



Plane Talking

*A Guide to Good
Radio Use*





While the well-known piloting priorities of 'Aviate – Navigate – Communicate' are always valid, good radio communication is vital to aviation safety – current and accurate information allows orderly sequencing, adequate separation, and collision avoidance. In an emergency, clear and timely communications will assist in obtaining the quickest and most appropriate response.

This booklet is intended to provide a handy guide to good radio operating practice. It is not intended to replace Advisory Circular AC91-9 *Radiotelephony Manual*, and should be read in conjunction with that AC, as well as the CAA *Plane Talking* radio course.



Every effort is made to ensure that the information in this booklet is accurate and up to date at the time of publishing, but numerous changes can occur with time, especially in regard to airspace and legislation. Readers are reminded to obtain appropriate up-to-date information.



Plane Talking

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The CAA gratefully acknowledges the assistance of Airways.

CAA Web Site

See the CAA web site for Civil Aviation Rules, Advisory Circulars, Airworthiness Directives, forms, and more safety publications.

www.caa.govt.nz



Abbreviations

AFIS	aerodrome flight information service
AIP	Aeronautical Information Publication
ATC	air traffic control
ATIS	automatic terminal information service
ATS	air traffic services
AWIB	aerodrome and weather information broadcast
CFZ	common frequency zone
FIS	flight information service
FISCOM	flight information service communication
GNSS	Global Navigation Satellite System
IFR	instrument flight rules
MBZ	mandatory broadcast zone
MHz	megahertz
NM	nautical miles
NORDO	non radio-equipped
PTT	press to talk
QNH	altimeter setting
RCCNZ	Rescue Coordination Centre New Zealand
RTF	radiotelephony
SARTIME	search and rescue time
UNICOM	Universal Communications
VFR	visual flight rules
VHF	very high frequency (30 – 300 MHz)
VMC	visual meteorological conditions
VNC	Visual Navigation Chart





Effective Communication

The radio is an important tool, and must be used properly to be effective. All communications must be of a high quality. An effective radio call has four elements – it must be:

» Clear

» Concise

» Consistent

» Correct

Clear

Others must be able to hear clearly what you are saying. You need to speak into the microphone, speak at a slightly slower rate than normal conversation, and use standard phraseology.

Concise

Transmit only for the minimum time necessary to get your message across. There are important elements in a radio call – make sure you include them, but don't add extra information that is 'nice to know', unless it is important for others to know this.

Most people don't need to hear what your departure point or destination is, unless it is nearby and is relevant to your current position and direction of flight.

Consider also, the information you would like to hear from other aircraft when making your own radio calls.

Consistent

Be consistent, not only by using standard phraseology, but also the order in which you give the information.

Correct

Be accurate. The situational awareness of others is affected by the accuracy of your radio calls – more specifically your position reporting. For instance, never use the words 'abeam' or 'approaching' to describe your position, as they are meaningless to anyone else. A precise description, such as 'three miles southwest of Rakaia' is much more useful.

Know Your Equipment

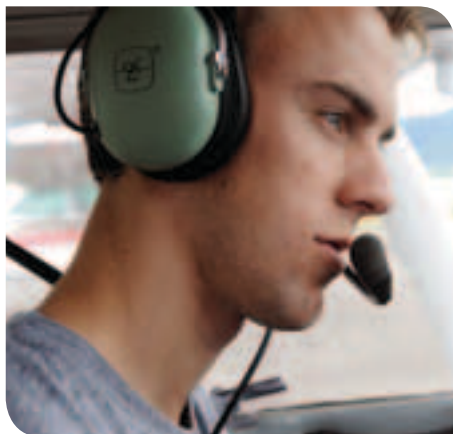
While there is a large number of radio types and configurations, your basic VHF aircraft radio will have the following features as standard:

- » Volume control, which may also incorporate the ON – OFF (power) switch.
- » A squelch control, which may be a simple press switch, or adjustable in a similar manner to the volume control. This feature permits reception of signals above a predetermined strength, and with the squelch off or disabled, you will hear continuous ‘white noise’, which can be useful when setting the desired volume. When reception is ‘broken’, the squelch control can be adjusted so you can hear the full transmission.
- » A means of selecting (and indicating) the desired frequency. Some radios have an ‘Active’ and ‘Standby’ frequency selector, enabling the next frequency to be set in the ‘Standby’ window, ready to be toggled into the ‘Active’ window when required.
- » And more often than not, a visual indication that the set is transmitting.

Some glass cockpit displays have a ‘virtual’ radio panel as part of the display. The means of manipulating the radio controls may not be immediately obvious, so make sure that you are familiar with these before you fly.



The ideal pilot-radio interface is a headset with a boom microphone, with the transmit button located on the control column. This keeps the hands free for the more important tasks of aviating and navigating, particularly advantageous in a busy environment. Your boom microphone should be positioned to just touch your lips when they are pursed. With a headset, you will usually be able to hear ‘sidetone’ when you transmit – that is, you hear your own voice, which is useful for getting your tone, speech volume and cadence right.



Some headsets are also equipped with a volume control for the earphones – this needs to be considered when adjusting the radio volume. The worst case is radio volume high, headset volume low, and the poor person in the other seat doesn't have a headset with a volume control.

Many aircraft are equipped with intercom systems, and these come in a variety of configurations. You need to know how the system in your aircraft works, as there are several traps for the unwary.

Some intercom systems are voice-activated ('hot mike'), while others have a press-to-talk (PTT) button. Don't confuse the intercom PTT with the radio transmit button – many of us have heard those embarrassing 'long-range intercom' conversations over the airwaves.

Intercom systems can have their own separate volume and squelch controls,

which may or may not affect the radio volume heard in the headset – it is worth checking if this is the case before you use the radio.

Audio selector panels are generally standard on IFR-equipped aircraft, and can also be found on VFR aircraft, depending on the avionics suite. The panel enables listening on individual COM or NAV radios, on either headset or speaker, and has a transmit selector switch. The characteristics of these vary between manufacturers, so some familiarisation may be required when you encounter one you haven't used before.

Hand-held microphones are normally provided as a backup – take care when using these, to ensure that the transmit button is not accidentally depressed when the microphone is stowed in its holder. When transmitting, hold the microphone the same distance from your lips as you would set your boom microphone.



