PROVINCE OF BRITISH COLUMBIA

Radio Communications Familiarization & Standard Operating Procedures

A Guide for the Radiotelephone Operator
prepared by the
PEP (volunteer) Radio Advisory Committee

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Introduction

Under the former communication regulations (Radiocommunications Act), it was a requirement for persons operating land-based radio station equipment involving public safety to obtain a Radiotelephone Operator's Restricted Certificate (RORC), Land qualification. Therefore, the PEP required registered volunteers working in support of the PEP to obtain the RORC (Land) Certificate. The same requirement once applied to users of Aviation and Marine based radio stations.

The regulations have undergone many revisions over the past few years, resulting in the elimination of the Land and Marine (Restricted) Certifications.

To maintain a level of competency within the PEP, and in support of the PEP, the PEP Radio Advisory Committee developed this document to replace the Land Certification once offered by Industry Canada (formally Communications Canada). This document contains the necessary radio communications familiarization and standard operating procedures knowledge each radio operator should possess.

PEP Radio Advisory Committee

The Radio Advisory Committee provides advice to the Provincial Emergency Program on issues relating to commercial and amateur radio communication services. In addition, the committee facilitates and encourages amateurs and amateur groups throughout the province to actively and effectively participate in emergency programs.

This is accomplished through the establishment of policies, procedures, standards and training which are intended to result in an effective communications response to whatever emergency may arise.

The committee is composed of the six Regional Amateur Radio Representatives, their Assistants, and a representative from each of the following; Provincial Emergency Program (PEP), Provincial Emergency Social Services (PESS), Amateur Radio Emergency Services (ARES), and selected other representatives as required. The Chair of this committee is elected from within the membership of this committee, by this committee. In this capacity, the Chair also serves as the Provincial Amateur Radio Coordinator, who reports to the PEP Telecommunications Officer.

Radio Legislation

Radio Station Licences

All radio stations in Canada must be licenced. Contrary to popular belief, radio equipment used by agency first-responders (police, fire, ambulance) are not exempt from licencing, nor are government organizations (federal, provincial, municipal), or volunteer groups in support of same.

The licence, or a copy of it, must be posted in a conspicuous place near the radio equipment. The licence generally specifies the call sign of the station, the frequencies to be used for transmitting and any special conditions under which the station should be operated.

It is the responsibility of the agency, organization, or volunteer group using 'any' radio equipment to ensure a valid radio licence is obtained for 'all' radio frequencies installed and/or utilized. This condition applies to radio frequencies used for training, special events, or operations in support of the PEP. The PEP has valid radio licences for all commercial radio equipment owned, used, and operated by PEP staff personnel (ie. Regional Managers and their Administrative Assistants).

Obtaining a Radio Licence

To obtain a radio licence, an application along with the prescribed fee is submitted to Industry Canada (formally known as the Department of Communications (DOC)). The radio equipment must be type-approved or found to be technically acceptable for licensing by Industry Canada.

Secrecy of Communications

Radio Operators and all persons who become acquainted with radio traffic are bound to preserve the secrecy of correspondence. This includes communications transmitted and received.

No person shall divulge the contents of correspondence transmitted, received or intercepted by a radio station, except to the addressee of the message or his accredited agent, to properly authorized officials of the Government of Canada, to a competent legal tribunal, or to an operator of a telecommunications system, as is necessary to forward or deliver the communication. These restrictions do not apply to a message of distress, urgency, safety or to messages addressed to "ALL STATIONS", that is, weather reports, storm warnings, etc.

Control of Communications

In communications between a base station and a mobile station, the base station has control of communications. This often does not apply in the cases of emergency communications, where the control of the communications lies with the station initiating the priority call.

Superfluous Communications and Interference

All radio transmissions should be restricted to those necessary for the communications of authorized messages. Profane or obscene language is strictly prohibited.

All radio stations shall be installed and operated so as not to interfere with or interrupt the operation of another radio station. The only situation under which you may interrupt or interfere with the normal operation of another station is when you are required to transmit a higher priority call or message, for example, emergency communications.

False Distress Signals

Any person who knowingly sends, transmits, or causes to be sent or transmitted any false or fraudulent distress signal, message, call or radiogram of any kind is guilty of an offence.

