Irish Radio Transmitters Society

Established in 1932

amateur radio in ireland

AREN Handbook

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1 Introduction

The purpose of this manual is to standardise the operating procedures for the Amateur Radio Emergency Network and to enable common operations with other emergency service providers with whom AREN is required to work.

A commonly understood format is necessary on a radio network and this is achieved by using procedures that are designed to ensure order and discipline. The main principles differ little, regardless of the system of communications and the frequency being used. There are various conventions which are particular to some services, but in general they are all similar, and it is upon this similarity that this document is based.

2 Scope and Qualifications

The AREN group exists to provide backup emergency communications to professional and voluntary user services in times of emergency. It is the responsibility of the individual operator to satisfy him/herself that they are in compliance with the statutory regulations governing participation by radio experimenters in this type of operation.

3 Radio Equipment

The radio equipment necessary for each operation will vary. The Network Control (Net Control) station will maintain up to date information regarding the capability of each member station and will identify individuals who are equipped to operate one or more of the following station types:

3.1 Base Station

Base stations will consist of well maintained HF, VHF and UHF amateur radio equipment, capable of efficient local, national and international radio telecommunications. Base stations will rely on the use of mains power derived from the public utility. These stations will have adequate backup power available for use in the event of a failure of the public supply.

Operators, who will be required from time to time to mobilise for training exercises, will maintain their base stations in good condition.

3.2 Mobile Station

Mobile stations will consist of a well maintained and road-worthy vehicle which will contain in turn, well maintained HF, VHF and UHF amateur radio equipment, capable of efficient local, national and international radio telecommunications. Mobile stations will rely on the use of power derived from the car. These stations will have adequate backup power available for use in the event of:

- A failure of the car's electrical system.
- The operator being required to operate the vehicle as a field station.

Operators who will be required from time to time to mobilise for training exercises will maintain their mobile stations in good condition.

3.3 Field Station

Field stations will consist of well maintained HF, VHF and UHF amateur radio equipment, capable of efficient local, national and international radio telecommunications. These stations will have adequate power available and will be fully independent of the public supply and that available from a vehicle. All equipment for use in the field should be portable, preferably in waterproof containers and easy to assemble and disassemble. Field stations will be maintained in good condition by operators, who will be required from time to time to mobilise for training exercises.

Operators who will be required from time to time to mobilise for training exercises will maintain their field stations in good condition.

Operators of each type of station will be fully equipped for and capable of carrying out any running repairs necessary to keep the station operating efficiently for the duration of an exercise or an emergency event. Each operator shall ensure that they carry a cellular phone that will be charged and equipped with spare batteries.

Minimum duration of backup power for field operations

Operators should ensure that their equipment is capable of being operated without connection to the mains or to vehicle power for a minimum period of 24 hours.

3.4 Minimum Power Levels

At all times during AREN activities and particularly during portable operations stations will use the minimum power level required to establish and maintain communication.

3.5 Power Connections

In line with international recommendations, it is recommended that the equipment, fixed or portable, at all AREN stations is equipped with Anderson Powerpole® connectors and that at least one West Mountain Radio RIGrunner or equivalent dc distribution board is held, maintained and used as part of the station equipment.

4 Radio Procedures

4.1 Net Control Stations

During the month preceding the national net, one member shall be designated as primary Net Control. This operator shall be supported by a designated backup controller each month. The names of these people will be circulated to each member of the AREN group by the AREN National Co-Ordinator using an e-mail that must be acknowledged. If this e-mail has not been acknowledged within forty eight (48) hours of transmission the National Co-Ordinator will contact the relevant member to ascertain that he or she has received the information.

4.2 Call-signs

It is essential that everyone listening on radio frequencies be in no doubt as to who is talking to whom.

The call-sign of the station being contacted is always to be used BEFORE that of the transmitting station.

AREN operators should familiarise themselves with Civil Defence or other user group call signs working in their vicinity.

AREN operators shall use their own call signs at all times while operating as part of the emergency network unless AREN Call-signs are allocated to individuals for the purpose of an individual event.

