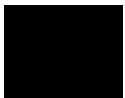


**EMERGENCY**

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# CANADA FLIGHT SUPPLEMENT / GPH 205

Effective 0901Z 20 November 2008 to 0901Z 15 January 2009

## F2 EMERGENCY

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### TRANSPONDER OPERATION

A transponder may, at any time, be adjusted to reply to

- (a) Code 7600, to indicate a communication failure;
- (b) Code 7700, to indicate an in-flight emergency; or
- (c) Code 7500, to indicate hijacking of the aircraft. (see unlawful interference)

### UNLAWFUL INTERFERENCE (HIJACK)

Selection of the code activates an alarm system and points out the aircraft on radar displays. If the controller doubts that an aircraft is being hijacked (as could occur when a code change was requested and the hijack code appears rather than the assigned code), the controller will say, CONFIRM SQUAWK SEVEN FIVE ZERO ZERO. If the pilot answers yes, the controller will alert the ATC system. If the pilot replies no, the controller will re-assign the proper code. If the pilot does not reply, the controller will take this as confirmation that the use of Code 7500 is intentional. If after using Code 7500 an aircraft changes to Code 7700, or transmits a message including the phrase TRANSPONDER SEVEN SEVEN ZERO ZERO, it indicates that the aircraft is threatened by grave and imminent danger and requires immediate assistance.

### TRAFFIC CONTROL LIGHT SIGNALS

Pilots without radio equipment should observe the tower for light signals. Acknowledge signals in the daytime by movement of ailerons or rudder on the ground and by rocking wings in the air. Acknowledge signals at night by flashing aircraft lights.

#### Color and Type

of Signal	On the Ground	In Flight
STEADY GREEN	Clear for take-off	Cleared to land
FLASHING GREEN	Cleared to Taxi	Return to landing (to be followed by steady green at proper time)
STEADY RED	Stop	Give way to other aircraft and continue circling
FLASHING RED	Taxi clear of landing area (runway) in use	Airport unsafe-do not land
FLASHING WHITE	Return to starting point on airport	
RED PYROTECHNICAL LIGHT		Notwithstanding any previous instructions. Do not land for the time being.
Projectiles at 10 sec intervals which burst into red and green lights or stars		Means: "You are in the vicinity of a prohibited, danger or restricted area, alter course".

### FUEL DUMPING

#### GENERAL

Whenever it is necessary to jettison fuel, the pilot should immediately notify ATC and provide information such as the course to be flown, the period of time and weather conditions. ATC may suggest an alternate area where fuel should be dumped; aircraft will be encouraged to dump fuel on a constant heading over unpopulated areas and clear of heavy traffic. When necessary information has been obtained, ATC will broadcast on appropriate frequencies a "fuel dumping advisory". Pilots should advise ATC immediately when fuel dumping has been completed. Environmental regulatory authorities must be notified of fuel jettisoning events.

MIL: Reporting shall be in accordance with 1 CAD HQ Uniform Spill Reporting Protocol. For detailed description of Aircraft Fuel Jettisoning, see 1 CAD ORDERS, Vol. 2, 2-004.

## MINIMIZING FUEL JETTISONING

No person shall jettison fuel from an aircraft in flight unless all appropriate measures are taken to minimize the danger to human life and the environment. Fuel jettisoning shall only take place when necessary to ensure aviation safety insofar as:

- (a) It is necessary to do so to achieve safe flying or landing conditions; or
- (b) It is necessary to verify aircraft serviceability by conducting maintenance flight tests.

## MINIMIZING THE IMPACT OF FUEL JETTISONING

Surface level impacts from fuel jettisoning are primarily dependent on the amount and type of fuel jettisoned, the altitude at which the jettisoning occurs, the location of jettisoning and the climatic conditions. In all cases, fuel jettisoning shall:

- (a) Be limited to the minimum amount necessary to ensure safe flight and landing conditions or to verify aircraft serviceability;
- (b) Unless emergency conditions dictate otherwise, be conducted at an altitude that will reduce to a minimum the amount of fuel reaching the ground. In non emergency conditions, 5000 feet AGL shall be used as a minimum altitude; and
- (c) Unless emergency conditions dictate otherwise, be conducted in designated areas.

## SEARCH AND RESCUE

### REQUEST FOR SEARCH AND RESCUE SERVICES

As soon as information is received that an aircraft is overdue, operators or owners should immediately alert the nearest Search and Rescue Co-ordination Centre at the following telephone numbers:

Victoria Rescue Co-ordination Centre – 1-800-567-5111 or 250-363-2992 or cellular #SAR or #727

Trenton Rescue Co-ordination Centre – 1-800-267-7270 or 613-965-3870

Halifax Rescue Co-ordination Centre – 1-800-565-1582 or Halifax 902-427-8200

NOTE: All Rescue Co-ordination Centres will accept collect telephone calls dealing with missing or overdue aircraft.

### RECOMMENDED PROCEDURES TO ASSIST IN SEARCH

Always file a flight plan or flight itinerary.

Always follow the flight plan or flight itinerary.

Report position at regular intervals.

Always close a flight plan or flight itinerary.