Radiocommunications Act Violation Fines

Fines or imprisonment can be given to anyone who sends:

- Profane, obscene or indecent language.
- False distress signals.

Or operates on a frequency that they are not licenced or authorized to use.
Or establishes a radio station without a radio licence.

Radio Fundamentals

Frequencies

A transmitter emits electromagnetic energy on one specific frequency at any one time. The band from 30 MHZ to 300 MHZ is known as the very high frequency (VHF) band, and is the band most commonly used by base, mobile, and portable operations.

The frequencies between 136 MHZ and 174 MHZ is commonly known as the commercial VHF band, and is the band most commonly used for operations in support of the PEP. There is however a small range of frequencies within this VHF band which are used by amateur radio operators, these frequencies are commonly referred to as the amateur VHF, or two metre band.

Frequency Bands

Radio frequency bands are specific frequency ranges which have been designated names to better describe their position withing the entire frequency spectrum. The following are only a few of the many frequency bands, these are the most common radio bands used in support of the PEP.

High Frequency (HF)	3 to 30 MHZ	- ie. shortwave
Very High Frequency (VHF)	30 to 300 MHZ	- ie. portable
Ultra High Frequency (UHF)	300 to 3,000 MHZ (or 3 GHZ)	- ie. cell phone

Propagation of Radio Waves

The communication distance achieved with a radio will depend on the power of the transmitter, the sensitivity of the receiver, the frequency used and the path between the transmitter and the receiver. A transmission in the VHF band will generally travel in much the same way as light. It will almost follow the line of sight between transmitter and receiver and can be reflected by walls, mountain terrain, buildings, etc. Communications can be blocked by objects in the path, but can often be restored by moving the transmit antenna to the left or to the right and up or down to restore the line of sight or the reflected path.

Generally, the higher the transmitter, the better its range; from a mountaintop it could be 50 km. As it is not always possible for someone to take their transmitter to the top of a mountain to improve their range, other techniques must be found. One method is to place a person with a transceiver at a high intermediate point to act as a "relay." Another method is a "repeater", a permanent unmanned installation usually placed on a mountaintop that receives a signal on one frequency and simultaneously re-transmits the same signal on a second frequency.

Frequencies Licenced by the PEP

The control and management of the radio frequency allocations of the PEP resides with the PEP Telecommunications Officer. All licence inquiries, and authorization for use, must be directed to the PEP Telecommunications Officer through the appropriate Regional Manager. Listed are the frequencies licenced and utilized by the PEP.

148.655* MHZ VHF-FM
148.685*
149.495
149.525
153.950

*Restricted, only to be used in specific areas, which are approved by area, and authorized for use by the PEP HQ Telecommunications Officer.

It must be clearly understood, the use of the PEP controlled frequencies are not exclusive to any specific agency, organization, or volunteer group, and may be utilized in support of the PEP as directed by the PEP HQ Telecommunications Officer. For example, in support of a large incident or Provincial Field Response Center (PFRC), any or all of the PEP controlled frequencies may be utilized for 'network' and/or 'working' frequencies or channels.

Channel/Frequency Assignment

The use of various frequencies can pose coordination problems when their use is not clearly specified and identified, for this reason the following 'network' or 'controlled net' names may be employed :

- Command for command and control channel, (Incident Commander, Emergency Coordinator, etc).
- Tactical for operational activities, (equipment and crew, etc).
- Liaison for mutual-aid and support functions.
- Situation for status 'broadcasts' and updates upon request.
- Check-In for initial contact and support for staging and collection locations.

The channel assigned may be designated and identified more clearly as follows :

- Simplex — for receive and transmit operation on one frequency only, (radio-to-radio, or tactical channel).
- Duplex — for receive on one frequency and transmit on another, (most commonly used when talking through a radio repeater system).
- Tone — a sub-audible tone is employed within the radio to permit communications with other equipment so equipped. This method is used in heavily populated areas where frequency congestion is high.

Radio Interference

Radio waves from many frequencies are constantly being emitted from both natural and man-made sources and are detected by many receivers. These unwanted signals are referred to as noise. F.M. radio is more immune to noise than A.M. radio because noise is mostly an A.M. signal. Higher quality equipment of either type, with improved receiver specifications, is more immune to noise.

