



RADIO COMMUNICATIONS ELECTIVE

335 / 409 Squadron
Australian Air Force Cadets
Cadet / Instructor Notes
AL1

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AMENDMENT HISTORY

Date	Version	Amendment Description
1 AUG 12	AL 0	Full re-write and release of updated publication
16 FEB 14	AL1	Minor formatting changes.

**RADIO GROUND COMMUNICATIONS (RCE)
(12 Periods)**

RCE 1 Introduction Period(s): 1

- a. Explain the reasons for formal radiotelephone procedure.
- b. Explain the purpose of prowords.
- c. Outline basic prowords and their meanings.
- d. State the phonetic alphabet and the reason for its use.

RCE 2 Speaking on the Radio Period(s): 1

- a. Explain the rules for radio net discipline.
- b. Explain the technique and rules for speaking on the radio
- c. Practise use of the phonetic alphabet.
- d. State the technique of sending numbers when using a radiotelephone
- e. Practise sending numbers.

RCE 3 Radio Nets Period(s): 1

- a. Describe the structure and purpose of a radio net.
- b. Describe the roles and tasks of:
 - (1) Net Control Station.
 - (2) Command Post Radio Operator
 - (3) Staff Radio Net Supervisor
- c. Describe the nature and purpose of the various types of call signs and address groups.
- d. Outline basic appointment titles and standard fixed call signs.

RCE 4 Radio Calls Period(s): 1

- a. Describe the parts of radio calls and answers.
- b. Describe single, multiple, net collective and exempt calls.
- c. Practise calls.
- d. Explain abbreviated procedures.
- e. Practise abbreviated procedures.

RCE 5 Establishing Communications Period(s): 1

- a. Describe the information required by operators before opening a net.
- b. Describe how to open a radio net in good and bad conditions.
- c. Explain the procedures for radio checks.
- d. Practise establishing radio communications.

RCE 6 Transmission of Messages Period(s): 1

- a. Describe how to arrange a radio conversation.
- b. Outline how to offer messages.
- c. Outline the format and purpose of routine and emergency reports.

RCE 7 Codes and Security Period(s): 1

- a. Explain the need for security, accuracy and discipline in radiotelephone procedure.
- b. State and explain the security rules.
- c. Describe the purpose and use of OPSCODES, NUMCODES and authentication and limitations on their use.
- d. Practise radio calls using codes.

RCE 8 Corrections, Repetitions, Verifications, Acknowledgments and Cancellations. Period(s): 1

- a. Describe correction of errors during transmission and after message is sent.
- b. Practise error correction.
- c. Describe repetition procedure, unknown station procedure, verification, acknowledgment and cancellation.
- d. Practise procedures for repetitions, verifications, acknowledgments and cancellations.

RCE 9 Procedures for Difficult Working Conditions Period(s): 1

- a. Outline delegating and assuming control.
- b. Outline the procedures for relay, read back and words twice.
- c. State the differences between free and directed nets.
- d. Describe the responses by the Net Control Station for directed nets.
- e. Practise the procedures for difficult conditions.

RCE 10 Operation of Radio Sets on AAFC Radio Nets Period(s): 1

Using a AN/PRC-77 radio set and/or UHF/VHF Citizens Band radio:

- a. Outline the technical characteristics of the radio
- b. State the components and demonstrate the controls of the radio.
- c. Demonstrate operating procedures.
- d. State allowable frequencies / channels.
- e. State the need for strict observance of correct procedures.
- f. Practise operation of the radio.
- g. State emergency channels, and restriction on use of channels.

RCE 11 Examination Period(s): 1

RCE 12 Examination Review Period(s): 1

RCE 1 INTRODUCTION TO RADIOTELEPHONE PROCEDURES 1 PERIOD

Objectives

- a. Explain the reasons for formal radiotelephone procedure.
- b. Explain the purpose of prowords.
- c. Outline basic prowords and their meanings.
- d. State the phonetic alphabet and the reason for its use.

Introduction

1001. Radiotelephony (R.T.) is the technique of voice communications by means of radio. Radiotelephone (R.T.) procedure (RATEL) is the prescribed method of communicating, using standard wording and procedures. This is designed to ensure messages are clearly understood, consistent with security and accuracy.

1002. This course covers radio communications between AAFC units on the ground. Ground R.T. procedures differ from air procedures in terms of operational requirements. There are a number of basic differences, such as the use in AAFC communications of the terms 'over' and 'out' to end messages. See section on 'PROWORDS' in this chapter.

1003. The subject of communications between aircraft and the ground, in particular A.T.C. are covered elsewhere and are not within the scope of this course.

1004. This course is designed to give AAFC cadets sufficient understanding of, and expertise in, ground radio communications to enable them to effectively operate a radio net. These skills will be practised during bivouacs and navigation (ground) exercises.

Reasons to learn radiotelegraphy procedure

1005. You need to learn and use R.T. procedure because:

- a. every word spoken on a radio set can be heard by others;
- b. even the best radio communications may, and at times will, suffer interference, which may result in misunderstood messages;
- c. Two or more people transmitting on a radio net at the same time will result in transmission being clipped or missed. Radio discipline, using correct and known procedures, is vital.

1006. RATEL is a set of rules designed to provide:

- a. security;
- b. accuracy;
- c. Discipline.

The MNEMONIC for this procedure is 'SAD'.

The phonetic alphabet

1007. To avoid confusion, or for clarity the phonetic alphabet will be used on air. Each letter of the alphabet has a distinctive and clarifying word to depict it. The alphabet is as follows:

Letter	Phonetic	Spoken as
A	ALPHA	AL FAH
B	BRAVO	BRAH VOH
C	CHARLIE	CHAR LEE
D	DELTA	DELL TAH
E	ECHO	ECK OH
F	FOXTROT	FOKS TROT
G	GOLF	GOLF
H	HOTEL	HOH TELL
I	INDIA	IN DEE AH
J	JULIET	JEW LEE ETT
K	KILO	KEY LOH
L	LIMA	LEE MAH
M	MIKE	MIKE
N	NOVEMBER	NO VEM BER
O	OSCAR	OSS CAH
P	PAPA	PAH PAH
Q	QUEBEC	KEH BECK
R	ROMEO	RO ME OH
S	SIERRA	SEE AIR RAH
T	TANGO	TANG GO
U	UNIFORM	YOU NEE FORM
V	VICTOR	VIK TAH
W	WHISKEY	WISS KEY
X	X-RAY	ECKS RAY
Y	YANKEE	YANG KEY
Z	ZULU	ZOO LOO

Note: syllables in heavy type carry the accent.

Spelling

1008. Difficult words or groups within the text of a message may be spelled using the phonetic alphabet. Such message should be preceded by the proword 'I SPELL' if required for clarity. Wherever possible the word should be identified by pronouncing it before and after the spelling, as illustrated in the following example:

MOVE TO BANQUO - I SPELL - BRAVO ALPHA NOVEMBER
 QUEBEC UNIFORM OSCAR – BANQUO

NOTE: BANQUO would be a typical pre-arranged code name for an agreed location.

1009. Distinct pauses are to be made between each letter as it is phonetically spelled.

Prowords

1010. Prowords are pronounceable words or phrases which have specific meanings to increase the efficiency of message handling on circuits where RATEL procedures are used. Prowords, or combinations of prowords, are not to be substituted for the text of a message. Common prowords and their meanings are:

<u>Proword</u>	<u>Meaning</u>
'Over'	I have completed my transmission and expect a reply or response.
'Out'	I have completed my transmission but I do not expect any reply or response.
NB NEVER use 'over' and 'out' together as it is a contradiction in terms.	
'I spell'	the following part of my transmission will be spelled phonetically.
'Roger'	I have received and understood your last transmission.
'Grid'	my next transmission will be a grid reference.
'Say again all before ...'	I did not understand your
'Say again all after ...'	transmission before/after ...say it again.
NB NEVER use the proword 'repeat' as a substitute to 'say again'.	
'Fetch'	Bring ... (appointment title) to the radio as I wish to speak personally.
'Wilco'	I understand your transmission and will comply.
'Radio Check'	a transmission is to be made to check the signal strength and readability of transmissions.

'Nothing Heard'	An entire transmission has been missed or not received. Allows all net stations to know the transmission was not received.
'Correction'	what has been said is wrong; the correct version follows.
'Disregard this transmission'	used to cancel a message during its transmission.
'Figures'	Used before sending a group of numbers, digit by digit.
'I Spell'	When spelling out a word
'Message'	an unregistered message that needs to be written down.
'Out to you'	this is the end of my transmission to you. No reply is expected and a call to another station follows immediately.
'Read Back'	repeat this entire transmission back to me entirely as received.
'Send'	I am ready to receive your message

RCE 2 - SPEAKING ON THE RADIO**1 PERIOD****Objectives**

- a. Explain the rules for radio net discipline.
- b. Explain the technique and rules for speaking on the radio
- c. Practise use of the phonetic alphabet.
- d. State the technique of sending numbers when using a radiotelephone
- e. Practise sending numbers.

Radio net discipline

2001. Good discipline is essential to the efficient operation of radio nets. Irrespective of their rank, the net control station (NCS) is in charge of the net and is responsible for radio security and discipline.

2002. Radio discipline includes:

- a. Adherence to correct Radiotelephone procedure at all times;
- b. correct opening and closing of any station on the net;
- c. use of correct frequency;
- d. Maintaining a radio watch (i.e. listening in) by all stations on the net.

Rules for Radio Discipline

2003. To prevent confusion on a radio net, the following rules will apply at all times:

<u>Rule</u>	<u>Basis for rule</u>
All messages to be written down prior to transmission	to utilise transmission time more efficiently.
All messages which are to be delivered by the receiving operator to another person, OR which are preceded by the proword MESSAGE , must be written down by the receiver	to ensure correctness of message do not rely on memory alone
Transmissions by radio to be as Short as practicable, consistent with clarity	Security and efficient utilisation of circuit time; create minimum delay for other operators
Standard phraseology to be used	Accuracy, brevity, clarity (ABC)
Transmissions are to be clearly spoken, with natural emphasis on	Clarity, brevity, security, avoidance of misunderstanding

each word, except for prescribed pronunciations of figures, and are to be spoken in natural phrases, not word by word.	especially at busy times
Operators must ensure a circuit is clear before starting a transmission	To avoid interfering with other traffic
Test signals are not to continue for more than 10 seconds, and are to be composed of spoken numerals (1, 2, 3, etc) followed by the call sign of the station transmitting the signals.	To avoid interfering with other traffic.
All calls are to be answered immediately and in correct answering order (see below security; under 'Answering order')	To utilise transmission time more efficiently; better minimise repeat calls; create minimum delay for other operators.
Users of the radio must ensure that the radio set returns to ' receive ' after each transmission.	Even one sticking P.T.T. switch can make a good circuit unusable.