The AREN National Co-Ordinator shall allocate call-sign(s), in writing before individual events. These call-signs will be drawn from the group of call-signs allocated to AREN by ComReg. Where it is not possible in times of emergency to allocate call-signs in writing these allocations shall be confirmed in writing as soon as possible during or following the event. The AREN co-ordinator shall decide which events are emergency or emergency training and which are community service.

The Call-sign of the station being communicated with shall be sent first, followed by the transmitting station's call-sign. Call-signs shall be sent at the beginning and end of working on a particular frequency and at the beginning and end of communications between any two stations. Call-signs shall be used at approximately 10-minute intervals in the handing of traffic between individual stations once contact has been established. The overuse of call-signs slows down message handling and the use of the word OVER should be routinely employed.

4.3 Establishing a Radio Net

A Radio Network consists of two or more radio stations operating on the same frequency for the purpose of communicating with one another. It consists of a control station and one or more Sub Stations.

The Net Control Station is usually located at the headquarters of the organisation, and is responsible for ensuring that net discipline is maintained and that all stations have an opportunity to transmit when required.

4.4 Message Sending

Send spoken messages at dictation speed, but not to the point of sending the entire message in one continuous transmission. Break up the text into phrases of three to four words at a time. These phrases should be read deliberately once, and then repeated a little quicker before moving on to the next phrase. In a longer message of more than, say 25 words or two sentences, break the transmission part way to allow the receiving operator to confirm. Any badly copied text can then be corrected before continuing. Before the receiving station transmits the message to the next user, he or she shall, if required by Net Control, read back the message to ensure that it has been accurately recorded.

During emergency operations, it may be difficult for inexperienced operators to send messages at dictation speed. Training and briefings will include techniques, which once absorbed by the operators, will allow them to focus on a single task and execute the handling of that task to the exclusion of events or distractions incidental to that task.

The attached AREN message form (see Appendix B) or other message form provided by Net Control if the operation requires it, should be used at both ends of the transmission.

For further information on formal message handling procedures please consult AREN's *IARU Message Handling Procedure* document.

4.5 Radio Operating Techniques

The aim of all operators shall be to get the message through with complete accuracy and minimum delay in order that the frequency is kept as clear as possible at all times for new traffic. These notes are designed to assist operators to improve their personal radio technique and will be expanded and amended based on new information as it becomes available.

Listen before you call

Someone else may be using the channel. If more than one station is transmitting at the same time, garbled transmissions will result. If any doubt exists as to whether a frequency is available for use, check with Net Control.

Speak clearly

Use your normal voice and do not speak too fast.

Think before you speak

Know what you are going to say before you press the microphone switch. Divide your message into natural phrases in order that it flows smoothly and is easily understood under possible adverse conditions by the receiving station.

Spelling

Spell difficult, ambiguous or unfamiliar words using the phonetic alphabet wherever necessary. When passing difficult to understand traffic the read-back technique shall be employed to ensure the successful transmission of that traffic.

Record messages

Write all messages clearly and include date and time (in UTC) of receipt or transmission on the AREN message form or other form provided by Net Control.

Maintain a log

Operators shall satisfy all statutory requirements with regard to the maintenance of logs. These logs will serve a number of purposes including use at future training sessions to improve techniques and will also be available to client organisations.

Interference

Nobody has the right to operate on any frequency to the exclusion of somebody else and this includes stations taking part in emergency training and operations. It is reasonable to expect however that operators engaged in emergency activities will be given priority by experimental or recreational users of the amateur bands.

AREN operators should be aware that others might cause interference with emergency communications unwittingly or deliberately. In the case of unwitting interference operators, through Net Control, should exercise their powers of diplomatic persuasion in order to keep the appointed frequency as clear of non-emergency communications as possible.

In the event of deliberate interference, operators shall not under any circumstances engage with the antagonist, during the net or at any other time. Careful observations shall be made of all aspects of the offending transmission the details of which shall be recorded in writing at the time of hearing the transmission or as soon afterwards as possible and passed to Net Control at the end of the event. In addition to the written report, where possible an audio recording should also be made and passed to Net Control. Net Control will pass this information to the AREN National Co-ordinator.