Transmitting Technique

To ensure that your message is received clearly it is essential that you use the following transmitting techniques:

- » Before transmitting, check that the receiver volume is set at the optimum level and listen out on the frequency to be used to ensure that your transmission will not interfere with a transmission from another station.
- » Be familiar with microphone operating techniques and do not turn your head away from the microphone while talking, or vary the distance between it and your mouth. Severe distortion of speech may arise from talking too close to the microphone, or holding on to the microphone or boom (of a combined headset/microphone system).
- » Use a normal conversation tone, speaking clearly and distinctly.
- » Maintain an even rate of speech (cadence) not exceeding 100 words per minute. When it is known that elements of the message will be written down by the recipient, speak at a slightly slower rate.
- » Maintain the speaking volume at a constant level.
- » A slight pause before and after numbers will assist in making them easier to understand.
- » Avoid using hesitation sounds such as “um” or “er”.
- » Press the transmit switch fully before speaking and do not release it until the message is complete. This will ensure that the entire message is transmitted.

Maintain the speaking volume at a constant level.





Radio Discipline

Radio telephony (RTF) discipline, or how you talk on the radio, is critical to safe flight.

Try to ensure that all your calls sound professional. Being professional is doing the right thing, even if there is nobody around to observe or check on you. 'Professional' is more than just being paid to be a pilot.

And for the 'professionals' – don't let your own standards slip because of familiarity and repetitiveness. Remember that you set the standard to which others will aspire, and sloppy radio work does nothing to assist them. In particular, note that there is a very large population of trainee pilots out there, not all with English as their first language, and that you are sharing airspace with them.

Listen Up!

Before transmitting, always listen out to make sure that you will not be butting in on somebody else's conversation. A good habit to develop is to use the second radio, where fitted, to listen out on the next frequency to be used. Two or three minutes' monitoring of the 'new' frequency, before you need to call, can give you an idea what and where the traffic is, and help build situational awareness.

To help you hear what is going on, and listen effectively, it may help to ask your passengers to keep quiet at certain points in the flight. You can brief them on the ground before you fly that when you hold up your hand, you would like them to be quiet while you listen to the radio. You can also ask them to keep quiet during the important parts of the flight, as in takeoff and landing.

Four Whiskeys

This isn't referring to any post-flight activity, but the 'Four-Ws' is a good guide to keeping your radio calls structured and intelligible. Others expect to hear your calls in the right order:

- » **Who you are calling** – what is the name of the station you are calling, for example "Christchurch Information", Feilding Traffic", or "New Plymouth Tower".

- » **Who you are** – your callsign, which will be either your aircraft registration or the callsign from your flight plan. Prefixing the registration with aircraft type on first contact can assist ATC and others in recognition and expected performance.
- » **Where you are** – give an accurate position report, including your location (or the time you were over a significant landmark or reporting point), and altitude.
- » **What you want** – either what you are requesting or what your intentions are. For example, “joining overhead to land”, “request controlled VFR on track Raglan Paeroa 3500 feet”, or “request latest METAR Hokitika”.

Not all calls will fit the ‘Four Ws’ model. Obviously, there is a wide variety of radio calls, but it is still important to get the elements in the right order. Some examples:

- » Circuit call – “XYZ downwind”. In this example, once you’ve established initial contact with an air traffic control service, their callsign can be omitted in subsequent related transmissions; and here, the ‘what you want’ element is also omitted if your intention is to make a normal landing.
- » A simple position update while you are operating in an MBZ would not usually have the ‘what you want’ component.

Another useful mnemonic for position reporting, whether IFR or VFR, is ‘PTA-ETA’. That is, **Position – Time – Altitude – ETA**, and intentions if applicable.



Consider having a prearranged signal to let your passenger(s) know when the radio requires your full attention.



Transmission

of Letters and Numbers

Newcomers to aviation will quickly find that there are set ways of doing things, and an important one of these is what you can and can't say on the radio. For instance, letters of the alphabet are transmitted using the International Phonetic Alphabet to avoid confusion between similar-sounding letters, such as M and N.

Letters of the Alphabet

The International 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	ho TELL
I	INDIA	IN dee ah
J	JULIETT	JEW lee ETT
K	KILO	KEY loh
L	LIMA	LEE mah
M	MIKE	MIKE

The International Phonetic Alphabet		
N	NOVEMBER	no VEM ber
O	OSCAR	OSS cah
P	PAPA	pah PAH
Q	QUEBEC	keh 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

As in every rule though, there are exceptions. Some abbreviations are transmitted without using the phonetic alphabet, and common examples are:

DME, ETA, ETD, FIR, GPS, IFR, ILS, MBZ, NDB, QNH, RVR, VFR, VHF, and VOR.

Some other common abbreviations are transmitted as spoken words, for example:

ACAS (A-cas), ATIS, METAR, SIGMET, SPECI, STAR, and T-VASIS (TEE-va-zee).

Numerals

Similarly, the transmission of numerals has its own pronunciation rules to avoid

confusion. The ones you are likely to hear most are 'fife' and 'niner' for 5 and 9 respectively, these being the two most likely to be mistaken for the other. In reality, given the fidelity associated with modern VHF radio equipment, you will seldom hear '4' pronounced 'FOW-er', except perhaps on ATIS broadcasts, or when reception is known to be difficult.

Where a decimal point appears in a number sequence, it is spoken as 'decimal', rather than 'point' (although you will hear 'point' used in American examples).

Numerals and Related Terms	
0	ZE-RO
1	WUN
2	TOO
3	TREE
4	FOW-er
5	FIFE
6	SIX
7	SEV-en
8	AIT
9	NIN-er
hundred	HUN-dred
decimal	DAY-SEE-MAL
thousand	TOU-SAND



Using These in Practice

Application	Example	Transmitted as
Aircraft callsign	QFA 355	Qantas three five five
	RLK 8582	Link eight five eight two
	XYZ	X-ray Yankee Zulu
Altitude (and cloud height)	300 ft	three hundred feet
	1500 ft	one thousand five hundred feet
	10,500 ft	one zero thousand five hundred feet
	13,000 ft	one three thousand feet
Flight levels	FL 180	flight level one eight zero
	FL 200	flight level two zero zero
Headings	150	heading one five zero
	080	heading zero eight zero
	300	heading three zero zero
Wind direction and speed	080/25	wind zero eight zero degrees two five knots
	100/18	wind one zero zero degrees one eight knots
	210/25G40	wind two one zero degrees two five knots gusting four zero knots
Runway designator	19	runway one nine
	06	runway zero six
	23L	runway two three left
Mach number	0.84	Mach decimal eight four
Altimeter setting	984 hPa	QNH nine eight four
	1027 hPa	QNH one zero two seven
Time	1634	three four or one six three four
	0803	zero three or zero eight zero three
	1300	one three zero zero
Visibility	200 m	two hundred metres
	1500 m	one thousand five hundred metres
	3000 m	three thousand metres
	10 km	one zero kilometres
Runway visual range	700 m	RVR seven hundred metres
	1600 m	RVR one thousand six hundred metres
Frequencies	128.3 MHz	one two eight decimal three
	135.75 MHz	one three five decimal seven five

Standard **Phraseology**

In aeronautical radio communications, a number of set phrases are used to avoid ambiguity and to minimise transmission time. You will see from the table that, in many cases, one word can replace a lengthy phrase or sentence.