### IF YOU CRASH LAND

#### EMERGENCY LOCATOR TRANSMITTER (ELT):

An ELT is your lifeline to the Search and Rescue organization. When activated, it emits a distinctive siren-like tone which drops in pitch with a rapid steady beat on 121.5 MHz and/or 243.0 MHz. This sound can be readily detected by SARSAT-COSPAS satellites, airliners and military aircraft. Properly maintained ELTs with serviceable batteries should provide continuous operation for at least 48 hours at a wide range of temperatures. Batteries which remain in service beyond their recommended life may not provide sufficient power to produce a usable signal.

#### When to Activate (Emergency conditions):

The sudden deceleration which is characteristic of a crash or a forced landing should activate your ELT on impact. However, it is always safest to assume that the automatic feature failed, **and manually place the ELT function switch to the "ON" position as soon as possible after the crash.** SARSAT-COSPAS satellites continually overfly Canada and will detect your ELT signals within 90 minutes. The satellites will alert the Search and Rescue organization to your distress and determine your position. Search aircraft will then home to your ELT.

ONCE YOU HAVE TURNED YOUR ELT "ON" IN AN EMERGENCY, DO NOT TURN IT OFF UNTIL YOU HAVE BEEN POSITIVELY LOCATED. SARSAT-COSPAS SATELLITES AND SEARCH AIRCRAFT REQUIRE CONTINUOUS TRANSMISSIONS FOR LOCALIZATION AND HOMING. INTERRUPTIONS TO THE SIGNAL WILL DELAY YOUR RESCUE.

# CANADA FLIGHT SUPPLEMENT / GPH 205

Effective 0901Z 20 November 2008 to 0901Z 15 January 2009

F4 EMERGENCY

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## SEARCH AND RESCUE (Cont'd)

### Maximizing Your Emergency Signal:

All ELTs currently operate on 406, 121.5 and/or 243.0 MHz and can be detected by COSPAS-SARSAT satellites. However, effective 01 February 2009, COSPAS-SARSAT satellites will not detect 121.5/243 MHz signals. Due to their frequencies ELTs are effective only in line-of sight and only the 121.5/243 MHz beacons or the 406 MHz beacons with a 121.5 homing signal can be homed. For best range, the transmitter should be placed as high as possible on a level surface to reduce obstructions between it and the horizon. Raising an ELT from ground level to 2.44 m (8 ft.) increases the range by 20 to 40 percent. The antenna should be vertical to ensure optimum radiation of the signal. Placing the transmitter on a piece of metal or even the wing of the aircraft, if it is level, will provide the reflectivity to extend transmission range. Holding the transmitter close to the body in cold weather will not significantly increase battery power output. As the body will absorb most of the signal energy, such action could reduce the effective range of the transmission. If the ELT is permanently mounted in the aircraft, ensure that it has not been damaged and is still connected to the antenna. If possible, for 121.5/243 MHz ELTs, confirm their operation by selecting 121.5 or 243.0 MHz (as appropriate) on the aircraft radio and listening for the audible ELT tone. 406 MHz ELTs cannot be tested in this manner. 406 MHz ELTs have a self test function and an indicator to show that the internal test has been successful. 406 MHz ELTs should only be operationally activated in an emergency and only operationally tested at an approved test facility. Note that the 406 MHz ELT transmits a digital signal that is detected by COSPAS-SARSAT satellites that broadcast that emergency signal to all COSPAS-SARSAT ground stations. Therefore, 406 MHz ELT signals may be received by every one of the more than thirty COSPAS-SARSAT affiliated countries and these countries treat all 406 MHz ELT transmissions as an alert. False 406 MHz ELT transmissions result in unnecessary search (UN SAR) activity. (Caution: If fuel fumes are present, do not turn on aircraft electrics).

Remember that the search will be conducted to locate your aircraft. If you land in an uninhabited area, stay with the aircraft and the ELT. The aircraft is easier to see than you are. If possible, have smoke, flares or signal fires ready to attract the attention of search crews who are homing to your ELT. Smoke, flares and signal fires should be sited with due regard for fuel spills which resulted from the crash.

### Non-Emergency Use of ELT:

If you have landed to wait out bad weather, or for some other non-emergency reason, AND NO EMERGENCY EXISTS, do not activate your ELT. However, if the delay will extend beyond:

- (a) **Flight plan**-one hour past ETA;
- (b) **Flight itinerary**; the SAR time specified, or 24 hours after the duration of the flight or the ETA specified;

**you will be reported overdue, and a search will begin.**

To avoid an unnecessary search (UN SAR), notify the nearest ATS unit of the change to your flight plan, notification or itinerary. If you cannot contact an ATS unit, attempt to contact overflying aircraft and have them relay the message.

If you cannot contact anyone, a search will begin at the times shown above. At the appropriate time, switch your ELT to ON, and leave it ON until search crews locate you. Once located, use your aircraft radio to advise the SAR crew of your condition and intentions. The combination of ELT and COSPAS-SARSAT works together to speed the rescue of survivors. The ELT "calls for help". COSPAS-SARSAT hears that call and promptly notifies SAR authorities, who then dispatch help. **Delays in activating your ELT will result in delays to your rescue.**

## SEARCH AND RESCUE (Cont'd)

### AIRCRAFT RADIOS

If your radio is serviceable, you can use it to send a distress message. Aircraft battery life will be limited so you will have to decide when to transmit. The choice will be between saving the radio until after your ELT has run down as compared to transmitting a MAYDAY regularly in expectation of a ground station or passing aircraft hearing the signal. Be prepared to transmit your MAYDAY blind, i.e. don't expect a reply. Also, if you know your position or approximate position, include it in the MAYDAY.