The following technique may be employed by Net Control for dealing with interference at his or her discretion:

1. Net Control may nominate a suitable station and ask him/her to make contact with the station causing interference, using their NVIS or DX antenna. This station will politely and firmly ask the interfering station to QSY having explained that he is interfering with emergency operations, and if appropriate thank the station for its co-operation before reporting back to Net Control. If co-operation is not received from the offending station the net member will leave the frequency without entering into further discussion.

2. Following the technique mentioned above, Net Control may make contact with a suitable individual, preferably somebody involved in the net, and ask him or her to obtain, if possible, a telephone number for the offending station. The nominated individual should then make contact by telephone with the station causing interference. This station will politely and firmly ask the interfering station to QSY having explained that the station is interfering with emergency operations, and if appropriate thank the station for its co-operation before reporting back to Net Control. If co-operation is not received from the offending station the net member will not enter into further discussion.

The AREN National Co-ordinator on the basis that the licensed operator has refused to facilitate emergency operations may subsequently make a complaint to the offending station's national society.

Alternative Frequencies

Net Control shall, before opening the net and if necessary at any time during the net inform participants of alternative frequencies and of techniques to be employed for reverting to these frequencies should the primary frequency become unusable for any reason.

4.6 Radio Operating Rules

Station to Station Transmissions communications between stations shall be controlled by the Net Control station and shall be restricted to AREN messages or those of an emergency nature being passed on behalf of a client group or organisation. As a general rule Net Control will not participate in conversations between stations taking part in the net where there is no need to do so. However all stations should allow time between transmission for Net Control, or other relevant operators, to be heard as required.

Short Conversations conversations should be kept as brief as possible allowing maximum time on frequency for emergency traffic.

Prompt Replies when called, or when a transmitting station has said "over", reply immediately. When a transmitting station fails to receive an immediate reply, there is doubt as to whether:

1. The message has been received.
2. The radio is working.
3. The operator is still at the radio.

Lack of a prompt response and bad operating skills can cause loss of confidence by client organisations in amateur radio as a reliable communications tool in time of emergency.

4.7 Operating Procedures

THIS IS shall be used to separate the call-sign of the station being called from the call-sign of the calling station.

OVER or OUT shall be used to signify that the transmitting station has handed to operation to the called station (over) or that the transmitting station has ceased operations (out).

OVER means ”I have finished transmitting” — ”please go ahead with your reply”.

OUT means ”This conversation is ended the frequency is now free for other users”.

The phrase **OVER AND OUT** is contradictory and shall not be used.

4.8 Procedure Words (Pro-words)

Pro-words are standard, easily pronounced words that have been assigned specific meanings to facilitate message handling on radio networks. They shall be used by the AREN group in order to mesh with procedures in use by client organisations.

A pro-word, or combination of pro-words must never be substituted for any word or phrase in the text of a message.

The following pro-words are acceptable for general use:

ACKNOWLEDGE	Receipt of this message must be acknowledged by the addressee. (The person to whom it is addressed).
ALL BEFORE/AFTER	Used when asking to repeat that portion of a message preceding or following a key word contained in the text.
ALL STATIONS	A call for the attention of all stations on the net usually followed by the transmission of traffic relevant to each station.
CANCEL	Used when a sender wished to cancel a message or transmission.
CORRECT	You are correct.
CORRECTION (I say again)	Indicates that an error has been made and that the transmission will continue from the last word correctly sent.
DIFFICULT	Communication is workable only with difficulty. Care and extra measures are needed.
DISREGARD THIS TRANSMISSION	This transmission has been made in error disregard.
FIGURES	Numerals follow.