Word/Phrase	Meaning
ACKNOWLEDGE	Let me know that you have received and understood this message
AFFIRM	Yes
APPROVED	Permission for proposed action granted
BREAK	I hereby indicate the separation between portions of the message <i>(to be used where there is no clear distinction between the text and other portions of the message)</i>
BREAK BREAK	I hereby indicate separation between messages transmitted to different aircraft in a very busy environment
CANCEL	Annul the previously transmitted clearance
CHECK	Examine a system or procedure <i>(not to be used in any other context – no answer is normally expected)</i>
CLEARED	Authorised to proceed under the conditions specified
CONFIRM	I request verification of: <i>(clearance, instruction, action, information)</i>
CONTACT	Establish communications with ...
CORRECT	True or Accurate
CORRECTION	An error has been made in this transmission <i>(or message indicated)</i> the correct version is ...
DISREGARD	Ignore
HOW DO YOU READ	What is the readability of my transmission?
I SAY AGAIN	I repeat for clarity or emphasis
MAINTAIN	Continue in accordance with the condition(s) specified, or in its literal sense, eg, "Maintain VFR"
MONITOR	Listen out on <i>(frequency)</i>



Word/Phrase	Meaning
NEGATIVE	No or Permission is not granted <i>or</i> That is not correct or Not capable
OVER	My transmission is ended and I expect a response from you <i>(not normally used in VHF communication)</i>
OUT	My transmission is ended and I expect no response from you <i>(not normally used in VHF communication)</i>
READ BACK	Repeat all, or the specified part, of this message back to me exactly as received
RECLEARED	A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof
REPORT	Pass me the following information
REQUEST	I should like to know or I wish to obtain
ROGER	I have received all of your last transmission <i>(under NO circumstances to be used in reply to a question requiring READBACK or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE))</i>
SAY AGAIN	Repeat all or the following part of your last transmission
SPEAK SLOWER	Reduce your rate of speech
STANDBY	Wait and I will call you
UNABLE	I cannot comply with your request, instruction or clearance <i>(normally followed by a reason)</i>
WILCO	I understand your message and will comply with it
WORDS TWICE	<p>(a) as a request</p> <p>Communication is difficult. Please send every word or group of words twice</p> <p>(b) as information</p> <p>Since communication is difficult every word, or group of words, in this message will be sent twice</p>

Getting it **Down**

On occasion, you will find it helpful to write down a clearance or instruction, particularly if you have to read it back. Obviously, you don't want the information to be delivered too fast for you to copy; similarly, when making a position report, remember that the recipient may have to write down **your** message – so don't gabble! Most transmissions generally have a fixed order and keeping to this will assist in anticipating what to expect next.

Clearance Shorthand

Here are some examples of shorthand you may like to use, either in planning a radio call, or copying down a clearance.

Above	<i>ABV</i>
Above (eg 7000 ft)	<i>70</i>
Advise	<i>ADV</i>
After	<i><</i>
Altitude 3000 – 7000 ft	<i>30-70</i>
ATC clears or cleared	<i>C</i>
Before	<i>></i>
Below	<i>BLW</i>
Below (eg 7000 ft)	<i>70</i>
Cleared to land	<i>L</i>
Heading	<i>H</i>
Left/right hand	<i>LH/RH</i>
Left turn after takeoff	<i>↖</i>
Maintain or magnetic	<i>M</i>
Out of (leave) control area	<i>△→</i>
Remain well to left side	<i>LS</i>
Remain well to right side	<i>RS</i>

Report	<i>R</i>
Reporting point	<i>REP</i>
Climb to (eg 5000 feet)	<i>↑50</i>
Contact	<i>CTC</i>
Cross	<i>X</i>
Cruise	<i>→</i>
Descend to (eg 7000 ft)	<i>↓70</i>
Direct	<i>DCT</i>
Enter control area	<i>→△</i>
Final	<i>F</i>
Flight planned route	<i>FPR</i>
From	<i>FM</i>
Right turn after takeoff	<i>↗</i>
Runway (number)	<i>RWY 18</i>
Squawk	<i>SQ</i>
Takeoff (direction)	<i>(N)</i>
Tower	<i>TWR</i>
Until	<i>U</i>
Until further advised	<i>UFA</i>
Via	<i>VIA</i>
While in control area	<i>△</i>



When copying a clearance, and you miss or don't fully understand any element, it is imperative that you clarify the relevant points before reading it back. Use the phrase "SAY AGAIN" if you want the whole message repeated; "say again (eg, altitude)" if only one element was unclear; or "say again all after ..." if the last part of the message was missed.

If you cannot comply with a clearance, say "UNABLE" and give the reason, eg, "rate of climb too low", so an alternative can be given.

If you are not ready to copy a clearance or other information, do not be afraid to say "STANDBY". Conversely, when you are asked to "STANDBY", do not acknowledge, but wait until you are asked to transmit.



Reading it Back

There is a range of ATC clearances, information and instructions that must be acknowledged by a full readback, followed by the aircraft callsign.

These are:

- » ATC route, approach and departure clearances, and any amendments to these;
- » clearances for VFR flights to operate within controlled airspace, including entering or vacating the circuit;
- » clearances (including conditional clearances) to operate on the manoeuvring area at a controlled aerodrome, including:
 - clearances to land on or take off from the runway-in-use;
 - clearances to enter, cross, taxi on or backtrack on the runway-in-use;
 - instructions to remain on or hold clear of the runway-in-use;
 - taxi instructions including a taxi route and holding point where specified;
- » runway-in-use;
- » SSR codes;
- » level instructions;
- » heading and speed instructions;
- » altimeter settings; and
- » frequency, after frequency change instructions.





The following exceptions are permitted:
(Note: in all cases, conditional clearances must be read back in full.)