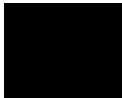
If you have an HF radio, it might be more effective than VHF or UHF. The HF's range of several thousand miles is much greater than the line-of-sight capability of VHF and UHF, and for this reason, is particularly useful in uninhabited and off-airways areas. The recommended HF frequency is 5680 KHz, a long-range communications channel monitored by many flight information centres for remote areas of Canada. The recommended time for distress signals is 15 and 45 minutes after each hour for 3 minutes' duration. Canada maintains two networks of direction-finding stations that can pinpoint the source of HF transmissions made anywhere in the country.

If you use your VHF or UHF, you should normally transmit on the emergency frequencies of 121.5 or 243.0. However, if you use your radio while your ELT is transmitting, don't transmit on the ELT frequency: chose instead a working frequency that ground stations or passing aircraft are likely to monitor.

### GROUND-TO-AIR SIGNALS

Even if no ELT or distress signal has been received, a visual search will commence as indicated in your Flight Plan, or Flight Itinerary. The search will start along your filed track, between your last known position and your destination, and expand from there. Searchers will be looking for anything out of the ordinary and their eyes will be drawn to any unnatural feature on the ground. Your aircraft has the best chance of being spotted if large portions of its wings and tail are painted in vivid colours. Keep your aircraft cleared of snow.

Many searches take at least 24 hours before rescue is accomplished. As soon as possible after landing, build a campfire. Make your site as conspicuous as possible. A smoke/smudge fire of green material should be prepared for instant lighting should you see or hear an aircraft. Three fires in a triangle is the standard distress signal. One of the best conspicuity items now available on the market is a cloth panel of brilliant fluorescent colour. It is staked to the ground during the day and used as a highly effective ground signal. It can also be used as a lean-to shelter and it supplies warmth as a blanket.



# CANADA FLIGHT SUPPLEMENT / GPH 205

Effective 0901Z 20 November 2008 to 0901Z 15 January 2009

## F6 EMERGENCY

### SEARCH AND RESCUE (Cont'd)

The following symbols are to be used to communicate with aircraft when an emergency exists. Symbols 1 to 5 are internationally accepted; 6 to 9 are for use in Canada only

TABLE 1			TABLE 2		
NO.	MESSAGE	CODE SYMBOL	NO.	MESSAGE	CODE SYMBOL
1	Require assistance	<b>V</b>	6	All is well	<b>LL</b>
2	Require medical assistance	<b>X</b>	7	Require food and water	<b>F</b>
3	No or negative	<b>N</b>	8	Require fuel and oil	<b>L</b>
4	Yes or affirmative	<b>Y</b>	9	Need repairs	<b>W</b>
5	Proceeding in this direction	↑			

#### NOTE:

- Use strips of fabric or parachutes, pieces of wood, stones or any other available material to make the symbols.
- Endeavour to provide as big a colour contrast as possible between the material used for the symbols and the background against which the symbols are exposed.
- Symbols should be at least 8 ft. in height or larger, if possible. Care should be taken to lay out symbols exactly as depicted to avoid confusion with other symbols.
- A space of 10 feet should separate the elements of symbol 6.

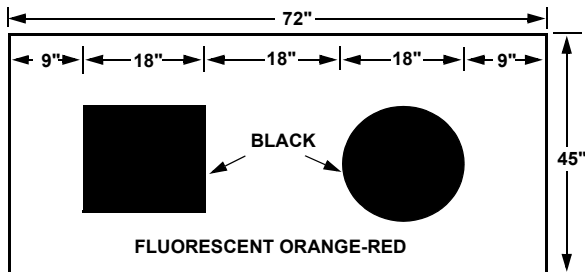
#### PROCEDURES WHEN SPOTTING SOMEONE IN DISTRESS

When a pilot observes an aircraft or surface craft in distress, he shall, if possible:

- (a) keep the craft in sight until such time as his presence is no longer necessary;
- (b) if his position is not known, attempt to establish it;
- (c) report to the Rescue Co-ordination Centre or Air Traffic Control Unit the following information:
  - time of observation
  - position of craft
  - general description of scene
  - apparent physical condition of persons.

#### SMALL CRAFT DISTRESS SIGNALS

Small craft may display distress or urgency signals as shown below



**SEARCH AND RESCUE (Cont'd)**

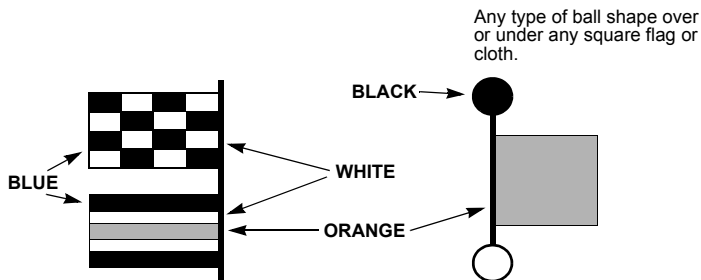
**DIRECTIONS TO SHIPS:**

Signals used by aircraft engaged in search and rescue operations to direct ships towards an aircraft, ship or person in distress.