FROM	Originator of the message is
FROM ... TO	Used to identify part of a message.
GRID	Used when giving a grid reference.
SAY AGAIN	I will re-transmit the message or part message. [request] Re transmit all (or all after) your transmission.
SPELL	The next word will be spelled. In difficult conditions, use phonetics.
MESSAGE	Offer of an unregistered message that needs to be written down.
MESSAGE TIME	The group that follows is the time the message was passed to you.
NOTHING HEARD	Indication that no signals have been received from a particular station.
OK	Communications satisfactory for working.
ORIGIN	The group that follows is the date and time group at which the message was originated.
OUT	This is the end of my transmission. No reply is expected.
OVER	This is the end of my transmission to you. A reply or acknowledgement is required, go ahead and transmit.
READ BACK	Request to a station to repeat back a message exactly as received.
RELAY TO	Transmit this message to the addressee(s) indicated.
ROGER	Message received and understood.
ROGER SO FAR	[query] Have you received my message so far? [answer]Message received so far - carry on.
SEND	You have permission to transmit your offered message.
WAIT	I am pausing for a few seconds. No other station is to transmit during this period even if I am not transmitting.

WAIT OUT	I will call you again - a pause for longer than a few seconds. A Further transmission on the same subject will follow later.
WILCO	I will comply with your message [to be used only by the person who intends to comply].
WORD AFTER/WORD BEFORE	Used to identify part of a message.
WRONG (I say again)	What has been said is wrong, the correct version is ...

4.9 Rules For Spelling

Spelling is only necessary where:

- A word or passage is obscure or unpronounceable.
- Where poor radio conditions prevent the proper reception of a difficult or obscure word or passage.

In either event the Pro-word I SPELL is used followed by the word spelt out letter-by-letter using the Phonetic Alphabet as shown. No other variations are permitted. Numbers should always be transmitted each digit individually, i.e. 600 is transmitted as SIX ZEE-RO ZEE-RO

4.9.1 Phonetic Alphabet

A	Alfa	AL-FAH
B	Bravo	BRAH-VOH
C	Charlie	CHAR-LEE or SHAR-LEE
D	Delta	DELL-TAH
E	Echo	ECK-OH
F	Foxtrot	FOKS-TROT
G	Golf	GOLF
H	Hotel	HOH-TEL
I	India	IN-DEE-AH
J	Juliett	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	KEY-BECK

R	Romeo	ROW-ME-OH
S	Sierra	SEE-AIR-RAH
T	Tango	TANG-GO
U	Uniform	YOU-NEE-FORM or OO-NEE-FORM
V	Victor	VIK-TAH
W	Whiskey	WISS-KEY
X	X ray	ECKS-RAY
Y	Yankee	YANG-KEY
Z	Zulu	ZOO-LOO

1	One	WUN
2	Two	TOO
3	Three	TREE
4	Four	FOW-ER
5	Five	FIFE
6	Six	SIX
7	Seven	SEV-EN
8	Eight	AIT
9	Nine	NIN-ER
0	Zero	ZEE-RO

4.10 Common abbreviations

Listed here are the majority of common abbreviations, which shall be used only in written messages:

ABT	About
ASAP	As soon as possible
CDHQ	Civil Defence Headquarters
FM	Frequency Modulation/From
GR	Grid Reference
HELO	Helicopter
INFO	Information
LOC	Location
MSG	Message
OPS	Operation
POB	Persons on Board
REF	Reference
RPT	Repeat
RPTR	Repeater
SITREP	Situation Report
STATS	Statistics
TPT	Transport
TXT	Text
WELF	Welfare
WX	Weather
@	Location

DO NOT USE THESE ABBREVIATIONS AS PART OF THE SPOKEN LANGUAGE!

4.11 Common Phrases

The following list explains most of the common phrases that may be used in message texts:

RADIO CHECK	Request a report on reception of the transmission at your location.
SAY AGAIN ALL AFTER	A request for the sender to retransmit all of the transmission after a particular word or phrase.
I SPELL	Means that the next word will be spelled out. In poor conditions, phonetics will be used.
NEGATIVE	Means NO more distinctly.
AFFIRMATIVE	Means YES more distinctly.
I SAY AGAIN	A repeated word or phrase or a correction.
FIGURES	The following part of the text is numerals.
MESSAGE CORRECT	The read back was correct.
READ BACK	The message just sent will be retransmitted for clarity.
STOP	Indicates a FULL STOP punctuation mark in the message.

