the message using words twice procedure:

DE4–DE4–THISIS–BP7–THISIS–BP7–MESSAGE– MESSAGE – OVER – OVER.

BP7–BP7–THISIS–DE4–THISIS–DE4–SEND–SEND – OVER – OVER.

DE4 – DE4 – THIS IS – BP7 – THIS IS – BP7 – WORDS TWICE – WORDS TWICE – Convoy arrived this loc at 1800 h. – Convoy arrived this loc at 1800 hr – OVER – OVER.

BP7–BP7–THISIS–DE4–THISIS–DE4–SAY AGAIN–

SAY AGAIN – WORD BEFORE arrived – WORD BEFORE arrived – OVER – OVER. DE4–DE4–THISIS–BP7–THISIS–BP7–I SAY AGAIN– I SAY AGAIN – WORD BEFORE arrived – WORD BEFORE arrived – Convoy arrived – Convoy arrived – OVER – OVER.

BP7 – BP7 – THIS IS – DE4 – THIS IS – DE4 – ROGER – ROGER – OUT – OUT.

8.35 In this second example, conditions are good, but DE4 is experiencing heavy local interference and requests BP7 to transmit the message twice:

DE4 – THIS IS – BP7 – MESSAGE – OVER.

(BP7) – (THIS IS) – DE4 – WORDS TWICE – OVER.

DE4–DE4–THISIS–BP7–THISIS–BP7–Convoy arrived this loc at 1800 hr – Convoy arrived this loc at 1800 hr – OVER – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

Section 8-5. Relay Procedure

8.36 If communications between any two stations fail, messages between them may be sent through a third station which is in contact with them both. The third station is known as the relay station. The message may be given to the relay station in the initial transmission or it may be offered.

8.37 A message is offered when:

- g. it is not certain that the relay station is in contact with

- h. the addressee, or
- i. it is necessary for the relay station to make a copy of the message.

8.38 The following prowords (table 8-1) are used in relay procedure and in this context are interpreted as indicated.

TABLE 8-1. Prowords Used in Relay Procedure

<i>Proword (a)</i>	<i>Meaning (b)</i>
RELAY	Station called is to transmit/relay this message to all addressees (used in formal message procedure only). The address component is mandatory when this proword is used.
RELAY TO...	Station called is to transmit/relay this message to the addressee(s) immediately following this proword. (The address component is mandatory when used in formal message procedure).
SEND	I am ready to receive your message for . . .
FROM	The originator of this message is indicated by the address designator immediately following.
THROUGH ME	Relay your message through me.
RELAY THROUGH	Transmit your message via call-sign . . . (normally the NCS will advise the most suitable station through which to relay).

8.39 In formal messages other than codress, the proword RELAY used alone indicates that the station called is to relay the message to all addressees and may only be used if lines 6, 7 and 8 are used (that is, the call may not serve as the address). In this case, it is used only when the calling station knows that the called station has communications with the station(s) to whom the message is to be relayed.

Relay To

8.40 The prowords RELAY TO followed by an address designator indicates that the station called is to relay the message to the stations indicated. When more than one station is called, the call-sign of the station designated to perform the relay will precede the prowords RELAY TO. At times it is necessary to relay a message to a station on another net or by some other means of communications employed for relay, and full call-signs or address groups are to be used in the address component (chapter 10, [Formal Message Procedure](#)) as per the examples below. Communication between call-signs DE4 and IMM is not possible. The relay message, which does not in this case require an offer, is relayed via call-sign T3Q:

IMM – THIS IS – DE4 – SUNRAY departed for your location – OVER.

(no reply from IMM)

IMM – THIS IS – DE4 – OVER.

IMM – THIS IS – DE4 – NOTHING HEARD – OUT TO YOU – T3Q – THIS IS – DE4 – RELAY TO IMM – SUNRAY departed for your location – OVER.

(DE4) – (THIS IS) – T3Q – (ROGER) – OUT TO YOU – IMM – THIS IS – T3Q – FROM DE4 – SUNRAY departed for your location – OVER.

(T3Q) – (THIS IS) – IMM – (ROGER) – OUT.

Through Me

8.41 The prowords THROUGH ME indicate that the calling station is in communication with the called station and is prepared to relay the message.

8.42 In the following example, the NCS hears call-sign DE4 is having difficulty and instructs him to pass the message through the NCS:

IMM – THIS IS – DE4 – SUNRAY departed for your location – OVER.

(no reply from IMM)

IMM – THIS IS – DE4 – OVER.

(no reply from IMM)

DE4 – THIS IS – BP7 – THROUGH ME – OVER.

(BP7) – (THIS IS) – DE4 – RELAY TO IMM – SUNRAY departed for your location – OVER.

(DE4) – (THIS IS) – BP7 – (ROGER) – OUT TO YOU – IMM – THIS IS – BP7 – FROM DE4 – SUNRAY departed for your location – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

Relay Through

8.43 The NCS uses the prowords RELAY THROUGH followed by an address designation to indicate which sub-station is to relay the message.

8.44 In this case, the message is such that it must be offered by call-sign DE4 to T3Q for relay to call-sign IMM. In relaying the message, call-sign T3Q sends the grid reference incorrectly. This error is noted by call-sign DE4 which corrects call-sign T3Q:

IMM – THIS IS – DE4 – MESSAGE – OVER. (no reply from IMM)

IMM – THIS IS – DE4 – OVER.

DE4 – THIS IS – BP7 – RELAY THROUGH T3Q – OUT.

T3Q – THIS IS – DE4 – RELAY TO IMM – OVER.

(DE4)–(THISIS)–T3Q–(ROGER)–OUT TO YOU–IMM– THIS IS – T3Q – MESSAGE – OVER.

(T3Q) – (THIS IS) – IMM – (SEND) – OVER.

(IMM) – (THIS IS) – T3Q – WAIT – OUT TO YOU – DE4 – THIS IS – T3Q – SEND – OVER.

(T3Q) – (THIS IS) – DE4 – RELAY TO IMM – POL at GRID Yankee Tango – India Romeo Oscar – India Romeo Papa – OVER.

(DE4)–(THISIS)–T3Q–(ROGER)–OUT TO YOU–IMM– THIS IS – T3Q – FROM DE4 – POL at GRID Yankee Tango – India Romeo Oscar – India Romeo Oscar – OVER.

(T3Q) – (THIS IS) – IMM – (ROGER) – OUT.

(DE4 would pause sufficiently to allow for receipt by call-sign IMM.)

T3Q – THIS IS – DE4 – Reference my message to IMM – CORRECTION – GRID Yankee Tango – India Romeo Oscar – India Romeo Papa – OVER.

(DE4)–(THISIS)–T3Q–(ROGER)–OUT TO YOU–IMM– THIS IS – T3Q – Reference message from DE4 – CORREC- TION – GRID Yankee Tango – India Romeo Oscar – India Romeo Papa – OVER.

(T3Q) – (THIS IS) – IMM – (ROGER) – OUT.

CHAPTER 9

Communication Drills - Voice

Section 9-1. Emission Control

9.1 The potential for obtaining intelligence from electromagnetic and sonic radiations, using modern technology, is very great. The greater the reliance a force places on the employment of electromagnetic and sonic systems the greater will be the need for effective emcon.

9.2 Emcon is the effective management of all electromagnetic and sonic emissions from a friendly force to prevent premature disclosure of the presence, location and composition of the force, while operating sufficient equipment to provide adequate warning of a threat.

9.3 Emcon in the form of electronic silence or restrictions applied in time, space or frequency will deny or reduce intercept opportunities to the enemy. It may be applied in a variety of ways to mislead the enemy, to deny warning of impending operations or to disguise redeployment.

9.4 The Force Commander is responsible for promulgating his emission policy for subordinate units and formations. Control of each type of emission is achieved by an emcon plan covering all emissions.

9.5 Commanders retain the right to coordinate with the joint operations and EW staff and to impose, amend or lift emcon plans to suit the tactical situation. Commanders should issue an emcon plan appropriate to the tactical situation. A number of contingency plans covering various options in anticipation of changes in the tactical situation should be promulgated well in advance of operations. emcon plans must be capable of being altered or implemented by signal. An example of a joint emcon plan is at [annex A](#). *ADFP 24, Electronic Warfare* contains further information on emcon.

9.6 There are certain standard occasions when a unit commander may break communications-electronic silence, although by doing so he violates the emcon plan in force. The fact that silence has been broken by a unit does not automatically change the policy in force. Any change must be in accordance with the emcon plan or by order of the Force Commander or subordinate commander as appropriate. The standard occasions permitted for breaking silence (which may be modified by the Force Commander) are as follows:

a. *All Components*. All components may, unless otherwise specified:

1. (1) report positive contact with the enemy;
2. (2) report unidentified radar and sonar contacts as ordered (by the Force Commander);

3. (3) report ES contacts as ordered (by the Force Commander);
4. (4) answer the authenticated call of a senior commander/officer including an instruction to acknowledge immediately;
5. (5) transmit a distress message;
6. (6) report urgent defects which might prevent accomplishment of assigned missions; and
7. (7) transmit lost enemy contact reports.

b. *Air Elements*. Air elements may also violate the emcon plan for the reasons listed in [sub-paragraph a](#) and:

1. (1) when on independent or special missions (as ordered by the Joint Force or Component Commander);
2. (2) to transmit urgent flight safety information; and/or
3. (3) for self-protection.

9.7 When emcon silence is broken on other than authorised occasions, if emcon policy permits, an EMCON BREAK message is to be transmitted detailing the elements that emitted, with the timings, location and reasons for breaking silence.

Section 9-2. Imposing, Lifting and Breaking Radio Silence

9.8 It is permissible for a unit or sub-unit commander to impose radio silence on the net or nets for which he is responsible, for technical or tactical reasons and not as part of general electronic silence. The orders for this may be issued either by separate secure means or, if necessary, over the radio, in which case the transmission is authenticated by the use of nicknames. Stations still remain on listening watch during radio silence.

9.9 Radio silence is imposed, lifted or broken by the use of a specified nickname. The nicknames, translated, are: IMPOSE RADIO SILENCE, LIFT RADIO SILENCE and BREAK RADIO SILENCE. Only the NCS may order the imposing of radio silence by quoting the nickname. Sub-stations do not act upon the preparatory order, other than by reading the nicknames back. The NCS delays the executive order until it is satisfied that all stations have received the preparatory order correctly. In the following example, the NCS initiates the imposition of radio silence:

SM5 – (THIS IS) – BP7 – PAPER DOLL – OVER.

(BP7) – (THIS IS) – DE4 – PAPER DOLL – OVER. (BP7) – (THIS IS) – IMM – PAPER DOLL – OVER. (BP7) – (THIS IS) – T3Q – PAPER DOLL – OVER. (BP7) – (THIS IS) – Z8N – PAPER DOLL – OVER.

(When the NCS is satisfied that all stations have received the preparatory order correctly, it transmits the executive order to enforce the radio silence.)

(SM5) – (THIS IS) – BP7 – PAPER DOLL – OUT.

(All sub-stations now maintain a vigilant listening watch, waiting for the lifting of, or break in radio silence.)

Radio silence may be lifted by the NCS or broken by a sub-station in the following manner:

- a. by use of a nickname, where authentication is not required; or
- b. in clear, where transmission, or challenge and reply authentication must be used.

When lifting radio silence, the NCS allows time for radio sets to warm up, if necessary. In both the following examples the NCS will use a nickname or prowords followed by OVER, and each station's response to the initial call will act as a radio check. The NCS then completes re-establishing the net by requesting an amplifying report (strength and readability) as laid down in [chapter 6](#).

The following example illustrates using a nickname: SM5 – THIS IS – BP7 – LEATHER STRAP – OVER.

(BP7) – (THIS IS) – DE4 – LEATHER STRAP – OVER. (BP7) – (THIS IS) – IMM – LEATHER STRAP – OVER.

(BP7) – (THIS IS) – T3Q – LEATHER STRAP – OVER.

(BP7) – (THIS IS) – Z8N – LEATHER STRAP OVER.

SM5 – THIS IS – BP7 – Report strength and readability etc. . . .

9.13 The next example illustrates using transmission authentication where no nickname is provided:

SM5 – THIS IS – BP7 – SILENCE LIFTED – AUTHENTICATION IS Kilo Golf – OVER.

(The NCS allows a short period of time for stations to confirm transmission authentication and awaits replies.)

(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OVER.

(BP7) – (THIS IS) – T3Q – (ROGER) – OVER.

(BP7) – (THIS IS) – Z8N – (ROGER) – OVER.

SM5 – THIS IS BP7 – Report strength and readability etc. . . .

Breaking Electronic Silence

9.14 Nicknames may be used in clear over the radio for lifting or breaking electronic silence within the conditions previously ordered. In the following example, sub-station IMM has authority and good reason, within the conditions previously ordered, to break electronic silence. BINGO DOG is the nickname for breaking of electronic silence. IMM initiates the call:

BP7 – THIS IS – IMM – BINGO DOG – Enemy tanks breaking through on my right – OVER.

(IMM) – (THIS IS) – BP7 – (ROGER) – OUT.

9.15 If transmission authentication is in use the following would be transmitted. IMM initiates the call:

BP7 – THIS IS – IMM – Enemy breaking through on my right – AUTHENTICATION IS Kilo Golf – OVER.

(IMM) – (THIS IS) – BP7 – (ROGER) – OUT.

Section 9-3. Emergency Silence

9.16 Emergency silence is the condition under which all radio sets remain on listening watch for the purpose of enforcing transmission security, deception measures, or for technical or tactical reasons. It is imposed and lifted only by the competent authority detailed in either the operation order (opord) or SOI.

9.17 When a transmission authentication system is in force, a station must always authenticate a transmission when imposing, lifting or breaking emergency silence. A transmission imposing emergency silence is to be made twice and ended with the proword OUT. Stations do not answer or receipt such transmission, however, when a transmission authentication system is not available, authentication is achieved by the use of a code-word, or by the senior sub-station challenging the NCS. Only the NCS may order the imposition of emergency silence. The formation net sub-stations then repeat this message on their unit nets, and the unit net sub-stations then repeat this message on their sub-unit net.

9.18 SILENCE, SILENCE, SILENCE when spoken means, ‘Cease transmission on this net immediately – silence is to be maintained until lifted’.

9.19 The following examples illustrate ceasing a transmission. The first example uses transmission authentication:

SM5 – THIS IS – BP7 – SILENCE SILENCE SILENCE – AUTHENTICATION IS Kilo Golf – I SAY AGAIN – SM5 – THIS IS BP7 – SILENCE SILENCE SILENCE – AUTHENTICATION IS Kilo Golf – OUT.

The second example uses a code-word:

SM5 – THIS IS – BP7 – BANDIT – I SAY AGAIN – SM5 – THIS IS – BP7 – BANDIT – OUT.

9.20 SILENCE, SILENCE, SILENCE, followed by a frequency or a frequency designator means, ‘Cease transmission immediately on that frequency’. For example:

SM5 – THIS IS – BP7 – SILENCE SILENCE SILENCE – Two Seven Zero Zero – AUTHENTICATION IS Kilo Golf – I SAY AGAIN – SM5 – THIS IS – BP7 – SILENCE SILENCE SILENCE Two Seven Zero Zero – AUTHENTICATION IS Kilo Golf – OUT.

9.21 SILENCE, SILENCE, SILENCE, followed by ALL NETS means, ‘Cease all transmissions immediately on all nets’. Subordinate NCS must repeat this message on their own nets as a matter of urgency.

9.22 The following are examples of how the NCS can conduct the call. In this first example, the NCS initiates the call using a codeword:

SM5 – THIS IS – BP7 – WALLABY – ALL NETS – I SAY AGAIN – SM5 – THIS IS – BP7 – WALLABY – ALL NETS – OUT.

9.23 In this second example, the NCS fails to offer transmission authentication or a codeword due to non-availability:

SM5 – THIS IS – BP7 – SILENCE SILENCE SILENCE – ALL NETS – I SAY AGAIN – SM5 – THIS IS – BP7 – SILENCE SILENCE SILENCE – ALL NETS – OVER.

(In this case transmission authentication or a code-word is not available for authentication. The senior sub-station (DE4) is to challenge the NCS; therefore, the transmission by the NCS is ended with the proword OVER.)

(BP7) – (THIS IS) – DE4 – AUTHENTICATE Kilo Golf – OVER.

(DE4) – (THIS IS) – BP7 – I AUTHENTICATE Lima – OUT.

In this third example, the NCS uses transmission authentication:

SM5 – THIS IS – BP7 – SILENCE SILENCE SILENCE – ALL NETS – AUTHENTICATION IS Tango Lima – I SAY AGAIN – SM5 – THIS IS – BP7 – SILENCE SILENCE SILENCE – ALL NETS – AUTHENTICATION IS Tango Lima – OUT.

To impose emergency silence during the transmission of a message by another station, the NCS waits for a pause in transmission before using any of the methods for imposing silence as detailed in paragraphs [9.16](#) to [9.26](#).

Emergency silence is lifted by the use of the prowords SILENCE LIFTED. The lifting is qualified where necessary by a frequency, frequency designator or the phrase ALL NETS. The method for lifting silence is as detailed in [paragraph 9.11](#).

Section 9-4. Changing Frequency

9.27 A frequency change is made for security, technical or tactical reasons.

Security Change

9.28 A security change is a large scale pre-arranged change intended to deceive the enemy and is organised only by a higher formation. Included in this category are those arrangements which may be made by a higher formation for the simultaneous changes of all frequencies in the formation at specified times or intervals. After a prolonged period of silence, the NCS is to allow time for radio sets to warm up before recommencing normal transmissions.

9.29 Full details of security changes are notified in advance to all concerned and include the exact time at which the frequency change is to take place. This time is determined by a higher authority and is also the time at which daily changing call-signs, NICs and address groups change. No warning transmission is made in connection with security changes. They are effected solely on a programmed basis. The orders specify the time at which transmission on the old frequencies is to cease, and the time for opening up on the new frequencies.

9.30 All transmissions on the old frequencies using the old NIC and call-signs are to cease exactly at the time specified. Communication on the new frequencies, using the new NIC and call-signs is to be re-established, if no separate time has been specified, as soon as possible after the time of closing down on the old frequencies.

Technical and Tactical Change

9.31 Technical and tactical changes are normally ordered

because of deterioration in working conditions (atmospherics, interference, distance and jamming), or for the regrouping of forces or other tactical reasons. Each frequency within a formation or unit assignment is allocated a number of nicknames for reference purposes. Frequency changes within formation or unit nets involve the use of alternative and spare frequencies and are to be referred to by their nickname. Only the NCS may order a change to a designated frequency by quoting the nickname appropriate to that frequency. The translation of the nickname is CHANGE TO ALTERNATE OR PRIMARY FREQUENCY, or F1, F2, F3.

9.32 Sub-stations do not act upon the preparatory order other than by reading back the nickname. The NCS delays giving the executive order until it is satisfied that all stations have correctly received the preparatory order. In the following example, the NCS initiates the change of frequency:

SM5 – THIS IS – BP7 – DIRTY DRAIN – OVER.

(BP7) – (THIS IS) – DE4 – DIRTY DRAIN – OVER.

(BP7) – (THIS IS) – IMM – DIRTY DRAIN – OVER.

(BP7) – (THIS IS) – T3Q – DIRTY DRAIN – OVER.

(BP7) – (THIS IS) – Z8N – DIRTY DRAIN – OVER.

(The NCS then transmits the executive order to enforce the frequency change.)

(SM5) – (THIS IS) – BP7 – DIRTY DRAIN – OUT.

9.33 The NCS may order one of the sub-stations to the new frequency to ensure it is workable prior to changing the remaining sub-stations on the net.

No Contact

9.34 If contact is lost with one or more stations after a frequency change, the NCS or a sub-station delegated by the NCS is to revert to the old frequency and try to re-establish communications with the lost stations. The lost sub-station(s) should also initially return to the old frequency. If communications are re-established with the lost sub-stations, the normal procedure is to repeat the order to change frequency and try again. Should this fail again, a decision by the responsible signals officer or NCO at the NCS will be required to determine further action to be taken, which may include allocation of additional frequencies.

9.35 No contact procedure is to be adopted as detailed in [chapter 6, section 6-2](#), if communications have not been established on the new frequency after a period of 15 minutes.

Transmission of Frequencies in Clear

9.36 Frequencies are **not** to be transmitted in clear over insecure radio for technical and tactical changes except:

- a. under emergency circumstances;
- b. after every other secure means of transmission has been considered (for example, enciphered in a high grade crypto-graphic system or encoded in a low grade crypto-graphic system);
- c. when enforcing emergency silence; and
- d. when they are changing daily and no nicknames or frequency designators have been allocated.

Changing Frequencies in Insecure Mode

9.37 The following are examples of changing frequencies while in insecure mode. This first example illustrates changing frequency in insecure mode using a nickname:

SM5 – THIS IS – BP7 – CHAIR GRASS – OVER.

(BP7) – (THIS IS) – DE4 – CHAIR GRASS – OVER.

(BP7) – (THIS IS) – IMM – CHAIR GRASS – OVER.

(BP7) – (THIS IS) – T3Q – CHAIR GRASS – OVER.

(BP7) – (THIS IS) – Z8N – CHAIR GRASS – OVER.

(The NCS then transmits the executive order to enforce the frequency change.)

(SM5) – (THIS IS) – BP7 – CHAIR GRASS – OUT.

9.38 This next example illustrates changing frequency in insecure mode using a frequency designator:

SM5 – THIS IS – BP7 – CHANGE TO Alfa Sierra Bravo – OVER.

LWP-G 6-1-4

(BP7) – (THIS IS) – DE4 – Alpha Sierra Bravo – OVER.

(BP7) – (THIS IS) – IMM – Alpha Sierra Bravo – OVER.

(BP7) – (THIS IS) – T3Q – Alpha Sierra Bravo – OVER.

(BP7) – (THIS IS) – Z8N – Alpha Sierra Bravo – OVER.

(The NCS then transmits the executive order to enforce the frequency change.)

(SM5) – (THIS IS) – BP7 – CHANGE NOW – OUT.

Section 9-5. Joining a Working Net

Procedure

9.39 Fixed Call-sign Joining a Working Net. When a station which has a fixed call-sign joins a working unit net, it will normally continue to use its fixed call-sign. If, however, this call-sign is already in use on the net, the new station will add its arms indicator of the NIC prefixed to its fixed call-sign. Authentication of the station joining is mandatory as per the following examples:

9.40 In this first example, a forward observer (FO) (fixed call-sign 21), joins an infantry B Company net (using the arms indicator G). The FO initiates the call :

0A – THIS IS – G21 – REPORTING INTO NET – OVER.

(G21) – (THIS IS) – 0A – ROGER – AUTHENTICATE Kilo Golf – OVER.

(The FO works out his reply.)

(0A) – (THIS IS) – G21 – I AUTHENTICATE Lima – OVER. (G21) – (THIS IS) – 0A – ANSWER FIRST – OVER.

(0A) – (THIS IS) – G21 – WILCO – OUT.

9.41 In this second example, a tank regiment LO (call-sign 94) joins an infantry battalion net (using the NIC PQ2B):

0A – THIS IS – 94 – NIC PQ2B – REPORTING INTO NET – OVER.

(94) – (THIS IS) – 0A – ROGER – AUTHENTICATE Novem- ber Echo – OVER.

(The LO works out his reply.)

(0A) – (THIS IS) – 94 – I AUTHENTICATE Whisky – OVER.

(PQ94) – (THIS IS) – 0A – ANSWER AFTER BH3T – OVER.

(0A) – (THIS IS) – PQ94 – WILCO – OUT.

9.42 When joining a net, the NIC ([94] in the above example) follows the call-sign in the initiating call; however, when cleared to join the net the abbreviated NIC (PQ) prefixes the call-sign.

9.43 Daily Changing Call-sign Joining a Fixed Call-sign Net. Should a station with a daily changing call-sign wish to join a fixed call-sign net, the full call-sign is to be used. Once communications are established and authentication has been carried out, abbreviated call-signs may be used. In the example below, a task force LO wishes to join an infantry battalion net:

0A – THIS IS – 405A – REPORTING INTO NET – OVER.

(405A) – (THIS IS) – 0A – ROGER – AUTHENTICATE Fox- trot Alfa – OVER.

(short pause while the LO works out his reply)

(0A) – (THIS IS) – 405A – I AUTHENTICATE Zulu – OVER.