- (a) CIRCLE the vessel at least once.
- (b) CROSS the vessel's projected course close AHEAD at low altitude while ROCKING the wings (see note).
- (c) HEAD in the direction in which vessel is to be directed.
- (d) When assistance of the vessel is no longer required, CROSS the vessel's wake close ASTERN at low altitude while ROCKING the wings (see note).

NOTE: Opening and closing the throttle or changing the propeller pitch may also be practiced as an alternative means of attracting attention to that of rocking wings. However, this form of sound signal may be less effective than the visual signal of rocking the wings owing to high noise level on board the vessel.

WATER CRAFT will normally change direction if able to comply. If unable to comply, it will hoist International flag "N" or give other visual signals. Crossing the stern of the boat at low altitude, opening and closing the throttle or changing the propeller pitch will indicate that the assistance of the boat is no longer required.



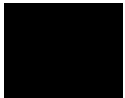
INTERNATIONAL FLAG "N" over "C"

**AVOIDANCE OF SEARCH AND RESCUE AREAS**

It has been reported that pilots of private and commercial aircraft, not under the control of the Canadian Forces during air searches, are seriously interfering with and jeopardizing the safety of aircraft engaged in search operations.

Such interference is occasioned by pilots flying unnecessarily through the search area, whose bounds have been established at the commencement of the search by a NOTAM, at heights below 2,000 feet above ground level.

In the interest of safety, and efficient search and rescue operations, pilots of aircraft not engaged in this activity are to avoid airspace in the area specified by NOTAM whenever possible. Extreme caution should be exercised whenever it is necessary to enter this airspace.



# CANADA FLIGHT SUPPLEMENT / GPH 205

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## F8 EMERGENCY

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### EMERGENCY RADAR ASSISTANCE

1. Emergency radar assistance is available on a 24 hour basis to identified aircraft within the limits of any Air Defense Identification Zone. The military radar system can at the discretion of the operator, provide the following services to aircraft; track, ground speed checks, position and bearing to the nearest airport or other designated points. Canadian military assistance provides bearing in degrees true. The radar assistance provided is advisory only and does not absolve the aircraft commander of the responsibility for safe navigation of the aircraft and compliance with air traffic control clearance or other required procedures.
2. Contact the Sector Air Operations Centre (SAOC) on frequencies 121.5 and 243.0. In the Domestic ADIZ, 364.2 is also available. Example: "Radar Assistance," aircraft call sign. Subsequent calls should address the specific ROCC answering the initial call.

#### EMERGENCY SURVEILLANCE RADAR APPROACHES:

Surveillance radar approaches will be provided by ATC, if:

- (a) ATC radar coverage is adequate,
- (b) no alternative method of approach is available, and
- (c) the pilot declares an emergency and requests a radar approach.

NOTE: NAV CANADA radars are not flight-checked or commissioned for surveillance approaches, nor are NAV CANADA controllers specifically trained to conduct them.

### EMERGENCY COMMUNICATIONS PROCEDURES

#### DEGREES OF EMERGENCY:

Type	Radio	R/T Signal	C/W Signal Usage
DISTRESS	MAYDAY	SOS	When you are threatened by serious and imminent danger and require immediate assistance, (ditching, crash landing, bailout, etc.). To give distress message for others unable to transmit. To relay a distress message. A distress message has priority over all other messages.
URGENCY	PAN PAN	XXX	When your situation requires urgent action, but is not actual distress (lost, fuel shortage, etc.). To report concerning the safety of an aircraft, ship or other vehicle or of some person on board or within sight. An urgency message has priority over all other messages except distress.

#### COMMUNICATION PROCEDURES:

- (a) Switch on all automatic emergency equipment.
- (b) Transmit appropriate distress call on A/G freq in use or on 121.5 followed by the distress message.

NOTE: 121.5 MHz may also be used to establish communications when the aircraft is not equipped with the published frequencies or when equipment failure precludes the use of normal channel.

Satellite communication equipped aircraft call the appropriate Air Traffic Services Unit by using the Inmarsat telephone number. The Inmarsat numbers for Canadian Flight Information Regions (FIR) for non-routine flight safety calls only are as follows:

Gander Oceanic FIR	–	431603
Gander Domestic FIR	–	431602
Moncton FIR	–	431604
Montréal FIR	–	431605
Toronto FIR	–	431606
Winnipeg FIR	–	431608
Edmonton FIR	–	431601
Vancouver FIR	–	431607



**EMERGENCY COMMUNICATIONS PROCEDURES (Cont'd)**

**MESSAGE FORM:**

1. (a) VOICE - MAYDAY, MAYDAY, MAYDAY, THIS IS, aircraft call sign (3 times).  
(b) CW - SOS, SOS, SOS, aircraft call sign (3 times).
2. TYPE OF AIRCRAFT.
3. POSITION OR ESTIMATED POSITION (state which) and TIME (when geographic coordinates are used, express latitude and longitude in "degrees and minutes".)
4. HEADING (state true or magnetic) AND INDICATED AIRSPEED.
5. ALTITUDE or FLIGHT LEVEL.
6. NATURE OF EMERGENCY.
7. PILOT'S INTENTIONS (bail out, ditching, crash landing, etc.).