4.12 Operating Guidelines

Work quietly and efficiently.

Be confident in your actions and patient with others on your team.

Keep messages brief and to the point.

Speak clearly. Send messages at dictation speed. Leave a break in your transmission when transmitting long messages and wait for ROGER before continuing.

REPEAT means ”Please repeat your message”.

Use the words OVER or OUT after each transmission as appropriate.

Net Control is aware that there may be difficulties in the field yet may not know about specific difficulties a field station is experiencing. This will to be taken into account by Net Control who will facilitate operators experiencing difficulties associated with the operation of a field station. These difficulties will be logged by the field station and also by Net Control and this information will be used to improve future activities.

During regular training nets and during emergency operations, non AREN members may contact the net for various reasons. During training sessions signal reports should be exchanged with these stations and the purpose of the net explained briefly to them. They should then be asked to standby until the end of the net, or preferably until a time or times during the net that will be set aside for the purpose of including non-members. During these periods non-members will be asked if they would like to join the group on a permanent basis and Net Control will obtain sufficient contact details to allow off air contact to be established.

During an actual emergency deployment do not enter into conversation with stations involved in activities outside of the AREN operation. Should interference arise from outside the net, Net Control shall politely ask them to leave the frequency. However nobody has the right to operate on any frequency to the exclusion of somebody else. The common sense rule, which requires operators to listen before using a frequency, should ensure that AREN activities are carried out on a frequency not required for another purpose.

4.13 The Radio Net

A radio net is a group of radio stations working together for the purpose of communicating with each other. A net has two types of radio station:

1. Control Station
2. Sub Station

The Control Station is responsible for:

1. Controlling Communications
2. Radio Discipline
3. The efficient clearance of traffic.

The Sub Stations shall obey directions or instructions from Net Control.

4.14 Activation Status

Three levels of activation status shall exist:

Alert Where net control has formed an opinion that the network may be required to be placed on standby or where it may be required to be activated. Operators will check all equipment, clothing and supplies and ensure that stations and vehicle are ready for deployment. Operators do not need to maintain constant contact with net control but must check into the net at intervals to be assigned by net control and any operator must inform control immediately if (s)he becomes unavailable for elevation of readiness level to Standby or Activation.

Standby Where net control has been asked to prepare the network to serve during an impending or existing event. Operators are in attendance at their stations, en route to the Incident Command Post (ICP) or in attendance at the ICP, ready and equipped to operate. While on standby, operators must be contactable by radio at all times and must check into the net at intervals to be assigned by net control.

Activation Where the network is required to actively participate in an event. Operators are now operating at an incident or event station.

4.15 Activation of the Net

The emergency network will be activated by Net Control or by a person appointed for the purpose by Net Control. In situations where it is required that the net mobilise quickly this will be achieved using the telephone system. It is possible during emergency situations that the telephone system will be rendered inoperable. See the *AREN Network Protocol* document for a more detailed explanation.

Regardless of the state of the telephone system operations, on becoming aware of a potential emergency situation operators shall maintain a listening watch on the 40 meter band, and locally on the 2m band. This watch will commence at the beginning of each hour and will be maintained unbroken until five minutes past each hour. This watch shall be immediately following by a period of listening on the 80 meter band and locally on the 2m band that shall continue until ten minutes past each hour(see Appendix A.1 for frequency list).

Net Control will monitor this watch period and will use the opportunity to brief stations on the developing situation or to gather information from participating stations. These on air briefings or information gathering opportunities will be held at the end of the watch period and will be carried out on a frequency other than the watch frequency.

It is the sole responsibility of the Net Control station to maintain a clear frequency during the watch period.

4.16 Establishing Communications

The Net shall commence operation at the specified time nominated in the briefing session before the event.

Frequencies of operation will have been allocated so have radio equipment tuned and ready beforehand. Frequencies should be programmed into your equipment before you reach your destination.

Operators should monitor the appointed frequency even before operations commence, as vital changes to locations, instructions and procedures arising from changing conditions attaching to a specific emergency may be made while you are in transit.

Be guided by Net Control and use initiative.