(405A) – (THIS IS) – 0A – ANSWER AFTER 9 – OVER. (0A) – (THIS IS) – 40 – WILCO – OUT.

9.44 If a station is required to join a formation net, instructions containing the necessary details should be issued beforehand to all concerned by some means other than radio. However, occasions will arise when a station is required to join a net in an emergency. In this case one of the following is used:

- a. a fixed call-sign, prefixed by its own NIC;
- b. a three-character tactical call-sign;
- c. an address group where no fixed call-sign or tactical call- sign is allocated.

9.45 Using an Address Group. Where an address group is used as a means of joining a net, it is replaced as soon as possible after communications have been established and authentication has been effected, by a spare call-sign issued by the NCS. The following example illustrates this procedure. A unit wishes to join a

brigade command net. The address group for the unit is MLCA. The unit wishing to join the net initiates the call:

BP7 – THIS IS ADDRESS GROUP – MLCA – REPORTING INTO THE NET – OVER.

(MLCA) – (THIS IS) – BP7 – ROGER – AUTHENTICATE Echo Delta – OVER.

(short pause while he works out his reply)

(BP7) – (THIS IS) – MLCA – I AUTHENTICATE Whisky – WHAT IS MY CALL-SIGN – OVER.

(MLCA) – (THIS IS) – BP7 – YOUR CALL-SIGN IS W9N – ANSWER AFTER T3Q – OVER.

(BP7) – (THIS IS) – W9N – WILCO – OUT.

Section 9-6. Time Checks

9.46 Time checks are to be given in local time unless otherwise requested or directed. The time zone suffix is not to be included in the time check. Time checks may be sent out:

- a. periodically by the NCS;
- b. when requested by a station; and
- c. in some cases by a sub-station to the NCS (for example, an LO who has synchronised with the company commander for a plan, sends a time signal to the NCS after orders).

Procedure

9.47 When the NCS desires to give an accurate time check to all stations on the net, it will pause for a sufficient interval between the warning phrase and the commencement of the count-down. This allows receiving operators to prepare their watches. The NCS announces its intention by using the prowords TIME CHECK AT This procedure is most important when transmission authentication systems are in force. The time at which the check is given is to be indicated by a four-figure time group followed by a 15 second count-down to the executive.

9.48 The following example illustrates the NCS initiating a time check:

SM5 – THIS IS – BP7 – TIME CHECK AT Zero Nine Three Zero – (pause to allow operators to prepare) – One Five Seconds – One Zero Seconds – Five – Four – Three – Two – One – TIME Zero Nine Three Zero – OVER.

(All stations answer in turn (ROGER) – OUT.)

9.49 When a station desires an accurate time check, it will be requested by using the prowords REQUEST TIME CHECK:

BP7 – THIS IS – DE4 – REQUEST TIME CHECK – OVER.

(DE4) – (THIS IS) – BP7 – TIME CHECK One Eight Zero Two (pause) – One Five Seconds – One Zero Seconds – Five – Four – Three – Two – One – TIME One Eight Zero Two – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

9.50 A time signal may be conveyed in advance by the NCS using the delayed executive method:

SM5 – THIS IS – BP7 – EXECUTE TO FOLLOW – TIME One Four One Five – DE4 – OVER.

(The NCS has indicated that call-sign DE4 is to receipt and no other station need answer.)

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(The NCS then transmits the executive signal to coincide with 1415 and has indicated that call-sign IMM is to receipt on behalf of the net.)

SM5 – THIS IS – BP7 – STAND BY – EXECUTE – IMM – OVER.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

Section 9-7. Closing Down

9.51 No station is to close down without prior permission from the NCS. The greatest possible care must be taken by the NCS never to close down a net, or an individual sub-station, without being completely satisfied that all sub-stations know, or will know, the new frequency and time of reopening. The necessary orders must be given by the most secure means available and, wherever possible, not by radio. In an emergency, the orders may have to be sent over the radio in operations code, before the net closes down. In this case, any security achieved is short-lived.

Procedure

1. **9.52** When it is essential to order a close-down over the radio and the NCS is satisfied with arrangements for reopening, it then orders the net or sub-station to close down by using a nickname and the procedure laid down for radio silence and changing frequency. The translation of the nickname is CLOSE DOWN NOW:
 2. SM5 – THIS IS – BP7 – BACK ALLEY – OVER.
 3. (All stations answer the preparatory order in turn BACK AL- LEY – OVER, and the NCS transmits the executive order to enforce the closure.)

4. (SM5) – (THIS IS) – BP7 – BACK ALLEY – OUT.
5. **9.53** When one station is required to close down temporarily for technical or other minor reasons (for example, changing batteries), the request and instructions are given in clear by use of the following prowords:
 - a. CLOSING DOWN, which means, ‘May I close down (until . .) due to . . .; and
 - b. CLOSE DOWN, which means, ‘Close down (until . .)’.
3. **9.54** Authentication is mandatory under these circumstances.
4. **9.55** In the following example, T3Q requests NCS permission to close down to change batteries and authenticates the request:
5. BP7 – THIS IS – T3Q – CLOSING DOWN – battery change – AUTHENTICATION IS Sierra India – OVER.
6. (T3Q) – (THIS IS) – BP7 – CLOSE DOWN – OUT.

9.56 If transmission authentication is not provided, the NCS is to challenge the station:

BP7 – THIS IS – T3Q – CLOSING DOWN battery change – OVER.

(T3Q) – (THIS IS) – BP7 – AUTHENTICATE X-ray Mike – OVER. (BP7) – (THIS IS) – T3Q – I AUTHENTICATE Alfa – OVER. (T3Q) – (THIS IS) – BP7 – CLOSE DOWN – OUT.

Annexes: [A](#).

[B. Radiation Status Indicators](#)

[Example of Joint Emission Control Plan](#) [C. Emission Control Message Formats](#)

ANNEX A CHAPTER 9

Example of a Joint Emission Control Plan

1. Figure 9-1 is an example of a Joint Emission Control Plan.

EMCON PLAN

		EMCON PLAN																							
		COMMUNICATIONS				ELECTRONIC WARFARE				NAV AIDS		SEARCH RADARS		FIRE CONTROL RADARS		ACOUSTIC									
INDEX NUMBERS		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
INDEX NUMBERS		ALL VHF	UHF SURFACE/EAR	HF GROUND/GROUND	HF SHIP/HQ	UHF AIR/AIR	UHF GROUND/GROUND	UHF GROUND/GROUND	ALL HF	VHF GROUND/WAR	UHF SHIP	ALL HF	VHF JAMMER	HF JAMMER	BAND JAMMERS	J BAND JAMMERS	HF TRANSMITTER	ALL BANDS	J BAND	K BAND	ALL EQUIPMENT	SQWAR 6-15KHz	UWTELEPHONE	FAIRWELL	SQWAR 6-15KHz
A	AIRCRAFT CARRIER	P	V			V	G	C	C	C	C	C	C	C	C	C	P	C	C		V	V			
B	DDG DD	T	V			V	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	V	V		
C	FAST PATROL BOATS		V			V	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
D	NAVAL GUN/FIRE SUPPORT GROUP	M	T	V	M	V	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	V	V	C	
E	INF BN	A	M	G	A	G	C	C	C	C	C	C	C	C	C	C	T	C	C	C	C	V	V	C	
F	ARTY REGT	G	G		G	C	D										C	C	C	C	C	C	C	C	
G	AD REGT	M	G		M	C	M										C	C	C	C	C	C	C	C	
H	3DIE HQ	A	M	G	V	A	A	G	A	C	C	C	C	C	C	C	Y	C	P	C	C	C	C	C	
I	CONTROL COORDINATION CENTRE	P			A		A										Y	Y	Y						
J	ASW HELOS	P		C		C	C										Y	C				Y	Y		
K	HELOS	G	P	A		A												Y							
L	AD AIRCRAFT	P		A		A	W		W	W	W	W	W	W	W	W	Y	Y							
M	CARS AIRCRAFT	P		A		A	W		W	W	W	W	W	W	W	W	Y	Y							
N	STRIKE AIRCRAFT	V	P		C	C	W	W	W	W	W	W	W	W	W	W	Y	C							

Figure 9-1. Joint Emission Control Plan.

Figure 9-1. Joint Emission Control Plan.

ANNEX B CHAPTER 9

Radiation Status Indicators

1. Figure 9-2 is an example authorisation of radiation status indicators (RSIs) for use in emcon plans.

RADIATION STATUS INDICATORS

1. The following RSI are authorised for use in EMCON plans:

Designator**Meaning**

- A. COMMUNICATIONS SECURITY.** No restrictions on communications emissions. All short-term tactical information is to be encrypted. This includes all friendly and hostile positions, courses, speeds, grid, frequencies and line numbers.
- B. ESSENTIAL EMISSIONS.** Emissions should only be made by units if the commanding officer considers it operationally essential (eg in contact with enemy or for safety) and should be kept to an absolute minimum to deny information and to assist friendly ESM.
- C. HELICOPTER OPERATIONS.** Equipment or communications may be operated by units directly concerned with helicopter control.
- D. COMMUNICATIONS SECURITY.** No restrictions on communications emissions. Immediate tactical information except for frequencies and positions of major units may be passed uncoded if essential.
- E. DISTANT.** Equipment and communications are only to be operated when well clear of friendly forces (distance as ordered by the JFC).
- F. COMMUNICATIONS SECURITY.** Communications emissions are to be kept to an absolute minimum. Immediate tactical information, except for frequencies and positions of major units, may be passed uncoded if essential.
- G. GUARD.** Unit is to operate equipment or maintain guard on the circuits designated on behalf of other units.
- H. AIRCRAFT.** Equipment or communications may be operated if essential to safe operation of aircraft.
- I. COMMUNICATIONS SECURITY.** Communications emissions are to be kept to an absolute minimum. All short-term tactical information is to be encrypted in low grade code. This includes all friendly and hostile surface positions (including grid), true courses, speeds, frequencies, line numbers; and times at which events are to be scheduled are to be encrypted.
- J. POSITIVE EMISSION CONTROL.** Under positive control of the JFC or delegated coordinator. Permission must be obtained before an emission is made. On release from EMCON, emissions should be kept to a minimum and the equipment reverted to silence immediately on completion of current task.
- K. SILENCE.** No emmissions are to be made except for standard occasions for breaking silence.
- L. LIMITED CONTROL.** No restrictions on emmissions but the JVC can veto emmissions (normally used for jammers only).
- M. UNRESTRICTED.** No restrictions on emissions. Acknowledgment Instructions:

Authentication:

Signature of Commander Rank

(SECURITY CLASSIFICATION - NORMALLY CONFIDENTIAL WHEN COMPLETED)

(WARNING - EXAMPLE ONLY)

Figure 9-2. Radiation Status Indicators.

Emission Control Message Formats

ANNEX C CHAPTER 9

1. Table 9-1 illustrates emcon message formats. **TABLE 9-1. Emission Control Message Formats**

<i>EMCON Change - to order an EMCON plan.</i>		
Usage	Set Name	Set Title
M	MSGID	Message Identification
M	EMCONCHG	Emission Control Change
M	PERIOD	Period of Time
O	RMKS	Remarks
M	AUTHEN	Authentication
<i>Example:</i>		
MSGID/EMCON CHG/EX K95/72 EW SQN/291100Z APR 95/PLAN BRAVO// EMCON CHG/A 10K, H235, M24S//		
PERIOD/291400Z APR 95/-//		
AUTHEN/FW/291100Z APR 95//		
<i>EMCON Break - to report unauthorised breaking of EMCON silence.</i>		
Usage	Set Name	Set Title
M	MSGID	Message Identification
M	EQUIP	Equipment Used
M	TMPOS	Time and Position Information
M	GEN TEXT/DURN	General Text
M	GEN TEXT/REASON	General Text

M	AUTHEN	Authentication
Example:		
MSGID/EMCON BRK/EX K95/72 EW SQN/291100Z APR 95// EQUIP/H23S//		
TMPOS/282453Z APR 95/1000S1-09900E8// GEN TEXT/DURN/10 MIN// GEN TEXT/REASON/EQUIPMENT MALFUNCTION// AUTHEN/GC/291100Z APR 95//		

CHAPTER 10

Formal Message Procedure

Section 10-1. General Instructions

10.1 Primarily, tactical radio nets are used for the transmission of informal messages and voice conversations, while logistic and administrative nets are used for the passage of formal messages.

10.2 The essential characteristics of a formal message are that it should be written down on a message form (OC33), have a DTG inserted, be signed by the releasing officer and handed to the operator for transmission.

Types of Formal Messages

10.3 There are two types of formal messages, plaindress (of which there is also an abbreviated version) and codress:

- a. *Plaintress*. A plaindress message is one in which the originator and addressees are indicated externally from the text (in the FROM, TO, and INFO spaces of the message form). A plaindress message contains all the components (unless the call serves as the address) shown in the basic message format and must always include the precedence and DTG.
- b. *Abbreviated Plaindress*. Operational requirements for speed of handling may require abbreviation of plaindress headings. In such case, any or all of the following may be omitted:

- (1) precedence,
- (2) date,
- (3) DTG, and
- (4) group count.

- c. Codress. An enciphered message is a codress when the entire address component is concealed within the text.

Precedence

10.4 Each message is given a precedence to indicate the speed with which the message should be handled. The degrees of precedence are outlined in [annex A](#).

Security Classification

10.5 Any message that contains information which may be of value to the enemy must be classified under one of the following four categories:

- a. TOP SECRET,
- b. SECRET,
- c. CONFIDENTIAL, or
- d. RESTRICTED.

10.6 All other messages are unclas.

10.7 The originator is responsible for ensuring that a message bears the lowest security classification consistent with its contents.

10.8 Classified messages are not to be transmitted in clear unless the situation warrants. Where this must happen, the CLEAR procedure is to be used.

Section 10-2. Basic Message Format

Parts of a Message

10.9 All formal messages have three separate parts, these being:

- a. a heading,
- b. text, and
- c. an ending.

10.10 These parts, when being transmitted by radio, are separated by the proword BREAK. The proword BREAK between the heading and text is inserted immediately after the last addressee of plaindress messages and before the security classification. In codress messages, the proword BREAK is inserted between the group count and the first group of the text.

10.11 Each message part has certain components which are broken down into elements and contents. All parts, and a majority of the components and elements, have a standardised arrangement, or order of appearance, which is applicable not only to ratel procedure but also to other operating procedures.

Schematic Diagram

10.12 In the schematic diagram, shown in annex B, it should be noted that every element is indicated in order of appearance in the message, but the contents of the various elements are not necessarily indicated in the order they will appear.

10.13 There is a total of 16 format lines. Lines 2 to 4 and 14 to 16 identify the procedural portion of the basic message format as designed for ratel operation. Lines 5 to 13 are non-changeable elements of the format. All format lines do not necessarily appear in every message but are to be in the order indicated when used.

Format Line 1 – The Offer

10.14 In format line 1, all formal messages are to be offered. The likelihood of sending a formal message using DO NOT ANSWER PROCEDURE is extremely rare; however, if this occurs then the prowords FORMAL MESSAGE are used to prompt the receiving operator to use an OC-33 to take the message down as in the following example:

BP7 – THIS IS – DE45 – DO NOT ANSWER – FORMAL MES- SAGE – (pause) –
Msg No . . . etc

Format Lines 2 and 3 – The Call and Calling Station

10.15 In format lines 2 and 3, the lines contain the call, the proword FORMAL MESSAGE and the transmission identification (TI) as follows:

- a. *The Call.* The call serves to identify the stations between which that particular message is being transmitted. It may also serve as the address of the message when the designators of the originator and addressees are the same as the call-signs of the stations in communication with one another on the same net.
- b. *FORMAL MESSAGE.* The prowords FORMAL MES- SAGE are to be transmitted during the initial call for all formal messages.
- c. *MESSAGE NUMBER.* A message number is to consist of the last element of format lines 2 and 3. The message number is to be preceded by the proword NUMBER, for example, NUMBER – ONE FOUR/ONE TWO (14/12). This indicates that it is the fourteenth message transmitted on the twelfth day of the month.

Format Line 4 – Transmission Instructions

10.16 Line 4 contains the transmission instructions, which may consist of prowords RELAY, RELAY TO, WORDS TWICE, READ BACK, call-signs, address groups and plain language designator.

10.17 Transmission instructions are to be used when the delivery or retransmission (retrans) responsibility of stations is not self-evident. (Call-signs are to be used

when referring to stations on the same net. Address groups are to be used when referring to stations **not** on the same net.) This is impossible to define but, when in doubt, transmission instructions are to be included to remove the risk of mishandling.

10.18 The following examples demonstrate transmission instructions after the relay instructions have already been offered in the initial call. In this first example, BP7 is called to retransmit to an addressee:

(BP7) – (THIS IS) – DE4 – NUMBER One Two/Two Six – RE- LAY TO – ADDRESS GROUP Alfa Zulu Oscar Delta –

In this second example, T3Q is called to retransmit a message and BP7 is itself one of the addressees:

(BP7 – T3Q) – (THIS IS) – DE4 – NUMBER One Two/Two Six – T3Q – RELAY TO – ADDRESS GROUP Alfa Zulu Oscar Delta.

Format Line 5 – The Preamble

10.19 Line 5 will contain the precedence, DTG and message instructions, as follows:

- a. *Precedence.* The precedence is transmitted as the first element of format line 5. In the case of dual precedence messages, the highest precedence designation will be transmitted first.
- b. *Date Time Group.* The DTG is transmitted immediately after the precedence designation. It is preceded by the proword TIME and followed by the zone suffix (Z), month and year.
- c. *Message Instructions.* Message instructions are not normally required on ratel messages. When included, they will consist of short and concise instructions which will be transmitted with the message to the station of designation.

10.20 An example of a normal message is:

(IMM) – (THIS IS) – BP7 – NUMBER One Two/ Two Six – PRI- ORITY – Date Time Group One Two One Six Three Zero Zulu December Nine Six –

10.21 An example of a dual precedence message is:

(IMM) – (THIS IS) – BP7 – NUMBER One Two/Two Six – PRI- ORITY – ROUTINE – Date Time Group One Two One Six Three Zero Zulu December Nine Six –

10.22 An example of a message with relay instructions is:

(IMM) – (THIS IS) – BP7 – NUMBER One Two/Two Six – IMM – RELAY TO – ADDRESS GROUP Alfa Zulu Oscar Delta PRI- ORITY – Date Time Group One Two One Six Three Zero Zulu December Nine Six –

10.23 An example of a message with message instructions is:

(IMM) – (THIS IS) – BP7 – NUMBER One Two/Two Six – ROUTINE – Date Time Group One Two One Six Three Zero Zulu December Nine Two – SUSPECTED DUPLICATE – . . .

Format Lines 6, 7, 8 and 9 – The Address Component

10.24 The lines 6, 7, 8 and 9 form the address of the message and are recognised by the prowords FROM, TO, INFO and EXEMPT, respectively, followed by a call-sign or address group. When the originator and the addressees are in communication with each other on the same net, the call is to serve as the address component. This means that there is no requirement for the plain language address to be transmitted as part of the formal message.

10.25 In the case of messages where the call cannot serve as the address component, plain language addressees are to be deleted and call-signs/address groups substituted where possible.

10.26 The following is an example of a plaindress message to addressees on the same net. The call serves as the address:

(IMM – Z8N) – (THIS IS) – BP7 – NUMBER One Five/One Nine – INFO IMM – PRIORITY – ROUTINE – TIME One Nine One Six Four Zero Zulu December Nine Six – BREAK – ...

10.27 In the same scenario as paragraph 10.26, this example shows a loss of contact between the NCS and call-sign Z8N. The NCS instructs IMM to relay the message to Z8N:

(IMM) – (THIS IS) – BP7 – NUMBER One Five/One Nine – IMM – RELAY TO Z8N – PRIORITY – ROUTINE – TIME One Nine One Six Four Zero ZULU December Nine Six – FROM Romeo Whisky Papa Juliet – TO IMM – INFO Z8N – BREAK – ...

(In this case, the address component has been included to re- move the risk of mishandling or confusion.)

10.28 In the following example, the address group LAMA is allocated to a specific address indicator group (AIG) from call-sign BP7. LAMA represents call-signs B42, P7P, 7N4 and 89A (as the message is to be relayed over another net, full call-signs are to be used). The originator indicates that call-signs 7N4 and 89A are exempted addressees:

(B42) – (THIS IS) – BP7 – RELAY – NUMBER Two Four/Zero Nine – ROUTINE – Date Time Group One Two One Seven One Five Zulu December Nine Six – FROM BP7 – TO LAMA – EX- EMPT 7N4 – 89A – BREAK – . . .

Format Line 10 – Group Count

10.29 Ratel messages are usually short and a group count (format line 10) is seldom used, except in the case of enciphered messages. However, the number of

groups, if sent, will be preceded by the proword GROUPS. The rules for counting groups are as follows:

- a. Only the text is to be counted.
- b. A sequence of letters not interrupted by a space is counted as one group.
- c. When a cipher group count is inserted by the crypto centre, staff or originator at the end of an enciphered text (plaindress message), it is included as part of the text when counting groups.

10.30 The following example illustrates a plaindress enciphered message:

(DE4) – (THIS IS) – BP7 – NUMBER One One/Two Zero – ROUTINE – Date Time Group Two Zero One Six Three Zero Zulu December Nine Six – FROM B42T TO DWQ4 – GROUPS One Five – BREAK –

10.31 The following is an example of a codress message:

(DE4) – (THIS IS) – BP7 – NUMBER One Two/Two Seven – ROUTINE – Date Time Group One Two Six Three Five Zulu December Nine Six – GROUPS One Seven – BREAK –

Format Line 11 – The Separation

10.32 Format line 11 contains the proword BREAK as shown in examples contained in paragraphs [10.26](#) to 10.31.

Format Line 12 – The Text

10.33 Format line 12 contains the plain language or enciphered text of the message. The plain language text contains the security classification or the word UNCLASSIFIED (transmitted as UNCLAS), internal instructions and the thoughts or ideas expressed by the originator. The text is transmitted exactly as written by the originator, except where clear names of units and formations are replaced by their call-signs or address groups. When it is necessary to refer to call-signs and address groups in the text of a message, it is preceded by the prowords CALL-SIGN or ADDRESS GROUP

10.34 The following example shows a plain language text (proword and words contained in brackets are optional and normally used during bad working conditions):

– BREAK – UNCLAS – Log Fifty Six (I SPELL Lima Oscar Golf FIGURES Five Six)
– Padres Hour – FULL STOP – Padres will visit your areas – during period
Fourteen Slant Fif- teen February (FIGURES One Four Slant One Five I SPELL
Foxtrot Echo Bravo) – FULL STOP – Advise members of RC (I SPELL Romeo
Charlie) and OPD (I SPELL Oscar Papa Delta) who will be available – to attend
Padres Hour – one these dates – BREAK –

10.35 This next example shows a plaindress cipher text:

– BREAK – FIGURES Four Four Nine Five Zero – Two One Five Two Three – Papa Romeo Oscar Whiskey Romeo – Charlie Oscar India Alfa India – Bravo Alfa Delta Sierra Lima – ... (seven five-letter groups) – FIGURES One Two/Zero One – BREAK – . . .

10.36 This following example shows a codress text:

BREAK – FIGURES Zero Four Eight Six Four – I SPELL – Delta – Echo – Zulu – Bravo – Charlie – Alpha X-ray Juliet Uniform X-ray – November Bravo India Quebec Oscar – ... (8 five-letter groups) – FIGURES Zero Four Eight Six Four – BREAK – . . .

(In this example directly above, the first group of the cipher could lead to confusion in the group count if the prowords I SPELL were not used. For example, the receiving operator would write these groups as 04864 DEZBC AXJUX when it should read 04864 Delta Echo Zulu Bravo Charlie AXJUX. The group count of the message is 17 groups).

Format Line 13 – The Separation

10.37 Format line 13 contains the proword BREAK as shown in the examples in paragraphs 10.34 to 10.36.

Format Line 14 – Time Group

10.38 Format line 14 is used only in abbreviated plaindress messages when a time group transmitted here takes the place of a DTG in line 5. It consists of the proword TIME followed by the time group plus the zone suffix.

Format Line 15 – The Final Instructions

10.39 Format line 15 contains any final instructions necessary. It is identified by the prowords WAIT, MORE TO FOLLOW, CORRECTION, EXECUTE, or AUTHENTICATION IS.