**CANCELLATION:**

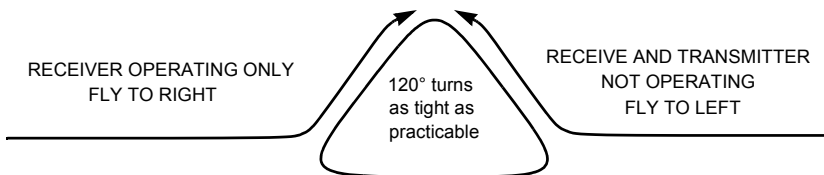
When the aircraft is no longer in distress, transmit a message cancelling the state of distress on the same frequency if possible, as was used for the distress call.

**IFF/SIF/TRANSPONDER OPERATION**

Emergency	IFF Control Box - Select Emergency
	SIF and Transponder - Mode A/3 Code 7700
Communication Failure	Mode A/3 Code 7600

**RADAR ALERTING MANOEUVRES:**

1. When lost or in distress and unable to make radio contact, attempt to alert all available radar systems as follows:
  - (a) activate IFF/SIF to EMERGENCY;
  - (b) guard emergency frequencies;
  - (c) fly two triangular patterns as depicted, resume course, repeat at 5 minute intervals.

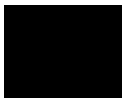


**TAS 300 Kts or less - fly TWO minute legs**  
**TAS more than 300 Kts - fly ONE minute legs**

2. If distressed aircraft is flying at night or in limited visibility, landing lights, navigation lights should be turned on to assist the interceptor.
3. If radar contact is established, a rescue aircraft will be dispatched for intercept.
4. Upon successful interception the interceptor and the distressed aircraft should attempt radio contact. If this is not possible, the following visual signals should be used.

**NOTE:** If flying at a low altitude an attempt should be made to climb, as the greater the altitude of the aircraft, the better chances of its being detected.

**NOTE:** For more detailed information on radar coverage see TC AIM, SAR para 4.5.



# CANADA FLIGHT SUPPLEMENT / GPH 205

Effective 0901Z 20 November 2008 to 0901Z 15 January 2009

## F10 EMERGENCY

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### TWO WAY COMMUNICATIONS FAILURE

It is impossible to provide regulations and procedures applicable to all possible situations associated with two-way communications failure. During a communications failure when confronted by a situation not covered in the regulations, pilots are expected to exercise good judgement in whatever action they elect to take. The following procedures are the standard communications failure procedures. However, they may be superseded by specific procedures which take precedence. For example, some SID procedures may have specific published communications failure procedures.

**GENERAL:** Unless otherwise authorized by ATC, the pilot-in-command of an aircraft that experiences a two-way communications failure when operating in or cleared to enter controlled airspace under IFR, or is operating in or cleared to enter Class B or C airspace under VFR shall:

1. if transponder equipped-select the transponder to reply to Mode A/3 code 7600 interrogations;
2. maintain a listening watch on appropriate frequencies for control messages or further clearances; acknowledge receipt of any such messages by any means available, including selective use of the normal/standby functions of transponders; and
3. attempt to contact any ATC facility or another aircraft and inform them of the difficulty and request they relay information to the ATC control facility with whom communications are intended.
4. NAV CANADA publishes the phone numbers of area control centres, control towers, flight information centres and flight service stations in the Canada Flight Supplement. In the event of an in-flight radio communications failure, and only after normal communications failure procedures have been followed (see TC AIM, RAC 6.3.2.1), the pilot in command may attempt to contact the appropriate NAV CANADA air traffic services unit by means of a cellular telephone.

### IFR FLIGHT PLAN

1. **Visual Meteorological Conditions:** If the failure occurs in visual meteorological conditions, or if visual meteorological conditions are encountered after the failure, the pilot-in-command shall continue the flight under VFR and land as soon as practicable.

**NOTE:** This procedure applies in any class of airspace. The primary purpose is to preclude extended IFR operation in controlled airspace in visual meteorological conditions. However, it is not intended that the requirement to "land as soon as 'practicable' be construed to mean 'land as soon as possible'". The pilot retains the prerogative of exercising his/her best judgement and is not required to land at an unauthorized airport, at an airport unsuitable for the type of aircraft flown, or to land only minutes short of destination.

2. **Instrument Meteorological Conditions:** If the failure occurs in instrument meteorological conditions, or if the flight cannot be continued under visual meteorological conditions, the pilot-in-command shall continue the flight according to the following:

(a) **Route**

- (i) by the route assigned in the last ATC clearance received and acknowledged; or
- (ii) if being radar vectored, by the direct route from the point of communications failure to the fix, route, or airway specified in the vector clearance; or
- (iii) in the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or
- (iv) in the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan.