Radio operation - techniques and rules

2004. When using any radio within a net, only one station can transmit at a time. To prevent confusion, the following rules must be obeyed:

- a. listen before transmitting to ensure the frequency is clear;
- b. do not 'cut in' on any transmission except in an emergency;
- c. allow a 5 second pause at the end of any transmission;
- d. answer all calls immediately;
- e. where several stations are answering a call in turn, and one station fails to do so, the next station will answer after a pause of five (5) seconds. The 'defaulting' station, having missed their turn, will answer after all other stations have answered;
- f. ensure the radio set returns to 'receive' after each transmission. A stuck 'press to talk' button will reduce the net to chaos.

2005. When speaking on a radio, ensure the following points are adhered to:

- a. think what you are going to say before making a call;
- b. hold the microphone between 50mm and 75mm from your mouth, speaking across the microphone, not into it;
- c. do NOT pass or refer to classified information in clear voice;
- d. remember the following during all transmissions:

- i. RHYTHM:- speak with a natural rhythm, dividing the message into sensible phrases;
- ii. SPEED:- use a slightly slower speed than when using normal conversation;
- iii. VOLUME: - ensure the volume of your voice remains the same throughout your conversation. Do not shout as this will distort your signal at the receiving station;
- iv. PITCH: - ensure your voice is pitched a little higher than normal.

REMEMBER THE MNEMONIC 'RSVP'.

24 hour clock

2006. To avoid any confusion regarding times or timings due to 'AM' or 'PM' being missed or not transmitted, ALL times used on radio are to 24 hour clock time. The 24 hour clock time is a group of four digits and will be pronounced digit by digit. The only exception is for times on the hour where 'xx hundred hours' may be used.

2007. The 24 hour clock time commences at one minute past midnight (0001 hours) on one day to one minute before midnight the next night (2359 hours) on the same day. Note - there is no such time as 0000 hours or 2400 hours. The word 'midnight' is used. The 24 hour clock time is broken into two, two digit figures - the first the number of hours past midnight and the last two numbers of minutes past the last hour.

2008. Examples of the 24 hour clock are:

	Time	24 Hr	Pronounced
a.	12.01 a.m.	0001	zero zero zero wun hours
b.	9.16 a.m.	0916	zero niner wun six hours
c.	12.00 noon	1200	twelve hundred hours
d.	10.53 p.m.	2253	too too fife three hours
e.	11.59 p.m.	2359	too three fife niner hours

Phonetic pronunciation - figures and punctuation

Figures

2009. Numbers are to be transmitted digit by digit - as with letters -except where exact multiples of hundreds and thousands are spoken. Where it is necessary to distinguish numerals from words, the proword 'figures' is to precede the number. Figures are pronounced as follows with the emphasis on the bold syllable:

0	Z ero	5	Fi - Yiv
1	W un	6	S ix
2	T oo	7	Se -ven
3	Th uh-ree	8	A te

4 **Fo-wer**9 **Niner**

2010. Hundred is pronounced Hun-dred; Thousand as Thow-sand; and a decimal point as Day-see-mal.

2011. Some examples of sending figures are:

10	wun zero
90	niner zero
136	wun thuh-ree six
1.7	wun day-see-mal se-ven
500	fi-yiv hundred; or fi-yiv zero zero
16000	wun six thow-sand
44	fo-wer fo-wer

Pronunciation of punctuation

2012. Punctuation marks, when required will be spoken as follows:

Punctuation Mark	Name	Spoken as
,	comma	comma
.	full stop	full stop
()	brackets	open/close brackets
/	oblique	slant
" "	quotation marks	quote ... unquote
-	hyphen	hyphen
-	dash	dash

RCE 3 - RADIO NETS**1 PERIOD****Objectives**

- a. Describe the structure and purpose of a radio net.
- b. Describe the roles and tasks of:
 - (1) Net Control Station.
 - (2) Command Post Radio Operator
 - (3) Staff Radio Net Supervisor
- c. Describe the nature and purpose of the various types of call signs and address groups.
- d. Outline basic appointment titles and standard fixed call signs.

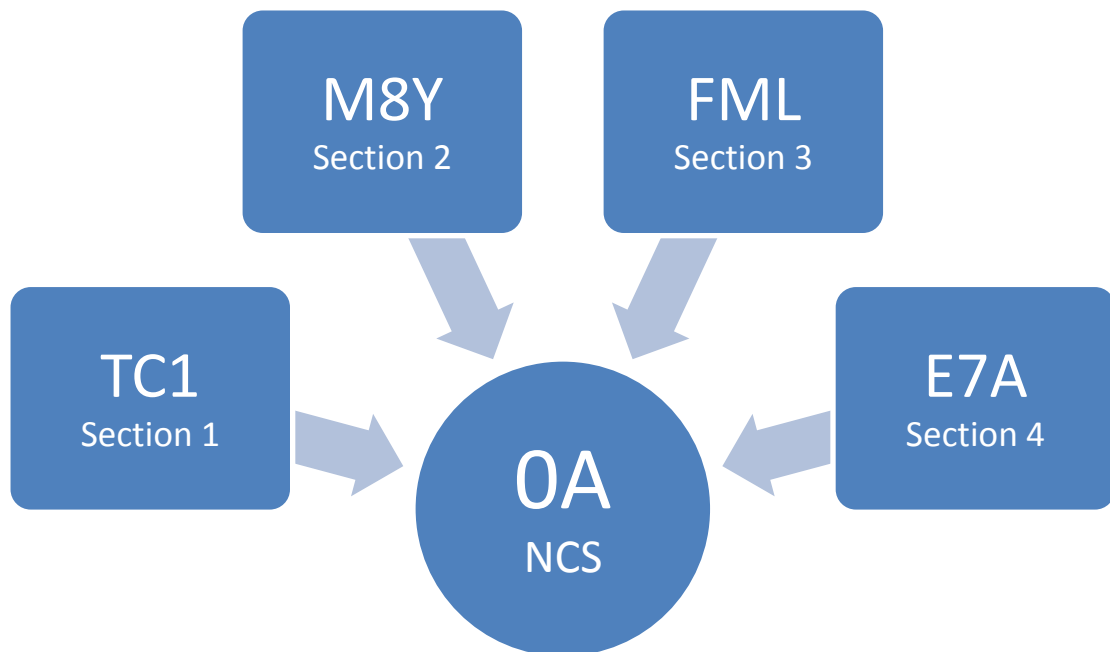
Radio nets and calls

3001. A radio net is defined as a group of radio stations, operating on the same frequency for the purpose of communicating with each other.

3002. A radio net is comprised of:

- a. A Net Control Station (NCS)
- b. Two or more subordinate stations (sub-stations).

3003. A simple net diagram is shown below.



Role of key functions

Net Control Station (NCS)

3004. 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

3005. The remaining stations on the net are called sub-stations. All sub-stations must comply with all communication instructions issued by the NCS.

Command Post Radio Operator

3006. The Command Post Operator is the on duty radio operator operating the Net Control Station.

Staff radio net supervisor

3007. Within the AAFC, any radio net will have an instructor or officer to act as staff radio net supervisor. Duties performed include supervising the overall operation of the radio net and issuing instructions and orders, maintaining the level of security and discipline of the net. All instructions and orders issued by the staff radio net supervisor will be complied with.

Call signs and address groups

3008. Call-signs are usually a combination of letters and figures (for example, FML) 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. For example (Contact callsign Zero Alpha).

3009. Figures used in call-signs are spoken digit by digit and letters are pronounced phonetically. Examples of some call signs are shown below:

Station	Call sign	Pronounced as
H.Q.	0A	Zero Al-Fah
CO	9	Niner
2IC	9A	Niner Al-Fah
EQUIPO	91	Niner wun

3010. This is not a complete list and is shown for example only. All relevant call signs will be promulgated in orders pertinent to any exercise when a radio net is required.

Appointment titles

3011. Appointment titles are used to indicate the function of a person without revealing names. They can also be used to indicate units without revealing the identity. Appointment titles afford only low grade security cover.

3012. Titles are not normally altered in any way except as follows:

- a. to indicate a junior appointment, 'minor' may be added - e.g. sunray minor (2IC);
- b. 'my', 'your', 'their' etc may be used before a title - e.g. my moonbeam;
- c. to further specify the appointment, a callsign may follow the title - e.g. sunray rabine sabre.

3013. Some examples of appointment titles are:

<u>Appointment</u>	<u>Appointment Title</u>
Commander	SUNRAY
Deputy Commander, Second in Command	SUNRAY MINOR
Chief of Staff, Executive Officer	MOONBEAM
Administrative Staff	MANHOLE
Equipment Staff	NUTSHELL
Movements Staff	CONTRACTOR
Transport	PLAYTIME
Ground Liaison Officer	GLOWORM
Medical	STARLIGHT
Air Liaison Officer	KINGFISHER
Air Traffic Controller	BASEBALL
Ground Defence Officer	FIREGUARD
Operations Staff	SEAGULL
Signals	PRONTO
Service Police	WATCHDOG

RCE 4 - RADIO CALLS**1 PERIOD****Objectives**

- a. Describe the parts of radio calls and answers.
- b. Describe single, multiple, net collective and exempt calls.
- c. Practise calls.
- d. Explain abbreviated procedures.
- e. Practise abbreviated procedures.

Calling

4001. A radio call consists of the following parts:

- a. **Initial Call.** The initial call indicates which station(s) is being called and which is the calling station. The call consists of:
 - I. the initial CALL-SIGN which identifies the station(s) being called;
 - II. the prowords THIS IS, used to indicate that the CALL-SIGN of the calling station follows; and
 - III. 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 that the transmission has ended:
 - I. **OVER.** OVER means, this is the end of my transmission to you and a reply or acknowledgement is required. Go ahead and transmit.
 - II. **OUT.** OUT means, this is the end of my transmission. No reply is required or expected.

4002. An example of a radio call is:

‘WUN ZERO THIS IS ZERO AL-PHA, RADIO CHECK, OVER’

CALLSIGN THIS IS CALLSIGN TEXT ENDING

Answering

4003. 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 maybe used to indicate the end of the transmission:
- (1) 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.
 - (2) 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.