Format Line 16 – The Ending

10.40 Format line 16 is identified by the prowords OVER, OUT or OUT TO YOU. In all transmissions where the prowords DO NOT ANSWER are used, the transmission shall be ended with the proword OUT.

Section 10-3. Offering a Formal Message

Before Transmitting

10.41 The operator is to scrutinise the message to ensure that no significant components have been omitted and that no security breach will result from its transmission. The most common security breach is the transmission of unit names in clear. The message details are recorded on the **out** operator's check sheet, inserting the TI on the message form, and in the radio operator's log. Where the

operator's check sheet is not used, the message must be recorded in the radio operator's log.

10.42 As most formal messages take more than 30 seconds to send, the message should be divided into suitable portions and long message procedure used.

The Offer

10.43 Formal messages are always to be offered using the prowords FORMAL MESSAGE. The offer is accepted or refused in the normal manner. Included in the offer is:

- a. the degree of precedence, and
- b. the number of messages bearing each precedence.

Section 10-4. Transmitting a Formal Message

Transmission

10.44 The operator is to send the message, as prepared for transmission, using prowords as indicated in the examples in paragraphs below:

10.45 The following example shows a formal message prepared by the message centre for transmission by the NCS to DE4 and IMM:

DE4 IMM – THIS IS – BP7 – PRIORITY – FORMAL MES- SAGE – OVER.

(BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(BP7) – (THIS IS) – IMM – (SEND) – OVER.

(DE4 IMM) – (THIS IS) – BP7 – NUMBER One Five /One Two – PRIORITY – ROUTINE – Date Time Group One Two Zero Nine Zero Two Zulu December Nine Six – MORE TO FOL- LOW – OVER.

(BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(BP7) – (THIS IS) – IMM – (SEND) – OVER.

(DE4IMM)–(THISIS)–BP7–FROMBP7–TODE4–INFO IMM – BREAK – UNCLAS – I SPELL – Sierra India Charlie – Foxtrot Foxtrot Sierra Ops Twenty Four (I SPELL Oscar Papa

Sierra FIGURES Two Four) – FULL STOP – Radio Detachments now delayed Bravo Yankee Charlie Zulu hours – BREAK – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT. (BP7) – (THIS IS) – IMM – (ROGER) – OUT.

10.46 The following example shows a plaindress cipher text formal message prepared by the message centre for transmission:

T3Q – THIS IS – BP7 – FORMAL MESSAGE – OVER.

(BP7) – (THIS IS) – T3Q – (SEND) – OVER.

(T3Q) – (THIS IS) BP7 – NUMBER Five Three/One Two – RE- LAY – ROUTINE – Date Time Group – One Two One Six Three Zero Zulu December Nine Six – FROM B42 – TO D38 – GROUPS One Three – BREAK – MORE TO FOLLOW – OVER.

(BP7) – (THIS IS) – T3Q – (ROGER) – OVER.

(T3Q) – (THIS IS) – BP7 – FIGURES Four Four Nine Five Zero – Two One Five Two Three – Papa Romeo Oscar Whiskey Romeo – Charlie Oscar India Alfa India – Bravo Alfa Delta Sierra Lima – Echo Golf Alfa Uniform Golf – November Alfa Lima November India – Alpha Lima Papa Echo Tango – MORE TO FOLLOW – OVER.

(BP7) – (THIS IS) – T3Q – (ROGER) – OVER.

(T3Q) – (THIS IS) – BP7 – ALL AFTER Alpha Lima Papa Echo Tango – Echo Hotel Tango Sierra November – India Alfa Tango November Oscar – Yankee Tango Echo Charlie Uni- form – Hotel Oscar Uniform Golf Hotel – One Two Zero One Two – BREAK – OVER.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

10.47The following example shows a codress formal message prepared by the message centre for transmission:

DE4 – THIS IS – BP7 – FORMAL MESSAGE – OVER.

(BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(DE4) – (THIS IS) – BP7 – NUMBER Five Five/One Two – ROUTINE – Date Time Group One Two One Six Three Five Zulu December Nine Six – GROUPS One Seven – BREAK – FIGURES Zero Four Eight Six Four – Delta – Echo – Zulu – Bravo – Charlie – MORE TO FOLLOW – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OVER.

(DE4) – (THIS IS) – BP7 – ALL AFTER – Delta Echo Zulu Bravo Charlie – Echo Sierra Alpha Charlie India – Echo X-ray Charlie Papa Tango – Sierra Papa Oscar Uniform Golf – Fox- trot India Foxtrot Golf Oscar – FIGURES Zero Four Eight Six Four – BREAK – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

10.48 The following example shows a plaindress formal message originated with a unit net, in which one of the addressees is not on the net. (Where sub-unit stations are not the type normally allotted address groups, the appropriate call-sign followed by the NIC would be used if the message is to be retransmitted over another net):

BP7 DE4 – THIS IS – IMM – PRIORITY – FORMAL MES- SAGE – OVER.

(IMM) – (THIS IS) – BP7 – (SEND) – OVER.

(IMM) – (THIS IS) – DE4 – (SEND) – OVER.

(BP7 DE4) – (THIS IS) – IMM – NUMBER Zero Seven/One Two – BP7 – RELAY TO V7T NIC T3W – PRIORITY – ROU- TINE – TIME One Two One Two Zero Zero Zulu December Nine Two FROM IMM–TOBP7–DE4–INFOV7T–BREAK

– MORE TO FOLLOW – OVER.

(IMM) – (THIS IS) – BP7 – (SEND) – OVER. (IMM) – (THIS IS) – DE4 – (SEND) – OVER.

(BP7 DE4) – (THIS IS) – IMM – ALL AFTER BREAK – UN- CLAS I SPELL – Sierra India Charlie Foxtrot Whiskey Quebec Ops Three (I SPELL Oscar Papa Sierra FIGURES Three) – FULL STOP – SUNRAY CALL-SIGN (ADDRESS GROUP) Zulu Three Four Delta departed I SPELL Papa Alfa Bravo Zulu X-ray Yankee Hours – FULL STOP – ETA (I SPELL Echo Tango Alfa) I SPELL November Charlie Foxtrot India Alfa Yankee hours – BREAK – OVER.

(IMM) – (THIS IS) – BP7 – (ROGER) – OUT. (IMM) – (THIS IS) – DE4 – (ROGER) – OUT.

10.49 The following example shows a plaindress formal message where the call serves as the address:

SM5 – THIS IS – BP7 – FORMAL MESSAGE – OVER. (BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(BP7) – (THIS IS) – IMM – (SEND) – OVER.

(BP7) – (THIS IS) – T3Q – (SEND) – OVER.

(BP7) – (THIS IS) – Z8N – (SEND) – OVER.

(SM5) – (THIS IS) BP7 – NUMBER One Eight/One Two – INFO T3Q – ROUTINE – Date Time Group One Two One Two One Zero Zulu December Nine Six – BREAK – UNCLAS Sierra India Charlie Foxtrot Mike Bravo – Log (I SPELL Lima Oscar Golf FIGURES One Zero) – FULL STOP – MORE TO FOLLOW – OVER.

(BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(BP7) – (THIS IS) – IMM – (SEND) – OVER. (BP7) – (THIS IS) – T3Q – (SEND) – OVER. (BP7) – (THIS IS) – Z8N – (SEND) – OVER.

(SM5) – (THIS IS) BP7 – ALL AFTER FULL STOP – Nominations for equipment familiarisation course to SEAGULL by Twenty Two (FIGURES Two Two) December – BREAK – OVER.

(BP7) – (THIS IS) – DE4 – (ROGER) – OUT.

(BP7) – (THIS IS) – IMM – (ROGER) – OUT.

(BP7) – (THIS IS) – T3Q – (ROGER) – OUT.

(BP7) – (THIS IS) – Z8N – (ROGER) – OUT.

Dual Precedence

10.50**Multiple** address messages, having both action and information addressees, may be assigned a single precedence, in which case it indicates the precedence of all addressees. Alternatively, two precedences may be assigned, one for all action addressees and a lower precedence for all information addressees. The procedure for indicating dual precedence in the heading of a plaindress and a codress message is as follows:

- a. *Plaindress*. In a plaindress message both precedence prowords, separated by a pause, will appear as the first element of the preamble. The higher precedence will appear first, for example, IMMEDIATE – ROUTINE – TIME –
- b. *Codress*. The same procedure is used for codress messages; however, when a message is routed to a crypto guard which serves all the addressees, the higher precedence proword only will be included in the preamble. The lower precedence will be included in the enciphered text in the form ‘ . . . (lower precedence) for information addressees’.

Codress Transmission Instructions

10.51 Any station(s) or addressee(s) included in the heading of the message which is (are) to receive the message at the lower precedence will be indicated in the transmission instructions by means of the prowords TRANSMIT AT THE LOWER PRECEDENCE, followed by the identification of the station(s)/addressee(s) concerned.

10.52If RELAY instructions are specifically included and the transmission instructions become long or complicated, those stations for which the message is intended at the lower precedence may be collated and shown together after the prowords TRANSMIT AT THE LOWER PRECEDENCE. The prowords will be inserted after the last RELAY addressee designation. In the following example, the NCS directs call-sign DE4 to transmit the codress message at the lower precedence to ODP1:

DE4 – THIS IS – BP7 – PRIORITY – FORMAL MESSAGE – OVER.

(BP7) – (THIS IS) – DE4 – (SEND) – OVER.

(DE4) – (THIS IS) – BP7 – NUMBER Two Zero/One Two TRANSMIT AT THE LOWER PRECEDENCE – ODP1 – PRI- ORITY – ROUTINE – Date Time Group One Two One Eight One Six Zulu December Nine Two – GROUPS. . .

Annexes: A. B.

Rules for the Use of Precedence Schematic Outline of a Message Format

ANNEX A CHAPTER 10

Rules for the Use of Precedence

1. Table 10-1 lists the circumstances which justify the various degrees of precedence. This list is not exhaustive.

TABLE 10-1. Rules for the Use of Precedence

<i>Degree of Precedence (a)</i>	<i>Circumstances which Normally Justify its Use □(b)</i>
FLASH	Reserved for operational combat messages of extreme urgency: 1. initial enemy contact reports, 2. warning of imminent large-scale attack, and 3. extremely urgent intelligence messages.
IMMEDIATE	Reserved for very urgent: 1. reports of unusual major moves of foreign military forces in times of peace or strained relations, 2. amplifying reports of initial contact, 3. messages relating to attacks or counterattacks, 4. messages concerning logistical support operations, 5. reports of widespread civil disturbances, 6. reports or warning of grave natural disaster, and 7. NOTICAS
PRIORITY	Messages concerning the conduct of operations in progress and for other important and urgent matters when routine precedence will not suffice for all the types of message which justify transmission, but do not require a higher precedence.

<i>Degree of Precedence (a)</i>	<i>Circumstances which Normally Justify its Use (b)</i>
ROUTINE	For all other messages, including those concerning day-to-day matters and those which require lead time for response.

ANNEX B CHAPTER 10

Schematic Outline of a Message Format

1. A schematic outline of a message format is shown in table 10-2.

TABLE 10-2. Schematic Outline of a Message Format

<i>Parts □(a)</i>	<i>Components (b)</i>	<i>Elements □(c)</i>	<i>Format Line □(d)</i>	<i>Contents □(e)</i>
			1	Not used (see ACP 125).
		Called Station(s)	2	Call-sign(s) of station(s) called, proword EXEMPT and exempted call-sign(s).
		Calling Station	3	Prowords THIS IS and call-sign of calling station.

<i>Parts □(a)</i>	<i>Components (b)</i>	<i>Elements □(c)</i>	<i>Format Line □(d)</i>	<i>Contents □(e)</i>
<i>H E A D I N G</i>	Procedure			
		Transmission Identification		Proword NUMBER and message serial number and day of the month.
		Transmission Instruction	4	Prowords WORDS TWICE, DO NOT ANSWER, READ BACK, RELAY, RELAY TO etc, operating signals, call-sign(s), address group(s), plain language address designator(s), AIG.
		Precedence	5	Precedence used.
		Date Time Group		Proword TIME, date and time expressed in digits and zone suffix (Z) followed by month indicated by first 3 letters, and the year indicated by the last 2 digits.

		Preamble		
		Message Instructions		Operating signals or their equivalent prowords and prowords EXECUTE TO FOLLOW.
		Originator	6	Proword FROM and originator's address designator (call-sign, address group, plain language).
	Address	Action Addressee(s)	7	Proword TO and action addressee(s) designator (call-sign(s), address group(s), plain language).

<i>Parts □(a)</i>	<i>Components (b)</i>	<i>Elements □(c)</i>	<i>Format Line □(d)</i>	<i>Contents □(e)</i>
<i>HEADING</i>		Information Addressee(s)	8	Proword INFO and information addressee(s) designator (call-sign(s), address group(s), plain language).
		Exempted Addressee(s)	9	Proword EXEMPT and exempted addressee(s) designator (call-sign(s), address group(s), plain language).
	Prefix	Group Count	10	Proword GROUPS followed by number of groups.
	Separation		11	Proword BREAK.
<i>TEXT</i>	Text	Subject Matter	12	The words CLEAR, UNCLAS, security classification, internal instructions and appropriate textual matter.
<i>ENDING</i>	Separation		13	Proword BREAK.
		Time Group	14	Proword TIME, hours and minutes expressed in digits and zone suffix when appropriate.

	Procedure	Final Instructions	15	Prowords WAIT, WAIT OUT, MORE TO FOLLOW, CORRECTION, EXECUTE, AUTHENTICATION IS , station designators.
		Ending Sign	16	Prowords OVER, OUT, OUT TO YOU.

CHAPTER 11

Retransmission

Section 11-1. Retransmission Procedure – Secure and Non-secure

Introduction

11.1 Radio retrans in single channel radio enables the signals received by one radio to be retransmitted by a second radio on a different frequency. The two methods of retrans are:

- a. *Automatic Retransmission.* Automatic retrans provides automated switching (retrans) from VHF to VHF radios.
- b. *Manual Retransmission.* Manual retrans provides manual switching (retrans) from HF to HF and HF to VHF radios.

Retransmission Prowords

11.2 The prowords used in retrans are shown in [table 11-1](#).

TABLE 11-1. Retransmission Prowords

Prowords (a)	Meaning (b)
MAKE	On receipt of order to retrans, switch the equipment to the retrans mode.
MADE	Retrans detachment acknowledges order to ‘make’ and replies ‘made’ before equipment is switched to the retrans mode.
BREAK	For automatic retrans, switch retrans mode off.
INSIDE LEG	The operating frequency from the control or NCS to the retrans station (usually the primary frequency).
OUTSIDE LEG	The operating frequency from the retrans station to the sub-station(s) (usually the retrans primary frequency).
REQUEST RETRANS	Alerts the retrans operator that manual switching is required. (HF/HF and HF/VHF retrans.)

Principles

11.3 To achieve uniformity in the method of establishing, operating and ceasing all retrans systems, the following principles are to be applied:

- a. The order to start retrans is normally given by the NCS.
- b. The communications operations staff, at any level where alternative retrans facilities are available, determine which is to act as the retrans station.
- c. The retrans station sets up the retrans facility which entails:
 1. using the same call-sign on both radios;
 2. checking the links to NCS and the sub-stations to be retransmitted prior to setting up the facility;
 3. changing the station(s) to be retransmitted from the primary to the retrans frequency; and
 4. advising the control station when communications have been established with all call-signs on the retrans frequency.
- d. The NCS then orders the retrans detachment to MAKE and tests the system with a RADIO CHECK to all the sub-stations being retransmitted. The order to BREAK is always given by the NCS.

Automatic Retransmission

11.4 The order to start automatic retrans is often given in the briefing to the retrans detachment prior to deploying on the retrans task. Where planning has not been possible, the NCS may give the order, 'ESTABLISH COMMUNICATIONS WITH CALL-SIGNS T3Q AND Z8N'. Once the order has been given, the retrans station is responsible for taking any action necessary. In the example shown in table 11-2 the retrans station, call-sign R8A, orders call-sign T3Q and Z8N to change to the retrans frequency (F2).

TABLE 11-2. Order to Change to Retransmission Frequency

<i>Station (a)</i>	<i>Frequency (b)</i>	<i>Transmission (c)</i>
R8A	F1	T3Q – Z8N THIS IS – R8A–BOOK HAT – OVER.
T3Q	F1	R8A – (THIS IS) – T3Q – BOOK HAT – OVER.
Z8N	F1	R8A – (THIS IS) – Z8N – BOOK HAT – OVER.
R8A	F1	(T3Q–Z8N) – (THIS IS) – R8A – BOOK HAT–OUT. (T3Q, Z8N and R8A change to the retrans frequency. R8A then establishes communications with T3Q and Z8N.)

R8A	F2	T3Q – Z8N – THIS IS – R8A – RADIO CHECK – OVER.
T3Q	F2	R8A – (THIS IS) – T3Q – OVER.

<i>Station (a)</i>	<i>Frequency (b)</i>	<i>Transmission (c)</i>
Z8N	F2	R8A – (THIS IS) – Z8N – OVER.
R8A	F2	(T3Q–Z8N) – (THIS IS) – R8A – ROGER – OUT. (R8A advises the NCS that communications have been established with T3Q and Z8N on the OUTSIDE LEG.)
R8A	F1	BP7 – THIS IS – R8A – T3Q AND Z8N – LOUD AND CLEAR – OUTSIDE LEG – OVER.

11.5 The NCS will now order the retrans site to switch the equipment to retrans mode using the proword MAKE (table 11-3).

TABLE 11-3. Order to Switch Equipment

<i>Station (a)</i>	<i>Frequency (b)</i>	<i>Transmission (c)</i>
BP7	F1	(R8A) – (THIS IS) – BP7 – MAKE – OVER. (R8A reports to BP7 when the facility is MADE.)
R8A	F1	F1(BP7) – (THIS IS) – R8A – MADE – OUT.
BP7	Both	BothT3Q–Z8N–THISIS–BP7–RADIO CHECK– OVER.
T3Q	Both	Both(BP7) – (THIS IS) – T3Q – ROGER – OVER.
Z8N	Both	Both(BP7) – (THIS IS) – Z8N – ROGER – OVER.
BP7	Both	Both(T3Q) – (Z8N) – (THIS IS) – BP7 – ROGER – OUT.

Ceasing of Automatic Retransmission

11.6 Before the order to BREAK is given, the NCS instructs the retransmitted call-signs to change to the appropriate frequency; the retrans station is then ordered to BREAK (table 11-4).

TABLE 11-4. Cessation of Retransmission

<i>Station (a)</i>	<i>Frequency (b)</i>	<i>Transmission (c)</i>
BP7	F1	(R8A) – (THIS IS) – BP7 – BREAK – OVER.
R8A	F1	(BP7) – (THIS IS) – R8A – ROGER – OUT. (Communications now proceed in the normal manner on F1.)

HF/VHF and HF/HF Manual Retransmission

11.7 The HF/VHF and HF/HF manual retrans procedure utilises the RAVEN Retrans Unit. Retransmitting HF/VHF or HF/HF requires manual retrans by an operator at the retrans site.

11.8 When working through a manual retrans site, the calling station is to alert the retrans operator by transmitting the prowords REQUEST RETRANS as the initial call. This will ensure the retrans operator is ready to initiate the manual retrans facility and monitor all calls.

11.9 In the following example, the NCS wishes to call call sign (C/S) DE4 on the outside leg. The NCS' initial call is to the retrans site (C/S R8A):

R8A – THIS IS – BP7 – REQUEST RETRANS – OVER. BP7 – THIS IS – F8T – ROGER – OVER.

(The retrans operator now activates the manual retrans switch and the NCS makes the call to the required sub-station.)

DE4 – THIS IS – BP7 – Convoy will arrive your loc at approx 1300 hr – OVER.

(The retrans operator, on hearing the NCS transmission, manually switches the toggle switch so the C/S DE4 may reply.)

(BP7) – THIS IS – DE4 – ROGER – OUT.

11.10 On hearing the proword OUT, the retrans operator is no longer required to activate the manual retrans and can now listen out for the other calls.

11.11 As retrans only occurs when manually switched, stations can continue to operate on their respective net and frequency until retrans is no longer required.

Section 11-2. Multiple Retransmission Engineering

11.12 Circumstance often dictates the need to employ more than one retrans station. The configurations may vary as shown in figures 11-1 and 11-2.

Call-signs

11.13 The call-signs to be used on a retransmitted net are to be those call-signs

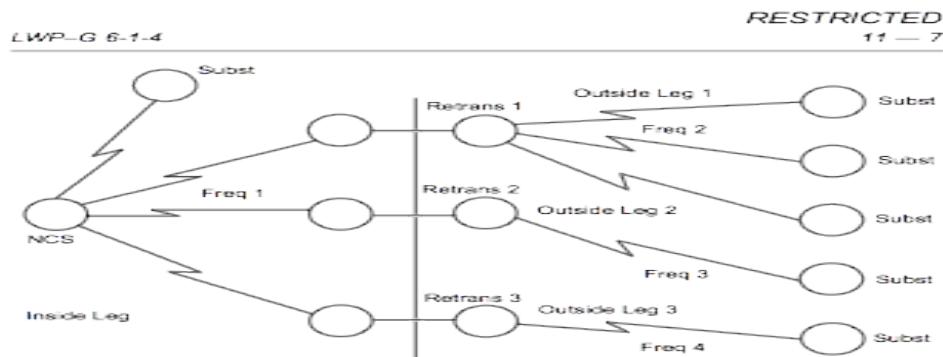


Figure 11-1. Multiple Retransmission – One Retransmission Site on One Leg

11.16 The sequence of establishing multiple retrans through multiple retrans sites as illustrated in figure 11-2 is as follows:

- a. At the predesignated time, all stations establish communications on their respective frequencies.
- b. Having established communications with Retrans Station 1 and confirmed that Retrans Station 1 has communication with Retrans Station 2, the NCS directs Retrans Station 1 to commence retrans.
- c. Once retrans communications have commenced at Retrans Station 1 and the NCS is able to communicate with Retrans Station 2, Retrans Station 2 is directed by the NCS to commence retrans.
- d. This procedure is continued until all stations are able to communicate as a net.

coinciding with the frequency used by the inside leg.

Establishing Multiple Retransmission

11.14 The NCS always retains control of the net. Retrans stations do not commence retrans until directed by the NCS, unless detailed otherwise in prior formal orders or instructions.

11.15 The sequence of establishing multiple retrans with one retrans site on one leg as shown in figure 11-1 is as follows:

- a. At the predesignated time, all stations establish communications on their respective frequencies.
- b. Having established communications with all retrans stations on the inside leg, the NCS then directs each retrans station systematically to commence retrans in its order of priority.
- c. If a retrans station is unable to commence retrans owing to communications or equipment failure, the NCS should direct the retrans station next in priority to commence retrans.
- d. The procedure continues until all retrans stations have commenced retrans.

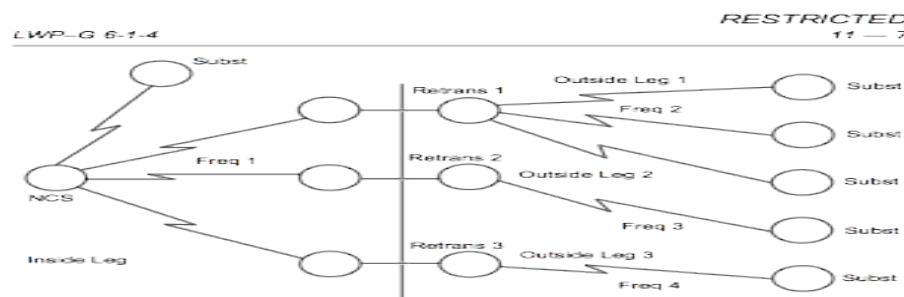


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Figure 11-1. Multiple Retransmission – One Retransmission Site on One Leg

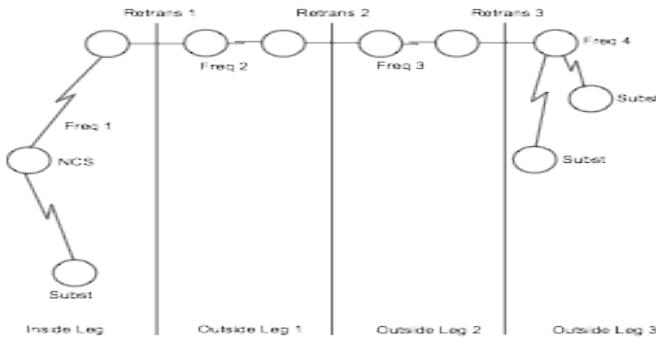


Figure 11-2. Multiple Retransmission Through Multiple Retransmission Sites on One Leg

Monitoring of Retransmission Facility

11.17 Close monitoring of the retrans facility is of primary importance for the maintenance of the net. Detachment commanders are to maintain a shift roster and ensure detachment members are conversant with each net being retransmitted, to enable immediate manual relay if the facility malfunctions.