- » When a VFR aircraft is cleared by ATC to route via a published arrival or departure procedure that is identical to that INITIALLY requested by the pilot, there is no requirement for the pilot to read back the clearance in full. The aircraft must transmit its callsign as an acknowledgment.
- » Instructions not requiring a full readback are acknowledged by "WILCO", which clearly indicates that they have been understood and accepted.

Messages that do not require a readback are acknowledged by transmitting the aircraft callsign.

What's a Conditional Clearance?

A conditional clearance depends on another movement being completed before the clearance takes effect. Two typical examples are:

- » "XYZ, behind the Cessna coming from your left, cross runway 20"
- » "Mount Cook 941, behind the Boeing 737 on short final runway 34, line up behind".

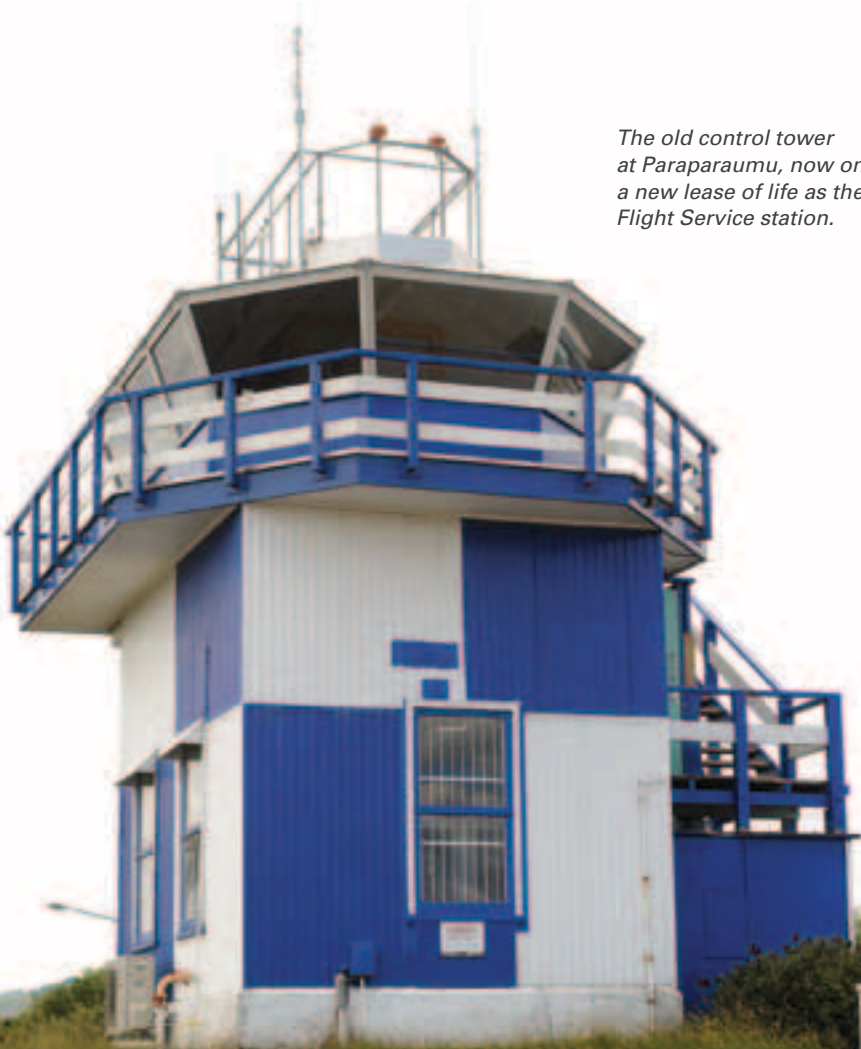
Note that clearances involving a runway will always include the runway designator.



Who to Call?

There's not a lot of variety – you will be talking to an air traffic services unit of some description, other traffic, or making a general broadcast, such as when you are operating in an MBZ.

The old control tower at Paraparaumu, now on a new lease of life as the Flight Service station.





Air Traffic Services

There are several 'levels' of ATS, some controlling, some not, depending on what type of airspace you are operating in at the time. These are the types of ground stations in use in New Zealand – the type of service is prefixed by the name of the location, for example, Christchurch Control, Gisborne Tower, Paraparaumu Flight Service.

Service	Function
CONTROL	Area and approach control, including area and approach radar
TOWER	Aerodrome control or aerodrome and approach/area control where these services are provided from an aerodrome control tower
GROUND	Surface movement control
FLIGHT SERVICE	Aerodrome flight information service (AFIS)
INFORMATION	Area flight information service (FIS)
DELIVERY	Clearance delivery
RADIO	Air-ground service
UNICOM	UNICOM ('Universal Communication') service

When you are being provided with an air traffic control service, your obligations are:

- » To comply with clearances and instructions;
- » To say when you are unable to comply with any instructions or clearances;
- » To keep a good lookout at all times;
- » Unless you are operating under IFR, you must remain in VMC at all times. If you are unable to do this, then you must tell ATC.

When you are in controlled airspace, ATC will not automatically separate you from other traffic. It will depend on whether you are an IFR or a VFR flight, and what type of airspace you are in. Regardless of the circumstances, when you are in VMC, **the final responsibility for collision avoidance rests with you.**

VFR in Control Areas

On occasions, ATC may not be able to provide you with a controlled VFR service, but will do when the workload or traffic allows it. Sometimes the level of traffic simply does not allow them to accept you. If they can't give you a clearance, have a plan B that will keep you outside the airspace.

Controlled VFR flight gives you access to the airspace at the level and route you are cleared for. Once you have accepted the clearance, you must not deviate from it without an amended clearance to do so. For example, if it looks like you are going to enter cloud at your present heading and altitude, you must request an amendment from ATC to avoid the cloud before you change heading or altitude.

If traffic levels increase you may be asked to leave controlled airspace, or accept a deviation from track or altitude – be prepared at all times so that you can carry this out as requested. You must be able to navigate visually at all times.

To request a controlled VFR clearance, ATC will need the following information – note that this is just a slightly more detailed version of the four Ws call:

- » ATC unit callsign;
- » Your callsign;
- » **Wait** for ATC acknowledgement; THEN
- » Your callsign;

- » Position – accurate distance and bearing from a significant point;
- » Altitude;
- » Squawk code, if you have one;
- » Requested type of clearance – controlled VFR;
- » Requested track;
- » Requested altitude.

Remember to read back the clearance, including new squawk code and QNH if issued.