4003. Examples illustrating answering calls are as follows:

‘ZERO AL-PHA THIS IS WUN ZERO, LOUD & CLEAR, OUT’
CALLSIGN THIS IS CALLSIGN TEXT ENDING

Order of Answering

4004. The order of answering a call is in alphabetical or numerical order according to the callsigns.

4005. If a station fails to answer in proper sequence, the next 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 then respond.

Unknown Station

4006. 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:

TC1 - THIS IS - 0A - Convoy departed - OVER.
 UNKNOWN STATION - THIS IS - TC1 – SAY AGAIN CALLSIGN- OVER.
 TC1 - THIS IS - 0A - OVER.
 0A - THIS IS - TC1 - ROGER OUT.

Types of calls

4007. The following types of calls may be used on a radio net:
- a. single call;
 - b. multiple call;
 - c. net call;
 - d. collective call;

- e. exempt call.

4008. The most common on AAFC nets will be single calls, with net calls the next most common.

Single Call

4009. A single call is a call to only one station on the net. It may be a call from the NCS or from a sub-station. There is no difference between the procedure used by the NCS and that used by a sub-station in initiating this type of call.

Multiple Call

4010. 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:

M8Y - FML - E7A - THIS IS - TC1 - I am moving now – OVER.
 TC1 - THIS IS - M8Y - ROGER - OUT.
 TC1 - THIS IS - FML - ROGER - OUT.
 TC1 - THIS IS - E7A - ROGER - OUT.

Net Call

4011. A net call is a call to all stations on the net from either the NCS or a sub-station. Note that a net callsign should be used if one exists for the net. There is no difference between the procedure used by the NCS and by a sub-station.

Collective Call

4012. A collective call is a call to selected stations on the net. The stations required are pre-arranged to suit the situation. It is not essential for all nets to have a collective callsign but if one exists it should be used when appropriate, to save transmission time. A common use for this type of call is where a commander wishes to speak to all of his sub-unit commanders without having to use their individual callsigns. 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.

Exempt Call

4013. 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 (SO3) wishes to contact all sub-stations other than call-sign FML:

SO3 - EXEMPT FML – THISIS - 0A – Move now - OVER.
 0A - THIS IS - TC1 - ROGER - OUT.

0A - THIS IS - M8Y - ROGER - OUT.
 0A - THIS IS - E7A - ROGER - OUT.

Abbreviated procedure

4014. Under normal operating conditions, radio procedure is 'abbreviated' to save time and improve security. Common abbreviations are:

- a. omitting the callsign(s) of called station(s), other than in the initial call;
- b. omitting any non-essential proword such as 'THIS IS', other than in the initial call;
- c. in a single call, i.e. to only one other station, callsigns may be omitted after the initial call and reply.

4015. Callsigns can usually be abbreviated on AAFC nets except when either NCS directs full callsigns are to be used, or when a sub-station requests a full callsign be used. Examples of abbreviated callsigns are:

- a. for callsigns containing fixed numeral suffixes: use suffix only, e.g. 'Sabine Raider Two' is abbreviated to 'Two';
- b. for pronounceable word call sign: delete first word, e.g. 'Sabine Raider' -abbreviate to 'Raider';
- c. for mixed letter and figure callsign: delete the first two characters, e.g. 'Alpha One Niner Too' - abbreviate to 'Niner Too'
- d. fixed callsign suffixes are, in effect, already abbreviated and need not be abbreviated further, e.g. 'One Three Alpha', or 'Niner Wun' stays as is.

Full Procedure

4003. 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:

SO3 - THIS IS - 0A - USE FULL PROCEDURE - OUT.

Reverting to Abbreviated Procedure

4004. 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:

SO3 - THIS IS - 0A - USE ABBREVIATED PROCEDURE -OUT

RCE 5 - ESTABLISHING COMMUNICATIONS**1 PERIOD****Objectives**

- a. Describe the information required by operators before opening a net.
- b. Describe how to open a radio net in good and bad conditions.
- c. Explain the procedures for radio checks.
- d. Practise establishing radio communications.

Opening A Net**5001. INFORMATION REQUIRED TO OPEN A RADIO NET**

- a. the net organisation, preferably in the form of a diagram which identifies all the stations on the net;
- b. the frequencies assigned to the net, and lost communications procedures;
- 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.

5002. Abbreviated callsigns and abbreviated procedures are to be used when establishing communications, unless conditions are difficult. The procedures listed below for opening a net in good or bad conditions will be used when:

- a. opening a net for the first time;
- b. Re-opening a net.

5003. To enable a net to commence and maintain a flow of traffic with a minimum of delay, the following conditions are required:

- a. proper control by the NCS;
- b. adherence to standard operating procedures (SOP's) by all stations on the net;
- c. Information contained in para 5001 be available to all substations.

Initial Call

5004. At the designated time, or when ready to establish/re-establish a net, the NCS initially orders sub-stations to report the strength and readability of its signal by using the proword RADIO CHECK, which means "What is my signal strength and readability?". 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 5012.

SO3 – THIS IS – 0A – RADIO CHECK – OVER.
 0A – THIS IS – TC1 – ROGER – OVER.
 0A – THIS IS – M8Y – ROGER – OVER.
 0A – THIS IS – FML – ROGER – OVER.
 0A – THIS IS – E7A – ROGER – OVER.
 SO3 – THIS IS – 0A – ROGER – OUT.

5005. 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.

5006. In this example, call-sign M8Y is unable to answer the net call:

SO3 - THIS IS - 0A - RADIO CHECK - OVER.
 0A - THIS IS - TC1 - ROGER - OVER.
FML hearing no reply from call-sign M8Y waits five seconds then transmits.
 0A - THIS IS - FML - ROGER - OVER.
 0A - THIS IS - E7A - ROGER - OVER.
 SO3 - THIS IS - 0A -ROGER - M8Y - NOTHING HEARD - OUT.

5007. When radio conditions improve, M8Y calls the NCS to report into the net:

0A - THIS IS M8Y - Reporting into the net - OVER
 The NCS, having no radio traffic for M8Y at present, transmits:
 0A - OUT'

5008. Note that in normal practice on military nets a station reporting late into a net would be required to prove its authenticity by using the authentication code in accordance with the prescribed authentication procedure. It is unlikely that authentication would be necessary in normal working conditions on AAFC nets. The authentication system is further described later

5009. The NCS waits for all stations on the net to reply before giving its reports to sub-stations. If the readability of a substation is less than LOUD AND CLEAR, the NCS will report the strength and readability of that station. An example is shown below:

SO3 – THIS IS – 0A – RADIO CHECK – OVER.
 0A – THIS IS – TC1 – ROGER – OVER.
 0A – THIS IS – M8Y – ROGER – OVER.
 0A – THIS IS – FML – ROGER – OVER.
 0A – THIS IS – E7A – ROGER – OVER.
 SO3 - THIS IS - 0A - TC1 - WEAK WITH INTERFERENCE - FML - WEAK BUT READABLE - OUT.

Radio Checks

5010. Radio checks are completed to ensure communication is available to all stations within the net. A station is assumed to have good signal strength and readability unless otherwise notified. Radio checks are not to be exchanged unless one sub-station cannot clearly hear another.

5011. Signal strength is the volume of the signal as heard by the receiving station; readability is the clarity as heard by the receiving station. A station wishing to inform another of its signal strength and readability is to do so by means of a short and concise report of reception.

5012. 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.
- d. WEAK. WEAK indicates that the sender's signal strength is weak.
- e. VERY WEAK. VERY WEAK indicates that the sender's signal strength is very weak.
- f. FADING. FADING indicates that at times the signal strength fades to such an extent that continuous reception cannot be relied upon.

5013. 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.

RCE 6 - TRANSMISSION OF MESSAGES**1 PERIOD****Objectives**

- a. Describe how to arrange a radio conversation.
- b. Outline how to offer messages.
- c. Outline the format and purpose of routine and emergency reports.

Arranging a Radio Telephone Message

6001. Radio telephone messages are usually addressed to stations or sub-stations, and not individuals. This does not, however preclude speaking to, or requesting to speak to nominated individuals (e.g. Sunray.)

6002. This is done by the operator calling the station concerned and uses the proword FETCH followed by the appointment title of the individual they wish to speak with. 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.

TC1 - THIS IS 0A - FETCH STARLIGHT - OVER.

0A - THIS IS TC1 - WAIT OUT.

On arrival, TC1 STARLIGHT transmits.

0A - THIS IS TC1 - STARLIGHT SPEAKING - OVER.

TC1- THIS IS 0A –SUNRAY SPEAKING- Can you provide....

NOTE: Above use of the prowords 'fetch' and 'speaking', and the use of the proword 'wait out' when the called party is not near the radio.

Offering a Message

6003. An offer is a preliminary message made to warn a station that a message follows. Messages are offered 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, SITREP).

6004. Messages may be offered by means:

- a. the abbreviated offer, which does not involve the use of a proword;
- c. the proword 'message' or 'long message' is used;
- d. a warning of the type of message to follow, e.g. SITREP, CASEVAC etc.

Informal Message

6005. If the message to be sent is not particularly difficult and does not necessarily have to be written down, the abbreviated offer is used as follows:

FML - THIS IS 0A - OVER.
 0A - THIS IS - FML - SEND - OVER.
 FML - THIS IS - 0A - Your SUNRAY has left this position - OVER.
 0A - THIS IS - FML - ROGER - OUT'.

Message

6006. The proword 'message' in the offer indicates that the message is to be written down, as in the following:

E7A - THIS IS - 0A - MESSAGE - OVER.
 0A - THIS IS - E7A - SEND - OVER.
 E7A - THIS IS - 0A - Move to GRID Mike Sierra Alpha Tango - OVER.
 0A - THIS IS - E7A - ROGER - OUT.

Long Message

6007. Long messages which take longer than 30 seconds to transmit are to be offered using the proword 'long message'. Operators are to transmit the message in sections of about 30 seconds, terminating each with the proword 'more to follow'. Receiving stations are to acknowledge each section, and if necessary, ask for repetitions. After obtaining acknowledgments for each section, the sender will pause for five sections. This will allow other stations to transmit urgent traffic.