Retransmission Malfunction

11.18 If the retrans facility malfunctions and the fault cannot be rectified immediately, stations on both sides of the retrans facility are to be notified that the facility is not available and that manual relaying of priority traffic will be necessary until the fault is rectified.

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- At the predesignated time, all stations establish communications on their respective frequencies.
- Having established communications with Retrans Station 1 and confirmed that Retrans Station 1 has communication with Retrans Station 2, the NCS directs Retrans Station 1 to commence retrans.
- Once retrans communications have commenced at Retrans Station 1 and the NCS is able to communicate with Retrans Station 2, Retrans Station 2 is directed by the NCS to commence retrans.
- This procedure is continued until all stations are able to communicate as a net.

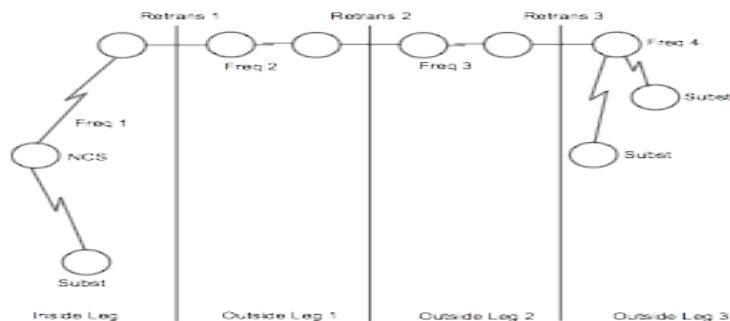


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11.18 If the retrans facility malfunctions and the fault cannot be rectified immediately, stations on both sides of the retrans facility are to be notified that the facility is not available and that manual relaying of priority traffic will be necessary until the fault is rectified.

Proving Retransmission

11.19 If sufficient equipment is available, retrans detachments may prove their facility by transmitting on one frequency through their facility and then receiving on the other, thus conducting a loop test. It is preferable that loop tests are conducted by a distant station to ensure that the radio equipment will transmit and receive over

distances. Where multiple retrans is employed, retrans detachments should conduct loop tests to prove one another's facility.

11.20 Whenever a continual carrier is monitored, the retrans facility is to be turned off and each radio is to be closely monitored to detect the affected frequency. The retrans detachment is to advise all stations that the facility has been turned off prior to checking the retrans equipment for malfunction. Operators must be aware that a continual carrier may be because of enemy interference, a stuck pressel switch or retrans equipment failure.

Station Responsibilities

11.21 The responsibilities of the retrans detachment must be fully appreciated by the detachment members. Such responsibilities are as follows:

- a. *Accurate Answers to Radio Checks.* If all stations give accurate answers to radio checks and generally keep one another informed of strength and readability, the retrans operator maintaining the net becomes aware of faults and can conduct any engineering or carry out maintenance at an early stage, thus preventing interruptions to communications.
- b. *Engineering.* During periods of engineering, it is essential that all stations restrict traffic flow if possible and carry out instructions issued by the retrans station, allowing engineering to be completed quickly so that normal traffic may resume. All sub-stations' radio equipment is to be operated using 'squelch', if fitted.

Fault Interpretation. Often the retrans facility is blamed for sub-station equipment faults and difficulties, when in fact it is a fault with the sub-stations' equipment. The transmitted stations must ensure that apparent faults with the retrans station are in fact not their own. Retrans fault isolation and rectification procedures are detailed in annex A.

d. *Failing to Answer.* All stations are to maintain a listening watch to ensure that all calls are answered promptly. Failure to do so may result in the retrans detachment having to begin unnecessary testing of its own facility.

[Annex: A. Retransmission Fault Isolation and Rectification](#)

Retransmission Fault Isolation and Rectification

ANNEX A CHAPTER 11

1. With sufficient experience, members of a retrans detachment may readily recognise specific faults and quickly carry out remedial action. If, because of lack of experience or because of the nature of the fault, diagnosis is not possible, then the procedures detailed in tables 11-5, 11-6 and 11-7 are to be followed in sequence.

TABLE 11-5. Fault Finding and Rectification: Non-secure RAVEN Retransmission Using WD-1/TT

<i>Serial (a)</i>	<i>Action Sequence (b)</i>	<i>Results (c)</i>
1	a. If possible, inform stations on both legs of the facility that the facility is about to be broken and that any high precedence traffic is to be passed manually.	a. Keeps net informed, prevents confusion.
2	a. Conduct radio checks to stations on both legs using the respective R/T.	<p>a. Confirms serviceability of R/T, antenna and battery.</p> <p>b. If unsuccessful replace faulty R/T, antenna or battery.</p>

<i>Serial (a)</i>	<i>Action Sequence (b)</i>	<i>Results (c)</i>
3	<p>a. Check both R/T to ensure that mode switches are set to 'AUTO' and WD-1/TT is connected to 'REMOTE' terminals.</p> <p>b. If 2 kHz tone is heard in handset, reverse the pairs of wire at one end.</p>	a. Confirms station is configured correctly for retrans.

4	<ul style="list-style-type: none"> a. Ensure antennas are physically separated by at least 7.5 m and that there is a frequency separation of at least 6 Mhz between R/T. b. Direct stations to conduct a radio check through the retrans facility. 	<ul style="list-style-type: none"> a. Reduces interference between radios. b. Confirms serviceability of facility. c. If unsuccessful, replace WD-1/TT.
5	<ul style="list-style-type: none"> a. If successful, inform NCS. 	<ul style="list-style-type: none"> a. Return facility to 'MADE'.

TABLE 11-6. Fault Finding and Rectification: RAVEN Retransmission Using Cable CX-F208

<i>Serial (a)</i>	<i>Action Sequence (b)</i>	<i>Results (c)</i>
1	<ul style="list-style-type: none"> a. If possible, inform stations on both legs that the facility is about to be broken and that high precedence traffic is to be passed manually. 	<ul style="list-style-type: none"> a. Keeps net informed, prevents confusion.
2	<ul style="list-style-type: none"> a. Change mode switches on both R/T to voice or digital data b. (if using KY-57). c. Conduct radio checks on both legs using the respective R/T. 	<ul style="list-style-type: none"> a. If successful, inform NCS.

<i>Serial (a)</i>	<i>Action Sequence (b)</i>	<i>Results (c)</i>
3	<p>a. Ensure antennas are physically separated by at least 7.5 m and that there is a frequency separation of at least 6 Mhz between the R/T.</p> <p>b. Change mode switches on both R/T back to retrans and direct stations to conduct a radio check through the facility.</p>	<p>a. Reduces interference between radios.</p> <p>b. Confirms serviceability of facility.</p> <p>c. If unsuccessful, replace retrans cable CX-F208.</p>
4	<p>a. If successful, inform NCS.</p>	<p>a. Return facility to 'MADE'.</p>

TABLE 11-7. Fault Finding and Rectification: RAVEN Retransmission Using Retransmission Unit HF/VHF, RN-F300 (RTU)

<i>Serial (a)</i>	<i>Action Sequence (b)</i>	<i>Results (c)</i>
1	<p>a. If possible, inform stations on both legs that the facility is about to be broken and that high precedence traffic is to be passed manually.</p>	<p>a. Keeps net informed, prevents confusion.</p>

2	a. Turn RTU off and conduct radio checks on both legs using the respective R/T.	<ul style="list-style-type: none"> a. Confirms serviceability of R/T, antenna, battery and cipher equipment (if fitted). b. If unsuccessful, replace faulty R/T, antenna, battery or cipher equipment.
3	a. Turn RTU on and conduct BITE (built-in test on equipment) test.	<ul style="list-style-type: none"> a. Confirms serviceability of RTU. b. If fail light illuminates, replace c. RTU. d. If power light flashes, check e. RTU power source (indicates low voltage).

<i>Serial (a)</i>	<i>Action Sequence (b)</i>	<i>Results (c)</i>
4	a. Using local select switch, conduct radio checks on both legs from RTU.	<ul style="list-style-type: none"> a. Confirms serviceability of both legs from RTU. b. If either leg is unsuccessful, swap retrans cables to c. confirm whether cable is faulty. d. Replace retrans cable if necessary.

5	<ul style="list-style-type: none"> a. Ensure antennas are physically separated by at least 7.5 m and that there is a frequency separation of at least 6 Mhz between R/T. b. Change local select switch to ‘RETRANS’ and direct stations to conduct a radio check through the retrans facility. 	<ul style="list-style-type: none"> a. Reduces interference between radios. b. Confirms serviceability of facility.
6	<ul style="list-style-type: none"> a. If successful, inform NCS. 	<ul style="list-style-type: none"> a. Return facility to ‘MADE’.

CHAPTER 12

Ciphony Communications

Section 12-1. Introduction

Purpose

RESTRICTED 12 — 1

1. **12.1** The purpose of this chapter is to detail the basic ratel procedure for the operation of ciphony (cipher and telephony) communications.
2. **12.2** All ciphony communications are to be established and conducted in the CIPHER mode. No preparatory transmissions are made in the PLAIN mode. After synchronisation has been achieved by activation of transmitters in the CIPHER mode, all transmissions are to be made using the ratel procedures contained in the preceding chapters of this publication. It is essential to use ratel procedures in order to confirm good habits and to reduce the risk of security breaches in mixed net operations.
3. **Prowords**
4. **12.3** The following prowords are to be used in ciphony communications:
 - a. *IN PLAIN*. IN PLAIN means that this station is operating in the PLAIN mode and all responses are to be in this format.
 - b. *GO PLAIN*. GO PLAIN means to change to PLAIN mode.
 - c. *GO CIPHER*. GO CIPHER indicates a change to
 - d. CIPHER mode.

Section 12-2. Simplex Ciphony Net Operation

Normal Situations

12.4 The procedure for establishing a net is as follows:

- e. All stations listen on the opening frequency in the CIPHER mode at the pre-arranged time. No preparatory transmissions are made in the PLAIN mode.
- f. Before transmitting, the operator is to ensure that the equipment is in the CIPHER stand-by condition.

- g. The NCS transmits in the CIPHER mode and establishes the net at the designated time. The sub-stations reply in the CIPHER mode in turn.

12.5 After the net is established, subsequent communications are conducted in the CIPHER mode, observing proper net discipline to avoid mutual interference. Stations temporarily leaving the net, re-enter by transmitting in the CIPHER mode.

12.6 Malfunctioning Ciphony Equipment. A station which has lost its ability to communicate in the CIPHER mode switches to the PLAIN mode and transmits:

BP7 – THIS IS DE4 – IN PLAIN – OVER. (Thereafter, mixed net operations follow).

WARNING

Mixed net operation is open to breaches of security.

Section 12-3. Simplex Ciphony Mixed Net Operation

Normal Situations

12.7 The procedure for establishing a net in a simplex ciphony mixed net, operation is as follows:

- h. Use the same procedure as described in [paragraph 12.6](#).
- i. The NCS conducts all communication in the PLAIN
- j. mode with stations that:
 - 1. (1) lack ciphony equipment,
 - 2. (2) lack compatible crypto variables, or
 - 3. (3) are experiencing a ciphony equipment malfunction.

12.8 If the net begins operating as a ciphony net and later becomes a mixed net, the NCS informs the other ciphony-equipped stations of the identity of the station without ciphony capability.

12.9 Subsequent communications are as follows:

- i. Use the same procedure as described in [paragraph 12.6](#).
- j. Ciphony-equipped stations monitor PLAIN mode communications between the NCS and those stations without ciphony capability, via the plain-text override, in order to:
 - 1. (1) avoid interfering; and
 - 2. (2) receive messages addressed to them by the station without ciphony capability, eliminating the need for relay by the NCS.

- k. If the NCS loses the ability to communicate in the CIPHER mode, control of the net is delegated to a station which is able to maintain effective control.

12.10 Stations Without Ciphony Capability. Stations working in plain are limited as they cannot receive higher transmissions. This denies the net the capacity to work on an all-informed basis and introduces the risk that a station working in PLAIN may inadvertently jam a cipher transmission. Stations without ciphony capability are to:

- a. tune to the authorised operating frequency and establish a listening watch in the PLAIN mode at the pre-arranged time;
- b. call the NCS only when absolutely necessary;
- c. monitor cipher signals of ciphony-equipped stations and avoid interfering; and
- d. prefix the text of each initial transmission with the prowords IN PLAIN, when transmitting on a mixed net in the PLAIN mode, for example:

BP7 – THIS IS T3Q – IN PLAIN – TASK COMPLETED – OVER.

or

BP7 – THIS IS T3Q – IN PLAIN – RADIO CHECK – OVER.

12.11 When there are one or more stations working in PLAIN mode on the net, the NCS has a licence to direct the transmitting station as to the most appropriate action that is to be taken to ensure the message is passed and received by the stations without compromise. The following are some of these options:

- a. The NCS may take the message in PLAIN mode, then ask (in CIPHER mode) the station(s) to whom the message was addressed to acknowledge the receipt of the message given they were able to hear it in PLAIN transmission. The NCS could then answer any correction or repetition queries in CIPHER mode.
- b. The NCS can direct the stations to whom the message is addressed to revert to PLAIN mode to receive the message.
- c. The NCS may direct one of the stations to whom the message is addressed to revert to PLAIN mode and receive the message, then relay the message to the other addressees in CIPHER mode.

12.12 Establishing communications in difficult conditions or during secure retrans operations may necessitate changing from the CIPHER mode to the PLAIN mode. Where this becomes necessary, the prowords GO PLAIN and GO CIPHER are to be used:

T3Q – THIS IS – Z8N – GO PLAIN – OUT.

(All ciphony-equipped stations switch to PLAIN mode and communicate in PLAIN language with one another and the station without ciphony capability, as necessary.)

T3Q – THIS IS – Z8N – GO CIPHER – OUT.

(All ciphony-equipped stations switch to CIPHER mode. Sub- sequent operations are conducted in accordance with instructions for normal situations.)

12.13 Extreme care is to be taken to avoid breaches of security during mixed net operation.

12.14 When more than one station in the net is without cipher capability, normal procedures plus the procedure described in paragraph 12.10 are to be used.

CHAPTER 13

Establishing Communications on a Frequency Hopping Net by a Non-hopping Station

Section 13-1. Introduction

13.1 This chapter describes the procedures for establishing and maintaining communications between frequency hopping (FH) stations and stations which are not capable of FH. All settings and procedures for data input on the VHF/HF radio for an FH net may be found in the technical manual for both RAVEN VHF and HF.

13.2 The procedures outlined in this section are to be used when combat net radios operating in the same frequency band cannot achieve synchronisation with a net in the FH mode because:

- a. the radio attempting to call is not capable of hopping by design;
- b. the calling radio is not capable of operating in an FH mode because of equipment malfunction; or
- c. the calling radio, though compatible with the FH net, does not contain the fill data for the net it is trying to access.

13.3 In order to implement the procedures outlined in [section 13-2](#), the non-hopping station must have:

- a. the calling (HAIL) frequency;
- b. a specified frequency(s) for maintaining communications;
- c. the HAIL Code (for HF);
- d. all necessary call-signs; and all authentication information.

Section 13-2. Procedures for Establishing Communications (VHF)

Initiating the Call

13.4 To call an FH net, the operator of the non-hopping equipment is to select the appropriate HAIL frequency for the desired net, and after checking that the channel is not in use, and the radio is in voice mode, cause a transmission by operating the pressel for the duration of between six to eight seconds.

13.5 If no reply is received from the hopping net within one minute, the operator checks the frequency and repeats the above procedure until contact is made.

Receiving the Call

13.6 Operators on the called frequency will be alerted by a tone and a display of HAIL on the liquid crystal display (LCD) panel (RAVEN equipment only). On receipt of the alert the NCS is to:

- a. select HAIL setting on the VHF FH unit; and
- b. establish communications with the calling non-hopping station (including authentication).

13.7 If the NCS is not the intended recipient of the call, the NCS is to revert to FH mode and inform the intended recipient that it is being called, providing details of the calling station's call-sign. The intended recipient should then establish communications on the calling frequency.

Section 13-3. Maintaining Communications

13.8 Communications cannot be maintained for long periods between non-hopping and FH net stations on the calling (HAIL) frequency. This would cause disruptions as the alert tone will continue to be received by FH stations on each occasion the non-hopping station transmits.

Procedure

13.9 The called station directs the calling operator to change to another frequency in order to maintain communications. This frequency can be:

- a. the frequency specified on the FH SOI (primary or alternate);
- b. a frequency specified in the communications instructions;
- c. a frequency assigned by the Regional Distribution Unit Frequency Manager; or
- d. if a frequency has not been specified, the frequency of the calling station's fixed radio net.

13.10 Both calling and called stations change to the elected frequency and carry out challenge and reply procedures. Once this has occurred, normal procedures can be adopted.

13.11 If a station on the FH net is required to maintain communications with a non-hopping station for a period of time, it may:

- a. use spare radio equipment to communicate on a frequency for maintaining communications;
- b. ask permission to leave the FH net for a designated period of time; or

- c. if the NCS requires to leave the FH net, delegate control to a sub-station, stating time of return and to which frequency it will be changing.

13.12 The procedures detailed in [paragraph 13.11](#) are also to be used when an FH station wishes to establish communications with a non-hopping station.

Section 13-4. HF Procedures

13.13 The procedure for HF is the same as VHF; however, a HAIL code in addition to the HAIL frequency is required. All other procedures detailed for VHF communications are to be carried out.

CHAPTER 14

Beadwindow Procedure

Section 14-1. Introduction

14.1 Beadwindow procedure is a simple, rapid training procedure for use by operators or users to police the security of insecure voice radio nets. It brings to the immediate attention of operators and users the fact that an essential element of friendly information (EEFI) has been disclosed on the net. Additionally, the beadwindow report serves to alert other operators and users on the net to the EEFI disclosure, and thus acts as an educational aid producing increased security awareness among operators and users, and an overall improvement in the security of insecure voice communications. Beadwindow procedure may be used during training and single Service exercises for the education of users and operators, but is **not** to be used during operations.

Procedure

14.2 The beadwindow procedure uses the keyword BEADWINDOW, followed by a number combination which is transmitted immediately to the station disclosing an EEFI. When a station on the net transmits information listed in an EEFI, the NCS operator or user (or any operator or user on the net in the event that the NCS fails to take action) transmits the keyword followed by the number(s) of the EEFI which has been disclosed. The following example illustrates the use of beadwindow procedure. Call-sign DE4 has just disclosed his position:

DE4 – THIS IS – BP7 – BEADWINDOW ONE – OVER. (BP7) – (THIS IS) – DE4 – ROGER – OUT.

14.3 The NCS has used serial 1 of the EEFI list in [annex A](#). The only authorised reply to a BEADWINDOW report is 'ROGER – OUT'.

14.4 This procedure is NOT to be used in operations. **Essential Element of Friendly Information List**

14.5 Approved broad EEFI for general use is listed in [annex A](#). An appropriate keyword or key phrase has been assigned to each EEFI for ease of training and rapid understanding of beadwindow reports. Additional EEFI for specific operations or exercises may be developed and broad EEFI expanded by commanders included in operations plans or orders. This may be accomplished by adding new EEFI categories (that is, 8, 9, 10) or by expanding existing categories (for example, 21 – force composition, 22 – force capabilities, 23 – force limitations). The EEFI list is to be posted in clear sight of the operator or user at all insecure voice positions for rapid reference.

[Annex: A. Essential Element of Friendly Information List](#)

ANNEX A CHAPTER 14

Essential Element of Friendly Information List

The approved broad EEFI listing for general use is shown in table 14-1.

TABLE 14-1. Essential Element of Friendly Information List

Serial (a)	EEFI No □(b)	Key Word □(c)	Definition □(d)
1	1	Position	<i>Friendly or Enemy Position, Movement or Intended Movement.</i> Used when the operator discloses the position, course speed, altitude or destination of any air, sea or group element, unit or force.
2	2	Capabilities	<i>Friendly or Enemy Capabilities or Limitations.</i> Used when the operator discloses the force compositions or identity, capabilities, limitations or significant casualties to special equipment, weapon systems, sensors, units or personnel, and percentages of fuel or ammunition remaining.
3	3	Operations	<i>Friendly or Enemy Operations, Intentions, Progress or Results.</i> Used when the operator discloses the operational or logistic intentions, assault objectives, mission participants, flying programmes, mission situation reports, or results of friendly or enemy operations.

Serial (a)	EEFI No □(b)	Key Word □(c)	Definition □(d)
4	4	EW	<i>Friendly or Enemy EW/emcon – Intentions, Progress or Results.</i> Used when the operator discloses the intention to employ EA, results of friendly or enemy ES, objectives of EA, results of friendly or enemy EP, results of ES, present or intended emcon policy, and equipment affected by emcon policy.

5	5	Personnel	<i>Friendly or Enemy Key Personnel.</i> Used when the operator discloses the movement or identity of friendly or enemy general or senior officers, distinguished visitors, unit commanders , and movements of key maintenance personnel indicating equipment limitations.
6	6	Comsec	<i>Friendly or Enemy comsec breaches.</i> Used when the operator has linked codes or code- words with plain language, compromised the changing of frequencies, linage with line numbers/circuit designators, or call-signs with previous call-signs or units. Used with compromised encrypted classified call-signs, and after incorrect authentication procedure.
7	7	Wrong Circuit	<i>Inappropriate Transmission.</i> Used when the operator discloses information requested, transmitted or about to be transmitted, which should not be passed on the subject circuit because it either requires greater security protection or is not appropriate to the purpose for which the circuit is provided.
8	8to10	As Required	<i>For Assignment as Required.</i>

PART THREE.

RADIOTELEGRAPH PROCEDURES

CHAPTER 15

Introduction to Radiotelegraph Procedures

Section 15-1. General

Aim

15.1 The aim of part 3 of this handbook is to standardise the radiotelegraph procedure for operators and users throughout the Australian Army, in a form which provides maximum compatibility with procedures used for joint and combined working, without seriously impairing the speed and efficiency of operation of land army nets.

15.2 Radiotelegraph procedure is the set of procedures utilised when using morse code. The radiotelegraph procedure used is based on normal working conditions. The procedures for poor to difficult working conditions are contained in [chapter 19](#).

Procedures

15.3 The procedures described are designed to provide a concise and definite format where radiotelegraph communications may be conducted accurately, rapidly and securely. This is achieved by observing the following principles:

- a. brevity,
- b. uniformity,
- c. simplicity,
- d. security,
- e. accuracy, and f. discipline.

Operating Method

15.4 The method for passing messages from one station to another is the receipt method. Other methods are used by the Navy and Air Force.

Receipt Method

15.5 The receipt method requires a receipt for each message received from the transmitting station in order to verify reception.

Joint and Combined Procedures

15.6 The radiotelegraph procedures for joint and combined working are detailed in *ACP 124 Communications Instructions, Radiotelegraph Procedure*.

Variations to Procedure

15.7 Unauthorised departure from, or variations to, set procedure are prohibited, as they invariably create confusion, reduce reliability and speed, and tend to nullify security precautions.

Examples

15.8 Some examples in this part show certain operational prosigns in brackets. This indicates that their use is optional depending upon the conditions at the time of transmission.

Section 15-2. Security, Accuracy and Discipline

Introduction

15.9 All radio transmissions are liable to interception. The operator must, therefore, presume that all transmissions are being heard by the enemy at all times and must be conscious of comsec. Security and discipline procedures are outlined in [chapter 1](#) of this handbook.

Accuracy

15.10 Each morse character is to be transmitted clearly and distinctly. The speed of transmission will be governed by the prevailing conditions and the capability of the receiving operator(s).

15.11 Accuracy in transmission is more important than speed. The difference in time required to send a message at 18 words per minute and that required to transmit it at 25 words per minute is slight, and any gain in time is often nullified by the necessity for the recipient to obtain corrections and repetitions.