(b) **Altitude**

At the HIGHEST of the following altitude or flight levels for the ROUTE SEGMENT BEING FLOWN:

- (i) the altitude(s) or flight level(s) assigned in the last ATC clearance received, and acknowledged; or
- (ii) the minimum IFR altitude (see TC AIM, RAC for definition); or
- (iii) the altitude or flight level ATC has advised may be expected in a further clearance. (The pilot shall commence climb to this altitude/FL at the time or point specified by ATC to expect further clearance/altitude change.)

**TWO WAY COMMUNICATIONS FAILURE (Cont'd)**

Note 1: The intent of the above is that an aircraft which has experienced communications failure will, during any segment of a flight, be flown at an altitude that provides the required obstacle clearance.

Note 2: If the failure occurs while being vectored at a radar vectoring altitude which is lower than a published IFR altitude, then the pilot shall immediately climb to and maintain the appropriate minimum IFR altitude until arrival at the fix, route or airway specified in the clearance.

(c) **Descent for Approach**

Maintain enroute altitude to the navigation facility or the approach fix to be used for the instrument approach procedure selected and commence an appropriate descent procedure at whichever of the following times is the most recent:

- (i) the expected time of arrival (ETA as calculated from take-off time plus the filed or amended (with ATC) estimated time enroute);
- (ii) the estimated time of arrival last notified to and acknowledged by ATC; or
- (iii) the expected approach time (EAT) last received and acknowledged

If failure occurs after receiving and acknowledging a holding instruction, hold as directed and commence an instrument approach at the expected approach time or expected further clearance time, whichever has been issued.

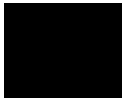
Note 1: If the holding fix is not a fix from which an approach begins, leave the fix at the expected further clearance time if one has been received, or, if none has been received, upon arrival over the clearance limit, and proceed to a fix from which an approach begins. Commence descent and/or approach as close as possible to the estimated time of arrival as calculated from the filed estimated time enroute or as amended with ATC.

Note 2: If cleared for a conventional or RNAV STAR, maintain the appropriate altitude described in paragraph b. "Altitude" and proceed to the final approach fix via:

- (a) the published routing; or
- (b) the published routing to the segment where radar vectors are depicted to commence, then direct to the facility or fix serving the runway advertised on the ATIS or specified in the ATC clearance, for a straight-in approach, if able, or to conduct the full procedure if one is published.
- (c) for a closed RNAV STAR, by flying the arrival as published, including any vertical and/or speed requirements depicted in the procedure, and intercepting the final approach course for a *straight-in approach*; or
- (d) for an open RNAV STAR, by flying the arrival as published, including any vertical and/or speed requirements depicted in the procedure. The pilot is expected to delete the heading leg at the downwind termination waypoint (DTW), to initiate an auto-turn at the DTW to the final approach course fix (FACF) and to intercept the final approach course for a *straight-in approach*.

For flights to the United States, communication failure procedures are essentially the same, but it is the pilots responsibility to consult the appropriate American publications.

Some instrument procedures do not include a procedure turn but include a statement, "RADAR REQUIRED", as part of the procedure. The initial approach segment of these instrument procedures is being provided by ATC radar vectors. Without ATC radar vectoring, the instrument procedure may not have a published initial approach segment.



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### TWO WAY COMMUNICATIONS FAILURE (Cont'd)

Should an aircraft communication failure occur while being vectored on one of these approaches, separately or as part of a STAR, the pilot is expected to comply with the communication failure procedure by selecting the transponder to MODE A/3 CODE 7600 immediately. Pilots should always be aware of the traffic situation, (i.e., ATC may have indicated that your aircraft was number two for an approach to runway 06L), and under these circumstances continue the flight along the route that normally would have been expected under radar vectoring. In some cases, this may necessitate a pilot to "dead reckon" or "DR" a route to the final approach course. It is important to other aircraft and ATC for the communication failed aircraft to continue the flight along a route that would permit the aircraft to conduct a straight-in approach and landing without unexpected manoeuvring. Pilots are expected to exercise good judgment in these cases. Unexpected manoeuvres, such as turns away from the final approach course, may cause traffic disruptions and conflicts.

If the communication failure occurs while being vectored at a radar vectoring altitude which is lower than a published IFR altitude (i.e., Minimum Sector Altitude 25 NM), the pilot shall immediately climb to and maintain the appropriate minimum IFR altitude until arrival at a fix associated with the instrument procedure.

Modern technology has introduced new onboard communications capabilities, such as airborne telephone communications. Pilots who are confronted with an aircraft communications failure may, if circumstances permit, utilize this new onboard technology to establish communications with the appropriate ATC units. NAV CANADA publishes the phone numbers of ACCs, control towers, and FSS units in the *Canada Flight Supplement*.

### NORTH ATLANTIC TRAFFIC

The following procedures are intended to provide general guidance for North Atlantic (NAT) aircraft experiencing a communications failure. These procedures are intended to complement and not supersede state procedures/regulations, as contained in the preceding section under "TWO WAY COMMUNICATIONS FAILURE" (pages F9 to F11). It is not possible to provide guidance for all situations associated with a communications failure.