6008. The transmitting station may interrupt its own message to send a more urgent one.

6009. If there is no interruption, the next section is transmitted, preceded by the last word or phrase of the preceding section. If there is an interruption, the next section will be transmitted preceded by the proword 'all after' followed by the last word or phrase previously transmitted. The procedure is continued until the message is completed.

TC1 - THIS IS - 0A - MESSAGE - OVER.
 0A - THIS IS - TC1 - SEND - OVER.

TC1 - THIS IS - 0A – Reports of a bushfire in your area at GRID Alpha Romeo Mike Tango moving south at 10 Kilometres an hour - MORE TO FOLLOW - OVER.

0A - THIS IS - TC1 - ROGER - OVER

0A pauses for five seconds to allow for higher precedence traffic.

TC1 - FML - THIS IS - 0A - ALL AFTER - Hour – You are required to move from your present position west to point Charlie - OVER.

0A - THIS IS - TC1 - ROGER - OUT.

Authentication

6010. It is likely that many AAFC activities will require cadets to utilise radio frequencies and channels used by regular civilian users. As such, it is not uncommon for non-AAFC users to infiltrate a radio network with the intention of disrupting communications and causing confusion.

6011. Authentication is a technique to counter attempts of an adversary to glean intelligence, or to cause confusion. Codes are used for challenges to, and proof of, identity. These codes act like a password, involving a challenge and reply.

6012. Each radio operator has a set of tables of codes (or challenges and knows what the reply to a particular password should be. Once a challenge and reply have been used, it is no longer secure, and another should be selected. In order to maintain security of authentication codes, they are changed daily. Further information on authentication codes is found in para. 6028.

6013. The two types of authentication used are;

- a. Challenge and Reply, and
- b. transmission.

Challenge and Reply

6014. Used by the called station or NCS when the authenticity of the calling station is in doubt. An example is:

E7A - THIS IS TC1 - move now - OVER
6 wishes to verify (authenticate this and selects the challenge 'Whiskey November', for which the answer is 'Delta')
 E7A - AUTHENTICATE Whiskey-November - OVER
 TC1 - WAIT OUT
 I AUTHENTICATE Delta - OVER'
E7A now knows TC1's transmission was authentic

6015. When a challenged station doubts the authenticity of the challenging station, a counterchallenge is then made. An example is:

TC1 - THIS IS - FML - send ration figures - OVER
FLM challenges

TC1 - authenticate Delta Tango - OVER
 TC1 – THIS IS – FML - WAIT OUT - I authenticate Mike - authenticate
 Hotel Charlie - OVER
 FML – THIS IS – TC1 - WAIT - I authenticate Bravo - radio figures
 already sent by other means - advise if not received - OVER'
 FML - Roger – OUT.

NOTE:

- a. the use of the prowords 'authenticate' and 'I authenticate';
- b. the use of abbreviated procedure;
- c. challenges involve a two word challenge and a one word reply;
- d. counter-challenges involve a two word challenge and a one word reply.

Self Authentication

6016. 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.

'Cog Wheel 3 - THIS IS Cog Wheel 1 - move now – AUTHENTICATION
 IS Bravo Lima X-ray - OVER'
Cog Wheel 3 checks and establishes authenticity
 '3 Roger - OUT'

NOTE:

- a. the use of the proword 'AUTHENTICATION IS';
- b. the abbreviated procedure;
- c. the self-authentication involves the use of a three word code, which consists of a two word challenge, and a one word reply joined together;
- d. once used, a self-authentication is no longer secure and will not be used.

It is unlikely that authentication of self-authentication would be used on AAFC nets.

Reports

6017. All reports are required to be written on a proforma. A copy of most reports, covering routine and emergency situations are shown as an appendix at the end of this document.

6018. A typical incident report is as follows:

Message

'Incident Report'

Comment

Type of report

Alpha	callsign six	a. call sign of station reporting the incident
Bravo	one, four, zero, two, eight, one, one, one, zero, five India Kilo	b. date and time of incident e.g. 14.02.81 (date 1105 I.K. (local time
Charlie	eight, six, two, niner, five four of incident	c. grid location (in clear
Delta	five	d. number of people in third party group
Echo	dress - casual clothes and back packs dress and other relevant details	e. description of third party
Foxtrot	one has broken leg	f. any specific details of third party
Golf	moving north before and after sighting	g. movement (direction third party moving
Hotel	sighted group at one zero five five heading towards large tank towards road junction. One member appears to have a broken leg. Unable to attract their attention.	h. brief account of incident

6019. The following reports are attached as appendix A to this document:

- a. INCIDENT REPORT Report of incident
- b. NAVEX REPORT Navigational report
- c. MAINTDEM REPORT Supply request
- d. CASEVAC REQUEST Request for casualty evac.
- e. NOTICAS Notification of casualty/ies
- f. SITREP Situation Report
- g. BUSHFIRE REPORT Self explanatory
- h. FLOOD REPORT Self explanatory
- i. ENMOS REPORT Emergency report – not otherwise covered
- j. LOST PERSON REPORT Self explanatory

6020. Remember to always prefix the report with 'exercise' for the purpose of training or during an exercise. For a genuine report only always use the proword "NO DUFF".

6021. In any report, do not ignore any serial. If something is not applicable, transmit - e.g. 'Charlie – Not Applicable'.

RCE 7 - CODES AND SECURITY**1 PERIOD****Objectives**

- a. Explain the need for security, accuracy and discipline in radiotelephone procedure.
- b. State and explain the security rules.
- c. Describe the purpose and use of OPSCODES, NUMCODES and authentication and limitations on their use.
- d. Practise radio calls using codes.

Security Accuracy and Discipline

7001. Radio Communications are easily intercepted, and thus form a vital cog in the intelligence gathering of a potential adversary. Following certain rules and the maintenance of radio discipline can limit any damage to net security. The following basic rules are essential for net security and will be strictly enforced on all AAFC nets:

- a. no unauthorised transmission will be made;
- b. the following practices are forbidden:
 - i. violation of radio silence, except when specifically authorised or a "No Duff" situation arises;
 - ii. unofficial conversations or messages between operators;
 - iii. transmitting in a directed net without permission of the NCS or staff radio net supervisor;
 - iv. unnecessary tuning or test calls;
 - v. transmitting an operators personal sign or name
 - vi. unauthorised use of plain language, especially when transmitting sensitive information - e.g. locations or unit strengths etc;
 - vii. use of other than authorised prowords;
 - viii. unauthorised use of plain language in lieu of applicable prowords;
 - ix. plain language disclosure of classified callsigns, or linking callsigns with plain language;
 - x. use of profane or indecent language;
 - xi. use of excessive transmit power;
 - xii. transmitting at speeds beyond the capability of receiving operators. Allows a potential adversary a chance to locate the transmitting station by having to repeat message.

Security - Radio Interception - Long Term Information

7002. It must be assumed that all radio transmissions are being monitored. There are two types of information which may breach security.

- a. Direct Breach - to prevent this, the names of units or formations are never to be said on air, nor is any clue to be given as to their nature, composition or deployment;

- b. Indirect Breach - these can lead to any potential adversary gaining intelligence on individuals and special operating techniques. Idiosyncrasies help identify individual operators.

Short Term Information Security - Radio Interception

7003. This is information transmitted during events such as contacts or exercises. Considerable care should be taken when transmitting any information in clear voice. A balance must be struck between security and speed, but careless operation and transmissions are NOT acceptable.

Codes

7004. Authorised codes can be used to avoid sending messages in 'clear'. The main types are:

- a. Operations codes (OPS-CODES) - this is a short term security code used for encoding complete message texts containing classified information;
- b. Numeral codes (NUMCODES) - another short term security code for use when only numerical parts of a message need be coded - e.g. grid references, formation numbers, etc.

7005. Both Operations Codes (OPS-CODES and NUMCODES are only used once).

7006. A third code used is 'Authentication Code' as described in RCE6.

Operations Code

7007. The design of OPS-CODES for AAFC should be as simple as possible. The following is an example of an Operations Code. This should be changed at a pre-arranged time daily:

ALPHABETICAL	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
ZULU	H	P	O	N	D	E	Z	X	S	R	A	Q	L	U	M	T	Y	W	C	V	I	K	E	G	J	C
PAPA	Z	E	A	W	V	L	N	U	F	B	T	O	D	R	J	H	K	P	Q	I	M	S	Y	C	M	G
BRAVO	E	Z	C	F	R	G	K	B	S	J	Y	O	P	N	Q	D	W	M	V	H	X	U	T	L	A	I

7008. To encode a message 'MOVE NOW', using code identifier PAPA would be:

'PAPA' (code identifier) 'DELTA JULIET SIERRA VICTOR ROMEO
JULIET YANKEE'

Numerals Code

7009. Numerals Code (NUMCODE) can be constructed similarly to OPS-CODES. The following is an example:

NUMBER	0	1	2	3	4	5	6	7	8	9
CHARLIE	W	M	P	R	V	D	Y	U	A	X
YANKEE	B	N	M	J	R	T	S	D	F	Q
GOLF	P	L	H	N	I	E	F	H	C	R

7010. To encode a message including a grid reference 'MOVE NOW' to grid reference 583641, choosing code identifier GOLF would read: 'Move to grid figures' 'GOLF' (code identifier) - 'ECHO, CHARLIE, NOVEMBER, FOXTROT, INDIA, LIMA'.

Authentication Code - Example

7011. When using authentication codes, a set series of challenges and authentication are used each day. Once a challenge has been used, it is to be discarded and not used again. An example of an authentication/challenge table is as follows:

CHALLENGE	WN	BA	XZ	MJ	OQ	TL
AUTHENTICATION	D	C	P	T	Z	F

In this case, 'Six' wishes to ascertain 'Four' is genuine.

FOUR – THIS IS – SIX – AUTHENTICATE MIKE JULIET
 FOUR – WAIT OUT – FOUR THIS IS SIX – I AUTHENTICATE TANGO
 FOUR THIS IS SIX – ROGER - OUT

Callsign Six is now satisfied callsign Four is genuine.

**RCE 8 - CORRECTIONS, REPETITIONS, VERIFICATIONS,
ACKNOWLEDGMENTS & CANCELLATIONS 1 PERIOD**

Objectives

- a. Describe correction of errors during transmission and after message is sent.
- b. Practise error correction.
- c. Describe repetition procedure, unknown station procedure, verification, acknowledgment and cancellation.
- d. Practise procedures for repetitions, verifications, acknowledgments and cancellations.