15.12 The following rules are to be obeyed when transmitting:

- a. No operator is to send faster than he can receive.
- b. The governing speed of the transmitting operator is that of the slowest receiving operator.
- c. If necessary, the NCS should prescribe the speed of transmission on the net.

Types of Radio (Morse) Communication

15.13 There are three types of morse communication:

- a. key conversation,
- b. informal messages, and
- c. formal messages.

Key Conversation

15.14 Officers wishing to converse with one another may initiate key conversations through their respective operators. A key conversation must be offered.

Informal Messages

15.15A user may wish to ask a question or send information without discussion. This can be done by giving the message to the operator verbally or in writing, for transmission as an informal message. An informal message consists simply of the user's text, with an indication of the addressees, when necessary.

Formal Messages

15.16 A formal message is written down on a message form, signed by the releasing officer and handed to the operator for registration, transmission and filing.

15.17 Formal messages may be in cipher, plain language, code or a mixture of plain language and code. The originator and addressee are responsible for encoding and decoding messages. The operator is responsible for encryption and decryption of formal messages.

15.18 Formal messages transmitted over land force radiotelegraph circuits are to be prepared in plaindress, abbreviated plaindress or codress form, except when a commercial or international civil aviation organisation form is used.

International Morse Code

15.19 All transmission on radiotelegraph Land Army nets are made by use of the international morse code. In the morse code, the letters, numerals, punctuation and procedure signs (prosigns), are each represented by a combination of dots and dashes and are expressed as shown in [table 15-1](#). An overscore (a line over two or more letters) indicates that the letters overscored are to be transmitted as a single character without a pause between letters. Character formation is to be as follows:

- a. A dot is used as the unit of duration.
- b. A dash is equal to three units.
- c. An element is either a dot or a dash.
- d. A space between elements is one unit.
- e. The space between characters is three units.

f. The space between groups is seven units.

TABLE 15-1. International Morse Code

TABLE 15-1. International Morse Code

Serial (a)	Letter/Numeral/Punctuation (b)	Representation (c)
1.	A	· -
	B	·· -
	C	·· · -
	D	·· · ·
	E	·
	F	·· · · -
	G	·· · · ·
	H	·· · · · -
	I	·· - -
	J	·· - - -
	K	·· - ·
	L	·· · -
	M	·· · ·
	N	·· · · -
	O	·· · · ·
	P	·· · · · -
	Q	·· · · · ·
	R	·· · · · -
	S	·· · · ·
	T	·
	U	·· · ·
	V	·· · · -
	W	·· - -
	X	·· - - -
	Y	·· - · -
	Z	·· - · ·
2.	1	····
	2	···· -
	3	···· ·
	4	···· · -
	5	···· · ·
	6	···· · · -
	7	···· · · ·
	8	···· · · · -
	9	···· · · · ·
	0	···· · · · · -

Serial (a)	Letter/Numeral/Punctuation (b)	Representation (c)
3.	Block Letters (capital letters or underline) (UK)
	Fraction Bar (slant)(XE)-
	Period (full stop) (AAA)-
	Hyphen (dash) (DU)
	Parenthesis (left bracket) (KN)-
	Parenthesis (right bracket) (KK)-
	Comma (MIM)	...,-
	Question Mark (INT)	...,-
	Colon (OS)	...,-

Prosigns

15.20 Prosigns are one or more letters, characters or combinations thereof. They are used to facilitate communication, by conveying in a condensed standard form, certain frequently used orders, instructions, requests and information relating to communications.

15.21 A complete list of prosigns used on Land Force nets and their meaning are shown in [annex A](#).

Operating Signals

15.22 'Z' and 'Q' operating signals are to be used in accordance with instructions contained in *ACP 131, Communication Instruction Operating Signals*. A list of frequently used operating signals is contained in [annex B](#).

Prosigns

15.20 Prosigns are one or more letters, characters or combinations thereof. They are used to facilitate communication, by conveying in a condensed standard form, certain frequently used orders, instructions, requests and information relating to communications.

15.21 A complete list of prosigns used on Land Force nets and their meaning are shown in [annex A](#).

Operating Signals

15.22 'Z' and 'Q' operating signals are to be used in accordance with instructions contained in *ACP 131, Communication Instruction Operating Signals*. A list of frequently used operating signals is contained in [annex B](#).

15.23 When selecting an operating signal for a specific purpose other than that indicated in this handbook, special care must be exercised to ensure that no ambiguity of security arises. The operating signal must also conform with chapter 1 of *ACP 131*.

Annexes: [A. Procedure Signs and Other Signs](#) [B. Operating Signals](#)

ANNEX A CHAPTER 15

Procedure Signs and Other Signs

1. The procedure signs (prosigns) and other signs which must be used by signals operators are listed in table 15-2.

TABLE 15-2. List of Prosigns and Other Signs

<i>Serial (a)</i>	<i>Prosign □(b)</i>	<i>Meaning □(c)</i>	<i>Normal Use □(d)</i>
1	AA	All after	To identify a portion of a message.
2	AA	Unknown station	In lieu of a call-sign in establishing communications with a station whose call-sign is not known or is not recognised.
3	AAA	Period (full stop)	Punctuation.
4	AB	All before	To identify a portion of a message.
5	AR	End of transmission	Indicates, ‘End of my transmission to you and no response is required or expected’.
6	AR ii	End of Transmission	Indicates, ‘End of my transmission to you and no response is required or expected. I am about to call another station immediately and no other station is to transmit in the meantime’.
7	AS	Wait	Indicates, ‘There will be a short pause of five seconds and no other station is to transmit during this period’.

<i>Serial (a)</i>	<i>Prosign □(b)</i>	<i>Meaning □(c)</i>	<i>Normal Use □(d)</i>
8	AS AR	Wait out	Indicates a pause longer than five seconds.

9	ASARii	Wait out to you	Indicates a pause longer than five seconds and, ‘I am about to call another station immediately. No other station is to transmit’.
10	B	More to follow	In final instructions and during transmissions.
11	BT	Long break	Indicates the separation of the heading, text and ending.
12	C	Correct/correction	Alone, indicates, ‘You are correct’. Followed by identification data indicates, ‘This is a corrected version of the message, portion detailed, or in answer to your request for verification’.
13	CC	Collective call	A call to certain stations on net without having to use individual call-signs.
14	DE	From	Indicates, ‘Transmission is from the station whose call-sign follows’.
15	DU	Hyphen (dash)	Punctuation.
16	EEEEEEEEE	Correction	A succession of eight Es indicates an error has been made in the transmission and will be corrected.
17	EEEEEEEEE AR —	Cancel	Indicates, ‘The transmission is in error and should be disregarded’.
18	F	Do not answer	In the transmission instructions indicates, ‘Stations called are not to answer this call or to receipt for this message or otherwise to transmit in connection with this transmission’.

<i>Serial (a)</i>	<i>Prosign □(b)</i>	<i>Meaning □(c)</i>	<i>Normal Use □(d)</i>
41	R	Received (roger)	After a call, in relation to receipt of a transmission.
42	R	Routine	Precedence.

43	R AR	Received message	Transmitted after each message to signify receipt. In good communications, AR alone is sufficient.
44	SVC	Service Message (plain language)	Identifies plain language service message.
45	TO	Action addressee sign	The action addressee(s) of this message is indicated by the address designator(s) immediately following.
46	T	Transmit to	In the transmission instructions, this indicates: <ol style="list-style-type: none"> Alone. ‘Station called, transmit this message to all addressees in the address component’. Followed by address designator(s). ‘Station called, transmit this message to the addressee(s) whose address designator(s) follow(s)’. Preceded by a call-sign and followed by address designator(s).‘Station whose call-sign precedes T, transmit this message to the addressee(s) whose address designator(s) follow(s) T’.
47	UK	Block letters (capital letters or underline)	Indication before and after words or phrases as applicable.
48	WA	Word after	To identify a portion of a message.
49	WB	Word before	To identify a portion of a message.

<i>Serial (a)</i>	<i>Prosign □(b)</i>	<i>Meaning □(c)</i>	<i>Normal Use □(d)</i>
50	XE	Fraction Bar (slant)	Punctuation.

51	XMT	Exempt addressee sign	The addressees immediately following are exempted from the collective call or net call.
52	Z	Flash (message)	Precedence.

ANNEX B CHAPTER 15

Operating Signals

1. Operating signals which must be known by signals operators are listed in table 15-3.

TABLE 15-3. Operating Signals

<i>Serial (a)</i>	<i>Operating Signal □(b)</i>	<i>Question □(c)</i>	<i>Answer and Advice □(d)</i>
1	QCX	What is your full call-sign?"	My full call-sign is . . .' or 'Use your full call-sign until further notice.'
2	QRK	What is the intelligibility of my signals (or those of)?"	The intelligibility of your signals (or those of...) is . . . <ul style="list-style-type: none"> 1. bad 2. poor 3. fair 4. good 5. excellent.'
3	QRM	Are you being interfered with?"	I am being interfered with 1. nil <ul style="list-style-type: none"> 2. slightly 3. moderately 4. severely 5. extremely.'
4	QRS	Shall I send slower?"	Send more slowly (. . . words per minute).'

<i>Serial (a)</i>	<i>Operating Signal □(b)</i>	<i>Question □(c)</i>	<i>Answer and Advice □(d)</i>
5	QSA	What is the strength of my signal(s) (or those of)?'	The strength of your signals (or those of ...) is... 1. scarcely perceptible 2. weak 3. fairly good 4. good 5. very good.'
6	QSB	Are my signals fading?'	Your signals are fading.'
7	QSL	Can you acknowledge receipt?'	I am acknowledging receipt.'
8	QSY	Shall I change transmission to another frequency?'	Change to transmission on another frequency (or on kHz).'
9	QSZ	Shall I send each word or group more than once?'	Send each word or group twice (or times).'
10	ZAA		You are not observing proper circuit discipline.'
11	ZAD		Your operating signal (made at ...) received as....'
12	ZAL		I am closing down (until....) due to...'
13	ZAN		Transmit only messages of and above the precedence of'
14	ZBB		For the following message you will require a total of copies.'
15	ZBI		Listen for radiotelephony.'

<i>Serial (a)</i>	<i>Operating Signal □(b)</i>	<i>Question □(c)</i>	<i>Answer and Advice □(d)</i>
16	ZBO	Of what precedence(s)?'	I have (or . . . has) (numeral followed by precedence prosign for each precedence message(s) for you (or for . . .).'
17	ZDA		I have a formal message for you (precedence is . . .).'
18	ZDK	Will you repeat message ... (or portion)?'	Following repetition (of . . . is) made in accordance with your request.'
19	ZEV	Request you acknowledge message . . .'	Message (or message plus call-sign as applicable...) is acknowledged.'
20	ZFH		Notification of additional addressees if message is readdressed.
21	ZFR		Cancel transmission . . . (made under TI serial number . . .).'
22	ZGA	What is my call-sign for use on this circuit only?'	Your call-sign for use on this circuit only is....'
23	ZGN	When was I (or . . .) last heard?'	Nothing heard from you (or . . .) since . . .'
24	ZGO	What is my call-sign and sequence in answering?'	Your call-sign is . . . answer after call-sign . . .'
25	ZKA	Who is NCS on this frequency (or on...kHz)?'	I am (or . . . is) NCS on this frequency (or on...kHz).'

<i>Serial (a)</i>	<i>Operating Signal □(b)</i>	<i>Question □(c)</i>	<i>Answer and Advice □(d)</i>
26	ZKB	Is it necessary to obtain the permission of the NCS before transmitting message?’	It is necessary to obtain the permission of the NCS before transmitting message.’
27	ZKC		NCS
28	ZKD	Shall I take control of the net (for...) (until . . .)?’	Take control of the net (for . . .) (until . . .).’
29	ZKE		I (or . . .) report(s) in the circuit (net).’
30	ZKF		Station leave net temporarily (or for . . . minutes) (to communicate with . . .) (will be on...kHz).’
31	ZKJ	May I close down (until. . .)?’	Close down (until . . .).’
32	ZNB	What is authentication of . . 1. Message . . . 2. Last transmission?’	Authentication (of . . .) is . . . 1. Message . . . 2. Last transmission.’
33	ZOE	Can you accept message for . . .? ’	Give me your message and I will dispose of it.’
34	ZOF		Relay this message (or message . . .) to ...now(or at...).’
35	ZOK		Relay this message via . . .’
36	ZOT		Transmit this message at the lower precedence to the station or address designator(s) which follow(s).’

<i>Serial (a)</i>	<i>Operating Signal □(b)</i>	<i>Question □(c)</i>	<i>Answer and Advice □(d)</i>
37	ZPF	What is the readability of the signals of the net (or of...) is (1 to 5) (same as QRK).'	The readability of the signals of the net (or of...) is (1 to 5) (same as QRK).'
38	ZPG	What is (are) signal strength(s) of net (or of. . .)?'	Signal strength(s) of net is (are) (or of...) is (1 to 5) (same as QSA).'
39	ZUA	Request a timing signal now (or at...)?'	Timing signal will be (or at . . .). The numerals indicating the time will be followed by five second dash terminating exactly at the time indicated.'
40	ZUE		Affirmative (Yes).'
41	ZUG		Negative (No).'
42	ZUG HM HM HM		Lift emergency silence.'
43	ZUI		Your attention is invited to . . .'
44	ZUJ		Stand by.'
45	ZUK	. . .(appointment title) desires key conversation on this net with... (appointment title) Will you indicate when you are ready?'	. . . (appointment title) is now ready to begin key conversation with . . . (appointment title).'

<i>Serial (a)</i>	<i>Operating Signal □(b)</i>	<i>Question □(c)</i>	<i>Answer and Advice □(d)</i>

46	ZXY		Transmit this message to the addressee(s) indicated by the numeral(s) following . . . All addressees are to be counted consecutively as they appear (numbers to be separated by the separative sign).'
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CHAPTER 16

Calls on Radio Nets

Section 16-1. Calling and Answering

Calling

16.1 Transmission from stations communicating on a net comprises three parts:

- a. *Initial Call.* The initial call indicates the station(s) called and the calling station:
 1. (CALL-SIGN) – which identifies the station(s) being called;
 2. DE – a prosign used to indicate that the call-sign of the calling station follows; and
 3. (CALL-SIGN) – which identifies the station calling.
- b. *Text.* The text consists of information to be passed.
- c. *Ending.* One of the following prosigns is used to indicate that the transmission has ended:
 1. K – meaning: ‘This is the end of my transmission to you and a response is necessary. Go ahead, transmit’; and
 2. AR – meaning: ‘This is the end of my transmission to you and no answer is required or expected’.

Answering

16.2 When a call requires an immediate answer such that it ends with the prosign K, the station(s) called replies with an answering transmission consisting of the following:

- a. *Answering Call.* The answering call consists of:
 1. (CALL-SIGN) – which identifies the station being called;
 2. DE – a prosign used to indicate that the call-sign of the station calling follows; and
 3. (CALL-SIGN) – which identifies the station calling.

- b. *Text.* The text may be answer or receipt. One of the following prosigns may be used as a receipt:
 - 1. R – meaning: ‘I have received your last transmission’; and
 - 2. AS – meaning: ‘I must pause for up to five seconds before replying. No other station is to transmit during this period’.
- c. *Ending.* In addition to the prosigns K and AR, the following may be used to indicate the end of the transmission:
 - 1. AS AR – meaning: ‘I must pause longer than five seconds before replying; your transmission is received. A further transmission on the same subject will follow later’; and
 - 2. AR – meaning: ‘This is the end of my transmission to you and no answer is required or expected and a call to another station follows immediately. A further transmission to you will follow later’.

16.3 In the event of the answering transmission ending with the prosigns AR, AS AR or AR, the series of transmissions is completed and further communication on the net is achieved by a new initial transmission. Should the answering call end with the prosign K, then subsequent transmissions follow the format of the answering call until the conversation or message is terminated by AR, AS AR or AR.

Order of Answering

16.4 Formation Nets. Where tactical call-signs are used, the order of answering is in alphabetical and/or numerical sequence in the format detailed in [chapter 3, paragraph 3.20](#).

16.5 Unit Nets. On unit or sub-unit nets where there may or may not be other arms' representatives attached, stations are to answer in the following order:

- a. Unit elements answer in numerical and alphabetical sequence (for example, 11, 11A, 11B, 12 and 12A).
- b. Representatives of other arms using arms indicators, answer in alphabetical order of arms indicator.
- c. Stations using NIC to qualify their call-signs, answer in the order in which they join the net.

16.6 If a station in order waits five seconds and then answers. The station which failed to answer in proper sequence must then wait until all other stations have answered and it then answers. A period of five seconds for each station which failed to answer the initial call, is allocated after the last station has answered in order, before any further action is taken by NCS.

16.7 If a station still does not respond, the NCS waits a further five seconds after the last response, and then initiates a new initial call to that station.

station fails to answer in proper sequence, the next

Section 16-2. Types of Calls

16.8 There are five types of call:

- a. single,
- b. multiple,
- c. net,
- d. collect, and
- e. exempt.

Single Call

16.9 A single call is a call to one station on the net from the NCS or from a sub-station:

T3Q DE BP7 ii MOVE NOW ii K

BP7 DE T3Q ii CANNOT MOVE FOR 10 MINUTES ii K

T3Q DE BP7 R AR

Multiple Call

16.10 A multiple call is a call to two or more stations, but not to all stations on the net:

Z8N IMM DE BP7 ii SUNRAY LEAVING FOR YOUR LOC NOW ii K

BP7 DE IMM R AR

BP7 DE Z8N R AR

Net Call

16.11 A net call is a call to all stations on the net from either the NCS or a sub-station:

SM5 DE BP7 ii RV AT DOG KENNEL AT 180900 HRS ii K

BP7 DE DE4 R AR

BP7 DE IMM R AR

BP7 DE T3Q R AR

BP7 DE Z8N R AR

Collective Call

16.12 A collective call is a call to certain stations on the net. The stations to which a particular collective call refers are pre-arranged. It is not essential for all nets to have a collective call-sign. Although collective calls are normally made by the NCS, they may be originated by any sub-station on the net.

16.13 On formation nets, tactical call-signs are allocated for each collective call.

16.14 On unit nets, collective calls could be used for commanders to converse with their sub-unit commanders without having to use their individual call-signs. The prosign CC is used to denote collective calls. Where there is a requirement for additional collective calls, the prosign CC is qualified by a figure, for example, CC1.

16.15 In the following examples which take place on a formation net, the collective call-sign CC1 has been designated to be answered by DE4, and Z8N, but also includes the NCS, when one of the sub-stations on the net uses the call-sign. IMM initiates the call:

CC1 DE IMM ii MOVING NOW ii K

IMM DE BP7 R AR

IMM DE DE4 R AR

IMM DE Z8N R AR

Exempt Call

16.16 An exempt call is a net or collective call where specified stations are not required to attend. The prosign XMT is used to denote exempt calls. In the following example, the NCS wishes to contact all sub-stations other than call-sign T3Q:

SM5 ii XMT T3Q DE BP7 ii MOVE NOW ii K

BP7 DE DE4 R AR

BP7 DE IMM R AR

BP7 DE Z8N R AR

Section 16-3. Calling Procedure and Call-signs

Abbreviated Procedure

16.17 Under normal working conditions, abbreviated procedure is used to save time and improve security by omitting the call-signs of the called stations, and any non-essential prosign, for example, DE, R. In a single call, all call-signs may be omitted after the initial call and reply. The following are examples of call-sign procedures:

- a. **QCX** - use full call-signs; and

b. **ZUG QCX** - use abbreviated call-signs.

16.18 Throughout the remainder of this handbook, those parts of a call or prosigns which may be omitted are shown in brackets. This is illustrated in the following example where one sub-station (IMM) calls the NCS and another sub-station:

BP7 ii T3Q DE IMM ii SUNRAY LEAVING NOW ii K

(IMM) (DE) BP7 (R) AR

(IMM) (DE) T3Q (R) AR

Abbreviated Call-signs

16.19 The NCS may direct the net to use abbreviated call-signs when conditions are favourable. All stations on the net must use the same procedure. Tactical call-signs are abbreviated to the first two characters. Fixed call-signs are not to be abbreviated except on the following nets:

- a. *Forward Control Nets.* The unit or sub-unit commander nominates a station to be NCS of the forward net. The station nominated deletes the letter suffix. The head-quarters stations which are not acting as NCS are sub-stations on the net and use their letter suffixes.
- b. *Rear Link.* The sub-unit commander appoints one station on the sub-unit net to work the rear link. The other stations then stand by. The remaining stations retain the suffix for use should they wish to transmit for any reason.

16.20 When ordering a change to abbreviated call-signs, the following is transmitted by the NCS:

SM5 DE BP7 ii ZUG QCX ii AR

Full Call-signs

16.21 If conditions on the net deteriorate, the NCS may order that full call-signs be used. Full call-signs may be used with either full or abbreviated procedure. To order the use of full call-signs the NCS transmits:

SM5 DE BP7 ii QCX ii AR

16.22 If the NCS considers it necessary for the transmitting station or the net to use full or abbreviated procedure, it is to request this by transmitting in full, as no Z or Q signal exists for such a procedure.

CHAPTER 17

Establishing a Net

Section 17-1. Establishing Drill

Operating Signals

17.1 The operating signals used in this chapter are shown in table 17-1.

TABLE 17-1. Operating Signals for Establishing a Net

<i>Serial (a)</i>	<i>Operating Signals (b)</i>	<i>Meaning (c)</i>
1	INT QSA	What is the strength of my signal?'
2	QSA...	Your signal's strength (or that of . . .) is: 1. scarcely perceptible 2. weak 3. fairly good 4. good 5. very good.'
3	INT QRK	What is the intelligibility of my signals?'
4	QRK	Your signal intelligibility (or that of . . .) is: 1. bad 2. poor 3. fair 4. good 5. excellent.'

<i>Serial (a)</i>	<i>Operating Signals (b)</i>	<i>Meaning (c)</i>
5	INT ZPG	What is the signal strength of the net?'
6	ZPG	The signal strength of the net (or of . . .) is: (1 to 5 as detailed in serial 2).'
7	INT ZPF	What is the readability of the net?'
8	ZPF	The readability of the net (or of . . .) is: (1 to 5 as detailed in serial 4).'

9	QRM	I am being interfered with: 1. not at all 2. slightly 3. moderately 4. severely 5. extremely.'
10	QSB	Your signals are fading.'
11	ZGN	Nothing heard from you or from . . . '
12	ZKE	I am reporting into the net.'

17.2 A net is established using a preliminary procedure drill. This ensures that all stations on a radio net are able to establish communications with one another on the same frequency. Disregard of the preliminary instructions and procedure may result in excessive tuning, making the task of enemy interception and direction-finding stations easier. Examples of establishing a net are given in [table 17-2](#).

TABLE 17-2. Establishing a Net (Initial Report)

<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
1	A	NCS DE4 IMM T3Q Z8N NCS	Call is made on a satisfactory formation net. SM5 DE BP7 INT QSA INT QRK (BP7) (DE) DE4 R K (BP7) (DE)IMM QSA3 QRK4 K (BP7) (DE) T3Q R K (BP7) (DE) Z8N QSA3 QRK3 QRM2 K (SM5) (DE) BP7 ii IMM QSA3 QRK4 AR	Hears NCS QSA5 QRK5. NCS signal strength fairly good. Hears NCS QSA5 QRK5. NCS signal strength fairly good with slight interference. All stations' signal strength very good, except IMM.

<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
2	B	NCS DE4 IMM T3Q Z8N T3Q	A sub-station on the net fails to answer in correct sequence. SM5 DE BP7 INT QSA INT QRK K (BP7) (DE) DE4 R K (BP7)(DE)IMMRK (no reply) (BP7) (DE) Z8N QSA4 QRK4 K (BP7) (DE) T3Q R K (SM5) (DE) BP7 R AR	(after 5 second pause) T3Q answers last.

<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>

3	C	NCS DE4 IMM TQ3 Z8N IMM NCS IMM IMM	A sub-station on the net fails to answer preliminary call. SM5 DE BP7 INT QSA INT QRK K (BP7) (DE) DE4 R K (no reply) (BP7) (DE) T3Q R K (BP7) (DE) Z8N QSA4 QRK4 K (no reply) IMM DE BP7 INT QSA INT QRK K (BP7)(DE)IMMRK (SM5) (DE) BP7 R AR	(after 5 second pause) (after 5 second pause)
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<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
4	D	T3Q NCS T3Q NCS	A sub-station on the net fails to answer NCS final request for a report. (no reply) T3Q DE BP7 INT QSA INT QRK K (no reply) T3Q DE BP7 ZGN AR SM5DEBP7RAR	(after 5 second pause) NCS indicates that he did not hear T3Q and advises remaining stations of their strengths.