1. General
  - (a) If so equipped, the pilot of an aircraft experiencing a two-way radio communications failure shall operate the secondary radar transponder on identity (Mode A) Code 7600 and Mode C.
  - (b) The pilot shall also attempt to contact any ATC facility and inform them of the difficulty and request they relay information to the ATC facility with whom communications are intended.
2. Communications Failure Prior To Entering NAT Oceanic Airspace
  - (a) If operating with a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the cleared oceanic entry point, level and speed, and proceed in accordance with the received and acknowledged oceanic clearance. Any level or speed changes required to comply with the oceanic clearance shall be completed within the vicinity of the oceanic entry point. The 'cleared oceanic flight level' is the flight level contained in the oceanic clearance.
  - (b) If operating without a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the first oceanic entry point, level and speed, as contained in the filed flight plan and proceed via the filed flight plan route to landfall. The first oceanic level and speed shall be maintained to landfall.
3. Communications Failure Prior to Exiting NAT Oceanic Airspace
  - (a) If cleared on flight plan route, the pilot shall proceed in accordance with the last received and acknowledged oceanic clearance to the last specified oceanic route point, normally landfall, then continue on the flight plan route. Maintain the last assigned oceanic level and speed to landfall. After passing the last specified oceanic route point, conform with the relevant State procedures/regulations.
  - (b) If cleared on other than flight plan route, the pilot shall proceed in accordance with the last received and acknowledged oceanic clearance, including level and speed, to the last specified oceanic route point, normally landfall. After passing this point, the pilot shall conform with the relevant State procedures and regulations, rejoining the filed flight plan route by proceeding, via published ATS routes where possible, to the next significant point ahead as contained in the filed flight plan.

**INFORMATION SIGNALS**

Fuel Status. Make drinking motion with closed hand, thumb extended toward mouth. Report estimated flying time remaining at present cruise condition, by extending fingers, each finger to indicate ten minutes, a closed hand indicating one hour. (Example: clenched fist followed by three fingers will mean one hour and a half.)

System	Preparatory Signal	Execution Signal
(a) Airbrakes in or out	Biting motion with hand; fingers and thumb meeting and opening alternately.	Nod of head
(b) Flaps up or down	Hand flat - Fingers forward. Downward motion of hand from wrist to lower flaps - reverse motion to raise flaps.	Nod of head
(c) Landing gear up or down	To signal intent to extend or retract the undercarriage, hold a closed hand forward of your head and rotate it in a circular motion in the vertical plane.	Nod of head

Note 1: Preparatory signals will be given at least twice.

Note 2: The execution signal is to be given when aircraft in formation are ready to activate the appropriate system.

Request Tower Permission to Land. Fly aircraft past the tower, if possible alongside the runway parallel to the landing direction at a height of 500 feet (150 metres) - with all available lights flashing, slowly rocking wings until the upwind end of the runway is reached. Climb and turn downwind checking for light or pyrotechnic signals from the tower or mobile control (if available). Exercise extreme caution to avoid other aircraft.

**MILITARY VISUAL SIGNALS****DAY EMERGENCY:**

Attention will first be attracted by rocking the wings of the aircraft laterally.

Bailing Out. One or both clenched fists pulled downwards across the face to simulate pulling the ejection blind.

Desire to Land. Movement of the hand, flat, palm downwards, from above the head towards and downwards, finishing the movement in a simulated round-out. Alternatively, lower the landing gear.

Systems Failures. The HEFOE signals are to be used only when radio contact is not possible. The pilot will clench his fist and hold it to the top of the canopy. After this signal he will show the required number of fingers to indicate which system is malfunctioning.

- (a) Hydraulic - one finger;
- (b) Electrical - two fingers;
- (c) Fuel - three fingers;
- (d) Oxygen - four fingers;
- (e) Engine - five fingers;

The pilot receiving the signal will repeat it to show acknowledgement.

If either the one finger signal is received or the intercepting pilot is unable to understand the signal given, he is to assume that the aircraft in distress has one or more systems inoperative and is to proceed with extreme caution.

Radio Failure. Tap microphone or earphone and signal as appropriate.

THUMBS-UP or THUMBS-DOWN. The signals will indicate satisfaction or dissatisfaction.

**NIGHT EMERGENCY:**

Attention will first be attracted by switching on the landing light(s), or taxi light(s) or by other means of illumination. Because night signals will be difficult to understand only one night signal shall be used:

- (a) Repeated intermittent Flashes with a flashlight. This signal indicates that the aircraft is in distress and wishes to land as soon as possible. The intercepting aircraft should assume that the aircraft in distress has one or more inoperative systems and is to proceed with extreme caution.
- (b) Care should be taken not to dazzle the other pilot with the flashlight.

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## INTERCEPTION OF CIVIL AIRCRAFT

Interceptions are made only where the possibility is considered to exist that an unidentified aircraft may be truly hostile until definitely proven to the contrary. Intercepted aircraft should maintain a steady course and under no circumstances take retaliatory action such as shining a light on an interceptor or attempt evasive action. Retaliatory action on the part of an intercepted aircraft could be construed a hostile intent and might result in drastic consequences.