Transmit Power

Transmit output power is rated in terms of watts and is the amount of radio signal fed to the antenna system. Typical output from portable radios is 2 to 5 watts, while base or mobile radio output is usually around 30 watts. The antenna cable, type of antenna, and location of antenna will have an effect on the effective radiated transmitter power and receiver performance.

Equipment Fundamentals

The aim of this section is to provide non-technical information on radio communications equipment that may be used by volunteers associated with the PEP. The terms presented are in common use and should be understood by all volunteers involved in radio communications..

Grade & Types of Equipment

A two-way radio consists of two parts, one portion that emits a signal and another that receives a signal . In most radio equipment, these two parts of the circuitry are incorporated into one combined circuit. Both transmission and reception are integrated in a "transceiver."

Equipment is manufactured and graded with a wide range of performance specifications. Equipment requiring greater immunity to noise or greater receiver sensitivity may be desired and obtained, for a price. For example, Commercial grade equipment is designed to operate within a tighter specification and wider frequency spacing than Amateur grade equipment.

The commercial grade equipment can be licenced for use on both the commercial and amateur allocated frequency bands. However, the amateur grade equipment can only be licenced for use on the amateur allocated frequency bands.

Three types of equipment are likely to be encountered by PEP volunteers.

- Base stations that are situated at fixed locations.
- Mobile transceivers that are usually mounted in vehicles.
- Portable transceivers that are usually the hand-held portable type.

Radio Operating Controls

It is very important to understand the basic radio operating controls. The operating controls of most radio equipment is very similar.

On-Off and Volume : The on/off switch and the volume control are usually connected to one knob. To turn the radio on, rotate this knob clockwise. To increase the receive volume, rotate this same knob further clockwise. The volume control has no effect on the transmit volume.

Squelch : All radio receivers produce noise when there are no incoming transmissions. The squelch circuit mutes the radio speaker when there are no incoming transmissions on the frequency. In some radios the squelch control is internal and there is not a squelch control that can be user adjusted. The squelch setting affects the receive sensitivity of the radio. To obtain the best sensitivity from the receiver the squelch control must be adjusted correctly.

To set this control, rotate the knob in one direction or the other until noise is heard. Then rotate the squelch knob in the opposite direction until the noise just disappears, at this adjustment point the receiver is the most sensitive.

Note that in portable radios the squelch may open (noise is heard) due to the radio battery becoming depleted. The noise will generally be heard in intermittent bursts and a readjustment of the squelch control may cure the problem until the battery is replaced.

Channel : If the radio is equipped to operate on more than one frequency (channel) set the knob or switch to the frequency desired. This is usually indicated by Fl, F2, F3, etc.

Many volunteer groups are using field or user programmable radios in which the radio frequencies can be entered by a keypad and may then be stored in memory. Exercise caution when programming radios, the wrong sequence may de-program or disable the radio.

When involved in mutual aid it is important to clarify before heading out on your assignment that "our channel 1" is the same as "their channel 1".

PTT : The Push-to-Talk (PTT) switch is used to activate the transmitter. When released, the transmitter is deactivated and the radio reverts back to the receive mode.

Types of Antenna

Most antenna employed for use in the VHF band are vertically polarized. A portable radio will generally come with one of two types of antenna. The first type is the helical antenna. It is a short, flexible antenna covered with PVC plastic. The second type is the telescopic or collapsing antenna. It must be fully extended before transmitting. Although the helical antenna is shorter and less efficient than the telescopic antenna, it is superior in the bush where the telescopic antenna could be easily broken.

Microphone Techniques

The efficient use of radio depends to a large extent on the method of speaking and on the articulation of the operator. As the distinctive sounds of consonants are liable to become blurred in the transmission of speech, and as words of similar length containing the same vowel sounds are apt to sound alike, special care is necessary in their pronunciation.

The following points should be kept in mind during verbal communications and when using radio :

Speech — Speak all words plainly and each word clearly to prevent words from running together. Avoid any tendency to shout or to over-accent syllables.

Speed — Keep the rate of speech constant, neither too fast nor too slow. Remember that the operator receiving your message may have to write it down.