Signal Reports

A radio Check should be performed as soon as the net is in place.

The procedure is as follows:

EI.... this is EI.... Radio Check, Over

Substations should then reply

EI.... This is EI.... Transmission is :

O.K. meaning transmission is satisfactory for working.

DIFFICULT meaning Communication is workable with difficulty. Care and extra measures are needed.

UNWORKABLE meaning impossible for communications. I am unable to receive message traffic from you until communications between us has improved.

Do not use the normal readability/strength type reports, which make sense in the world of amateur radio, but which are impractical in the field where a simple indicator of signal usability, readily understandable by everybody, is essential.

Sub stations experiencing difficulty with communications should take whatever steps are necessary, via Net Control, to improve the situation and may relay through another station or via any device available to the event in order to establish and maintain contact with control. Net Control will take charge of establishing communications with stations experiencing difficulties and will direct them as necessary in order that they may operate as efficiently as possible.

4.17 Closure of the Net

No station shall cease to operate without receiving permission from the Net Control Station.

Sub Stations shall inform Net Control if they need to leave the Net while it is in operation and await a confirmatory reply. There may still be traffic for the assigned area and in a busy situation alternative arrangements will need to be made to cover this area before the operator is given permission to leave.

4.18 Radio Discipline

Radio discipline is a fundamental ingredient of voice procedure without which a Radio Net cannot function efficiently. Good radio discipline results in improved communications efficiency, improved accuracy and high standards.

The Control Station Operator irrespective of his or her level of experience is in charge of the Net and is responsible for radio discipline.

The following rules for Radio Discipline are mandatory on all radio nets.

Stations on the Net Must

1. Use the correct procedures and radio discipline as outlined herein.
2. Maintain a constant listening radio watch while the net is active.
3. Ensure that the correct frequency or channel is being used by them.
4. Answer calls in the correct order and without delay.
5. Listen carefully before transmitting to ensure that the channel is clear.
6. Leave a short pause at the end of a conversation before starting another transmission.
7. Release the press to talk switch promptly.
8. On releasing the press to talk switch, check that the radio returns to the receive condition. A stuck push-to-talk switch can be disruptive to a net if the fault is not promptly detected and rectified.
9. Be aware of the opening and closing times for the net.

Stations on the Net Must Never

1. Make unnecessary or unduly long transmissions.
2. Engage in conversation or operations not controlled by the net.
3. Disrupt other transmissions as allowances need to be made for transmissions where only one of the participants can be heard by you.
4. Speak faster than the receiving station, which may be experiencing poor reception conditions, can be expected to receive.
5. Act without instructions from the Net Control Station.
6. Exit the net without good reason and without first obtaining the permission of the Net Control Station.
7. Operate a de-briefing session on the air as this is more productively accomplished off air when the net has been closed.
8. Use terminology other than that recommended herein while on the air.

4.19 Radio Logging

Accurate log keeping can be used to facilitate training for future AREN events. Messages will be recorded on separate message forms and the log will act as the normal record of on air operations. The following activities should appear in the log:

1. Location of the portable/mobile station and the equipment being used at that location.
2. Date time groups and titles of formal messages written separately on the message form.
3. Opening and closing of the operator's station.
4. Changes in operating conditions, frequency or location and any interference or difficulties experienced.
5. Sufficient reference data to identify all procedural messages transmitted or received by the operator on the net.
6. Entries recording technical details of the operation of the individual station. This should record strengths and weaknesses, which can be used to inform future events. For instance radio checks and other inspections can be carried out at regular intervals during periods of inactivity and the results recorded in the log.
7. Stations with whom contact is difficult complete with details of any corrective action taken by you or by others.

8. Any unusual occurrences such as interference caused by/to other stations or by/to any non-AREN agency.
9. Handover/takeover of the radio station where the relieving operator shall record his name and signature to record the transfer.
10. Details of the stations worked and working conditions as detailed herein
11. Any relevant details which has a bearing on the AREN operation

Good log keeping is an essential aid to the operation of a radio station particularly at the control station where the operator is responsible for other stations on the net.