Corrections

8001. Correction during a transmission - when an error is made during a transmission, the proword 'CORRECTION' is to be used. The following is an example:

0A - THIS IS - E7A – Nine members are now moving into tree line -
CORRECTION - ALL BEFORE Moving – Nineteen members are now
moving - OVER.

8002. When an error is not discovered immediately but prior to sign off, the prowords 'CORRECTION' and 'WORD AFTER' are used. The following is an example.

'..... CORRECTION - word after five should have been seven - OVER'

8003. Where it is necessary to correct a transmission after a message has been sent, a further message must be transmitted. The following is an example:

THREE – THIS IS - ONE - reference my message on water supply –
CORRECTION – WORD AFTER arrive at - Romeo - OVER'

Repetitions

8004. 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, " am going to repeat the difficult portion just transmitted" as shown in the following example:

SIX – THIS IS ONE – PROCEED TO BANQUO, I SAY AGAIN,
PROCEED TO BANQUO - OVER

8005. When words are missed, or are in doubt, they are to be requested, and given, before transmission is ended. The proword 'SAY AGAIN, used alone or

with the prowords 'ALL BEFORE', 'ALL AFTER', 'FROM TO', 'WORD BEFORE', 'WORD AFTER' are used for this purpose.

8006. When supplying a repetition, the transmitting station is to identify the message part which is to be repeated, using the proword 'I SAY AGAIN', along with other applicable prowords - e.g. 'ALL BEFORE', 'ALL AFTER' etc.

8007. A typical message where repetitions are used is shown below:

SIX – THIS IS - ONE – Proceed to BANQUO - OVER
 ONE – THIS IS - SIX - SAY AGAIN ALL AFTER Proceed - OVER
 SIX – THIS IS - ONE - I SAY AGAIN - proceed to BANQUO - OVER'

NOTE: It is normal with short messages to use the proword ' SAY AGAIN' rather than ask for one or two words to be repeated.

8008. If a receiving station has difficulty recording a written message, use the proword 'SPEAK SLOWER' to request the sender to reduce the speed a message is sent.

Verifications

8009. If a station wishes to check all, or part of a message, a verification should be requested. The originating station will verify with the message originator the correct version. The following is an example of verification:

THREE – THIS IS – FIVE - Reference your LOCSTAT 0800 hours -
 verify - OVER
 FIVE – THIS IS - THREE - WAIT – OUT
 FIVE – THIS IS – THREE - I verify LOCSTAT - ALPHA CHARLIE
 ZULU
 YANKEE GOLF HOTEL YANKEE - OVER'

8010. Where a message to a number of addresses is queried by one station and found to be incorrect, the corrected version is to be sent to all addresses as follows:

SIX – THIS IS – ONE - reference your orders, verify words after report to - OVER'
The operator at Six checks, finds out the word after 'REPORT TO' should have been 'STARLIGHT' instead of 'SUNRAY' and transmits
 ONE - THIS IS - SIX - reference my orders - CORRECTION - word after REPORT TO - STARLIGHT - OVER'

NOTE: 'I VERIFY' cannot be used in this case because a correction is necessary.

Acknowledgments

8011. An originator may request an acknowledgment from any or all addressees. The proword 'WILCO', in reply to a request for acknowledgment can only be authorised by the officer who can comply with the acknowledged message. An example of acknowledgment procedure is as follows:

THREE - THIS IS FIVE - search area figures eight - three – one -
ACKNOWLEDGE - OVER
FIVE - THIS IS – THREE - your search message - WILCO

Immediate Acknowledgment

8012. The proword 'ACKNOWLEDGE' can be used to ensure information passing between two stations is brought to the attention of other stations on the net. An example is as follows:

ONE - THIS IS –THREE - vehicles have arrived - OVER
One replies to Three and then contacts Five to ensure Five has received the message:
ONE - OUT TO YOU - FIVE - THIS IS ONE - ACKNOWLEDGE -
OVER
FIVE - OUT

Delayed Acknowledgment

8013. If an acknowledgment cannot be given immediately, the following is an example:

ONE - THIS IS –THREE - Vehicles have arrived - OVER
One - OUT
Later, one wants five to acknowledge the vehicle report and transmits:
FIVE - THIS IS - ONE - Acknowledge vehicle report from callsign Three
- OVER'
FIVE - OUT

Cancellation

8014. During the transmission of a message, and prior to the ending, a transmission may be cancelled by using the password

“Disregard this transmission – OUT”

8015. If a message has been transmitted in full, it can only be cancelled by another message such as:

“Cancel my last transmission" - OR - "Cancel my MAINTEN".

Do Not Answer

8016. If it is imperative that a station not answer a transmission, the proword 'DO NOT ANSWER' is to be sent immediately following the call, and the complete transmission is sent twice. The transmission will end with the proword 'OUT' as illustrated:

THREE - THIS IS - SEVEN - DO NOT ANSWER - Use plan CHARLIE -
I SAY AGAIN - THREE - THIS IS - SEVEN - DO NOT ANSWER - USE
PLAN CHARLIE - OUT'.

NOTE: The correct proword is 'SAY AGAIN' not 'REPEAT'.

RCE 9 - PROCEDURES FOR DIFFICULT WORKING CONDITIONS 1 PERIOD**Objectives**

- a. Outline delegating and assuming control.
- b. Outline the procedures for relay, read back and words twice.
- c. State the differences between free and directed nets.
- d. Describe the responses by the Net Control Station for directed nets.
- e. Practise the procedures for difficult conditions.

Delegating Control

9001. On occasions, it may be necessary to delegate control from the NCS to a substation. If effective control cannot be maintained, or if the NCS has to leave the Net, any substation can be delegated control. In such cases, the proword 'ASSUME CONTROL' will be used. The following is an example:

SO3 - THIS IS - 0A - TC1 - ASSUME CONTROL -
 AUTHENTICATION IS Kilo Golf - OVER.
 0A - THIS IS - TC1 - WILCO - OUT.
 0A - THIS IS - M8Y - ROGER - OUT.
 0A - THIS IS - FML - ROGER - OUT.
 0A - THIS IS - E7A - ROGER - OUT.

9002. NOTE: TC1 used the proword 'WILCO' to acknowledge compliance with the message. All other callsigns merely acknowledged receipt of the message.

Assuming Control

9003. When the NCS is not in a position to warn other stations it is leaving the Net, the senior substation will normally ASSUME CONTROL. Before this occurs, that substation will confirm that control cannot be heard by other substations on the Net. On formation of the net, 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. An example of a substation assuming control is as follows:

9004. In the following example, nothing has been heard from the NCS for some time:

SO3- THIS IS -TC1 - Have you heard anything from CALLSIGN 0A -
 OVER.
five second pause for the NCS to answer, if able
 TC1 - THIS IS - M8Y - No - OVER.
 TC1 - THIS IS - FML - No - OVER.
 TC1 - THIS IS - E7A - No - OVER.
All stations wait for five seconds to allow the NCS to answer, if able.

SO3 - THIS IS - TC1 - I AM ASSUMING CONTROL -
AUTHENTICATION IS Kilo Golf - OUT.

9005. If the NCS is able to re-establish communications, it will re-assume control in a similar manner as above.

Relay Procedure

9006. If communications between any two stations fail, messages may be recalled through a third station. The following is an example of a relayed message:

9007. NCS has a message for Five:

FIVE - THIS IS ONE - MOVE NOW - OVER
FIVE does not reply, so NCS transmits an abbreviated offer:
 FIVE - THIS IS ONE - OVER
NCS transmits again using full callsigns:
 COG WHEEL FIVE - THIS IS COG WHEEL ONE - OVER
There is still no reply, so NCS requests SEVEN to relay to FIVE:
 SEVEN - THIS IS ONE - Relay to FIVE - OVER
If callsign SEVEN knows it is in contact with FIVE, then SEVEN would accept the message. If SEVEN does not know, then it would reply:
 SEVEN - WAIT OUT - FIVE this is SEVEN - OVER
FIVE hears SEVEN and replies:
 FIVE - OVER
SEVEN then accepts the message for callsign FIVE:
 WAIT - OUT TO YOU - ONE - THIS IS SEVEN - send your message -
 OVER
NCS then gives the message to be relayed:
 ONE - Relay to FIVE - MOVE NOW - OVER
SEVEN receipts the message and relays:
 SEVEN - OUT TO YOU - FIVE this is SEVEN - FROM ONE - MOVE
 NOW - OVER
 FIVE - ROGER - OUT

NOTE: The use of the prowords 'RELAY TO' and 'FROM'. Because One has heard Seven relay the message, One assumes it has been received. The relaying station must inform the originating station if there is not receipt of the message. A station which hears another trying to contact a third station with which it is in contact can offer to relay by using the proword 'THROUGH ME', e.g. 'Five - THIS IS Seven - THROUGH ME - OVER'.

The message would then be transmitted through callsign Seven.

Read Back Procedure

9008. Read back procedure is used when:

- a. the sending station wishes to ensure that the message has been received correctly, or

- b. the receiving station wishes to make sure that it has received the message.

Use of Read Back Procedure

9009. The proword READ BACK alone means that the entire message is to be read back. If only the text of the message is to be read back, the term 'READ BACK TEXT' can be used. The proword 'READ BACK', when not preceded by identifying callsigns, means that all stations are to read back.

9010. In cases other than a single call, not all stations are to read back, the station/s concerned are to be specified by giving the appropriate callsign/s before the proword 'READ BACK'. Only stations directed to do so are to read back. The stations are to remain silent unless ordered to receipt. When reading back the proword is 'I READ BACK'.

9011. If the first station detects an error by the station reading back, it should draw attention to the error by using the proword 'WRONG'. When the station reading back corrects the error, the proword 'CORRECT' is used to acknowledge that it has been corrected.

9012. Here are some examples of read back procedure:

Full message -

9013. Three transmits to Seven:

SEVEN - THIS IS THREE - MESSAGE - OVER.
 THREE - THIS IS SEVEN - SEND YOUR MESSAGE - OVER.
 SEVEN - THIS IS THREE - **READ BACK** - Convoy has arrived at
 GRID - XRAY ZULU PAPA ROMEO DELTA ALPHA - OVER.
SEVEN transmits, reading back:
 THREE - THIS IS SEVEN - I READ BACK - SEVEN - THIS IS THREE -
 READ BACK - Convoy has arrived at GRID - XRAY ZULU PAPA
 ROMEO DELTA ALPHA - OVER
 SEVEN - THIS IS THREE - CORRECT - OUT.