Rhythm — Preserve the rhythm of ordinary conversation. In separating words so that they are not run together. Avoid the introduction of unnecessary sounds such as and "um" between words.

Portable Radio Batteries

The operating voltage for most low power radios is usually supplied by a self-contained battery. The operating life of a battery is determined by the type of battery used and the duty cycle that is applied to the battery. All battery types operate best at room temperature. Keeping the radio tucked inside one's clothing when operating in cold weather will help to keep the battery warm and achieve it's maximum operational life. Heating a battery or placing it near a source of heat should be avoided as the battery will deteriorate and could be damaged. All batteries discharge slowly when they are not in use.

Fully charged ni-cad batteries when used for a short period of time without completely discharging and then put back in the charger will develop "memory". A dead battery indication will start to appear on a portable radio with a battery that has developed "memory" and the radio will go dead after a short use. To prevent memory from developing the battery must occasionally be allowed to completely discharge. This will prolong battery life. This discharge can take place on operations if a spare battery is kept on hand to replace the dead one, or the radio can be left with the squelch open until the battery is dead. However, this will only work on older models with an external squelch control, and will not work on newer radios with internal squelch settings.

Another alternative is to take the batteries to a radio service shop and have them placed in a battery analyser to have the battery cycled. During the re-conditioning process, the condition and capacity percentage of the battery can be determined.

New rechargeable batteries should be recharged upon receipt, and should be re-charged every month for a short period to ensure operational readiness. Ni-Cad batteries in particular will slowly discharge over a period of time.

Standard Operating Procedures

Failure of communications is often identified as one of the weak links in any operation. People in the field cannot be contacted, batteries go dead, information is not clearly worded, or often there is too much unnecessary traffic on the frequency(ies). It is therefore imperative all radio operators be familiar with standard operating procedures to overcome these problems.

Basic Radio Operating Procedures

Preparation : Turn on the radio and adjust the volume and squelch as described earlier. Set the radio on the appropriate channel to ensure it is ready to receive any incoming signals or messages.

Transmitting : Monitor the channel to ensure a call in progress will not be interrupted. Maintain the microphone about 10 cm (4 inches) from your mouth. Plan what you are going to say before speaking, deliver the message clearly and concisely using standard phraseology whenever practical, and always use the proper calling procedure.

Always keep in mind, there may be people monitoring your transmissions, discretion must be practiced at all times.

If transmission and/or reception is poor, it may help to re-position your antennae to a new location, or move to a higher location to improve your line of sight with the intended target. The suggestion that pointing the antennae in the intended direction of transmission to improve the signal is entirely false. The radio signal is attenuated as much as 20dB (in technical terms, lots !) when operating with one vertically polarized and one horizontally polarized antennae. Poor radio performance may also result from low battery voltage, a freshly charged battery should always be tried when experiencing communications equipment problems.

At minimum, one freshly charged spare battery should accompany each radio in the field.

The efficient use of the radio depends on the method of speaking and on the articulation of the operator. Speak without whispering, mumbling or shouting. Words of similar length containing the same vowel sounds are apt to sound alike. Therefore the following procedures are to be followed.

'Controlled Net' Communications Procedures

Following proper voice procedures ensures that all participants utilizing radio communications will be able to communicate in a manner that is readily understood.

The controlled net is the utilization of a common radio frequency or channel by more than one user, with only one designated net controller or control station. The radio conversation(s) or message(s) are referred to as radio traffic or just plain traffic. When a radio frequency or channel becomes very busy it is said to have heavy traffic. In addition to these procedures, it is important to remember the following principles if smooth running communications are to be achieved.

- Communications should be conducted using a "Controlled Net." This means that a Net Control Station (NCS) controls all radio traffic, and all communications are directed through the NCS.

- There must not be any "traffic" between individuals without the permission of the Net Control Station. Request permission of the NCS to contact other radio operators.

- Messages should be short and concise, and clearly articulated.

- The Net Control station must maintain a brief log of all radio communications. It is important that a radio log be employed in event that it be required during debrief or court proceedings. To accurately reconstruct the order of events, the log should include other critical information such as when other agencies arrived, etc.

