

In-flight incapacitation - Flight crew training

Objectives

To train crews to be alert to the possibility of a flight crew member becoming incapacitated in flight.

To train crews to take suitable actions to ensure the safety of the aircraft following the incapacitation of a flight crew member.

Criteria

Initial classroom and subsequent training, using CRM principles, should be given in order that the above objectives are fulfilled.

Simulator training should be undertaken on a recurrent basis to provide the opportunity to experience and practise the operation of the aircraft with the resulting reduced crew complement.

Introduction

The purpose of this text is to provide a general outline regarding basic steps in the training of flight crews to reduce the operational hazards involved in the loss of a member of the flight crew.

Definitions

Incapacitation in the above context is defined as any physiological or psychological condition which adversely affects flight crew performance in flight.

Incapacitation is classified into two categories:

 Obvious (usually maximal loss of function).

 Subtle (usually partial loss of function).

Obvious incapacitation

Obvious incapacitation is frequently sudden, usually prolonged and usually results in a complete loss of operating function. By definition, it is immediately apparent to the remaining flight crew members.

Included in this category is the case where flight crew members are aware of their own significant discomfort or pain. In such an event they should immediately advise the other flight crew members of their condition.

Subtle incapacitation

Subtle incapacitation is frequently partial in nature and often transient (for periods of seconds or minutes). It presents a significant operational hazard because it is difficult for other crew members to detect. The affected flight crew members may look well and be conscious, but with their brain only functioning partially. They may be unaware of, or incapable of assessing the consequence of their condition.

Crew training

Crew training on a recurrent basis is recommended as a method of reducing the operational hazards resulting from flight crew member incapacitation. The training proposed is adaptable to the different operating procedures used by operators.

Furthermore, although it supports and reinforces well-recognised operating philosophies and procedures, it requires only nominal additional flight simulator time and does not require new flight techniques.






Classroom training

Initial classroom training should be given in parallel with initial simulator training. Thereafter, refresher training programmes should review the subject and include discussion of notified cases of flight crew incapacitation.

Past experience and simulated incapacitation studies reveal two prime operational requirements.

The first critical need is to develop a method of recognising subtle incapacitation before the aircraft reaches a critical situation.




This is facilitated by:

-  Strict adherence to standard operating procedures;
-  Routine monitoring and cross-checking of flight instruments and crew actions, particularly during critical phases of flight;
-  The use of challenge and response concept in completion of checks and drills;
-  The use of crew concept of operation, which integrates the functions and actions of a flight crew and requires that each members' action is monitored by another;
-  The use of the "Two Communication Rule".

"Two Communication Rule" means that flight crew members should have a very high degree of suspicion of a subtle incapacitation whenever a flight crew member does not respond appropriately to two verbal communications, or whenever there is no appropriate response to any verbal communication, associated with a significant deviation from a standard flight profile.

It is necessary to stress the importance of a crew's adherence to Standard Operating Procedures and Standard Flight Profiles at all times. It is frequently a procedural deviation that provides the first indication of incapacitation. In such a case a lack of appropriate communication should trigger a high degree of suspicion.

The second operational need is for an organised method of dealing with the incapacitation and loss of a flight crew member's services. All cases of incapacitation create three basic problems and it is essential that they are considered in the following order:

-  Maintain control of the aircraft;
-  Take care of the incapacitated crew member;
-  Re-organise the flight deck work and land the aircraft.

The remaining pilot must first assume command and maintain control of the aircraft. Furthermore the position of essential controls and switches should be checked, and in nearly all cases, use of the autopilot should be made and an emergency be declared. Use of the autopilot and priority of air traffic service are two obvious and effective ways of maintaining a tolerable level of workload.

The second step is to take care of the incapacitated flight crew member. The grounds for this are not entirely humanitarian; if left unattended an incapacitated pilot can become a major problem and in any case is a major distraction to the remaining crew. Thus the incapacitated pilot must be moved out of the range of flight controls. In all cases, the advisability of removing a pilot (perhaps unconscious) from the seat must be dictated by consideration of the phase of the flight, the crew available, and the contours of the flight deck.

Note: Consideration of the restraint and care of an incapacitated pilot dictates that cabin attendants are at least familiar with the operation of harness and seat controls

Finally, and after the incapacitated flight crew member has been taken care of, the remaining flight crew should re-organise the cockpit work and prepare for landing. Details will depend on many variables including such considerations as the type of aircraft being flown, phase of flight, en route and terminal weather, and many others.

Simulator training

Simulator training should be given following the initial classroom introduction and thereafter during refresher training programmes.

As a guideline, the following procedure may be adopted. In the simulator, the captain or co-pilot could be discretely briefed to cease functioning at a particular point in the flight, e.g. when passing the outer marker, after calling for landing gear up, and so on. Incapacitation training should not be used in formal assessment of performance. It is therefore preferable that incapacitation is dealt with during refresher training.

Summary

All operators should have a training programme dealing with incapacitation. The above guidelines constitute a basis for such a programme, which can be modified in the light of local philosophies and conditions. Primarily, the training is directed to raising crews' awareness to the possibility of incapacitation.

Secondly, it stresses the need to apply standard operating procedures so as to show up any abnormality in a flight crew member's performance. Any suspicion of a colleague's condition must be immediately questioned and in the case of any doubt incapacitation should be considered.