**Practice interceptions are not carried out on civil aircraft**

## INTERCEPTION SIGNALS

The word "interception" in this context does not include intercept and escort service provided, on request, to an aircraft in distress, in accordance with the ICAO Search and Rescue Manual (Doc. 7333).

An aircraft which is intercepted by another aircraft shall immediately:

- (a) follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals (see following page);
- (b) notify, if possible, the appropriate air traffic services unit;
- (c) attempt to establish radio communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz and repeating this call on the emergency frequency 243.0 MHz, if practicable giving the identify and position of the aircraft and the nature of the flight;
- (d) if equipped with transponder select Mode A Code 7700, unless otherwise instructed by the appropriate air traffic services unit.

If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual or radio signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the instructions given by the intercepting aircraft.

**SIGNALS FOR USE IN THE EVENT OF INTERCEPTION**

SIGNALS INITIATED BY INTERCEPTING AIRCRAFT AND RESPONSES  
BY INTERCEPTED AIRCRAFT

SERIES	INTERCEPTING AIRCRAFT SIGNALS	MEANING	INTERCEPTED AIRCRAFT RESPONDS	MEANING
1	<p><b>DAY</b>-Rocking wings from a position in front and, normally, to the left of intercepted aircraft and, after acknowledgement, a slow level turn, normally to the left, on to the desired heading. Flares dispensed in immediate vicinity.</p> <p><b>NIGHT</b> - Same and, in addition flashing navigational lights at irregular intervals. Flares dispensed in immediate vicinity.</p> <p><b>NOTE 1.</b> Meteorological conditions or terrain may require the intercepting aircraft to take up a position in front and to the right of the intercepted aircraft and to make the subsequent turn to the right.</p> <p><b>NOTE 2.</b> If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock its wings each time it passes the intercepted aircraft.</p>	<p>You have been intercepted Follow me.</p>	<p>AEROPLANES: <b>DAY</b> - Rocking wings and following. <b>NIGHT</b> - Same and, in addition flashing navigational lights at irregular intervals.</p> <p>HELICOPTERS: <b>DAY or NIGHT</b> - Rocking aircraft, flashing navigational lights at irregular intervals and following.</p> <p><b>NOTE</b> - Additional action by intercepted aircraft is prescribed on preceding page in para "INTERCEPTION SIGNALS"</p>	<p>Understood, will comply.</p>
2	<p><b>DAY or NIGHT</b> - An abrupt breakaway manoeuvre from the intercepting aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.</p>	<p>You may proceed.</p>	<p>AEROPLANES: <b>DAY or NIGHT</b> - Rocking wings.</p> <p>HELICOPTERS: <b>DAY or NIGHT</b> - Rocking aircraft.</p>	<p>Understood, will comply.</p>
3	<p><b>DAY</b> - Circling aerodrome, lowering landing gear and overflying runway in direction of landing or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area.</p> <p><b>NIGHT</b> - Same and, in addition, showing steady landing lights.</p>	<p>Land at this aerodrome.</p>	<p>AEROPLANES: <b>DAY</b> -Lowering landing gear, following the intercepting aircraft and, if after overflying the runway landing is considered safe, proceeding to land.</p> <p><b>NIGHT</b>-Same and, in addition showing steady landing lights (if carried).</p> <p>HELICOPTERS: <b>DAY or NIGHT</b> - Following the intercepting aircraft and proceeding to land, showing a steady landing light (if carried).</p>	<p>Understood, will comply.</p>

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## SIGNALS FOR USE IN THE EVENT OF INTERCEPTION (Cont'd)

SIGNALS INITIATED BY INTERCEPTING AIRCRAFT AND RESPONSES  
BY INTERCEPTED AIRCRAFT

SERIES	INTERCEPTING AIRCRAFT SIGNALS	MEANING	INTERCEPTED AIRCRAFT RESPONDS	MEANING
4	<p><b>AEROPLANES:</b></p> <p><b>DAY</b> - Raising landing gear while passing over landing runway at a height exceeding 300m (1000 ft) but not exceeding 600m (2000 ft) above the aerodrome level, and continuing to circle the aerodrome.</p> <p><b>NIGHT</b> - Flashing landing lights while passing over landing runway at a height exceeding 300m (1000 ft) but not exceeding 600m (2000 ft) above the aerodrome level, and continuing to circle the aerodrome. If unable to flash landing lights, flash any other lights available.</p>	Aerodrome you have designated is inadequate	<p><b>DAY or NIGHT</b> - If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear and uses the Series 1 signals prescribed for intercepting aircraft.</p> <p>If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.</p>	<p>Understood Follow me.</p> <p>Understood you may proceed.</p>
5	<p><b>AEROPLANES:</b></p> <p><b>DAY or NIGHT</b> - Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.</p>	Cannot comply.	<b>DAY or NIGHT</b> - Use Series 2 signals prescribed for intercepting aircraft.	Understood.
6	<p><b>AEROPLANES:</b></p> <p><b>DAY or NIGHT</b> - Irregular flashing of all available lights.</p> <p><b>HELICOPTERS:</b></p> <p><b>DAY or NIGHT</b> - Irregular flashing of all available lights.</p>	In distress	<b>DAY or NIGHT</b> - Use Series 2 signals prescribed for intercepting aircraft.	Understood.