NOTE: That abbreviated procedure could have been used, and in this case Seven would have read back exactly what it was that Three had transmitted in its message.

Text only -

SIX - THIS IS FIVE - MESSAGE - OVER.
 FIVE - THIS IS SIX - SEND YOUR MESSAGE - OVER.
FIVE transmits message and asks for text to be read back:
 SIX - THIS IS FIVE - READ BACK TEXT - Convoy has arrived at GRID
 - XRAY ZULU PAPA ROMEO DELTA ALPHA - OVER.
 FIVE - THIS IS SIX - I READ BACK TEXT - Convoy has arrived at
 GRID - XRAY ZULU PAPA ROMEO DELTA ALPHA - OVER.
 SIX - THIS IS FIVE - CORRECT - OUT.

NOTE: That the read back text procedure can be used with either full or abbreviated procedure.

Multiple call -

9014. The MESSAGE offer is made to the appropriate stations, who then reply in turn. The sender of the message, to simplify proceedings, can then nominate one station only to read back or read back text (for example: Six READ BACK TEXT'. After this is done the sender advises that the read back is correct, and the other stations send 'ROGER - OUT'.

SO3 - THIS IS -0A-M8Y READ BACK- Convoy has arrived at GRID
Bravo Yankee - Mike Charlie Bravo - Oscar Tango Mike - OVER.

Use of Proword "Wrong"

9015. If, in the above example of the text only read back, Six had read back incorrectly, Five would call attention to the error by using the proword 'WRONG', followed by the correct version, as follows:

9016. Six read back incorrectly, reading BRAVO instead of PAPA:

FIVE - THIS IS SIX - I READ BACK TEXT - Convoy has arrived at
XRAY ZULU BRAVO ROMEO DELTA ALPHA - OVER.
SIX - THIS IS - FIVE - WRONG - word after ZULU - PAPA - OVER.
FIVE - THIS IS - SIX - I READ BACK - word after ZULU - PAPA -
OVER.
FIVE - CORRECT - OVER.

Words Twice

9017. When communication is very difficult, callsigns should be transmitted twice. Phrases, words or groups to be transmitted twice are indicated by use of the prowords 'WORDS TWICE'. Words missed can be checked by use of the proword READ BACK.

9018. Under these conditions messages are to be offered and full procedure used. The use of full callsigns is optional and will be directed by the NCS if necessary.

9019. This procedure is lengthy and laborious and should not be used on AAFC Nets unless absolutely necessary.

9020. The following example illustrates the procedure to be used:

ONE - ONE - THIS IS FIVE - THIS IS FIVE - MESSAGE - MESSAGE -
OVER.
FIVE - FIVE - THIS IS ONE - THIS IS ONE - SEND YOUR MESSAGE
- SEND YOUR MESSAGE - OVER.

ONE - ONE - THIS IS FIVE - THIS IS FIVE - WORDS TWICE –
WORDS TWICE - Convoy has arrived - Convoy has arrived - OVER -
OVER.

9021. Despite the repetitions, reception is so poor that ONE has to ask for the message to be repeated:

FIVE - FIVE - THIS IS ONE - THIS IS ONE - SAY AGAIN - SAY AGAIN
OVER - OVER.

ONE - ONE - THIS IS FIVE - THIS IS FIVE - I SAY AGAIN - I SAY
AGAIN - Convoy has arrived - Convoy has arrived - OVER - OVER.

ONE has now read the message and transmits:

FIVE - FIVE - THIS IS ONE - THIS IS ONE - ROGER - ROGER - OUT
- OUT.

Free and Directed Nets

Free Net

9022. Under the normal conditions a net is free and control (NCS will not intervene in direct communications between substations, whether a message is offered or not.

Directed Net

9023. When conditions are difficult or the flow of traffic heavy, the NCS may order the net to be DIRECTED. Thereafter, all messages between substations must be OFFERED. The NCS is the first to answer these offers, and is therefore able to regulate all traffic on the Net.

Prowords

9024. The prowords to be used for changing the state of the Net are:

- a. THIS IS A DIRECTED NET;
- b. THIS IS A FREE NET.

Directed Net-

9025. Because of difficult working conditions the NCS decides that the Net should be directed, and transmits using full callsigns:

Cog Wheel - THIS IS - Cog Wheel One - THIS IS A DIRECTED NET -
OVER'.

9026. All stations then answer in turn. If the traffic is heavy, abbreviated callsigns would be used.

Free Net

9027. When conditions on the net improve, the NCS transmits:

Cog Wheel - THIS IS ONE - THIS IS A FREE NET – OVER

9028. All stations then acknowledge in turn.

Replies by NCS when Net is directed

9029. There are four responses that the NCS can make when a message has been offered by one substation to another on a directed Net:

- a. "SEND YOUR – OUT"
- b. "WAIT – OUT"
- c. "THROUGH ME"
- d. "RELAY THROUGH"

SEND YOUR MESSAGE - OUT

9030. This response indicates that control has given permission for the particular message to be sent and will take no further part in the transmission.

9031. This is illustrated in the following example, where M8Y has a SITREP for E7A, and transmits the following:

E7A - THIS IS - M8Y - SITREP OVER.
M8Y – THIS IS - 0A - Send your SITREP-OUT.

WAIT OUT

9032. This response indicates that the substation must wait until given permission by the NCS to carry on with the transmission.

M8Y - THIS IS - TC1 - MESSAGE - OVER.
As more urgent traffic is to be passed, the NCS transmits:
TC1 - THIS IS - 0A - WAIT OUT.

THROUGH ME

9033. The THROUGH ME response is used when conditions between substations are unsatisfactory, although the NCS is in contact with both of them. Once the NCS has ordered this procedure it assumes complete responsibility for the delivery of the message, and may send it by any means available.

9034. 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.

9035. An example of THROUGH ME procedure is as follows. E7A offers a message to FML, NCS knows that FML receives E7A weak with interference, and offers to relay:

FML - THIS IS - E7A - MESSAGE - OVER.
 E7A - THIS IS - 0A - THROUGH ME - OVER.
 0A - THIS IS - E7A - FOR FML - Have reached BIG APPLE - OVER.
 E7A - THIS IS - 0A - ROGER OUT TO YOU - FML – THIS IS 0A - Did you receive the message from E7A-OVER.
 0A - THIS IS - FML - NO - OVER.
 FML - THIS IS - 0A - FROM E7A - Have reached BIG APPLE - OVER.
 0A - THIS IS - FML - ROGER - OUT.

RELAY THROUGH

9036. 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, TC1 offers a message to M8Y:

M8Y - THIS IS - TC1 - MESSAGE - OVER.
 TC1 - THIS IS - 0A - RELAY THROUGH FML - OUT.
 FML- THISIS- TC1- RELAY TO M8Y- Message... etc....
(TC1 sends the message to M8Y via FML using normal relay procedure.)

RCE 10 OPERATION OF RADIO SETS ON AAFC RADIO NETS 1 PERIOD**Objectives**

Using a AN/PRC-77 radio set and/or UHF/VHF Citizens Band radio:

- a. Outline the technical characteristics of the radio
- b. State the components and demonstrate the controls of the radio.
- c. Demonstrate operating procedures.
- d. State allowable frequencies / channels.
- e. State the need for strict observance of correct procedures.
- f. Practise operation of the radio.
- g. State emergency channels, and restriction on use of channels.

The Radio Set AN/PRC-77**Description**

10001. The Radio Set AN/PRC-77 is a Very High Frequency (VHF, Frequency Modulated (FM) transceiver for voice transmission and reception. The set is light, for ease of carrying, and is normally carried on a backpack. Its power is limited. Originally designed in the USA in the early 1960s as the Radio Set AN/PRC-25, the type was modified to become the AN/PRC-77 by the addition of a breather vent to the battery box.

Technical Characteristics

10002. The technical characteristics of the radio set AN/PRC-77 are as follows:

- a. Frequency range
 - i. Low band 30.00 to 52.95 MHz
 - ii. High band 53.00 to 75.95 MHz;
- b. Number of channels
 - i. 920;
- c. Channel spacing
 - i. 0.05 MHz (50 kHz;
- d. Type of modulation
 - i. Frequency modulation;
- e. Transmitter power output
 - i. 1.1 to 2.0 watts;
- f. Average communication range
 - i. Up to 8 kilometres, approximately, line-of-sight;
- g. Types of antennae
 - i. Short antenna - 0.9 metre long, flexible steel tape "whip" antenna;
 - ii. Long antenna - 3 metres long, foldable multi-section antenna.
- h. Power source
 - i. Dry cell battery (standard carbon type or a magnesium cell. The battery comes as a 3-pound (1.3 kg pack

supplying 3 and 15 volts and provided with a connector to join with a special battery plug in the battery box of the AN/PRC-77 set;

- i. Weight of set
 - i. With battery 11.1 kg
 - ii. Without battery 9.8 kg
- j. Battery life
 - i. 20 hours (with a 9-to-1 receiver/transmit radio.)

Components

10003. The components of the AN/PRC-77 are as follows. These parts are shown in diagrammatic form.

Radio receiver-transmitter

10004. This consists of:
- i. battery box;
 - ii. receiver-transmitter case;
 - iii. receiver-transmitter (transceiver)

10005. The transceiver is held in its case by 4 "captive" screws. The battery box contains the battery and is attached to the case by 2 clamps. The complete assembly is watertight. A battery plug projects from the receiver-transmitter to fit the battery connector. All controls are located on the top panel, see diagram.

Bag, cotton duck

10006. This bag is sectionalised into several pockets which are used to store the two antennae and the handset.

Antenna (whip)

10007. This is a 2-section 3-foot (0.9 m long whip antenna, in construction rather like a wind-up steel measuring tape. It can be folded into a small space. It is used for general short-range service.

"Goose neck"

10008. This is a flexible coiled-metal base attachment which can be bent in various directions to allow the whip antenna to be kept in a vertical position regardless of the position of the radio set.

Support, antenna

10009. This is a rigid tubular support used as the main support for the foldable antenna.

Antenna (folding)

10010. The 10-foot (3 metre long folding antenna comprises 7 tubular metal sections fitting end-to-end. A cable under spring tension is threaded through the sections to keep them together. This antenna is used when maximum transmission/reception range is required.