Logs shall be kept safely for future inspection if required by Net Control or by any authorised individual or agency.

4.20 General Information

4.20.1 Briefing

Net Control will be responsible for liaising with any professional groups that AREN will be required to support and will in turn brief AREN operators, generally off air, before the net commences to operate.

The chain of command will be: Client Group — Net Control — Net.

A de-briefing session will be held at the end of each exercise and at the end of actual emergency activities.

4.20.2 Maps

Operators shall not enter an area without being familiar with the location of their destination and the means of access. Relevant permissions and directions shall be obtained and established off air prior to or during briefing. Ordnance survey Discovery Series Maps and a local city or town maps shall be held by the co-ordinator of each local group and shall be made available to Net Control Stations and operators as required. Members of the group shall similarly purchase and hold these maps for future use in their operations attaching to the group. These maps will aid operators to become familiar with place names, to check Grid References, and to assist with placement of portable repeaters.

These maps are available from the local tourist offices, large book stores, newsagents and many supermarkets as well as from Ordnance Survey Office, Phoenix Park, Dublin.

4.20.3 Map Reading

This skill shall be learned by attending a training course, which shall be organised by the AREN group.

Operators should become familiar with the symbols used on the map to show, among others features, roads, tracks, vegetation and contours.

Map reading requires a reliable compass and knowledge of the deviation between true North and magnetic North. When using a compass, keep well clear of radios, electrical appliances, and magnetic or metal objects in order to avoid inaccuracies in the reading.

All operators should be equipped with portable Global Positioning System units, which should be maintained and ready for field operations. Units, which employ the Irish grid system, should be purchased.

Grid references refer to a spot on the map indicated by a six-digit number using the numbers at the top and bottom of the map (easting) and at the sides of the map (northing). This can be practised using the instructions and the sample grid reference shown on each sheet. Always read across before you read up or down. Knowledge of grid references is required in order to check messages coming in from the field, and also in giving instructions as to where portable repeaters or relay stations should be located by field parties.

AREN personnel shall not be sent into the field unaided unless they are familiar with the area or have been trained in map and compass work.

4.21 Key points

Do

- Maintain regular contact with your AREN group
- Be active and participate in activities.
- Keep yourself well-trained and up to date, through group activities.
- Attend seminars and courses whenever possible.
- Check equipment regularly and after each use.
- Repair equipment promptly, as soon as possible after faults are diagnosed.
- Return any borrowed gear promptly and in good condition with a full report to the owner of any faults that have been diagnosed and details of any repairs carried out.
- Be aware of AREN activities outside your own operating area.

- Bring adequate nourishment with you on all events as the AREN group is self-contained and does not rely on other agencies for basic needs.
- Offer constructive input at training and briefing sessions.

Do Not

- Speak Amateur Radio terminology as it can be confusing for other agencies.
- Take on more than you can handle.
- Defer repairs to equipment.

5 Safety

The AREN Group will provide radio backup communications for many different organisations and participate in training events in order to be prepared for emergency situations. Personal safety is a very important aspect when planning any of these events.

Each emergency situation will be different and the training exercises will involve members in a variety of situations in order to try to anticipate the type of situation in which members may be required to participate.

Emergency sites will have structures and controls in place to order the efficient functioning of that site. AREN members shall at all times observe these structures and controls, particularly:

The directions of people who are in charge on the site. Attend safety induction courses held on site. Become involved only in activities concerned with the provision of backup radio communications.

Members will be required to attend a short safety training awareness course run by the AREN Group.

Mobile stations shall display a badge, to be provided by the AREN group, on their vehicles that will clearly identify them as a Voluntary Emergency Radio Network group.

Field stations shall wear high visibility vest and hats/hard-hats, to be provided by the AREN group that will clearly identify them as a Voluntary Emergency Radio Network Group.