- Do not leave the "Controlled Net" without advising the Net Control Station.

Phonetic Alphabet

The phonetic alphabet is used to avoid confusion when transmitting difficult or unusual words. This alphabet should be used when communications by radio or telephone is difficult or there is a chance of the receiving operator misspelling a word. Call-signs which are not plain language should always be spelled phonetically. This alphabet should not be used indiscriminately or time will be lost.

The ITU (International Telecommunication Union) phonetic alphabet is:

Letter	Word	Pronounced as
A	Alfa	*AL* FAll
B	Bravo	BRAH **VOH**
C	Charlie	CHAR LEE **or**
D	Delta	DELL TAll
E	Echo	**ECKOH**
F	Foxtrot	**FOKS TROT**
G	Golf	GOLF
H	Hotel	HOH TELL
I	India	iN **DEE All**
J	Juliett	JEW LEE ETT
K	Kilo	KEY LOH
L	Lima	LEE MAll
M	Mike	MIKE
N	November	**NO** VEM **BER**
0	Oscar	**OSS** *CAll*
P	Papa	PAll PAH
Q	Quebec	KEH **BECK**
R	Romeo	**ROW ME OH**
S	Sierra	**SEE** *AIR* RAH
T	Tango	**TANG GO**
U	Uniform	**YOU** NEE **FORM**
V	Victor	**VIK** TAll
W	Whiskey	WISS KEY
X	**X-ray**	**ECKS** RAY
y	**Yankee**	**YANG** KEY
Z	**Zulu**	**ZOO** LOO

Note: The syllables to be emphasized are in bold.

Transmitting Numbers

All numbers except whole thousands should be transmitted by pronouncing each digit separately. Whole thousands should be transmitted by pronouncing each digit in the number of thousands followed by the word "thousand".

Examples	15 becomes	one five
	32,000 becomes	three two thousand
	68,009 becomes	six eight zero zero nine

Numbers containing a decimal point shall be transmitted as above, with the decimal point indicated by the word "decimal".

Example	121.5 becomes	one two one decimal five

Monetary denominations, when transmitted with groups of digits, should be transmitted in the sequence in which they are written.

Examples	$17.25 becomes	dollars one seven decimal two five

Date and Time

The twenty-four hour clock system is to be used when expressing time. Time is to be expressed and transmitted by means of four figures, the first two numerals denoting the hour past midnight and the last two numerals denoting the minutes past the hour.

Although there are 24 hours in a day, there is no 24:00. The time starts at 00:00:00 and goes to and ends at 23:59:59. It is common practice to omit 2400 when referring to time in the 24 hour format. For example, 2400 hrs would therefore be expressed as 0000 hrs the following calender date.

Examples:	12:00 mid-night	is expressed as 0000
	12:45 am	is expressed as 0045
	12:00 noon	is expressed as 1200
	1:45 pm	is expressed as 1345
	4:30 pm	is expressed as 1630
	11:45 pm	is expressed as 2345

Some parts of BC straddle a time zone boundary so it should be clarified which time zone is being used in those areas.

Procedural Words and Phrases

Slang expressions such as "OK", "Over and Out", "Breaker Breaker", "Ten-Four" should **not** be used. The following is a list of a few words and phrases that should be used instead:

WORD OR PHRASE	MEANING
- Affirmative	Yes, or permission granted.
- Confirm	My version is... is that correct?
- Correction	An error has been made in this transmission (or message indicated). The correct version is...
- Go ahead	Proceed with your message.
- I say again.	Self explanatory (use instead of 'I repeat')
- MAYDAY	* Spoken word for distress communications.
- Negative	No, or that is not correct, I do not agree.
- Over	My transmission is ended, expect a response.
- Out	Conversation is ended, no response expected.
- PAN PAN	* Spoken word for urgency communications.
- Roger	I have received all of your last transmission.
- Say again	Repeat message (do not say 'repeat .....')
- Security	* Spoken word for safety communications.
- Stand by	Please wait.
- That is correct	Self explanatory.
- Verify	Check with the originator and repeat message if required.
- Wilco	Self explanatory, will comply.

* for correct usage refer to emergency communications procedures section.