Controlled Aerodromes

Controlled aerodromes are those where an air traffic control service is being provided from a control tower. Operations at controlled aerodromes require you to both request and comply with clearances and instructions.

ATIS

Controlled aerodromes have an automatic terminal information service giving the weather and ground conditions at that aerodrome. This is important information, because it gives you the local weather and QNH and includes relevant operational information, such as closed taxiways, or wind shear on approach.

Before you make contact with the tower, copy down the ATIS, then give the identifier and QNH on first contact.

Before Departure

Make sure you are familiar with the *AIP New Zealand* aerodrome chart and, if applicable, departure charts. The three main international aerodromes (Auckland, Wellington, Christchurch) have comprehensive ground movement charts and instruction pages, as well as detailed departure procedures. Some secondary aerodromes, particularly those with a high level of IFR traffic, also have detailed departure procedures.



There may or may not be a Ground (surface movement control) frequency. Some aerodromes also have a Delivery frequency, which is normally used for requesting and issuing IFR clearances.

VFR flights do not usually need a clearance to start, but you will need one to taxi. Make sure you have the aerodrome or ground movements chart handy, as it is very easy to get lost on an aerodrome.

Even though you are receiving an ATC clearance, you still need to develop and maintain your situational awareness (mental picture) of where you are and where the other traffic is.

Don't forget to read back the correct elements of your clearance, and then follow it.

Departing

Some aerodromes, particularly those with a high level of IFR traffic, also have detailed departure procedures. These have individual identifiers, but it is still possible to mistake one for the other. Be familiar with these departures and have the correct charts readily available.

You may be given departure instructions where there are no published procedures – these may be as simple as requiring you to vacate the control zone via a specific reporting point. The tower should already know what your intentions are, as you will have informed them by phone or IFIS before you went out to the aircraft, or on the radio when about to taxi.





If you can't comply with the departure instructions, for example if you can't maintain the rate of climb needed, then inform the tower and request an alternative. If you simply don't like them, that's too bad. There will be a good reason for giving you that clearance or instruction, and usually that will involve other traffic.

It is important to be familiar with these departures and to have the correct charts readily available.

Arrival

Copy down the ATIS in advance and confirm receipt (with identifier and QNH) on first contact with Tower or Ground. You will need a clearance before you enter the control zone, so make sure you request this in plenty of time, not when you arrive at the zone boundary.

The clearance may be direct or via a published arrival procedure, and will usually be accompanied by joining instructions and traffic information where applicable. If arrival procedures apply, have your charts to hand and make sure you are familiar with the procedures.

Unless you request one specifically, your arrival generally won't be via an overhead join, although you may be cleared overhead the field onto the downwind leg. It will usually be to join the circuit via either

downwind or on base leg. Remember you still need to keep a good lookout, and it is especially important to make sure you identify any aircraft ahead of you in the sequence. If, for example, you are told to join number three, clearly identify the two aircraft ahead of you and sequence correctly behind them.

Once you have acknowledged traffic in sight you are responsible for maintaining your separation. If you lose sight of the traffic, you **must** advise ATC accordingly or request a traffic update.

Exiting the Runway

At the end of your landing roll, Tower will give you taxi clearance, and if applicable, instructions to contact Ground.

Where taxi instructions are likely to be detailed, ensure that you have your applicable aerodrome or ground movements chart to hand.

See *AIP New Zealand AD 1.5 Aerodrome Operations* for more detailed information on operations at controlled aerodromes.



AFIS Aerodromes

An aerodrome flight information service may be provided at aerodromes where the number of scheduled air transport operations is not enough to justify an ATC service, but the mix and number of movements is such that safety would be improved by having a flight information service available. At the time of publication of this booklet, AFIS was provided at Paraparaumu and Milford Sound.

AFIS provides information useful to pilots for the safe and efficient conduct of their flights. It differs from an air traffic control

service in that pilots being provided with an AFIS are responsible for assessing a situation based on information passed to them by the flight information officer and then advising their intentions. Other pilots hearing these intentions and information make their own decisions and, in turn, state their intentions.

Not a Control Service

The flight information officers will not issue clearances, although they can relay them from ATC. They **will**, however, inform you of other traffic in the area.





The AFIS is there to help ensure you have all the information you need. It will provide weather, QNH, runway in use, significant traffic, and pertinent operational information, such as bird hazards. It will not limit your movements or direct you, and it certainly does not provide separation.

Collision Avoidance

Just as at uncontrolled aerodromes, making sure you don't hit anything is entirely your responsibility at an AFIS aerodrome.

You retain the ultimate responsibility for where you put your aircraft to maintain separation and sequencing with other traffic.

A particular note – Paraparaumu is located within the Paraparaumu Mandatory Broadcast Zone. Pilots intending to transit the zone without landing **must** comply with MBZ procedures and **keep clear** of the Paraparaumu circuit area. There is scheduled IFR traffic in and out of Paraparaumu most days.



*Paraparaumu
Flight Service*

Listen Carefully

You still make the decisions about where to place your aircraft at an AFIS aerodrome, so you need to listen carefully to the radio traffic and plan your movements accordingly.

Before you speak, listen for a minute or two to hear what other traffic is doing, in order to form a mental picture of the traffic.

When the frequency is busy, and in order to help reduce radio congestion, you can acknowledge the “traffic and conditions” you have already heard.

Remember, the information you provide the AFIS is used to advise other traffic, so it should be timely and clear.

Taxi and Departure

The AFIS aims to give you the most up-to-date traffic and conditions, and if you then have an extended run-up or preparation time before you are ready to depart, the information could well be out of date, so may require another radio call to update you.

Arrival and Joining

Plan well in advance of your arrival.

Do not arrive on frequency without having taken the time to listen to the traffic for a few moments. It is your responsibility to be aware of the other aircraft in the circuit and sequence with them – not for them to give you their position reports.

Generally, the standard overhead join procedure is not used at AFIS aerodromes – *AIP New Zealand AD 1.5 Aerodrome Operations* gives the option of joining overhead or directly on downwind, base or long final, with the following provisos:

- » joining intentions are advised to AFIS if the aircraft is RTF equipped; and
- » the runway-in-use and aerodrome traffic are properly ascertained; and
- » when making a straight-in approach, or joining downwind or base leg, the aircraft is sequenced in such a way as to give priority to aircraft already established in the circuit or established in the standard overhead circuit joining pattern; and
- » when entering or flying within the circuit, all turns are made in the direction appropriate to the runway-in-use.