Each individual shall equip themselves with a field pack which as a minimum requirement shall contain the following items:

5.1 Clothing

- Good quality waterproof boots with good grips on the sole good ankle support.
- Warm good quality socks
- Woollen cap.
- Warm gloves that will allow the operation of radio equipment.
- Wind proof and water proof jacket.
- Wind proof and waterproof trousers.
- Under layers of clothing that will ensure that the operator can maintain a comfortable body temperature in all situations

5.2 Safety kit

- Handheld 2m or 70cm transceiver complete with spare batteries or a field charger contained in a waterproof container.
- Discovery series ordnance survey map of the relevant area.
- Handheld GPS receiver complete with spare batteries or a field charger contained in a waterproof container.
- Good quality field compass.
- Marine strobe complete with spare batteries or a field charger.
- Good quality whistle
- Good quality waterproof flash light, Mag-Lite or similar with spare batteries or a field charger.
- Mobile phone, fully charged, complete with spare batteries or a field charger all contained in a waterproof container.
- Food and drink to sustain the operator for the period during which he or she is required to remain in the field. Chocolate, Kendal Mint Cake and high energy drink are recommended as basic requirements.
- Binoculars (small 10x25 type is ideal).
- Basic first aid kit as detailed herein.

5.3 Contents of a basic first aid kit

- Assorted Dressings
- Bandages
- Crepe Bandages
- Adhesive Tape
- Cotton wool balls
- Spenco Second Skin (good for Blisters and Burns)
- Medical Grade Latex Gloves
- Antiseptic Wipes
- Antiseptic solution sachets.
- Antiseptic Cream (Germolene or similar)
- Sterile Saline sachets
- Sling
- Survival Blanket (Aluminium Foil Type)
- Good Quality Scissors
- Safety Pins
- Sachets of Dioralyte for oral re-hydration.
- Panadol Tablets
- Water

All of these items should be packed in a small box or waterproof bag. Check the contents of the first aid kit after each exercise or event and replace any used items ready for future mobilisation.

Commercially produced kits are available and the contents should be checked against the above list.

6 On an Emergency site

You are a radio operator and should become involved in no other activity. You shall maintain and operate your station until you are instructed otherwise by Net Control.

7 Identity Cards

Identity Cards serve as a means of identifying members of the AREN Group. These should be worn at each event that involves AREN Personnel and should be available on demand for inspection by officials in control of emergency sites. The cards remain valid until the date shown when they will be renewed by the AREN group.

8 Insurance

You enter into emergency operation at your own risk and privately owned equipment is the responsibility of the owner. Equipment borrowed from the AREN group or from other operators is the responsibility of the user who shall be responsible for it at all times.

8.1 Vehicle Insurance

Accidents are the responsibility of the AREN member involved, regardless of whether they occur while in charge of the member's own vehicle or the vehicle belonging to someone else.

8.2 Life Insurance

This is the responsibility of the individual and each member should ensure that they are covered for accidents arising while participating as a volunteer member of the AREN Group.

8.3 Insurance cover at Emergency sites

In some but not all cases there is blanket liability insurance cover at emergency sites for personnel who are asked to assist in operations, and public liability insurance is usually in place at these sites. It is also possible that in the future AREN will be able to obtain blanket libility cover for its members operating on AREN business. However, operators should be aware that there may not be cover or even sufficient cover available for all operations that AREN participates in.

9 Acknowledgements

The authors would like to thank those whose contributions and reviews were invaluable in the creation of this document. We would also like to thank the clubs and individuals who have permitted the use of their equipment for public service.

Appendices

A Emergency Communications Frequencies

A.1 HF Emergency Communications Frequencies

Band (Meters)	IARU Region 1 CoA Frequency (MHz)	AREN (MHz)
160	-	-
80	3.760	3.660
40	7.110	7115
20	14.300	
17	18.160	
15	21.360	

A.2 VHF/UHF Emergency Communications Frequencies

A.2.1 4 meters

Frequency (MHz)	Mode
70.325	Packet & Winlink

A.2.2 2 meters

Frequency (MHz)	Mode
144.525	FM Voice communication
144.800	AX.25 APRS communication

A.2.3 70 centimeters

A.2.4 70 centimeter repeater

Frequency (MHz)	Mode
438.450	Mobile TX
430.850	Repeater TX

B Message Form

Message form should be attached to this document.