Call-Signs

Distinctive call signs, consisting of a group of letters and or numbers, can be assigned to base, mobile and portable radios. Call-signs should be used for initial contact, and again when communication is concluded.

When two or more users share a common frequency, it is essential that correct identification is used to ensure positive identification. A readily recognizable identifier such as fleet car or truck number should be used or, in the case of marine or aviation operations, a registration or unit identification.

Tactical call-signs should be used to avoid confusion wherever possible. Typical tactical call-signs could include the following :

- Net Control or Control
- Disaster Site
- Hospital
- Triage
- Registration
- Search Base

Notes :
- assign numbers if multiple sites utilized; 1,2, ect.
- all tactical call-signs are to be identified using plain language only.
- the tactical call-signs will not change during the situation.

Licenced radio operators shall announce their licenced assigned call-signs on instruction from the Net Control Station. The licenced call-sign will be that of the person who is operating the equipment, or of the person who is in control of same equipment. The licenced call-sign may change if or as radio operators change shifts.

In the support of the PEP, the use of call-signs ensures proper identification of first-responders, volunteers and equipment.

Calling Procedure

Before transmitting, the operator should listen for a period long enough to ensure that no one else is transmitting, and thus interfere with the other transmissions. The call-sign of the station being called is ALWAYS spoken first, followed by the words "THIS IS" and your own station call-sign. In situations where communications traffic is very poor or very busy, the use of "OVER" to denote the end of transmissions may be used. The use of "OVER" is optional.

Example: Public Works calling a grader number seven ...
call "grader number seven THIS IS public works OVER"
response "public works THIS IS grader seven go ahead OVER"

If the originating station wishes to communicate to more than one station, the call-signs of each station desired is called in any convenient sequence preceding the works "THIS IS".

Example: Public Works calling grader number seven , ten , and eleven ...

call "grader number seven , ten , eleven , THIS IS public works OVER"
response "public works THIS IS grader number seven go ahead OVER"

If an operator hears a call but is uncertain that the call is intended for his/her station, he/she should not reply until the call has been repeated and understood. If an operator hears a call that is understood to be for him/her however does not catch the call-sign of the station calling they should request them to repeat it by saying:

Example: "Station Calling , this is (call-sign being called) , Say Again , Over"

Radio Codes

Codes should be kept to a minimum and kept as simple as possible. This will make it less confusing for all and will ensure fewer mistakes.

Other types of codes such as 10 codes should not be used by the PEP volunteer. Use plain language whenever possible.

Signal or Radio Checks

If requested to give a radio check give a brief description of how well you are receiving the transmission as follows ;

1) Call to request a signal or radio check.
2) The signal check consists of "SIGNAL CHECK 1,2,3,4,5 OVER"
3) Your station identification (call-sign) should be transmitted during such test transmissions.
4) Signal checks should not last more than 10 seconds.
5) When replying or receiving a reply to a signal check, the following phrases should be used:
    1. Bad (unreadable)
    2. Poor (readable now and then, broken up)
    3. Fair (readable but with difficulty, weak but clear)
    4. Good (readable, strong and clear)
    5. Excellent (perfectly readable)

Use of numbering system not recommended, use of plain language recommended to avoid confusion. The use of bad-to-excellent provides clear information without interpretation.

Emergency Communications Procedures

In an emergency condition, the situation is classified in accordance with the degree of danger or hazard as follows :

Distress - a condition of being threatened by grave and imminent danger, and immediate assistance is required.

Urgency - a condition concerning the safety of a transport vehicle, someone on board or within sight, but which does not require immediate assistance.

Distress, urgency and safety procedures are laid down by international regulations and are designated primarily for aeronautical and maritime services. Use of these types of communications in the land service is very rare but radio communications personnel should have an understanding of the basic procedures.

Distress Signal

The distress call shall only be sent on the authority of the person in command of the station, and shall not be addressed to a particular station. The distress call has absolute priority over all other transmissions. All stations which hear it shall immediately cease any transmission capable of interfering with distress traffic and continue to listen on the frequency used for the distress call.

The spoken word for distress is "MAYDAY"

The distress signal indicates that the station sending the signal is :

1) Threatened by grave and imminent danger and requires immediate assistance, or
2) aware that an aircraft, ship or other vehicle is threatened by grave and imminent danger and requires immediate assistance.

