



## INTRODUCTION

**T**he safe operation of an aircraft places many demands on the pilot and crew. In order to meet these demands, a crew member requires good mental and physical health. The impairment of physical or mental capability has serious implications for the safety of flight.

Given certain conditions, anyone can become incapacitated. It is essential that pilots know what incapacitation is, how best to avoid it, and how to deal with it.

This discussion will address the following topics:

UNDERSTANDING INCAPACITATION

RECOGNIZING AN INCAPACITATED CREW MEMBER

IMMEDIATE ACTIONS

FOLLOW-UP CONSIDERATIONS

## UNDERSTANDING INCAPACITATION

**I**ncapacitation can occur gradually or suddenly, ranging from mild to very severe. While causes are many, steps can be taken to identify and minimize risk factors.

The most common causes of **sudden** incapacitation are gastrointestinal (stomach and bowel) problems, such as stomach cramps, nausea, vomiting or diarrhea.

Pilots must be careful of the food and drink they consume, particularly in remote areas or where there are poor facilities. Two pilots flying together should **never** eat the same food, and preferably should not eat at the same time.

Heart problems and fainting are the main causes of **serious** incapacitation. Complaints of chest pain (often confused with indigestion), weakness, palpitation or nausea should be taken seriously. Pallor, unusual sweating, repeated yawning or shortness of breath should all trigger suspicion.

**When in doubt, ask.  
Victims often try to ignore  
their problems.**



A pilot may be at increased risk of incapacitation when one or more of the following conditions exist:

- A known medical problem has resulted in a licence restricted to "with or as co-pilot";
- **The individual is:**
  - a smoker, particularly older;
  - obese and in poor physical condition;
  - showing signs of personal stress;
  - smelling of alcohol or with known high intake;
  - using medication of any type;
  - recovering from recent surgery; or
  - complaining of headache or digestive problems.

## RECOGNIZING INCAPACITATION

Incapacitation generally falls into one of two groups:

### 1) *Subtle or Incomplete*

- Skills or judgement may be lost with little or no outward sign.
- The victim may not respond to stimulus, may make illogical decisions, or may appear to be manipulating controls in an ineffective or hazardous manner.

- Failure to respond normally to two consecutive challenges or one significant warning ("You're 100 feet below decision height") should trigger action.
- Symptoms may be evident only in moments of high stress or workload.
- The victim's condition may lead to more dramatic or complete incapacitation.

Subtle incapacitation is most commonly caused by hypoxia, hypoglycemia, extreme fatigue, alcohol, drugs or other toxic substances. Neurological problems, such as stroke or brain tumour, may also be a cause.

### 2) *Obvious or Complete*

- The first indication of illness may be loss of consciousness, seizures, severe pain or paralysis.
- Onset may be sudden.
- The victim may interfere with aircraft controls, by (for example):
  - gripping controls during a seizure;
  - slumping forward on the controls; or
  - behaving in a violent or aggressive manner.
- The victim's condition may deteriorate rapidly. He or she may be in distress.

Heart attack or stroke are the most common causes of complete incapacitation. Warning signs include pallor, sweating, nausea, comment on heartburn, etc. The victim may deny the severity of the problem.

## IMMEDIATE ACTIONS

ANY form of incapacitation is serious. As the actual extent of impairment cannot be determined, *treat all cases as if they were complete incapacitation.*

**Your first responsibility is to ensure the safe operation of the aircraft.**

The stricken pilot may be suffering from a life-threatening illness. Do not let your natural concern for the victim's health interfere with your primary duty - that of safe aircraft operation.

The mnemonic **CHASE** may help organize your actions:

- |            |   |
|------------|---|
| 1) Control | the aircraft                              |
| 2) Help!   | declare an emergency and alert other crew |
| 3) Assess  | the situation                             |
| 4) Secure  | the victim and cockpit                    |
| 5) Explain | your plan to ATC and other crew members   |

### **1** CONTROL THE AIRCRAFT

Take command. ("**I have control.**")

The stricken pilot may interfere with flight controls. **Do whatever is necessary to maintain control of the aircraft.**

If you need to restrain the victim, do only what is needed to deal with an immediate threat to control. You will have time to further secure the victim in step 4.

Climb to and maintain a safe altitude clear of obstacles and traffic.