Area Flight Information Service (FIS)

The area flight information service is provided to give advice and information useful for the safe and efficient conduct of flights. It includes:

- » SIGMET (significant meteorological information);
- » weather conditions reported or forecast, at departure, destination, and alternative aerodromes;
- » changes in the condition of aerodromes and associated facilities;
- » facility to file or amend flight plan details and SARTIME;
- » traffic information; and
- » other activities likely to affect safety.

Although you can ask for this information from any ATC service, this will not be their primary task and they might be busy doing other things. You may be asked to stand by, or directed to Information to make your request.

The VNCs show the FISCOM frequencies in specific areas of New Zealand. This information is based on VHF coverage at 4000 feet.

There are benefits to using this service, and you don't have to file a flight plan to use it. You can receive up-to-date information, and it provides a form of assurance that somebody has an idea of where you are, as every call and position report is logged.

But you must be aware of the etiquette. One Flight Information Officer (FIO) will be working 14 frequencies at one time,

and you may not be able to hear pilots transmitting on the other frequencies, but you will hear the FIO. It is important to establish contact and wait to be acknowledged before you transmit the whole message, and be prepared to wait for the FIO to get back to you.

They will not charge you if you call up wanting assistance – so use the service – they are there to help.

UNICOM

UNICOM is not an air traffic service – it is a non-certificated air-ground communications facility providing an information service at aerodromes with no aerodrome control or aerodrome flight information service.

There is currently only one UNICOM in New Zealand – at Ardmore aerodrome, where the service is provided by the airport company.

Information provided may include:

- » current aerodrome information and conditions;
- » basic weather information such as: wind direction and strength; visibility; cloud cover; temperature; and QNH;
- » Aerodrome and Weather Information Broadcasts (AWIB).

The UNICOM operator may also provide other ancillary services. The operator is not permitted to provide traffic information derived from their own observations, but may relay specific aircraft position reports, or make a general broadcast to all aircraft (such as information on inbound IFR traffic).



Enroute Frequency Selection

Choosing which frequencies to use while flying in uncontrolled airspace may require some thought and pre-planning.

119.1 MHz – it is not a lot of use listening on 119.1 everywhere, as this is no longer the ‘universal’ unattended aerodrome frequency. Aerodromes with their details published in *AIP New Zealand* will always have a designated ‘unattended’ frequency (except where there is a 24-hour ATC service). In some cases, this frequency will be 119.1, as it will with most ‘unpublished’ aerodromes. If any of the latter are located in an MBZ or CFZ, expect the ‘unattended’ frequency to correspond with that of the airspace.

FISCOM frequency – this could be your best option. You will hear traffic broadcasting in your FISCOM area, and this can help keep you up to date with any relevant information that the FIO broadcasts. However, to get clear reception on a FISCOM frequency you may need to be above 4000 feet, depending on your location and the terrain. In some areas in the Southern Alps there are communication ‘shadows’, where you will need to be a lot higher in order to make radio contact. Refer to *AIP New Zealand*, Figures GEN 3.4-2 and 3.4-3 for more information.

MBZ – in an MBZ you **must** use the published frequency, as will all the other traffic in the MBZ.

CFZ – in a CFZ, all traffic in the area **should** be on this frequency.

Special use airspace – be aware of any special use airspace and associated frequency requirements on your route. This includes permanent and temporary danger or restricted areas. Temporary special use airspace is often active around events, and you must check the current NOTAMs and AIP Supplements before flight.





VFR Flight Plans and SARTIME

It currently costs a few dollars to file a VFR flight plan, and potentially millions of dollars to try and find you if you go missing – and they will try to find you! Comforting to know, but a lot more comforting when they are looking in the right place.

Even if you don't want to file a full flight plan you can give ATS a SARTIME – this is a time at which ATS will initiate a search for you if you haven't made contact with them. But make sure you cancel that SARTIME when you arrive safely, because as soon as it is reached, alarms go off and ATS will start trying to find you. If they haven't spoken with you after about five minutes, they start search action.

Remember that you can amend or update your flight plan and SARTIME during flight to allow for stopovers.

On multi-leg flights you may nominate a SARTIME relative to the first destination, but you must remember to amend the SARTIME after each landing or takeoff. Recommended practice is to set your SARTIME to a maximum of 30 minutes after your next landing, not the time you expect to make your last landing of the day.



Weather

Weather information is available from many sources during flight.

- » Christchurch Information – you can find the frequency on the VNCs or the FISCOM charts in *AIP New Zealand* GEN 3.4.
- » ATIS – within line of sight of the aerodrome, you should receive the ATIS. The frequency is on the aerodrome chart.
- » AWIB – automated broadcast on a specified frequency at some unattended aerodromes. The frequency is on the aerodrome chart.
- » ATS – control tower or area controllers.
- » VOLMET – broadcasts selected meteorological information on discrete HF frequencies.
- » Basic Weather Report (BWR) – usually reported by another pilot, and may be disseminated as flight information by ATS.

METAR Conditions

Place	Type	Time - local	Wind "T"	Visibility	Weather	Cloud (agl)	Temp/DP	QNH
TG	Auto	1000	290/12 260/320	2km NDV	//	BKN 2100	17/13	1019
RO	Auto	1000	280/09	15km NDV	-SHRA	FEW 2000 OVC 2600	14/13	1019
AP	Auto	1000	320/10	6000m NDV	-DZ	FEW 800 BKN 1000	15/12	1017
NR	Auto	1000	330/10	20km NDV	//	BKN 8000	21/13	1012
GS	Auto	1000	310/15	20km NDV	//	No Cloud Detected	18/13	1015



Operating at Unattended Aerodromes

Flying at uncontrolled aerodromes has its challenges. Most people think they are not as busy as controlled aerodromes. They can be even busier, so you need to be prepared. There can also be quite a mix of aircraft operating at the same time, like gliders, helicopters, microlights, parachutes and IFR aircraft.

At an uncontrolled aerodrome you are responsible for your own sequencing and collision avoidance. Lookout, 'listenout' and good RTF are crucial for building situational awareness and ensuring safe separation.

The key to flying at uncontrolled aerodromes is to show as much courtesy to others as you would like them to show you.

Collision Avoidance

Making sure you don't hit anything, is entirely up to you.

The best way to do this is to build, and then maintain, good situational awareness. Use your eyes and ears.

Don't just rely on hearing the traffic in the circuit, as there are still plenty of NORDO aircraft out there, or others that aren't on the frequency for some reason.