The **distress call** should comprise :

1) the distress signal "MAYDAY" spoken three times ;
2) the words "THIS IS" ;
3) the call-sign of the station in distress spoken three times.

The **distress message** shall follow the distress call as soon as possible, the message should include as much pertinent information as possible. For example ;

1) the distress signal "MAYDAY" ;
2) the call-sign of the station in distress (once) ;
3) the nature of the distress condition and the kind of assistance required (i.e., what has happened) ;
4) the intentions of the person in command ;
5) the particulars of its position (airspeed, altitude, heading) ;
6) the number of persons on board and injuries (if applicable) ;
7) any other information that might facilitate the rescue ;
8) the call-sign of the station in distress.

The acknowledgment of receipt of a distress message shall be given in the following form :

1) the call-sign of the station in distress spoken three times ;
2) the words "THIS IS" ;
3) the call-sign of the station acknowledging the receipt spoken three times ;
4) the words "RECEIVED MAYDAY"

Actions by stations acknowledging receipt of a distress message :

1) Forward received information immediately to the appropriate agency or organization,
   - Police,
   - Medical Personnel,
   - Air SAR (responsibility of the Canadian Armed Forces),
   - Marine SAR (responsibility of the Canadian Coast Guard),
   - Land SAR (responsibility of the RCMP, supported by the PEP), etc.
2) Continue to guard the frequency on which the distress message was received.
3) Notify any station with direction-finding or radar facilities that may be of assistance, etc.
4) Cease all transmissions that may interfere with the distress traffic.

Cancellation of Distress

When a station is no longer in distress, or when the rescue operation has concluded, a message addressed to "ALL STATIONS" on the distress frequency(ies) advising that the distress traffic has ended shall be transmitted. The proper procedure for cancelling a distress message is :

1) the distress signal "MAYDAY" (once) ;
2) the words "ALL STATIONS" (three times) ;
3) the words "THIS IS" ;
4) the name or call-sign of the station transmitting the message (three times) ;
5) the filing time of the message ;
6) the call-sign of the station in distress (once) ;
7) the words 'DISTRESS TRAFFIC ENDED" ;
8) a short plain-language description of why the distress situation is being cancelled ;
9) the name or call-sign of station transmitting the message ;
10) the word "OUT".

Urgency Signal

The urgency signal indicates that the station calling has a very urgent message to transmit concerning the safety of an aircraft, ship or other vehicle, or the safety of a person. The urgency signal and urgency message may be addressed to all stations or to a specific station. The urgency signal has priority over all other communications except distress.

The urgency signal is "PAN PAN" spoken three times at the beginning of the first communication.

The **urgency message** should contain as many as required of the following elements and, if possible, in the following order :

1) the urgency signal "PAN PAN" (three times) ;
2) the name of the station addressed, or the words "ALL STATIONS" (three times) ;
3) the words "THIS IS" ;
4) the identification of the transmitting station ;
5) the nature of the urgency condition ;
6) the intentions of the person in command ;
7) present position, flight level or altitude and heading ;
8) any other useful information.

Cancellation of Urgency Message

When the urgency signal has been used before a message addressed to "ALL STATIONS" and calls for action by stations receiving the message, the station responsible for its transmission shall cancel it as soon as it knows that action is no longer necessary. The cancellation message shall be addressed to "ALL STATIONS".

Safety Signal

The safety signal is used mainly in the maritime mobile service. It indicates that the station calling is about to transmit a message concerning the safety of navigation or giving important meteorological warnings. The safety signal and the safety message may be addressed to "ALL STATIONS" or to a specific station. The safety signal has priority over all other communications except distress and urgency.

The safety signal is the word "SECURITY" spoken three times at the beginning of the first communication.

The **safety message** should contain as many of the following elements and, if possible, in the following order :

1) the safety signal "SECURITY" (three times) ;
2) the name of the station addressed or "ALL STATIONS" (repeated three times) ;
3) the words "THIS IS" ;
4) the name or call-sign of the station sending the message ;
5) the nature of the condition ;
6) the words "THIS IS" ;
7) the name or call-sign of the station sending the message.