If you are on an approach which has destabilized, initiate a missed approach, *following standard procedures*. You may not have access to a checklist, so take extra care to accomplish essential tasks.

*Keep your thoughts organized.* Saying your actions out loud may help you to stay focused. If the aircraft is autopilot equipped, engage the autopilot at an operationally safe altitude to lessen your workload.

## 2 HELP!

Declare an emergency as soon as workload permits. Alert other crew that you have a problem.

## 3 ASSESS THE SITUATION

Take time to determine the status of the flight. How much fuel do you have? Is your destination still the best choice, given the situation? Are other airports with better facilities and better weather close by?

## 4 SECURE THE VICTIM AND COCKPIT

If possible, enlist the help of other crew or passengers to prevent the victim from interfering with control of the aircraft. Move the victim's seat to its full aft position, and lock the shoulder harness (if equipped) to prevent the victim from falling forward.

**Once the victim is no longer a direct threat to the flight, give your undivided attention to flying the aircraft. Your responsibility is to safely fly the aircraft to the nearest suitable aerodrome for landing.**

If an assistant has successfully removed the victim from his or her seat, consider the following:

- Which seat do you usually fly from? If you are not in your usual position, weigh the advantages of flying from a familiar seat against the hazards of making a seat change in flight.
- Would it be useful to have an assistant in the unoccupied seat? If another pilot is aboard, he or she may prove valuable, regardless of level of training. Tasks such as ATC communication increase during an emergency.

Strive to return the flight deck to normal operation. The fewer procedural changes required, the greater the likelihood of a safe arrival. The victim's chances of recovery are greatest if you land safely.

## 5 EXPLAIN YOUR PLAN TO ATC AND CREW

When duties permit, advise ATC of the nature of the emergency. The controller will coordinate Emergency Response Services at the aerodrome of your choice, and may suggest alternate destinations with superior emergency services.

Your plan should consider weather and approach aids. **Add an extra margin of safety for your situation**, and any abnormal operating conditions.

Once you have decided on a plan, let ATC know your intentions. Discuss whether you

will shut down on the runway or taxi to another area. While the final decision is yours, ATC may want to reroute other traffic, and may have a helpful suggestion or two. Remember to keep any assistants involved in your plan. By using the help available, your chances of covering all the bases are improved.

You will be under stress, so give yourself the maximum margin for error. If you do not have access to items such as braking or ground steering from your seat, be sure that ATC has this information. Emergency Response Services will be better prepared, and ATC will endeavour to provide maximum runway and overrun area.



### Preparing for the Arrival

Consider the approach and landing, with a view to minimizing your workload. Avoid any option that involves a maximum performance approach, landing or missed approach procedure.

Prepare passengers and crew for the possibility of an emergency landing. If qualified help is available, delegate the preparation task to them and concentrate on operating the aircraft.

Brief for the approach well back, and configure the aircraft as early as possible.

### Approach, Landing and Shutdown

Carry out the approach and landing as discussed with ATC and crew. Do not be distracted by the presence of rescue vehicles. They will accommodate you.

Once the landing is safely completed, either shut down on the runway or taxi to a rescue area as agreed with ATC. Carry out the after-landing checks and, once you reach the rescue area, carry out the proper shutdown checks. *Follow normal procedures*, considering the safety of the ground rescue personnel. Items such as engines, radar, and strobe lights should be confirmed OFF.

Once the aircraft is secured, assist rescuers in their effort to extricate the victim. Ensure that passengers remain seated and deplane **after** the victim is evacuated.

### **A word about you...**

As a pilot trained to handle incapacitation, you have a vital role to play in an emergency. Are you ready? Ask yourself the following questions:

- 1) In an emergency, how would you **use the resources available** to you, such as ATC, passengers, and your crew (if you have one)?
- 2) When was the last time you **briefed for incapacitation**?
- 3) Have you **trained** on how to secure an incapacitated pilot **in this aircraft**?
- 4) **Are you an incapacitation hazard?**

Remember that **anyone** can become incapacitated. Be aware of warning signs that suggest you are at risk. If you don't feel well, say so, and don't go flying until you have received medical advice.

*Comments should be sent to:*

Transport Canada  
Personnel Licensing, AARRB  
Ottawa ON K1A 0N8