Handset

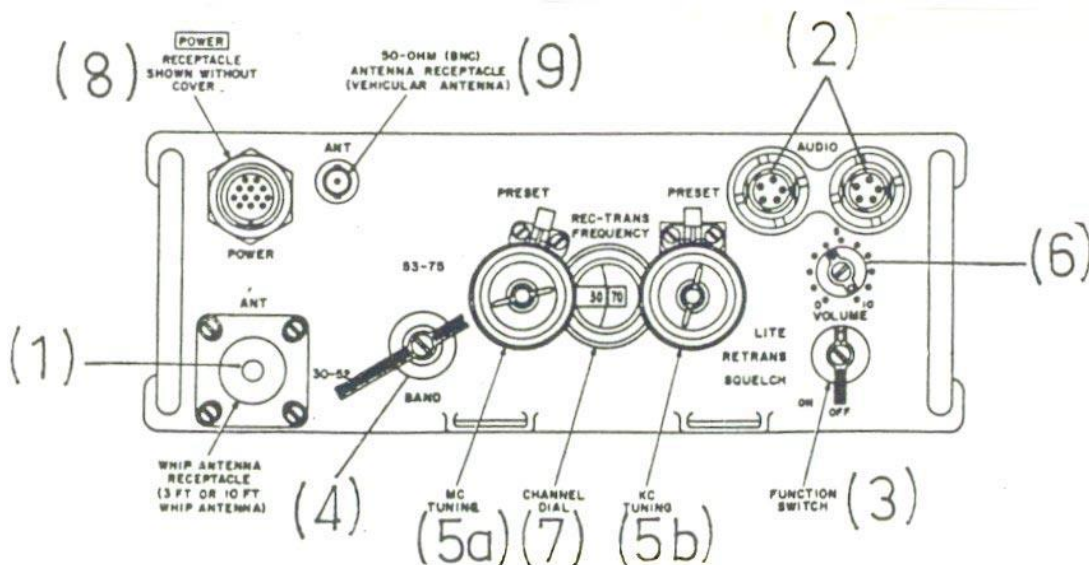
10011. This is a telephone-type handset consisting of a microphone and an earpiece/receiver section, connected to the radio set by a coiled insulated cord ending with a 5-pin connector. A push-to talk (or 'pressel' switch is mounted in the handle of the handset.

Harness, electrical equipment

10012. This is used to secure the radio set so that it can be carried on the operator's back. The set is held in place by the retaining straps. The set rests on the metal braces. The lower straps are buckled to the shoulder straps and the operator's arms go through the loops, with the set on the back. The belt straps can be hooked onto the webbing belt by the operator. The handset is connected to one of the AUDIO connections on the control panel of the set. The operator passes the handset cord over the shoulder and retains the handset at the front. The handset can be clipped onto the front of the harness until it is required for use.

Controls

10013. The following is a diagram showing the controls, indicator and connectors of the AN/PRC-77 receiver-transmitter.



<u>Control, indicator or connector position</u>	<u>Switch</u>	<u>Function</u>
Function switch (3)	OFF	Turns off power
	ON	Turns on power
	SQUELCH	Turns on power and reduces rushing noise (hissing when no radio signal is received)
	RETRANS	Permits automatic radio relay operation.
BAND switch (4)	LITE	Spring-loaded position for lighting channel dial (7)
	30-52	Selects lower frequency 'A' band
	53-75	Selects higher frequency 'B' band.
Mc tuning control (5a)		Tunes radio in 1 MHz steps as indicated by channel dial (7)
Kc tuning control (5b)		Tunes radio in 0.05 MHz (50 kHz steps as indicated by channel dia.
REC-TRANS FREQUENCY, or channel dial (7)		Indicates operating frequency in MHz and kHz
PRESET levers		Allows two frequencies to be pre-set for rapid location.
VOLUME control (6)		Varies receiver volume.
AUDIO connectors (2)		Provide connections from handset to transceiver.
ANT mount (1)		Provides connection for whip (folding antennae.
ANT (BNC connector (9)		Provides connection for special antennae.
POWER connector (8)		Provides connector for external power supply from vehicle battery. Cover must be in place if set is powered by dry battery.

Uniden UH076SX-NB UHF CB Transceiver.

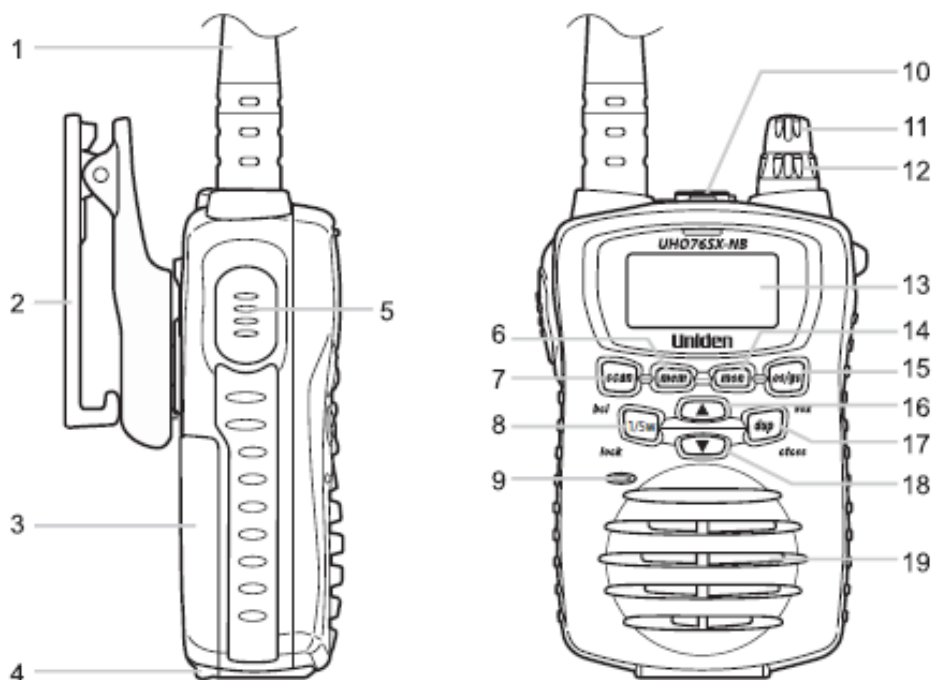
Introduction

10015. The Uniden UH076SX-NB UHF CB Transceiver is the current in service CB radio used by 335SQN.

Features

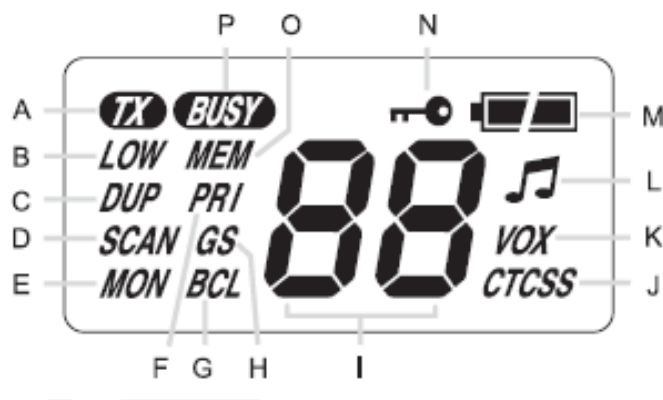
10016. The Uniden UHF CB Transceiver has the following features:

1. Narrow Band (NB) Radio
2. 77 Channels in the UHF-CB Band
3. 5W Max TX Power
4. 1W/5W Switchable TX Power
5. Waterproof
6. Rubber Grips/Seal
7. 38 Built-in CTCSS codes
8. Backlit Keypad & LCD Display
9. Duplex Mode
10. Open and Group Scan
11. Busy Channel Lockout Function
12. VOX Function
13. Headset Jack
14. Keypad Lock
15. Battery Type: Lithium-Ion Rechargeable
16. Low Battery Alert
17. Battery strength Indicator
18. Auto Battery Save
19. Battery Cover with charge contacts
20. Roger Beep



10017. Controls and Indicators. The number correlate to the above diagram.

1. Antenna
2. Beltclip
3. Battery
4. Battery Release Clip
5. PTT (Push to Talk) Key
6. Memory Key (mem)
7. Scan Button (scan)/ Busy Channel Lock-Out Mode (bcl)
8. TX Power/Lock Button
9. Microphone
10. Speaker MIC Jack
11. ON/OFF VOL Knob
12. Squelch Knob (SQ)
13. LCD Display
14. Monitor Button (mon)
15. Open Scan/Group Scan (os/gS)/VOX
16. Channel Up Button
17. Duplex Key (dup)/ CTCSS Key (ctcss)
18. Channel Down Button
19. Speaker



10018. Indicators.

- A. Transmit
- B. 1W Power
- C. Duplex Transmit
- D. Scanning
- E. Monitor
- F. Priority
- G. Busy Channel Lock Out
- H. Group Scanning
- I. Channel Numbers
- J. CTCSS
- K. VOX
- L. Roger Beep
- M. Battery Level Indicator
- N. Key Lock
- O. Memory
- P. Receive

Battery Life

10019. The battery life for the Uniden Transceiver is typically 12 Hours. This is based on the following Duty Cycle:

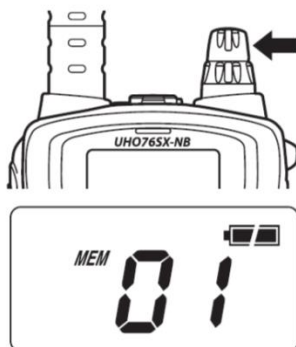
- a. Transmit (Low Power) 5%
- b. Receive 5%
- c. Stand-by 90%

10020. Cadets should be mindful that this time will decrease as the rate of operation increases. The same applies for an increase in transmit power.

Operation

Power On/Off

10021. To turn the unit **ON**, rotate the **[ON/OFF VOL]** clockwise. A channel number and battery level should appear on the display.



10022. To turn the unit OFF, rotate the **[ON/OFF VOL]** knob counter-clockwise. The display will disappear.

Volume

10023. Rotate the **[ON/OFF VOL]** knob clockwise or counter-clockwise to adjust speaker volume to desired listening level.

Adjusting the Key Beeps

10024. Your radio emits a beep each time-one of the keys (except for the PTT or mon) are pressed.

10025. To turn OFF this beep: Press and hold the duplex button **[dup]** while turning on the radio.

10026. To turn ON this beep: Press and hold **[dup]** while turning on the radio.

Roger Beep

10027. Roger Beep is a BEEP that is sent to notify the end of transmission (both PTT and VOX transmission.) Roger Beep can be heard through the speaker when Key Beep is on. Roger Beep is transmitted even if key beep is turned off. However Roger Beep will not be heard from the speaker.