Give your position relative to published reporting points, prominent geographical features, or the aerodrome. Avoid using

'local knowledge' names, which could be meaningless to a non-local pilot.

It is also good airmanship to repeat the name of the aerodrome somewhere in your broadcasts, especially where there are other nearby aerodromes using the same frequency. Often the aerodrome name at the beginning of the transmission is not heard clearly by other pilots. For example:

» "Waimate traffic XYZ downwind two two Waimate" instead of "(Unidentifiable) traffic, XYZ downwind".

Use your lights to enhance the ability of others to see you. If you become concerned that another pilot has not seen you, a small banking manoeuvre may expose a more visible view of your aircraft.

When it comes to sequencing and separation, a good rule of thumb is not to do anything that would cause or require another pilot to change their flight path. Overall, be predictable.

Listen Carefully

Before you speak, listen for a minute or two to hear what other traffic is doing, in order to form a mental picture of the traffic.

Taxi and Departure

While you are starting up and completing the checks, keep a listening watch on the traffic. Mentally plot their positions and try to anticipate their movements, and listen for their intentions.

When you have a good mental picture of what is going on at the aerodrome, on the ground and in the air, decide how you are going to fit into the sequence, and make your radio call.

Planning for Arrival

Plan well in advance of your arrival. The overhead join procedure should be sorted out in your mind (if it is the appropriate way to join at this particular aerodrome).

Do not arrive on frequency without having taken the time to listen to the traffic for a few moments. It is your responsibility to be aware of the other aircraft in the circuit, and sequence with them – not for them to give you their position reports.

Joining and Circuit

The standard overhead join procedure is recommended, unless *AIP New Zealand* specifies another way to join at the aerodrome. This could be due to a non-standard contrary circuit for helicopters or gliders, for example.

When using the procedure, orbit overhead until you have identified all of the traffic and can safely sequence into the pattern.

Make only the appropriate calls. There is usually no need for 'rolling', 'crosswind', 'early downwind', 'final' and 'vacating' calls – unless other aircraft are affecting your flight and you need to alert them to your position.

Using standard calls will help to improve everyone's situational awareness, while cutting down on radio 'clutter'.

Interpreting IFR Calls

Aircraft doing IFR approaches at uncontrolled aerodromes can present a hazard to VFR traffic – and vice versa. Their radio calls may relate only to the procedure they are flying, and not to anything a VFR pilot might recognise.

Generally this is an issue only when the weather is fine and the IFR aircraft is training, or when the cloud base is approximately 2000 feet above the aerodrome.

If you are one of those IFR pilots, then you should be giving additional radio calls that allow a VFR pilot to be able to locate you.

If you are a VFR pilot then you can get some indication of where the approach may be from looking at the VNC. There is a purple teardrop symbol on the charts, giving the approximate direction of the instrument approaches (both ground navaid-based and GNSS-based) in relation to the aerodrome.



The symbol is located away from the chart 'clutter' around the aerodrome, so the distance from the aerodrome is not truly representative but it does give you a quadrant in the sky in which to be concentrating your visual search.

Common IFR Radio Calls

(For further information on radio calls and instrument approach procedures, refer to *AIP New Zealand* ENR 1.1 and 1.5 respectively, and AC91-9.)

Overhead	The aircraft is overhead the radio navigation aid (beacon) – as shown on the aerodrome chart.
Commencing base turn	The aircraft is at the end of the outbound leg of the teardrop and is now turning back towards the aerodrome.
10 DME	The aircraft is approximately 10 NM away from the beacon.
Circling	The aircraft has established visual reference and is positioning for another runway – usually the one that is into wind. This is still an IFR procedure.
Established in the holding pattern	The aircraft is following a racetrack pattern generally above the beacon but can be up to 15 NM from the aerodrome.
Beacon outbound	The aircraft passed over the beacon (which may not be on the aerodrome) and is following the outbound leg of a teardrop approach, (normally) away from the aerodrome.
Inbound	The aircraft is established on the final track of the instrument approach and is (usually) descending towards the runway.
Established on the arc	Some instrument approaches follow a flight path that keeps them up to 15 NM from the beacon until they intercept the final approach path. This position puts the aircraft at a 10 – 15 NM radius tracking towards the final approach path.
Missed approach	The aircraft has abandoned the approach and is climbing and following the missed approach procedure (which usually turns it back towards the beacon).
Visual	The pilot has the runway in sight and may now manoeuvre to intercept final to land. This may be a continuation of the final approach path, or may require the aircraft to circle for another runway.

Whangarei

Whangarei is a good example of an uncontrolled aerodrome that has a varied mix of aircraft using the aerodrome, including aircraft carrying out the instrument

approach while other aircraft are in the circuit. There are two conventional approaches based on the navigation aid, one similarly-aligned GNSS approach, and one direct GNSS approach to Runway 06.



Wanaka

Wanaka has only a GNSS approach, as there is no radio navigation aid at the aerodrome.

Aircraft on the GNSS approach will probably not be using the phraseology listed in the table, but will be reporting over the waypoints. These will probably make no sense to the VFR pilot, but the IFR pilots

should also be making position reports you can understand. If they're not, ask them to.

It is also very useful to know where the waypoints are, in general, on the approaches at your home aerodrome, or ones you visit frequently. You can find this information on the approach charts in *AIP New Zealand* Vols 2 and 3, or you can ask your local instructors.





When it All **Goes Wrong**

Some day, you may find yourself in a situation where you don't appear to be able to communicate with anybody. Worse still, you may be in an emergency where you are going to need assistance. In the latter case, clear, unambiguous radio work is required, particularly as you may have a very limited time in which to get your message heard and understood.



Troubleshooting

Sometimes it can seem like you are experiencing a communications failure, but some simple checks may resolve the problem.

Check these basic items:

- » PTT button – fully released after transmitting;
- » Volume – set to audible level;
- » Squelch – set correctly;
- » Radio/intercom selector – in the correct position – radio selected, not intercom;
- » Radio – correct radio selected, if there are two radios;
- » Frequency – correct frequency set and active

If these don't solve the problem, check the following:

- » Headset jacks in the correct socket and are fully inserted;
- » Headset volume;
- » Headset batteries on noise attenuating headsets, if fitted;
- » Master switch is ON (including the avionics switch if applicable);
- » Alternator ammeter charge/discharge indication;

- » Fuses or circuit breakers;
- » Try another headset if there is one available, as yours could be malfunctioning;
- » Turn the aircraft 90° to try and get a better signal;
- » Is the terrain in the way? VHF radio waves work on 'line of sight'.