5	E	T3Q NCS T3Q	Sub-station reports late into the net. BP7DET3QZKEK (T3Q) (DE) BP7 INT QSA INT QRKINTZNBAFK (BP7) (DE) T3Q QSA4 QRK 4 AS (a short pause while authentication is calculated) ZNBWK	T3Q reporting into net. NCS requests T3Q to report strengths and to authenticate. T3Q reports strengths and indicates the authenticator.
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<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
6	F	NCS	NCS replies to sub-stations of varying strengths, and reports only those stations which are unsatisfactory. SM5 DE BP7ii DE4 QSA2 QRK3 ii IMM QSA3 QRK4 ii T3Q QSA4 QRK4 ii Z8N QSA4 QRK4 AR	NCS advises that DE4 is weak but fair, IMM is fairly good, T3Q and Z8N are good.

17.3 The preliminary procedure drill prescribed in this chapter is to be used either when opening a net for the first time, or when re-opening a net. Proper control by the NCS and adherence to operating rules by the stations on the net will enable it to exchange messages with minimum delay. The NCS is responsible for maintaining security on the net.

17.4 Establishing a net requires two phases:

- a. preliminary instruction, and

- b. the report of signals strengths and readability.

Preliminary Instructions

17.5 The preliminary instructions regarding the working of the net are to be formal instructions (for example, SOI) and are carried out by all stations on the net. These instructions should contain:

- c. the net organisation in the form of a diagram or list of stations;
- d. the frequencies assigned to the net;
- e. the call-signs, address groups and other net identification information;
- f. operations codes, numeral codes and authentication tables;
- a. code-words and nicknames;
- b. the time the net is to open; and
- c. net security measures.

Checking Communications

17.6 As soon as the radio sets are adjusted, the NCS determines whether transmissions are being received by the sub-stations on the net by use of the initial report.

17.7 It is necessary for the NCS to know how sub-stations are receiving NCS transmissions, and how they are receiving one another. This is achieved by using an initial report followed by an amplifying report. These reports provide the NCS with a summary of the communications state of the net.

Initial Report

17.8 The NCS orders sub-stations to report the strength and readability of signals by use of the prosign INT followed by the operating signals QSA and QRK. Sub-stations answer this call in turn, also giving a report of the signal strength and readability of the NCS, using the operating signals QSA and QRK followed by a numeral to indicate the strength of the signals. The prosign R will suffice to indicate that reception is QSA5 and QRK5.

17.9 When a sub-station fails to answer a net call in sequence, the sub-station must wait until all other sub-stations answer before transmitting. If any sub-station fails to answer, the NCS will wait five seconds and then initiate a new preliminary call to each sub-station failing to answer the first call. If the NCS does not receive a reply from a sub-station to the final request for a report, the NCS responds by using the operating signal ZGN.

17.10 The NCS reports on sub-station signal strengths and readability after all sub-stations have reported.

17.11 A station that reports late into a net is to be challenged to authenticate. The NCS acknowledges valid authentication by reporting the signal strengths and readability of the net.

Amplifying Report

17.12 It may be necessary during poor operating conditions or after a period of communications silence for the NCS to determine the communication status of the net. This is done by the use of the operating signals ZPG and ZPF, but should only be done if there is no high precedence traffic awaiting transmission.

17.13 Sub-stations report only those stations which are not satisfactory (that is, not strength 5). No report indicates that the other stations are ZPG5 and ZPF5.

17.14 Examples of signals strength and readability reporting between sub-stations are shown in [table 17-3](#).

TABLE 17-3. Establishing a Net (Amplifying Report)

<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
1	A	NCS DE4 IMM T3Q Z8N NCS	Satisfactory reports from all stations on a formation net. SM5 DE BP7 ii IMM QSA3 QRK4 INT ZPG, INT ZPF K (BP7) (DE) DE4 R AR (BP7) (DE) IMM R AR (BP7) (DE) T3Q ii IMM QSA3 QRK4 AR (BP7) (DE) Z8N R AR (After the final response of the amplifying report, the NCS may authorise the use of abbreviated call-signs.) SM DE BP AR	All stations' signal strengths are very good except IMM. NCS then requests all stations to report strengths of all other stations. Hears all stations ZPG5 ZPF5. Hears all stations ZPG5 ZPF5. All stations' signal strengths very good except IMM. Hears all stations ZPG5 ZPF5. No receipt is necessary from sub-stations for this transmission.

<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
2	B	NCS DE4 IMM T3Q Z8N NCS IMM	Where high precedence traffic is waiting transmission to the NCS, the offer should be made during the initial report. SM5 DE BP7 INT QSA INT QRK K (BP7) (DE) DE4 R K (BP7) (DE) IMM R ZDA P K (BP7) (DE) T3Q R K (BP7) (DE) Z8N R K (SM5) (DE) BP7 R IMM K (BP7) (DE) IMM (transmits message)	IMM informs the NCS of priority message.

<i>Serial (a)</i>	<i>Example (b)</i>	<i>Calling Station (c)</i>	<i>Call Made □(d)</i>	<i>Remarks □(e)</i>
3	C	NCS DE4 IMM T3Q Z8N T3Q	High precedence traffic between substations can be offered in a similar way (to example B) during the amplifying report. SM5 DE BP7 INT ZPG, INT ZPF K (BP7) (DE) DE4 R AR (BP7) (DE) IMM R AR (BP7) (DE) T3Q R ii ZDA P Z8N K (BP7) (DE) Z8N R K Z8N DE T3Q (transmits message)	

Other Reports

17.15The operating signals QRM and QSB may be used as applicable to indicate interference or fading. The degree of interference is indicated by a numeral from 1 to 5 after the operating signal QRM. The operating signal ZGN is to be used to report that a station cannot be heard.

Section 17-2. Establishing Communications

17.16 When a calling station requests a radio check with one or more stations, the calling station will reply and report the signal strength of the called station:

BP7 DE DE4 INT QSA ii K (DE4) (DE) BP7 R ii K

(BP7) (DE) (DE4) R ii AR

Section 17-3. Authentication

17.17 The enemy may attempt to join our radio nets to:

- a. give false messages causing erroneous action, damage or confusion;
- b. give receipt for messages, in order to deceive or confuse friendly forces; and
- c. induce the disclosure of important information. (This act is termed ICD. The proper use of authentication systems will protect against ICD.)

Authentication Systems

17.18 An authentication system is a comsec aid and is designed to serve as a secure means of challenging the identity of a station or establishing the authenticity of a station, transmission or message.

17.19 The methods of authentication used are as follows:

- a. challenge and reply, and b. transmission.

Challenge and Reply

17.20 Challenge and reply is a method of authentication whereby one station requests authentication of another station (the challenge), who, by a correct reply, establishes his authenticity (the reply). Challenge and reply authentication requires the use of two elements selected at random. To illustrate this, the following example shows the method used when Z8N doubts the authenticity of the transmission:

Z8N DE IMM – MOVE NOW ii K

(IMM) (DE) Z8N INT ZNB BC K

(short pause while authentication is calculated) (Z8N) (DE) (IMM) ZNB Q K

(IMM) (DE) (Z8N) AR

Transmission Authentication

17.21 This is a method whereby the authentication is sent as part of the transmission by the originating station and no reply by the called station is

necessary to determine the validity of the transmission or message. It is particularly useful in 'DO NOT ANSWER' procedure:

SM5 DE BP7 ii MOVING NOW ii ZNB LA AR

When to Authenticate

17.22 If a station is not sure that authentication is required, it should challenge. If a station takes more than 30 seconds to authenticate, a further challenge should be issued. An enemy operator will try to contact another station on a different net and have it respond to that same challenge. Once the answer is obtained, the enemy will call back and blame the delay on some equipment failure. ICD is a common EW technique and authentication is one method available to counter it.

17.23 Authentication is mandatory when:

- a. making initial contact (for example, joining a working net) or resuming contact (after temporary closure or prolonged interruptions due to equipment fault);
- b. a station suspects a fraudulent transmission (ICD);
- c. challenged or requested to authenticate by another station (communications silence is not broken for the sole purpose of completing authentication);
- d. transmitting a plain language cancellation of a message, when the transmitting station cannot be recognised;
- e. making initial enemy contact and amplifying reports in plain language, including brevity codes (for example, talking about enemy contact, giving an early warning report or issuing any follow-up report);
- f. lifting or breaking communication silence or imposing emergency silence, where a code-word or nickname is not used;
- g. transmitting operation instructions which affect the tactical situation (for example, closing down a station, directing a shift of frequency or imposing emergency silence when code-words are not available) and relocation of units and sub-units;
- h. transmitting to a station which is under communications silence;
- i. transmitting a message in the blind when a station's calls have gone unanswered or when 'DO NOT ANSWER' procedure is in force; or transmitting a classified message in the clear over insecure radio circuits.

CHAPTER 18

Normal Procedure

Section 18-1. Introduction

18.1 Information requiring expeditious delivery is prepared for transmission in the form of brief and concise messages.

18.2 There are two types of messages:

- a. procedural messages, and
- b. service messages.

Procedural Message

18.3 A procedural message is one between operators to facilitate traffic handling. This type of message contains only prosigns, operating signals, address designators, identification of messages, parts of messages and amplifying data, as necessary. A procedural message may be transmitted using plaindress or abbreviated plaindress procedure. It is not identified, and need not be authorised, in the same manner as a service message.

Service Message

18.4 A service message is one between communications centre personnel and relates to traffic handling, communications facilities, or circuit conditions.

18.5 An encrypted service message will always include a group count, and will be identified as a service message only within the encrypted text.

18.6 Plain language service messages are identified by the prosign SVC.

18.7 Service messages may be prepared and transmitted in plaindress, abbreviated plaindress or codress format. They generally concern messages originated at, destined for, or refiled by the originating station and normally will be assigned a precedence equal to that of the message to which they refer.

Section 18-2. Arranging a Key Conversation

1. **18.8** The offer for key conversations should include the operating signal INT ZUK followed by the appointment titles (annex [A to chapter 1](#)) of the officers concerned. To illustrate this, in the following example an operations staff officer at call-sign DE4 wishes to hold a key conversation with the commanding officer at call-sign Z8N. The transmission would be as follows:

2. Z8N DE DE4 INT ZUK SEAGULL ii SUNRAY K
3. (DE4) (DE) Z8N AS AR
4. (if the CO were near the set, AS would be sufficient) DE4 DE Z8N ZUK SUNRAY ii SEAGULL K
5. (Z8N) (DE) DE4 ii (the conversation would now take place through the respective operators).
6. **18.9** Arrangements for a key conversation should be made in the following manner:
 7. **INT ZUK**(appointment title) desires key conversation on this circuit with.....(appointment title). Will you indicate when you are ready?
 8. **ZUK**(appointment title) is now ready to begin key conversation with.....(appointment title).

Sequence for Answering Queries

18.10 When a message is transmitted to a multiple or collective call, stations answer in sequence. Should any station have any question concerning the message, this is to be dealt with by the transmitting station and a receipt obtained from the receiving station concerned, before the next station in sequence transmits.

Section 18-3. Transmission of Messages

Parts of a Transmitted Message

18.11 All transmitted messages have three separate parts. These are:

- a. a heading,
- b. text, and
- c. an ending.

18.12 The prosign BT separates these parts during transmission. The prosign BT, between the heading and text, is inserted immediately after the last addressee (whether action or information) or before the security classification in the case of encrypted messages.

18.13 Each part of a message is divided into components and elements (chapter 21). All parts and a majority of the components and elements are arranged in a standard order, which is applicable not only to ratg procedure but also to other operating procedures.

Offering a Message

18.14 Informal messages are offered by using the prosign K, and formal messages by the operating signal ZDA.

Indicating Precedence in an Offer

18.15 For precedence messages of PRIORITY and above, the precedence prosign must always be sent in the offer. ROUTINE messages do not require a precedence prosign to be sent.

Pause in Transmission

18.16 The prosign AS made during a transmission and without an ending sign (prosign K or AR) indicates a short pause. An operator having received AS is to wait for K before transmitting unless there is a message of a higher precedence awaiting transmission. The interrupted call is completed by transmitting a repetition of the last word, phrase, groups or proword previously transmitted followed by the remainder of the message:

T3Q DE IMM K

(IMM) (DE) T3Q K

(T3Q) (DE) (IMM) ii NR006 ii join convoy at rendezvous point at AS (pause) at 1000 hr K

(IMM) (DE) T3Q R ii AR

Long Pause in Transmission

18.17 The prosign AS followed by the prosign AR directs the receiving station to wait. Upon resumption, the remaining portion is transmitted, preceded by the message identity, the prosign AA and the last word, phrase, group or prosign transmitted in the original message:

T3Q DE IMM ii NR006 ii join convoy at rendezvous point at AS AR

T3Q DE IMM ii NR006 ii AA at – at 1000 hr K

(IMM) (DE) T3Q R ii AR

Receipts

18.18 The prosign R AR or AR is used to acknowledge receipt of a message. Normally the prosign R AR is transmitted after each message or string of messages to signify receipt; however, when communications are good the prosign AR alone is sufficient:

IMM DE BP7 ii send boat for mail K

(BP7) (DE) IMM (R) AR

18.19 Before receipting a message, the receiving operator is to check the message for correctness and completeness. If the message appears incorrect or incomplete the operator is to request a repetition of the whole message, or portions thereof, by means of the prosign IMI, with identifying data:

T3Q IMM DE Z8N ii boat departed for mail ii K

(Z8N) (DE) T3Q (R) AR

(IMM having missed the word 'mail', transmits)

(Z8N) (DE) IMM IMI WA for K

(IMM) (DE) Z8N IMI WA for ii for mail ii K

(Z8N) (DE) (IMM) (R) AR

In addition, the operator is to query doubtful portions of the message by means of the prosign INT, with identifying data.

18.20 After a call, the prosign R preceded by INT means 'HAVE YOU RECEIVED MY LAST TRANSMISSION?' or 'HAVE YOU RECEIVED', for example:

DE4 DE IMM INT R K (or)

DE4 DE IMM INT R NR006 K

18.21 The prosign B signifies that the sending station has further traffic to transmit.

18.22 In the following example, T3Q transmits to Z8N and indicates there is further traffic:

Z8N DE T3Q ii batteries have been dispatched ii B ii K (T3Q) (DE) Z8N (R) K

(Z8N) (DE) (T3Q) (request advise ration state etc)

Section 18-4. Corrections, Repetitions and Unknown Stations

18.23 Corrections to a previously transmitted message are effected by sending a new message. Mistakes detected during transmission may be corrected before the transmission ends. Receiving stations may also request corrections.

Correction During Transmission

18.24 An error made in transmission may be corrected by transmitting the prosign EEEEEEEE (not less than eight Es) as shown in [table 15.2](#) (serial 16), followed by the repetition of the last word, group or prosign correctly transmitted. Transmission then continues:

DE4 DE IMM ii ENEMY TANKS EEEEEEEE ENEMY AR- MOURED CARS
ADVANCING FROM GR261812 ii K

(IMM) (DE) DE4 (R) AR

18.25 When an error in transmission is made but not discovered immediately, the correction is made in the final instruction. When making such a correction, the word, phrase, group or prosign to be corrected, must be identified:

DE4 DE IMM ii ENEMY TANKS ADVANCING FROM GR 261812 ii C AB
ADVANCING ii ENEMY ARMOURED CARS ii K

(IMM) (DE) DE4 ii (R) AR

Cancelling Transmission

18.26 A transmission may be cancelled by using the prosign (8 Es) EEEEEEEE AR, before transmission of the message has been completed. To illustrate this, in the following example during the transmission of a formal message, T3Q realises that the transmission is being sent in error and therefore cancels it. T3Q transmits:

(Z8N) (DE) (T3Q) NR12706/12 ii R ii 120743Z OCT 92 BT UN- CLAS SIG AAV
LOG EEEEEEEE AR

Correction after Transmission

18.27 If it is necessary to make corrections after a receipt has been obtained for a message, a further message identifying the portion of the original message to be corrected is transmitted.

18.28 The following examples illustrate correction after transmission. In this first example, T3Q transmits a procedural message to DE4 correcting an error in an informal message previously transmitted:

DE4 DE T3Q C MY 1630Z WA PINE ii TREES K

(T3Q) (DE) DE4 (R) AR

In this second example, T3Q transmits a procedural message to DE4 correcting an error in a formal crypto message previously transmitted:

DE4 DE T3Q C MY NR024/12 GR19 ii GHC K

(T3Q) (DE) DE4 (R) AR

Request for Repetitions

18.29 When words are missed or are doubtful, repetitions are to be requested before receipting the message. The prosign IMI used alone or in conjunction with prosign AB, AA, '...to...', WB, WA, or another suitable word or prosign (for example, PT, GR or DTG) is to be used for this purpose.

18.30 In the following example, BP7 transmits a formal message (Note that under actual working conditions LONG MESSAGE procedure would be used):

(Z8N T3Q) (D3) (BP7) Z3 ii NR013/12 ii R ii 120052Z OCT 92 BT UNCLAS SIG
AAV LOG 12 ii AT 1800K PROCEED TO SNAKE GULLY TO ARRIVE 16 MAR ,
LOAD STORES AND RETURN NINGPO, ACKNOWLEDGE BT ii K

(BP7) (DE) Z8N IMI AT TO PROCEED K

(Z8N) (DE) BP7 IMI AT TO PROCEED ii AT 1800K PRO- CEED K

(BP7) (DE) (Z8N) (R) AR

18.31 T3Q, having heard Z8N give a receipt for the message, asks for his repetitions. In this case, T3Q missed from AT to PROCEED and the word after LOAD. As Z8N had asked for the repetition AT to PROCEED and T3Q heard it repeated, it is now not necessary for him to request for that part to be repeated:

(BP7) (DE) T3Q IMI WA LOAD K

(T3Q) (DE) BP7 IMI WA LOAD ii STORES K

(BP7) (DE) T3Q (R) AR

18.32If T3Q did not hear the repetition for Z8N, T3Q would transmit:

(BP7) (DE) T3Q IMI AT TO PROCEED ii WA LOAD K

(T3Q) (DE) BP7 IMI AT TO PROCEED ii AT 1800K PRO- CEED ii WA LOAD ii
STORES K

(BP7) (DE) T3Q (R) AR

Request for Repetitions after Transmission

18.33New messages to request a repetition of all or part of a previous message must identify the message and the portion required. The message number, the DTG or time group is used to identify the message to be corrected. The data used to identify the message must be as brief as practicable, and contain no plain language reference to the address or portions of text which were previously encrypted.

18.34 In the following example, IMM transmits a service message requesting a repetition of a complete message:

BP7 DE IMM K (IMM) (DE) BP7 K

(BP7) (DE) (IMM) ii NR004/12 ii R ii 120500Z OCT 92 BT UNCLAS SVC INT ZDK
(MESSAGE IDENTIFICATION) BT K

(IMM) (DE) (BP7) (R) AR

Repetition of Difficult Portions

18.35 In the text of a plain language message, difficult portions may, at the discretion of the sender, be repeated to ensure correct reception of a word, phrase or group that has just been transmitted by using the prosign IMI. This means: 'I am going to repeat the difficult portion just transmitted'.

18.36 In the following example, Z8N transmits a formal message and the operator repeats a difficult portion of the message:

(T3Q) (DE) (Z8N) ii NR009/12 ii R ii 120953Z OCT XX BT UN- CLAS SIG AAV
LOG12 YOUR 121212Z JUN XX REPLACEMENT PART NO23A/MB6/M/D47 IMI
23A/MB6/M/D47 BEING DISPATCHED K

Unknown Station

18.37 When a station hears a call without being certain for whom that call is intended, no answer should be made until the call has been repeated and understood. When a station is called, but is uncertain of the call-sign of the calling station, it should answer immediately by transmitting the prosign AA followed by DE, its own call-sign and the prosign K:

IMM DE #!! K

AA DE IMM K

IMM DE BP7 . . etc . .

Section 18-5. Checking the Group Count, Questioning Doubtful Portions

and Verifications

Checking the Group Count

18.38 When a codress or crypto message is being received and the number of groups received does not correspond with the group count of the message, the receiving station requests a check by transmitting 'INT GR' followed by the number of groups received. When queried, the transmitting station will check and if the number of groups received is correct, the transmitting station will indicate this by use of the prosign C. The receiving station must then alter the group count accordingly. To illustrate this, in the following example, BP7 transmits a crypto message and T3Q notices that the group count and the number of groups received are at variance:

T3Q DE BP7 ii MNT SUB ELY GBZ FOU DOP OBJ 8/12 K(BP7) (DE) T3Q INT
GR7 K

(The BP7 operator checks and finds that the group count should be 7 [seven].)

(T3Q) (DE) (BP7) C ii K

(BP7) (DE) (T3Q) (R) AR

18.39 If, after checking, the transmitting station finds that the number of groups received by the receiving station differs from the transmission copy (indicating that groups have not been transmitted or have not been received), the transmitting station repeats the original group count, the prosign BT, and then transmits the first character of each word or group in the text in succession, and repeats the prosign BT in its proper position. This will enable the receiving station to discover which group(s) are missing and to ask for them. This procedure is used for all messages with a group of 30 or less.

18.40In the following example, BP7 transmits a formal crypto message, IMM queries the group count and BP7, on checking, finds the group count correct:

(IMM) (DE) (BP7) ii NR014/12 ii R ii 122038Z OCT 92 BT DGI LOP JTX ROT FMX OSP TRS MDG DNI STD GBX OSM 12/31 BT ii K

(BP7) (DE) (IMM) INT GR11 K

(IMM)(DE)(BP7)GR12BTDLJRFOTMDSGOBTK (IMM can now see which group he has missed.)

(BP7) (DE) (IMM) INT 5 K (IMM) (DE) (BP7) 5 ii FMX K

(BP7) (DE) (IMM) (R) AR

18.41 When the received group count differs for messages with a group count exceeding 30 groups, the transmitting station repeats the original group count and transmits the identifying number of the first, eleventh, and every subsequent tenth group. These will be separated from the initial letter of that group by a separative sign.

18.42In the following example, BP7 transmits a message containing 76 groups to Z8N. Z8N questions the group count:

(BP7) (DE) (Z8N) INT GR75 ii K

(BP7 checks and finds the group count correct as transmitted, then transmits.)

(Z8N)(DE)BP7)GR76BT1iiD11iiL21iiH31iiI41iiQ51ii M 61 ii W 71 ii F BT K

(Z8N then requests a repetition of the 10 groups in which it has a miscount.)

18.43 Where long message procedure is used, the number of groups sent is to be checked at the end of each part sent.

Questioning Doubtful Portions

18.44 A station may question any part of a message suspected of being doubtfully received by transmission of the prosign INT with identifying data.

18.45 In the following example, T3Q questions reception of the word 1800K:

(IMM) (DE) (T3Q) INT WB PROCEED ii 1800K K (T3Q) (DE) (IMM) C K

(IMM) (DE) (T3Q) (R) AR

Verifications

18.46 It may be necessary to verify the meaning of a message after it has been received. This occurs frequently with encoded informal messages or messages containing code-words, numeral code or figures such as grid references.

18.47 When an error has occurred and the message does not make sense, it must be checked by all those involved with the transmission. The process of verifying the sense of the message must not be confused with the procedure of requesting a repetition, where only the reception of the message is in doubt.

18.48 In verifying a message, the originator is first given the opportunity of checking whether the receiving station has taken down the message correctly. A request for verification of a message is made by use of the prosign J. The prosign J, when used after a call without identifying data, means 'verify with originator and repeat your last message'. J followed by identification data, means 'verify with originator and repeat message or portion thereof', as indicated:

SM5DEZ8NiiABCFGALCDSYDCDXFLGCOLMPG8/12K

(All stations receipt the crypto message. After a period of time, IMM requests a verification of group 1.)

(Z8N) (DE) IMM J GR8/12 GR 1 ii ABC K

(IMM) (DE) Z8N AS AR

(The Z8N operator verifies with the originator. The group being correct, Z8N transmits.)

IMM DE Z8N J GR8/12 GR1 ii ABC K

(Z8N) (DE) IMM (R) AR

18.49 When verification of a message, or a portion thereof, has been requested, the originating station operator is to verify with the originator (the person who drafted the message). If the message is found to be incorrect, the corrected version must be sent. If the message is to a number of addressees, the corrected version must be sent to all addressees.