10028. To turn ON Roger Beep: Press and hold the channel up button [▲] while turning on the radio.

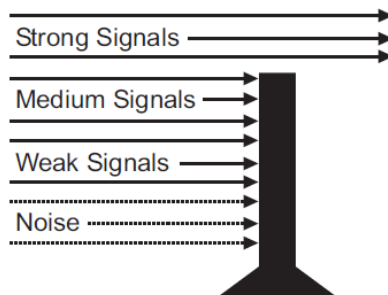
10029. To turn OFF Roger Beep: Press and hold [▲] while turning on the radio.

Selecting Channel

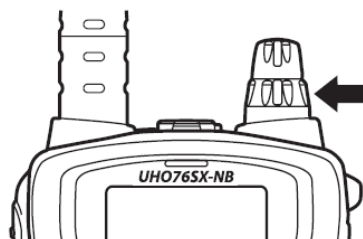
10030. Press [▲] or [▼] to select the desired channel. Pressing and holding either of the buttons will cause the channel number to scroll rapidly.

Squelch

10031. The squelch is used to eliminate any annoying background noise when there are no signals present. Think of squelch as a gate. Turn [SQ] fully clockwise. This raises the “Squelch Gate” so that only the very strong signals can get through.



10032. Turn [SQ] fully counter clockwise until you hear a hiss. This opens the “Squelch Gate” so that everything gets through noise, weak signal, and strong signals.



10033. To set the “Squelch Gate” to the desired level, turn **[SQ]** counter-clockwise until you hear noise. Then turn the **[SQ]** clockwise just until the noise stopped. Now only the desired signal can get through.

To Transmit and Receive

10034. The UH076SX-NB uses the UHF-CB Channels. For your reference a list of the available channels and corresponding frequencies is printed on p.24 - p.25.

10035. The maximum RF transmit power of UH076SX-NB is 5 Watts. To switch to low power, press 1/5w . LOW appears on the LCD. To switch back to higher power, press 1/5w again. LOW indicator disappears from the LCD.

10036. Before you transmit, listen for activity on the selected channel. When the channel is clear, press and hold the PTT to transmit. TX appears on the LCD.

10037. Hold the radio with microphone approximately five cms in front of your mouth with the antenna at approximately 45* angle away from your head. Speak in a clear, normal conversational voice.

10038. When you have finished speaking, release the PTT and listen for a response. TX indicator then disappears on the LCD. The display shows BUSY when a transmission is being received by your radio.

Using a Repeater Channel

10039. UHF-CB Repeaters are used to retransmit or relay your signal. Repeaters will extend the range of your radio and overcome the shielding effect caused by solid obstructions.

10040. In normal Simplex operation, your radio transmits on one particular frequency and receives on that same frequency. If there is a barrier (i.e. a Tall Building) that partially blocks your transmitted signal, the possibility of the other radio receiving the signal is very slim. Valleys, metallic structures, etc., tend to act as a screen between radios.

Standard Operation without the aid of a Repeater Station
Operation with the aid of a Repeater

10041. With Duplex operation, the signal coming from your radio is received by the Repeater station and then re-transmitted at the same time on another channel.

10042. Your UH076SX-NB is designed with duplex capability on Channels 1 to 8 and Channels 41 to 48. When any of these channels are set to operate in duplex mode during transmission, the UH076SX-NB automatically sends the signal at a frequency 30 channels above the original in order to access the repeater station. After transmitting, the radio reverts back to its original operating frequency.

To Operate UH076SX-NB in Duplex Mode

10043. Only channels 01 - 08 and 41 - 48 are available for Duplex.
10044. Press [**dup**] momentarily. The DUP icon appears.
10045. Press [**dup**] again to deactivate the duplex operation. UH076SX-NB will return to simplex operation.

Scanning

10046. The UH076SX-NB has two types of scanning; Open Scanning (OS) and Group Scanning (GS). Scanning allows you to search for active channels programmed in the OS or GS memory.
10047. **To initiate scanning;** Press scan and scanning starts. SCAN icon flashes during scanning.

Open Scan (OS) Mode

10048. The absence of GS icon indicates that the unit is in OS mode. Allows continuous scanning of channels stored in the Open Scan (OS) memory. If an active channel is found, scanning will stop on that channel.

Group Scan (GS) Mode

10049. Allows you to monitor a Priority Channel while scanning.
10050. To use GS Mode Scanning, press the os/gS key. GS icon appears on the display. GS Scanning checks the Priority channel activity regularly. If the Priority channel becomes active the radio will stay on that channel for as long as the signal is present. If the received signal ceases, Priority scanning continues after 3 seconds.
10051. To deactivate SCAN, press scan or PTT .

Programming Scan Channels

10052. Select which Scanning Mode you wish to use OS or GS Mode.
NOTE: OS is indicated by the absence of the GS icon.
10053. Select the channel you want to store by pressing [**▲**] or [**▼**].
10054. Press and hold [**mem**] for 1.5 secs. to store. MEM icon appears and two short tone beeps are heard.
10055. To remove the channels from Memory, press and hold mem for 1.5 secs once more. Two short tone beeps are heard and the MEM icon disappears.

Priority Channel

10056. The Priority Channel feature allows the user to monitor one channel in the UH076SX-NB, monitoring it every 1.5 secs. during Group Scanning.

Choosing a Priority Channel

10057. The starting channel, when Group Scanning is initiated, is always the Priority Channel. To change the priority channel setting while scanning,

10058. Press [**▲**] to select a higher channel, or press [**▼**] to select a lower channel

Drop-out Delay

10059. While scanning, the UH076SX-NB stops at a busy channel and receives a signal. When the received signal is over, the unit will wait for 3 seconds for the return of the signal, otherwise, the radio resumes scanning.

2. APPENDIX A

INCIDENT REPORT:

ALPHA:	callsign of station involved in an incident;
BRAVO:	time and date in local time e.g. India Kilo or U.S.T. universal standard time (Zulu);
CHARLIE:	grid reference of incident;
DELTA:	number of persons involved in the incident;
ECHO:	description of dress and any other relevant details'
FOXTROT:	any specific details of persons involved in the incident;
GOLF:	direction of travel of persons involved in the incident;
HOTEL:	brief account of incident.

NAVEX REPORT:

DATE:	
REPORT TO:	
MAPS:	
ALPHA:	size and composition on navigation exercise;
BRAVO:	tasks;
CHARLIE:	time of departure;
DELTA:	time of return;
ECHO:	routes out and in;
FOXTROT:	terrain
GOLF:	details of any other groups met during exercise;
HOTEL:	any map corrections;
INDIA:	miscellaneous information;
JULIET:	any special observations or notes;
KILO:	conditions of navigational exercise;
LIMA:	conclusions and recommendations.

MAINTDEM REPORT:

ALPHA: requesting sub-units;
 BRAVO: items and quantity required;
 CHARLIE: earliest time required;
 DELTA: latest time required;
 ECHO: method of movement;
 FOXTROT: point of delivery (in code);
 GOLF: radio frequency used at point of delivery;
 HOTEL: callsign at delivery point;
 INDIA: any other appropriate details.

CASEVAC

ALPHA: callsign of requesting station;
 BRAVO: grid reference (in clear or code);
 CHARLIE: degree of urgency, i.e. urgent, priority;
 DELTA: if patient is walking wounded or stretcher case;
 ECHO: type of injury or illness;
 FOXTROT: radio frequency and callsign of unit to which patient belongs;
 GOLF: any special measures required, e.g. spinal injuries;
 HOTEL: any remarks.

NOTICAS:

ALPHA: ID of person concerned;
 BRAVO: nature of illness or injury;
 CHARLIE: grid reference, date/time where sickness/injury occurred;
 DELTA: present location (grid reference of injured/sick person);
 ECHO: need to notify next of kin or other persons.

SITREP:

NUMBER: usually numbered sequentially;
FROM: unit reporting situation;
TO: unit receiving situation report;
LOCAL TIME: (India Kilo local time (Zulu universal time [G.M.T.];
ALPHA: situation - other party;
BRAVO: situation - self;
CHARLIE: administrative details;
DELTA: any other information.

BUSHFIRE REPORT:

ALPHA: own callsign;
BRAVO: grid reference - in clear of fire;
CHARLIE: any assistance required is evacuation required;
DELTA: extent of fire - widespread, small area, growing in size etc;
ECHO: direction and speed of fire front;
FOXTROT: type of terrain - scrub, grass, forest, etc.;
GOLF: how many persons in your group;
HOTEL: any danger to anyone;
INDIA: action taken by your group, e.g. fire extinguished, evacuate area, protection sought;
JULIET: details of casualties;
KILO: best way in - request for evacuation;
LIMA: any other relevant information.

FLOOD REPORT:

ALPHA:	own callsign;
BRAVO:	location - grid in clear;
CHARLIE:	any assistance required - is evacuation required;
DELTA:	extent (widespread, localised);
ECHO:	direction and speed of water;
FOXTROT:	type of flood - flash flood, localised, river overflowing, dam bursting, etc;
GOLF:	any persons in danger;
HOTEL:	any danger to other groups;
INDIA:	action taken - e.g. evacuation, move to higher ground;
JULIET:	any casualties - details;
KILO:	best way in/out, request for evacuation and pickup point;
LIMA:	any other relevant information.

EMNOS REPORT:.

ALPHA:	own callsign;
BRAVO:	grid reference of situation;
CHARLIE:	nature of emergency;
DELTA:	any assistance required e.g. evacuation;
ECHO:	what personnel or vehicles are involved - own group;
FOXTROT:	any other personnel involved (Yes/No);
GOLF:	number of persons in own group;
HOTEL:	number of persons in other group;
INDIA:	any danger to own group or others;
JULIET:	action taken by own group;
KILO:	details of casualties;
LIMA:	best way in for evacuation/CASEVAC;
MIKE:	any other relevant information.

LOST PERSON REPORT:

ALPHA: own callsign;
BRAVO: location (grid reference of unit sending report;
CHARLIE: number/name/description of lost persons;
DELTA: last known location (grid reference and direction of travel of
lost party;
ECHO: time lost party last seen;
FOXTROT: known equipment of lost party - food, water, etc;
GOLF: any assistance required;
HOTEL: nearest access road, suggested rendezvous point if
required;
INDIA: any action taken.