If you still can't make contact, try the 'speechless technique' detailed in *AIP New Zealand* ENR 1.15. This applies when the transmit and receive functions are serviceable, but the microphone input is unserviceable. When an unmodulated transmission is heard, the ATS operator will request the pilot to activate the transmitter (that is, press the PTT button) three times; and if the pilot complies, the operator will ask questions requiring YES or NO answers to determine if the aircraft can continue visually or can make an instrument approach. This and any other information required will be obtained by requiring the pilot to transmit:

- » once for YES or ROGER;
- » twice for NO;
- » three times for SAY AGAIN;
- » four times for AT NOMINATED POSITION.

Total Communications Failure – Aircraft

If the troubleshooting checks are unsuccessful, assume that you have a communications failure. The procedures are listed in *A/P New Zealand* ENR 1.15, and are reproduced here for VFR aircraft, as follows:

- » Maintain terrain clearance throughout all procedures.
- » Switch transponder to code **7600**.
- » Try alternate then secondary published ATS frequencies for the sector or unit you should be in communication with.
- » Check aircraft communications equipment.
- » Listen to ATIS if possible.
- » Transmit position reports and intentions, assuming the aircraft transmitter is operating, and prefixing all transmissions with "TRANSMITTING BLIND".
- » Turn on landing lights, beacons, and strobe lighting.
- » If a mobile phone is available in the aircraft, attempt to establish telephone communications with Christchurch Control or Christchurch Information on 0900 62 675 or (03) 358 1509, or the ATC unit you should be communicating with (refer to GEN 3.3 for numbers).
- » If the destination is within an MBZ, proceed to an alternate aerodrome unless the risk in proceeding safely to an alternate aerodrome is clearly greater than continuing, without communications, to the planned destination. (Refer to s13A of the Civil Aviation Act – beforehand, that is; not when you have the problem!)

The pilot of an aircraft operating under VFR should:

- » not enter controlled airspace, including control zones, unless complying with:
 - a clearance already received and acknowledged; or
 - published COM failure procedures for that aerodrome.
- » divert to an unattended aerodrome and report arrival to ATS as soon as possible;
- » if unable to divert to an unattended aerodrome:
 - continue to operate transponder on code **7600**; and
 - enter the control zone via a published arrival procedure; or
 - approach the aerodrome side-on to the main runway or runway-in-use, and carry out a standard overhead circuit joining procedure; and
 - contact ATS as soon as possible after landing.
 - If an emergency condition exists, switch transponder to emergency code **7700**.

Communications Failure – ATS

If there is a significant disruption to air traffic or telecommunication services, such as when Christchurch Centre has been evacuated during earthquakes, ATS will, as far as practicable, advise pilots when the level of available communication is being reduced. This advice will facilitate transition to either:

- » Alternative communications; or
- » A TIBA (traffic information broadcasts by aircraft) environment.

In the worst case, there will be no ATS available. See *AIP New Zealand* ENR 1.15 for detailed procedures.

If you have suffered a communications failure and are landing at a controlled aerodrome, the control tower will be able to give you instructions by light signals.

Colour and Type of Signal	To Aircraft in Flight	To Aircraft on the Aerodrome
Steady green	Cleared to land	Cleared for takeoff
Steady red	Give way to other aircraft and continue in the circuit	Stop
Series of green flashes	Return for landing	Cleared to taxi
Series of red flashes	Aerodrome unsafe – do not land	Taxi clear of landing area in use
Series of white flashes	Land at this aerodrome and proceed to apron	Return to starting point on aerodrome
Series of alternate red and green flashes	Danger – be on the alert	Danger – be on the alert
Red pyrotechnic	Notwithstanding any previous instructions do not land for the time being	

Distress and Urgency Messages

Distress is defined as a condition of being threatened by serious and/or imminent danger and requiring immediate assistance. The keyword associated with a distress situation is **MAYDAY**.

Urgency is defined as a condition concerning the safety of an aircraft, or of some person on board or within sight, but which does not require immediate assistance. The key phrase associated with an urgency situation is **PAN PAN**. (Pronounce it as written.)

MAYDAY Message **(AIP New Zealand ENR 1.15)**

The pilot of an aircraft in distress must transmit on the air-ground frequency in use at the time of the distress, the distress signal MAYDAY (**spoken three times**), followed by the distress message.

If on an unattended frequency, and it is considered that better assistance can be provided by transferring to another frequency, the pilot should do

so, after broadcasting this intention on the original frequency.

The distress message should consist of as many of the following elements spoken distinctly and if possible, in the following order:

- » name of station addressed (time and circumstances permitting);
- » identification of the aircraft;
- » nature of the distress condition;
- » intention of the pilot; and
- » present position, level (flight level or altitude), and heading.

The transmission of an accurate aircraft position may be critical to any subsequent search and/or rescue action.

In addition, the pilot should switch the transponder to the emergency code **7700**; and

- » activate the ELT, and tracking system alarm, if fitted;
- » if the emergency situation is recovered, turn the ELT off and advise ATC or RCCNZ as soon as possible;
- » if the ELT is turned off and ATC or RCCNZ are not advised as soon as possible, it will be assumed that the aircraft has crashed and search planning will have commenced.

PAN PAN Message **(AIP New Zealand ENR 1.15)**

The pilot of an aircraft reporting an urgency condition must transmit on the air-ground frequency in use at the time, the urgency signal PAN PAN (**spoken three times**), followed by the urgency message.

The urgency message should consist of as many of the following elements spoken distinctly and if possible, in the following order:

- » name of station addressed;
- » identification of the aircraft;

- » nature of the urgency condition;
- » intention of the pilot;
- » present position, level (flight level or altitude), and heading; and
- » any other useful information.

In Either Case

The importance of saying “PAN PAN” or “MAYDAY” three times cannot be over-emphasised. In past events, where the relevant expression was spoken only once, a great deal of valuable time was lost in the ‘was that what I thought it was?’ reaction, and subsequent replays of the ATS recordings to make sure.

Do not be afraid to speak up!

It is best to alert somebody early in an emergency, and have help being organised, rather than leaving it to the last possible minute – when you could find that you have your hands full with ‘aviating and navigating’, with no spare capacity for communicating. Also, getting an early call in may ensure that you are still high enough to maximise the chances of your transmission being received, and give your ELT time to transmit a valid signal. (Note: this takes about 50 seconds after activation.)



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