18.50 In the following example, BP7 requests a verification and the transmission by Z8N is found to be correct; that is, Group 1 (ABC) has been received incorrectly by BP7 as ACB:

Z8N DE BP7 ii J GR8/12 GR1 ii ACB K

(BP7) (DE) (Z8N) AS AR

(The Z8N operator checks and finds that an error was made in reception by BP7 operator.)

BP7 DE Z8N ii ZUI GR8/12 C GR1 ii ABC K

(Z8N) (DE) BP7 (R) AR

Section 18-6. Acknowledgements, Cancellations and Do Not Answer

Acknowledgement of a Message

18.51 An acknowledgement should not be confused with a reply or receipt. A prompt reply referring to the message may serve in lieu of an acknowledgement. It is up to the originator to request an acknowledgement to a message from any or all addressees of that message. If the message has been transmitted, the request for acknowledgement will constitute a new message. Acknowledgements are to be originated only by the addressee to whom the request was made.

18.52 Message acknowledgements are made only when specifically requested by the ACKNOWLEDGE appearing as the last word of the text. If the addressee(s) required to acknowledge are operating under communication silence, they are to reply by any means which does not violate the communication policy currently in effect.

Cancelling an Informal Message After Receipt

18.53 An informal message which has been transmitted can be cancelled by another informal message quoting some form of identification information. Any station passing a cancellation must authenticate the order using transmission authentication.

18.54 In the following example, IMM realises that his last transmission to Z8N was made in error and transmits:

Z8N DE IMM ii ZFR MY LAST ii ZNB LM K

(IMM) (DE) Z8N (R) AR

Cancelling a Formal Message After Receipt

18.55 Once a formal message has been transmitted and received, it can be cancelled in two ways.

18.56 The originator may wish to cancel the message. He must write a formal message to do so. The text of the message may read as such:

UNCLAS OPS947 CANCEL MY OPS821 DATED 19 JUL 92

18.57 An operator may also wish to cancel if he realises that one of his transmissions was in error. In order to effect this, he must transmit a service

message. A station cancelling a transmission is responsible for the message and any further handling, if required. Any station passing a cancellation service must authenticate the order using transmission authentication.

18.58In the following example, DE4 realises that his last transmission to BP7 was in error and transmits:

BP7 DE DE4 ii ZFR NR001/12 ii ZNB K P ii K

(DE4) (DE) BP7 (R) AR

Do Not Answer Method

18.59 When it is imperative that called stations do not answer a transmission, the prosign F will be transmitted as a transmission instruction and the complete transmission will be sent twice, the full transmission ending with the prosign AR. It is mandatory that these transmissions be authenticated:

SM5 DE Z8N ii F ii ACT IN ACCORDANCE WITH PLAN CHARLIE ii ZNB BL IMI
SM5 DE Z8N ii F ii ACT IN ACCORDANCE WITH PLAN CHARLIE ii ZNB BL AR

CHAPTER 19

Procedures for Bad Working Conditions

Section 19-1. Free and Directed Nets

19.1 When traffic is being passed over a net, the NCS regulates the flow of traffic over the net by making it either a free or directed net.

Free Net

19.2 Under normal conditions, once a net has been established it is free. The prime purpose of a net is the interchange of traffic and therefore, the NCS does not usually intervene to prevent direct communications between sub-stations.

Directed Net

19.3 A free net is changed to a directed net by the operating signal 'ZKB' used by the NCS when conditions are difficult, or traffic is heavy. Sub-stations must obtain NCS approval before communicating with other net stations. This approval is not required for FLASH messages, which are transmitted direct in all cases.

Nevertheless, predetermined schedules may be used to control directed net transmissions.

19.4 The use of directed net procedure must be kept to a minimum, as direction slows down net working. In bad conditions, the first consideration must be to improve communications rather than to make the net directed. A net should not be declared directed as a means of correcting bad net discipline.

19.5 In the following example, NCS declares the net directed using the operating signal ZKB:

SM5 DE BP7 ii ZKB K (All stations answer in turn using full call-signs R AR.)

19.6 The NCS may return the net from directed to free by the use of the operating signals ZUG ZKB:

SM5 DE BP7 ZUG ZKB K (All stations answer in turn using full call-signs R AR.)

Section 19-2. Delegating, Assuming and Resuming Control of a Net

19.7 Where variation of control of the net is required for tactical or technical reasons, the procedures in this section are to be used. The examples quoted include transmission authentication, however, challenge and reply authentication may be employed by the next senior sub-station. Examples are:

ZKD

INT ZKD ZKE ZKA

ZKC

Take control of the net (for...) (until...)

Shall I take control of the net (for...) (until...)

I (or...) report into circuit (net...)

I am (or...is) controlling station (NCS) on this frequency (or on...kHz)

Net Control Station

Delegating Control

19.8 It may be necessary for the control of the net to be delegated to a subordinate station if effective control cannot be maintained by the NCS, or if the NCS has to leave the net for any reason. In such cases the operating signal ZKD is to be used.

19.9 In the following example, the NCS is leaving the net and decides that T3Q is in the best position to assume control of the net:

SM5 DE BP7 ii T3Q ZKD ii ZNB AX ii K

(BP7) (DE) DE4 (R) AR

(BP7) (DE) IMM (R) AR

(BP7) (DE) T3Q (R) AR

(BP7) (DE) Z8N (R) AR

Resuming Control

19.10 The original NCS uses the operating signal ZKA to resume control of the net. All changes in control of the net must be authenticated.

19.11 In the following example, the NCS reports into the net and, wishing to resume control of the net, transmits:

SM5 DE BP7 ii ZKE ZKA K

(T3Q would challenge BP7 to authenticate and, once authenticity is proved, all other subordinate stations would answer in turn (R) AR.)

Assuming Control

19.12 Other occasions may arise when the NCS is not in a position to give warning that it is leaving the net. In such cases the senior subordinate station is to assume control, but, before doing so, must confirm that the NCS cannot be heard by the other stations on the net. Seniority is derived by the alphabetical sequence of the call-signs. The senior station may, if necessary, delegate control to another subordinate station who would have more effective control of the net.

19.13 In the following example, nothing has been heard from the NCS for some time. IMM, being senior substation on the net, transmits:

SM5 DE IMM INT ZGN BP K

(All stations answer in turn NO or ZGN K.) (SM5) (DE) IMM ii ZKA ZNB MX ii K

(All stations answer in turn (R) AR.)

Section 19-3. Bad Condition Procedures

19.14 When conditions have deteriorated to such an extent that the efficient passage of traffic is hampered, the stations on a net may use any of the following procedures:

- a. repeat back,
- b. words twice, or c. relay.

19.15 The NCS may also decide, because of poor conditions, to make the net a directed net.

Offering

19.16 In poor or difficult conditions, when it is necessary for the sender to satisfy himself that communications are sufficiently good for the entire message to be received, all traffic is to be offered. When a net has been made a directed net by the NCS, it is mandatory that all traffic be offered.

Repetition of Call-sign

19.17 Call-signs are sometimes difficult to hear, especially if the transmission is unexpected. On these occasions the sending station may repeat the call-sign. This procedure wastes time and should be used sparingly. It is normally sufficient to use this procedure in the initial call only:

Z8N ii Z8N DE IMM ii IMM ii YOUR KIT IS READY FOR COLLECTION K

(IMM) (DE) Z8N ii WILL SEND FOR IT NOW AR

Section 19-4. Read Back

19.18 If a transmission or message must be repeated back, the prosign G and identifying data are transmitted following the call. If a collective or net call is used,

but only some of the stations represented in the call are required to repeat back, that station or those stations will be specified by the transmission of the appropriate call-sign(s) preceding the prosign G. When the order to read back is given, only those stations directed to do so are to read back the message. The remaining stations called are to keep silent until the reading back has been completed, and then answer in order, giving a normal receipt.

19.19 In the following example, the NCS directs call-sign T3Q to read back the complete transmission:

SM5 DE BP7 ii T3Q ii G ii CONVOY HAS ARRIVED AT GR EINOLJAM ii K

(BP7) (DE) T3Q ii G ii CONVOY HAS ARRIVED AT GR EI- NOLJAM ii K

(T3Q) (DE) (BP7) ii C ii K

(BP7) (DE) T3Q R AR

(BP7) (DE) DE4 R AR

(BP7) (DE) IMM R AR

(BP7) (DE) Z8N R AR

19.20 In this example, the NCS directs call-sign IMM to read back the grid reference only:

SM5 DE BP7 ii IMM G GR ii CONVOY HAS ARRIVED AT GR EINOLJAM K

(BP7) (DE) IMM ii G GR ii GR EINOLJAM K (IMM) (DE) (BP7) ii C ii K

(BP7) (DE) IMM R AR

(Remaining stations answer in order R AR.)

Section 19-5. Words Twice

19.21 When communications are poor or difficult, words or groups may be transmitted by using the operation signal QSZ. The station called may request the calling station to transmit twice by the prosign INT directly before the operating signal QSZ:

INT QSZ.....Shall I send each word or group more than once?

QSZ.....Send each word or group twice (or ... twice)

19.22 To illustrate transmission twice, the following examples are provided. In this first example the conditions are difficult, so the NCS decides to transmit the message twice:

DE4 DE4 DE BP7 BP7 ii K K BP7 BP7 DE DE4 DE4 ii K K

(DE4) (DE4) (DE) (BP7) (BP7) ii QSZ QSZ ii CONVOY CON- VOY HAS HAS ARRIVED ARRIVED ii K K

(BP7) (BP7) (DE) (DE4) (DE4) ii IMI IMI WB WB HAS HAS ii KK

(DE4) (DE4) (DE) (BP7) (BP7) ii IMI IMI WB WB HAS HAS ii CONVOY CONVOY ii KK

(BP7) (BP7) (DE) (DE4) R R AR AR

In this example, conditions are good, but Z8N is experiencing heavy local interference and requests BP7 to transmit the message twice:

Z8N DE BP7 K BP7 DE Z8N ii QSZ K

Z8N Z8N DE DE BP7 BP7 ii P P ii CONVOY CONVOY HAS HAS ARRIVED ARRIVED ii K K

BP7 DE Z8N R AR

Section 19-6. Relaying

19.23 If communications between any two stations fail, messages between them may be sent through a third station which is in contact with both stations. The third station is known as the relay station. The message may be given to the relay station in the initial transmission or it may be offered.

Use of the Prosign T

19.24 The T used alone indicates that the station called is to relay the message to all addressees and may only be used if lines 6, 7 and 8 are used (that is, the call may not serve as the address). In this case, it is used only when the calling station knows that the called station has communications with the station to whom the message is to be relayed.

19.25 In the following example, the NCS wants to pass a message to T3Q, but does not have communications with that station. The NCS, using its strength and readability chart, knows that call-sign IMM has communication with T3Q, so it directs IMM to relay:

IMM DE BP7 ii T ii NR 008/02 ii P ii 120322Z FEB 93 ii FM BP7 ii TO T3Q ii BT UNCLAS SIG AAV OPS14 PROCEED ON MISSION ASSIGNED BT ii K

(BP7) (DE) IMM R AR ii T3Q DE IMM ii ZDA ii P K

(IMM) (DE) T3Q K

(T3Q) (DE) (IMM) ii NR 008/02 ii P ii 120322Z FEB 93 ii FM BP7 ii TO T3Q BT UNCLAS SIG AAV OPS14 PROCEED ON MISSION ASSIGNED BT K

(IMM) (DE) (T3Q) (R) AR

19.26 The prosign T followed by an address designator indicates that the station called is to relay the message to the stations indicated. When more than one station is called, the call-sign of the station designated to perform the relay will precede the prosign T. At times, it is necessary to relay a message to a station on another net or by some other means of communication. When such relay is necessary, it is the responsibility of the station relaying the message to place it in the proper format for the means of communication employed. Full call-signs are to be used in the address component. If communications between any two stations fail, messages are sent through a third station that is in contact with both stations.

19.27 In the following example, NCS transmits to T3Q and receives no reply. NCS then requests Z8N to relay the message to T3Q:

T3Q DE BP7 MOVE NOW K

(no answer from T3Q)

T3Q DE BP7 K (no answer from T3Q) T3Q DE BP7 K (no answer from T3Q)

T3Q DE BP7 ii ZGN AR ii Z8N DE BP7 ii T ii T3Q K

(Z8N, before accepting the message, checks to ensure that communication with T3Q is possible.)

(BP7) (DE) (Z8N) AS AR ii T3Q DE Z8N K (Z8N) (DE) T3Q K

(T3Q) (DE) (Z8N) AS AR ii BP7 DE Z8N K (Z8N) (DE) (BP7) ii T ii T3 ii MOVE NOW K

(BP7) (DE) (Z8N) (R) AR ii T3Q DE Z8N FM BP7 ii MOVE NOW K

(Z8N) (DE) T3Q (R) AR

Use of Operating Signal ZOE

19.28 The operating signal ZOE indicates that the calling station is in contact with the called stations and is prepared to relay the message (Relay through me . . .).

19.29 In the following example, the NCS transmits to IMM and receives no reply. T3Q offers to relay:

IMM DE BP7 MOVE NOW K (No answer from IMM) IMM DE BP7 K (No answer from IMM)

IMM DE BP7 K (No answer from IMM)

BP7 DE T3Q ZOE K

(T3Q) (DE) BP7 (R) T ii IMM ii MOVE NOW K

(BP7) (DE) (T3Q) (R) AR ii IMM DE T3Q FM BP7 ii MOVE NOW K

(T3Q) (DE) IMM (R) AR

Use of Operating Signal ZOK

19.30The operating signal ZOK followed by an address designation transmitted by the NCS, indicates the subordinate station which can relay the message. (Relay via).

19.31 In the following example, IMM transmits to T3Q and BP7 indicates that Z8N is to relay the message. For brevity, once established, the stations have decided to use abbreviated call-signs:

T3Q DE IMM YOUR VEHICLE HAS ARRIVED K (no answer from T3Q)

T3Q DE IMM K (no answer from T3Q)

T3Q DE IMM K (no answer from T3Q)

IMM DE BP7 ZOK Z8N AR

Z8N DE IMM ii T ii T3 ii YOUR VEHICLE HAS ARRIVED K

(IMM) (DE) Z8N (R) AR ii T3 DE Z8 FM IMM ii YOUR VEHICL E HAS ARRIVED K

(Z8N) (DE) T3Q (R) AR

CHAPTER 20

Communication Drills - Morse

Section 20-1. Executive Method

20.1 The executive method is used to transmit an executive order by message. Only abbreviated plaindress messages may be employed with the executive method.

Sequence of Transmission

20.2 A message which requires a signal of execution will contain the prosign IX, meaning that the executive is to follow in the message instructions:

SM5 DE BP7 IX BT COMMENCE GROUND ATTACK BT K

(BP7) (DE) DE4 (R) AR

(BP7) (DE) IMM (R) AR

(BP7) (DE) T3Q (R) AR

(BP7) (DE) Z8N (R) AR

20.3 When the message is required to be executed, a message containing the executive signal IX (five-second dash) is transmitted by the originating station. IX followed by a five-second dash means execute. The execution is carried out the instant the five-second dash stops:

SM5DEBP7IX ----(five-second dash)AR(orK)

20.4 The following should be noted:

- a. IX on its own means execute all messages awaiting execution.
- b. If more than one message is awaiting execution, then the text of the message to be executed is transmitted, followed by the executive signal.
- c. If some considerable time has elapsed since the transmission of a message awaiting execution, then the text is to be retransmitted followed by the executive signal.
- d. If a message containing various parts is awaiting execution and only one part is required to be executed, then that part is to be retransmitted, followed by the executive signal.
- e. If it is considered necessary to obtain a receipt for a message that has just been executed, then the prosign K is to be used in place of AR:

SM5 DE BP7 IX BT MOVE NOW BT ii ZNB FJ ii K (BP7) (DE) DE4 (R) K
(BP7) (DE) IMM (R) K
(BP7) (DE) T3Q (R) K
(BP7) (DE) Z8N (R) K
(SM5) (DE) BP7 IX - - - - (five-second dash) AR

Cancelling Executive Messages

20.5 An executive message cannot be cancelled once the executive signal has been transmitted and can only be corrected after transmission by cancelling the original message (or portion thereof) and issuing a new executive message.

20.6 The cancellation is effected by means of the proword NEGAT. The proword NEGAT, on its own, means 'cancel all unexecuted messages made by the executive that are held at the station called'.

1. **20.7** The proword NEGAT, followed by identification data, means: 'Cancel the data following which was transmitted by executive method which is being held by the station called'.
2. **20.8** In the following example, BP7, having transmitted an executive message to IMM, now wishes to cancel it:
3. IMM DE BP7 BT NEGAT BT K
4. (BP7) (DE) IMM (R) AR
5. **20.9** When a message is awaiting the signal of execution and a portion of it has been cancelled or executed, only the remainder of the message is considered to be outstanding.

Section 20-2. Changing to Voice

20.10 The operating signal ZBI is used to change the mode of operation to voice. ZBI means 'listen for radiotelephony'. NCS initiates the call:

SM5 DE BP7 ii ZBI ii K
(BP7) (DE) DE4 (R) AR
(BP7) (DE) IMM (R) AR
(BP7) (DE) T3Q (R) AR
(BP7) (DE) Z8N (R) AR

Section 20-3. Communications Silence

20.11 Communications silence may consist of one of the following:

- a. electronic silence,
- b. radio silence, or
- c. emergency silence.

Electronic Silence

20.12 Electronic silence is a period during which all or certain equipment capable of electromagnetic radiation is kept inoperative. It is part of the general plan for an operation and not an isolated activity. Electronic silence covers a much wider field than radio communications and may affect other equipment, such as radar, surveillance devices, infra-red, ECM equipment and beacons.

20.13 Orders for the imposition of electronic silence are issued by a senior formation and include comprehensive instructions covering:

- a. its extent;
- b. the time of its imposition;
- c. codes for lifting and emergency breaking;
- d. circumstances in which, and by whom, it may be lifted or broken;
- e. whether lifting and/or breaking is to be progressive or total;
- f. details of transmission authentication system; and
- g. other relevant information.

20.14 These orders are distributed by secure means in advance and no executive order in connection with the imposition of electronic silence is to be passed by code-word in clear over the radio.

20.15 However, code-words may be used in clear over the radio for lifting or breaking electronic silence with the conditions previously ordered.

20.16 In the following example, T3Q has authority and good reason, within the conditions previously ordered, to break electronic silence. BINGO is the code-word for the emergency breaking of electronic silence:

BP7 DE T3Q ii BINGO ii ENEMY TANKS BREAKING THROUGH ON MY RIGHT ii K

(T3Q) (DE) BP7 (R) AR

20.17 If transmission authentication is in use, the following would be transmitted:

BP7 DE T3Q ii ENEMY TANKS BREAKING THROUGH ON MY RIGHT ii ZNB DW
ii K

(T3Q) (DE) BP7 (R) AR

20.18 When stations are on listening watch, they must be on their guard against attempts by the enemy to induce a break of electronic silence by false messages. On no account is silence to be broken to request authentication of a station which transmits during electronic silence. Once a code-word has been used for an emergency break it is not to be used again.

Radio Silence

20.19 Radio silence is a period during which all, or certain radio equipment capable of radiation, is kept inoperative. It is permissible for a unit or sub-unit commander to impose radio silence on the net or nets for which he is responsible, for technical or tactical reasons and not as part of general electronic silence. The orders for this may be issued either by separate secure means or, if necessary, over the radio in which case the transmission is authenticated by the use of nicknames. Stations still remain on listening watch during radio silence.

20.20 Radio silence is imposed, lifted or broken by the use of a specified nickname. The nicknames are translated as: IMPOSE RADIO SILENCE, LIFT RADIO SILENCE and BREAK RADIO SILENCE. Only the NCS may order the imposing of radio silence by quoting the nickname.

Sub-stations do not act upon the preparatory order, other than by acknowledging receipt of the nickname. The NCS delays the executive signal until it is satisfied that all stations have correctly received the preparatory order. (Note that this procedure cannot be distinguished from closing down and changing frequency procedures using nicknames.)

20.21 In the following example, the NCS is going to impose RADIO SILENCE using the nickname PAPER DOLL:

SM5 DE BP7 ii PAPER DOLL ii K (BP7) (DE) DE4 (R) K

(BP7) (DE) IMM (R) K

(BP7) (DE) T3Q (R) K

(BP7) (DE) Z8N (R) K

(When the NCS is satisfied that all stations have correctly received the preparatory order, it transmits the nickname to enforce the radio silence.)

(SM5) (DE) BP7 ii PAPER DOLL ii AR

20.22 Radio silence may be lifted by the NCS, or broken by a sub-station in the following manner:

- a. by the use of a nickname, where authentication is not required; and
- b. in clear, where transmission or challenge and reply authentication must be used.

20.23 When lifting radio silence, the NCS re-establishes the net as laid down in [chapter 17](#). An example of lifting radio silence using a nickname is as follows:

SM5 DE BP7 ii LEATHER STRAP ii K

(All stations respond, (R) K, then the NCS requests strengths and readability reports.)

Emergency Silence

20.24 Emergency silence is the condition under which all radio sets remain on listening watch for the purpose of enforcing transmission security, deception measures, or for technical or tactical reasons. It is imposed and lifted only by a competent authority.

20.25 When a transmission authentication system is in force, a station must always authenticate a transmission when imposing, lifting or breaking emergency silence. A transmission imposing emergency silence is to be made twice and ended with the prosign AR. Stations do not answer or receipt such transmissions. However, when a transmission authentication system is not available, authentication is achieved by the use of a code-word.

20.26 HM transmitted three times means, ‘Cease transmission on this net immediately; silence is to be maintained until lifted’. In the following example, the NCS imposes emergency silence using transmission authentication:

SM5 DE BP7 ii HM HM HM ZNB DT IMI HM HM HM ZNB DT ii AR

In this example, the NCS imposes emergency silence using a code-word:

SM5DEBP7iiHMHMHM BANDITIMIHMHMHM BAN- DIT ii AR

20.27 HM transmitted three times followed by a frequency or a frequency designator means, ‘Cease transmission immediately on that frequency’:

SM5 DE BP7 ii HM HM HM A67 ZNB PG IMI HM HM HM A67 ZNB PG ii AR

20.28 HM transmitted three times, followed by ALL NETS means, ‘Cease all transmissions immediately on all nets’. Subordinate NCS must repeat this message on their own nets. Note that formation net sub-stations then repeat this message on the unit net:

SM5 DE BP7 ii HM HM HM ALL NETS WALLABY IMI HM HM HM ALL NETS WALLABY ii AR

20.29 To impose emergency silence during the transmission of a message by another station, the NCS waits for a pause in transmission before transmitting.

20.30 Emergency silence is lifted by the use of the operating signal ZUG, followed by the authentication. The lifting is qualified where necessary by a frequency or the phrase ALL NETS:

SM5 DE BP7 ZUG HM HM HM ZNB KH AR

Section 20-4. Changing Frequency

20.31 A frequency change is made for security, technical or tactical reasons.

Security Change

20.32 A security change is a large-scale, pre-arranged frequency change intended to deceive the enemy and is organised only by a higher formation. Full details of security frequency changes are notified in advance to all concerned and include the exact time at which the frequency change is to occur. No warning transmission is made in connection with security frequency changes. They are effected on a programmed basis. The orders specify the time at which transmission on the old frequencies is to cease, and the time for opening on the new frequencies. These changes are detailed in formation SOI.

Technical and Tactical Change

20.33 These changes may be ordered because of a deterioration in working conditions (atmospherics, interference, distance and jamming), or for the regrouping of forces or other tactical reasons. Each frequency within a formation or unit assignment is allocated a number of nicknames for reference purposes. Frequency changes on a net involve the use of alternative and spare frequencies and are to be referred to by the nickname.

20.34 The NCS only may order a change to a designated frequency by quoting the nickname appropriate to that frequency. The translation of this nickname is, 'Change to alternate or primary frequency'. Sub-stations do not act upon the preparatory order other than by acknowledging receipt of the nickname. The NCS delays giving the executive order until it is satisfied that all stations have correctly received the preparatory order:

SM5 DE BP7 ii PAPER DRAIN ii K (BP7) (DE) DE4 (R) K

(BP7) (DE) IMM (R) K

(BP7) (DE) T3Q (R) K

(BP7) (DE) Z8N (R) K

(SM5) (DE) BP7 ii PAPER DRAIN ii AR

Failure to Establish Communications

20.35 If a net has not been established within 15 minutes of a frequency change or communications are lost for 15 minutes, the procedure to be adopted is as identified in chapter 9 (paragraph 9.34 on), ratel procedure.

Section 20-5. Joining a Working Net

20.36 The following are used when joining a working net:

- a. INT ZGO What is my number (call-sign) and sequence in answering?
- b. ZGO Your number (call-sign) is . . . Answer after number (call-sign) . . . (Numbers to be separated by separative sign).

20.37 If a station is required to join a formation net, instructions containing the necessary details should be issued beforehand to all concerned by some means other than radio. Occasions will arise when a station is required to join the net without prior instructions. In this case one of the following is used:

- a. a fixed call-sign, prefixed by its own NIC;
- b. a three character tactical call-sign; or
- c. an address group.

Fixed Call-sign

20.38 When a station with a fixed call-sign joins a working unit net, it will continue to use its fixed call-sign. If the call-sign is already in use on the net, the new station will add its arms indicator or NIC prefixed to its fixed call-sign. Authentication of the station joining is mandatory. The NCS may assign a spare call-sign if necessary.

Daily Changing Call-signs

20.39 If a station with a daily changing call-sign wishes to join a fixed call-sign net, the full call-sign is to be used. Once communications are established and authentication has been carried out the NCS may allocate the joining stations a fixed call-sign.

Address Groups

20.40 Where an address group is used as a means of joining a net, it is replaced as soon as possible after communications have been established and authentication has been effected, by a spare call-sign issued by the NCS.

20.41 In the following example, HQ CDE wishes to join a net. The address group for HQ CDE is MLCA:

BP7 DE PT MLCA ZKE K

(MLCA) (DE) BP7 R INT ZNB ED K (Pause while CDE works out his reply.)

(BP7) (DE) (MLCA) ZNB W ii INT ZGO (MLCA) (DE) (BP7) ii ZGO W9N ii Z8N ii K

(BP7) (DE) (W9N) (R) AR

Section 20-6. Time Signal

20.42 Time signals may be sent:

- a. periodically by the NCS;
- b. when requested by a station; and
- c. in some cases by a sub-station to the NCS (for example, a platoon commander who has synchronised with the company commander for a plan, sends a time signal to the NCS after orders).

20.43 Time signals are given in Zulu time unless otherwise requested or directed. The time zone suffix is not to be included in the time signal.

Method

20.44 When a time check is given on a net, sufficient time should be allowed between the warning and the commencement of the time check to allow receiving operators to prepare their watches and/or clocks. The NCS may announce an intention to transmit a time check at a certain time, using the operating signals ZUJ ZUA and the time group, for example:

- a. ZUA.....Time signal will be transmitted now (or at...). The numerals indicating the time will be followed by a five-second dash terminating exactly at the time specified.
- b. INT ZUA.....Request time signal now (or at...).
- c. ZUJ.....Stand by.

20.45 This is known as the delayed executive method. The NCS warns the net that he intends to transmit a time check at 0015 hr:

SM5 DE BP7 ii ZUJ ZUA 0015 ii AR

(Then, at the prescribed time BP7 transmits.)

SM5 DE BP7 ii ZUA 0015 (pause) (five-second dash) AR

20.46 An accurate time check will be requested by use of the operating signal ZUA preceded by the prosign INT as follows:

BP7 DE IMM ii INT ZUA ii K

(IMM) (DE) BP7 ii ZUA 1805 (pause) (five-second dash) K

Section 20-7. Closing Down

20.47 No station is to close without prior permission from the NCS. The greatest possible care must be taken by the NCS never to close down a net or an individual sub-station without being completely satisfied that the sub-station knows, or will know, the new frequency and time of reopening. These orders must be given by the most secure means available, and wherever possible not by radio. In an emergency, the orders may have to be sent over the radio, in operations code, before the net closes down. In this case any security achieved is temporary.

20.48 When it is essential to order a close down over the radio and the NCS is satisfied regarding arrangements for reopening, it then orders the net or sub-station to close down by use of the operating signal ZKJ:

SM5 DE BP7 ii ZKJ ii K

(All sub-stations answer the preparatory order in turn R, K and the NCS transmits the executive order to enforce the closure.)

(SM5) (DE) BP7 ii ZKJ ii AR

20.49 When one station is required to close down for technical or temporary minor reasons, (for example, changing batteries), the request and instructions are given in clear by use of the following operating signals:

- a. INT ZKJ1 which means, ‘May I close down (until...?’;
- b. ZAL which means, ‘I am closing down (until...) due to...’; and
- c. ZKJ which means, ‘Close down (until...?’). (Authentication is mandatory under these circumstances.)

20.50 In the following example, T3Q requests to close down to change batteries and authenticates the request:

BP7 DE T3Q ii ZAL BATTERY CHANGE ii ZNB SI ii K

(T3Q) (DE) BP7 (R) AR

CHAPTER 21

Formal Message Procedure

Section 21-1. Introduction

Types of Formal Messages

21.1 Messages are processed according to the way they are addressed. The types of address are:

- a. single,
- b. multiple, c. book, and d. general.

21.2 A single address message is for one addressee only.

21.3 A multiple address message is one which is intended for two or more addressees, each of whom is informed of the other addressees. Each addressee must be indicated as ACTION or INFORMATION.

21.4 Book Message. A book message is one intended for two or more addressees, and is of such a nature that the originator considers that no addressee needs to be informed of any other addressee. Each addressee must be indicated as ACTION or INFORMATION.

21.5 General Messages. Messages which have a wide standard distribution are termed general messages. They are usually addressed with the aid of an AIG, for example, AIG2074.

Plaindress Format

21.6 Plaindress message format is a message in which the originator and addressee designators are indicated external to the text (in the FROM, TO and INFO spaces of the message form). When the offer indicates the total address composition, the address component may be omitted (abbreviated plaindress). The text of a plaindress message may either be plain language or ciphered group. The code or cipher being used will indicate the types of format to be used.

Abbreviated Plaindress Format

21.7 Operational requirements for speed of handling may require abbreviation of plaindress message headings. In such cases, any or all of the following may be omitted:

- a. precedence, b. DTG, and/or c. addressees.

Codress Format

21.8 Codress message format describes a message that has the entire address component contained within the encrypted text.

Message Structure

21.9 The structure of all transmissions consists of 16 format lines. Format line 1 is not used in ratg procedure. Format lines 2 to 4 and 14 to 16 are used by the operator and identify the portion of the message format allotted for ratg procedures. Lines 5 to 13 are the responsibility of the originator and are not to be changed without referring the message back to the originator. It is not necessary for all format lines to be used in every message. When all format lines are used they must be in the order indicated in the schematic diagram in [annex A](#).

Separative Sign (Prosign ii)

21.10 The separative sign (Prosign ii) is used to avoid mistakes in reception which might occur if letters or figures of adjacent groups are run together. The separative sign is used in messages:

- a. before and after all prosigns in the procedure and preamble components of the heading, except DE, AA, NR and IX (the separative sign after the prosign is omitted when the prosign is followed by BT);
- b. to separate each element of the address components, that is, preceding the prosigns FM, TO, INFO and XMT;
- c. to separate the address component from the prefix when an accounting symbol is used; and
- d. to separate, in the preamble components, the DTG from the message instructions.

Long Message Procedure

21.11 A long transmission is one which will take more than 30 seconds to transmit and generally consists of more than 30 words. As long transmissions usually need to be written down, the following procedure is to be used:

- e. The message is to be sent in sections, each lasting approximately 30 seconds, and each section, except for the last section, terminating with the prosign B.
- f. Receiving stations are to acknowledge each section and, if necessary, ask for repetitions prior to the transmission of the next section.
- g. After obtaining receipt for each section from all or selected receiving stations, the transmitting station is to pause for five seconds to allow any other station to transmit an urgent message.
- h. The transmitting station may interrupt a transmission to send a more urgent one.

- a. If there is an interruption, the next section will be transmitted preceded by the prosign AA and followed by the last word, phrase or group of the section previously transmitted.
- b. If there is no interruption, the next section is transmitted, preceded by the last word, phrase or group of the preceding section.
- c. This procedure is continued until the complete message is transmitted.

21.12 The following examples illustrate this procedure. In the first example, the NCS transmits a long message with no interruptions; abbreviated call-signs are used

IMM T3Q DE BP7 K (BP7) (DE) IMM K (BP7) (DE) T3Q K

(IMM) (T3Q) (DE) (BP7) TANKS ADVANCING FROM SCRUB GR 432678
SUPPORTED BY INFANTRY MORTARS FIRING ON BUILDINGS GR 435688
WITH SMOKE B K

(BP7) (DE) IMM (R) K (BP7) (DE) T3Q (R) K (five-second pause)

(IMM) (T3Q) (DE) BP7 ii SMOKE NO INDICATION OF AT-TACK FROM THAT
DIRECTION BUT ADVISE SUNRAY PT E96 TO MOVE WITH CAUTION ii K

(BP7) (DE) IMM (R) AR

(BP7) (DE) T3Q (R) AR

In this example, the NCS transmits a long message and interrupts its own transmission to pass an urgent message to Z8N; abbreviated call-signs are used:

IMM T3Q DE BP7 ii TANKS ADVANCING FROM SCRUB GR 423679
SUPPORTED BY INFANTRY MORTARS FIRING ON BUILDINGS GR 435688
WITH SMOKE AS AR ii Z8N DE BP7 MOVE TO ACE HIGH NOW ii ZNB AQ K

(BP7) (DE) Z8N (R) AR (five-second pause)

IMM T3Q DE BP7 AA SMOKE NO INDICATION OF AT-TACK FROM THAT
DIRECTION BUT ADVISE SUNRAY PT CE5 TO MOVE WITH CAUTION ii K

(BP7) (DE) IMM (R) AR

(BP7) (DE) T3Q (R) AR

Section 21-2. Offering a Formal Message

21.13 An offer is a short transmission made to warn a station that a message follows. An offer is to be made when:

- a. the calling station wishes to ascertain whether the called station is ready to receive a message,
- b. conditions are difficult and it is necessary for the sender to ensure that communications are sufficiently good for the entire message to be received,
- c. it is necessary for the message to be written down,
- d. the net is directed, and/or
- e. the information to be passed is in a standardised form requiring the completion of a proforma.

Offering

21.14 All formal messages are to be offered, using the operating signal ZDA:

Z8N DE BP7 ii ZDA ii P ii K

21.15 After the offer has been made and acknowledged by the receiving stations, it need not be repeated in subsequent transmissions.

Before Transmitting

21.16 The operator is to scrutinise the message to ensure that no significant components have been omitted and that no security breach would result from its transmission. The message number may be obtained from either the radio operator's log or the out check sheet, if used.

21.17 Most formal messages take more than 30 seconds to send and should be divided into suitable sections for transmission.

Message Transmission

21.18 **Messages** are to be transmitted exactly as written. Abbreviations are not to be substituted for plain language or plain language substituted for abbreviations.

1. **21.19** Numerals in DTGs, serial numbers and call-signs, and those numerals used with operating signals and prosigns are to be written and transmitted as digits.
2. **21.20** The prosign BT is to be transmitted immediately following the last element of the heading and text of all messages, except in procedural messages where a DTG or time group is not used.

Section 21-3. The Procedural Component (Format Lines 2, 3 and 4)

21.21 The procedural component is the first part of the heading to be transmitted and consists of a complete call followed by:

- a. the message number, and
- b. transmission instructions.

The Call

21.22 The call serves to identify the stations between which the message is to be transmitted. It may also serve as the address of the message when the stations are on the same net.

Message Number

21.23 A message number is used to identify each message transmitted from a station. A message number consists of the prosign NR and a serial number/date and is used by the receiving station to acknowledge receipt when required, for example, NR006/12.

Transmission Instructions

21.24 Transmission instructions are prosigns or operating signals that are inserted by the radio operator to detail how a message is to be transmitted. The two kinds of transmission instructions are:

- a. those which apply to the signalling of the message; and
- b. those which apply to the retrans or the delivery of the message, for example:
 1. (1) T – transmit to;
 2. (2) F – do not answer;
 3. (3) G – read back; and
 4. (4) ZXY – transmit this message to the addressee(s) indicated by the numeral(s) following.

Transmission Instructions in Codress Messages

21.25 The operating signal ZOT indicates that the call-sign following ZOT is to receive the message at the lower precedence. The absence of the operating signal ZOT indicates that the message is to be handled at the higher precedence by all stations. If T instructions are included, stations to receive the message at the lower precedence may be shown in a group following the operating signal ZOT.

21.26 In the following example, the NCS transmits the message to DE4 and IMM, indicating to IMM to process the message as routine:

DE4 IMM DE BP7 NR021/12 ii ZOT IMM ii P ii R ii 120816Z FEB 93 ii GR71 BT
(etc)

Section 21-4. The Preamble (Format Line 5)

21.27 The preamble consists of the following elements:

- a. the precedence,
- b. the DTG, and
- c. message instructions.

Precedence

21.28The assignment of precedence to a message is the responsibility of the originator and is determined by the degree of urgency with which the message should be handled. The degrees of precedence and respective prosigns are indicated at the head of the section.

Rules for Handling Precedence Traffic

21.29Messages are to be handled in the order of precedence. Messages of the same precedence are handled in the order in which they are received. FLASH and IMMEDIATE precedence traffic are handled before those of lower precedence, even to the extent of interrupting the transmission of lower precedence traffic. Degrees of precedence are:

- a. FLASH = Z;
- b. IMMEDIATE = O;
- c. PRIORITY = P; and
- d. ROUTINE = R.

21.30 Priority traffic should be handled before that of routine, but routine traffic should not be interrupted unless the message is an exceptionally long one.

Single Precedence

21.31 Where multi-addressed messages have both information and action addressees of the same precedence, the precedence prosign is only transmitted once to indicate the precedence of all addressees.

Dual Precedence

21.32 Where multi-addressed messages have been assigned two precedents, one for action addressees and one for information addressees, the information addressee will always carry a precedence of Routine unless indicated by the originator.

Transmitting the Precedence

21.33 Only one precedence is transmitted when action and information addressees are the same. Where two precedence prosigns are transmitted, they are separated within the preamble by the separative sign.

Date Time Group

21.34 The DTG, inserted by the releasing officer, consists of a six-figure group, a zone suffix, abbreviation of the month and the last two figures of the year (for example, 241450Z FEB 98).

Message Instructions

21.35 Message instructions consist of operating signals that detail how the message is to be handled. These operating signals are transmitted with the message to the stations of designation. The prosign IX is included in the message instructions where applicable.

Section 21-5. The Address Group Component (Format Lines 6,7,8 and 9)

21.36 The address component consists of the originator, action addressees and information addressees.

Address Designators

21.37 The originator and addressees of a message are indicated by the address groups of their headquarters. Sending an address in plain language is not permitted for security reasons. When an addressee is a station on the same net as the originator then that station's call-sign must be used instead of its address group.

Use of Prosigns

21.38 Prosigns are used to differentiate between the various elements of the address component:

- a. *FM (From)*. The group which follows identifies the originator.
- b. *TO (To)*. The groups following identify the action addressees.
- c. *INFO (Information)*. The groups following identify the information addressees.
- d. *XMT (Exempt)*. The groups following are not addressees in this call.

Messages for Addressees on the Same Net

1. **21.39** When a message is for action addressees only, and these stations are on the same net as the originator and are indicated by their call-sign, the address component can be omitted.

2. **21.40** When there are some information addressees, the address component may be omitted providing that the operating signal ZFH in conjunction with the applicable call-sign(s) is included in the call.
3. **21.41** In the following example, the NCS calls several stations on the net; Z8N can omit the address component:
 4. IMM Z8N DE BP7 ii Z8N ZFH K

Section 21-6. The Prefix (Format Line 10)

21.42 The prefix consists of one element containing:

- a. an accounting symbol, or
- b. a group count.

Group Count

21.43 A group count is used with encrypted or encoded messages or messages subject to accounting. The number of groups appears in the message prefix, preceded by the prosign GR. When a message is transmitted before the group count is determined, the prosign GRNC (groups not counted) is to be used in lieu of the group count. The actual group count may then be transmitted in the final instructions and be inserted in the message prefix by the receiving operator.

Rules for Counting Groups

21.44 When counting groups, the following rules are to apply:

- a. The text only is to be counted.
- b. Punctuation marks and symbols are not counted unless spelled out or abbreviated.
- c. Sequences of letters not interrupted by a space are counted as one group.

Cipher Group Count

21.45 When a cipher group count is inserted by the operator or originator using operations code at the end of an encoded text, the group count is NOT included as a group. The group count consists of the number of groups and the date (day and month only) and is written as indicated in the following example:

AWM YPE UXV NCT VVI USY RSG LEV MUT NNY 10/28

Section 21-7. The Separation (Format Lines 11 and 13)

21.46 The prosign BT is used to separate the text of a message from the heading and ending parts respectively. The information contained between the BT prosigns constitutes the text.

Section 21-8. The Text (Format Line 12)

21.47 The text of a message consists of:

- a. the security classification;
- b. the subject indicator code (SIC);
- c. the originator's number; and
- d. the subject matter.

Security Classification

21.48 The security classification of a message will be decided by the drafter. Security classifications are as follows:

- a. TOP SECRET,
- b. SECRET,
- c. CONFIDENTIAL, and
- d. RESTRICTED.

21.49 Messages must not be accepted for transmission unless they bear a security classification or the word 'UNCLASSIFIED' (the abbreviation UNCLAS). Messages without a security classification are to be referred back to the originator for classification.

Subject Indicator Code/Originator's Number

21.50 The SIC is a three-letter code used to identify the subject of a message. SIG is used for message distribution.

21.51An originator's number will consist of a combination of letters and figures used by the originator to allow the recipient to identify and refer to that message.

Subject Matter

21.52 The text of a message is to be transmitted exactly as written by the originator, except when clear names of units, for example, are to be replaced by call-signs or address groups by the operator. When it is necessary to refer to a call-sign or an address group in the text of a message, the operator will insert the prosign PT immediately preceding the call-sign or address group concerned.

Section 21-9. The Ending (Format Lines 14, 15 and 16)

21.53 The ending consists of:

- a. time group (when used);

- b. final instructions; and
- c. ending sign.

Time Group

21.54 The time group appears in format line 14, and is used only in abbreviated plaindress messages. A time group that is transmitted in line 14 takes the place of a DTG in format line 5.

Final Instructions

21.55 Final instructions are transmitted after the BT following the text using prosigns or operating signals.

Ending Sign

21.56 Every transmission is to end with either the prosigns K or AR. The offer, acknowledgement and the message as signalled by the operator are shown in table 21-1.

<i>Serial (a)</i>	<i>Format Line (b)</i>	<i>Element (c)</i>	<i>Transmission (d)</i>
1		Offer	IMMT3QDEBP7ZDAiiPiiT3QZBB3 K
2		Acknowledgement	BP7DEIMMK BP7DET3QK
3		ELEMENT	
4	2/3	Call	(IMM) (T3Q) (DE) BP7 ii

<i>Serial (a)</i>	<i>Format Line (b)</i>	<i>Element (c)</i>	<i>Transmission (d)</i>
5	3	Transmission identification	NR014/13 ii
6	4	Transmission instructions	T3QTT3QiiWVOii
7	5	Precedence	PiiRii
8	5	DTG	130245Z OCT 95
9	5	Message instructions	

10	6	From addressee	FM HGB ii
11	7	To addressee	TOWFNiiWVOii
12	8	Information addressee	INFO JLJ ii
13	10	Accounting symbol	
14	10	Group count	
15	11	Separation	BT
16	12	Security classification	UNCLAS
17	12	SIC	FFV
18	12	Originator's number	LOG021
19	12	Subject matter	REQ BATTERY FORECAST FOR MOV
20	13	Separation	BT
21	15	Final instructions	ii B (The prosign B indicates that more traffic is to follow).
22	16	Ending Sign	K

Section 21-10. Readdressing Messages

Rules for Redressing

21.57 If the message being readdressed is held in the files of the communications centres serving the additional addressees, readdressing may be accomplished by a procedural message containing appropriate operating signals.

21.58 If the message being readdressed is not held in the files of the communications centres serving the additional addressees, it is to be processed as follows:

- a. A supplementary heading is inserted in front of the original preamble. The supplementary heading will include all format lines, 1 through 10, as required.

- b. All parts of the original message heading preceding format line 5 are omitted.
- c. The precedence indicated by the readdressing authority will be used in the supplementary heading.
- d. A new DTG will be assigned by the readdressing authority and will appear in format line 5 of the supplementary heading.
- e. The designation of the readdressing authority (new originator) will appear in format line 6 of the supplementary heading.
- f. The addressee(s) to whom the message is readdressed will appear in format lines 7 and/or 8 as appropriate.
- g. The accounting symbol of the readdressing authority will appear in the supplementary heading in format line 10.

21.59 Messages are not to be readdressed by altering the original preamble, address, prefix or text.

21.60 Encrypted messages are not to be readdressed without prior reference to the crypto centre.

21.61 If the readdressing authority considers that any of the original addressees or the originator should be informed of the additional addressees, notification may be accomplished as follows:

Annex:

In the case of plaindress, notification may be through use of the operating signal ZFH (and appropriate numeral) or a separate message.

In the case of codress, the originator or other addressees of the message may be informed of the readdressal by the separate codress message or by being included as information addressees in the readdressal.

[**A. Structure of a Formal Radiotelegraph Message**](#)

ANNEX A CHAPTER 21

Structure of a Formal Radiotelegraph Message

1. Formal ratg messages are set out as shown in table 21-2.
2. Serials 1 to 6 represent the heading of the formal message. Serial 18 represents the text and serials 20 to 23 represent the ending.
3. TABLE 21-2. Structure of a Formal Radiotelegraph Message

<i>Serial (a)</i>	<i>Components □(b)</i>	<i>Elements □(c)</i>	<i>Format Line □(d)</i>	<i>Contents □(e)</i>
1			1	Not used.
2	Procedure	Called Station(s)	3	Station(s) called, prosign XMT and exempted call-signs.
3		Calling Station		Prosign DE and call-sign of station calling. Serial number (transmission identification), prosign NR followed by a number or a combination of letters and numbers.

<i>Serial (a)</i>	<i>Components □(b)</i>	<i>Elements □(c)</i>	<i>Format Line □(d)</i>	<i>Contents □(e)</i>
4		Transmission Instructions		Prosigs F, G, T, operating signals, call-signs, address groups, plain language address designators, AIG, routing indicators.
5		Precedence	5	Precedence prosign.
6	Preamble	DTG		Date and time expressed in digits and zone suffix followed by month indicated by first three letters, and, if required by national instructions, the year is indicated by the last two digits.
7		Message Instructions		Operating signals and prosign IX.
8	Address	Originator's Prosig	6	Prosign FM.
9		Originator		Originator's designator (call-sign, address group, plain language address designator, routing indicator).

10		Action Addressees' Prosign	7	Prosign TO.
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<i>Serial (a)</i>	<i>Components □(b)</i>	<i>Elements □(c)</i>	<i>Format Line □(d)</i>	<i>Contents □(e)</i>
11		Action Addressees		Action addressees' designators (call-sign, address group, plain language address designators, AIG routing indicator).
12		Information Addressees' Prosigs	8	Prosign INFO.
13		Information		Information addressees' designators (call-sign, address group, plain language address designators, AIG routing indicator).
14		Exempted Addressees' Prosigs	9	Prosign XMT.
15		Exempted Addressees		Exempted (call-sign, address group, plain language address designators).
16	Prefix	Accounting Information	10	Prosign GR (No of groups).
17	Separation		13	Prosign BT.
18	Text	Subject Matter	12	UNCLAS or appropriate classification, SIC/originator's number, internal instructions and appropriate textual matter.

19	Separation		13	Prosign BT.
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<i>Serial (a)</i>	<i>Components □(b)</i>	<i>Elements □(c)</i>	<i>Format Line □(d)</i>	<i>Contents □(e)</i>
20		Time Group	14	Hours and minutes expressed in digits and zone suffix.
21		Final Instructions	15	Prosigs AS, B, C, IMI, IX (5 second dash).
22	Procedure			Operating signals, station designators.
23		Ending Sign	16	Prosign K, AR.