



# EMERGENCY MANAGEMENT FOR AERODROME CONTROLLER

## 1. Introduction

**ASSIST** is a simple set of acronyms which may make it easier for controllers to remember the immediate actions, or sequence of actions, to be followed on initial notification in the event of an unusual/emergency situation:

- **A**cknowledge the call. Make sure you understand the nature of the emergency.
- **S**eparate the aircraft from other traffic. Give it room to manoeuvre. Do not forget to maintain separation all the time.
- **S**ilence on your control frequency if necessary. Do not disturb urgent cockpit actions by unnecessary radio transmissions.
- **I**nterrogate those who need to know and those who can help; inform others as appropriate
- **S**upport the pilots in any way possible - Start to think of alternative routings, etc.
- **T**ime - Give the pilots time to collect their thoughts, do not harass them for information. Time produces good decisions

Many organizations successfully adopted the **ASSIST** principle pioneered by the Deutsche Flugsicherung GmbH (DFS) entrusted with controlling the air traffic in Germany

Pay attention during emergencies, the controller shall maintain necessary communication with the flight crew if possible and of course, in function of the situation.

The air traffic controller shall avoid frequency change if he can continue to manage the traffic even outside of his responsibility area. Radar contact shall be maintained during the emergency activation period.

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## 2. Emergency declared on runway

### 2.1. Brake problem or poor braking

Situation:

- Poor braking can be due to contamination of the runway or due to technical problems
- Pilots can request the longest runway.

The controller shall anticipate the following consequences:

- High level of stress and increased workload - caused by directional control and deceleration problems resulting from brake failure during landing, or during high speed rejected take off (RTO)
- Flight crew might be not aware of fire, tyre burst or deflation that could result from heavy braking upon landing, RTO
- Aircraft can overshoot runway threshold at far end
- Aircraft tyres can burn (fire) or deflate
- Aircraft can lose directional control
- Aircraft swerving off of the runway
- Collision with nearby traffic or object close to the runway
- Runway(s) can be blocked after landing
- Taxiway(s) can be blocked after landing
- ILS unserviceable (not applicable for IVAO)

The actions for the controller shall be:

- Follow ASSIST procedure
- Free the landing runway and all the holding points if possible.
- When the aircraft is on final, do not allow poor positioning for the approach, carefully monitor alignment, height, speed and distance to touchdown
- If a brake problem was discovered prior to landing, ATC shall inform the pilot about:
  - the longest runway available
  - the widest runway available
  - possibility to execute holding procedures to burn fuel in order to lower aircraft landing weight;
  - possibility to divert to alternate aerodrome if any condition such as poor braking action, runway contamination or adverse weather is present at the destination aerodrome, or if any other conditions exist that could result in higher ground speed on touchdown or are unfavourable for taxiing;

<b>A</b>	Acknowledge the emergency; inform the flight crew if fire/smoke is observed (not applicable for IVAO)
<b>S</b>	Separate the aircraft and if necessary prioritize it for landing, keep the active runway clear of departures & arrivals
<b>S</b>	Silence the non-urgent calls (as required); use a separate frequency if possible (not applicable for IVAO)
<b>I</b>	Inform the airport emergency fire rescue services and inform the adjacent ATC units if the aircraft is approaching or is near to their areas of responsibility
<b>S</b>	Support the flight by providing any information requested and necessary such as type of approach, runway length and aerodrome details
<b>T</b>	Provide time for the flight crew to assess the situation; do not press them with non-urgent matters.

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## 2.2. Bird strike

Birds, which are flying around airfield, are dangerous for aircraft and can be the cause of many situations:

- Bird impact can break the windshield or canopy, creating loss of visibility from the flight deck or windshield penetration
- Birds may get into a jet engine and cause single or multi engine failure
- Aircraft hydraulics may get damaged and may bring about loss of control

According to real studies on bird strike incidents, in 40% the impact was on the aircraft engines. Another large portion of impacts are spread out over the aircraft nose, radome and flight deck windscreen.

The controller shall anticipate the following consequences during take-off:

- Flight crew can decide to abort take-off
- Flight crew can decide an immediate return to the aerodrome or next suitable aerodrome
- Flight crew can have restricted visibility if canopy is damaged.
- Landing gear can be damaged

The actions for the controller shall be:

- Follow the ASSIST procedure
- Ask the pilot if he is able to control the aircraft
- Allow long final if requested.
- Free the runway if it is required by the emergency
- Inform about alternate aerodrome details as soon as possible including runway characteristics and navigation information.

<b>A</b>	Acknowledge the bird strike, ask for the crew's intentions when the situation permits, minimize frequency changes, and establish whether the crew is able to control the aircraft
<b>S</b>	Separate the aircraft from other traffic, prioritize it for landing and keep the active runway clear of departures & arrivals
<b>S</b>	Silence the non-urgent calls (as required) and use a separate frequency if possible (not applicable for IVAO)
<b>I</b>	Inform the airport emergency services and inform the adjacent ATC units
<b>S</b>	Support the flight experiencing the consequences of the bird strike with any information requested and deemed necessary (e.g. type of approach, runway length and aerodrome details, etc.)
<b>T</b>	Provide time for the crew to assess the situation; do not press them with non-urgent matters.

## 2.3. Rejected take-off

Situation:

- Aircraft can abort take-off during rolling before  $V_1$

In the event of an engine malfunction, flight crew should be able to safely reject the take off if the decision to do so is made at a speed not greater than the correctly calculated decision speed ( $V_1$ ). After  $V_1$ , a reject should only be considered if there is a strong reason to believe that the aircraft will not fly.

The controller shall anticipate the following consequences:

- Aircraft can overshoot the runway threshold at the far end
- Aircraft tires can burst
- Runway can be blocked after landing
- Go-around for approaching aircraft
- Passenger evacuation (not applicable for IVAO)
- Directional control is not maintained during the roll

The actions for the controller shall be:

- Delay the taking-off and landing on that runway

## 3. Emergency declared near the runway

### 3.1. Engine or APU on fire

Situation:

- Fire is the first enemy on board. Engines when facing failure can create fire.
- A bird strike can create fire inside the engines
- When fire is detected, aircraft shall land as soon as possible on a suitable aerodrome.

Fire in the air is one of the most hazardous situations that a flight crew can be faced with. A fire can lead to the catastrophic loss of that aircraft within a very short period of time.

The controller shall anticipate the following consequences:

- Flight crew are facing maximum stress in the cockpit and heavy workload.
- Flight crew can use fire extinguishers
- Aircraft engine(s) can shut down as a first consequence
- Hot brakes if a rejected take-off has been performed
- Runway can be blocked after landing or rejected take-off
- Aircraft could lose altitude in order to re-gain performance
- Aircraft speed should decrease
- Flight crew can ask to land on the next suitable aerodrome or return to the departure aerodrome after take-off

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The actions for the controller shall be:

- Follow the ASSIST procedure
- Ask if there are dangerous goods on board, the number of persons on board
- Coordinate with the landing aerodrome controller if connected
- Clear the runway when the aircraft is 20NM final
- In case of an emergency landing, record last known position and time.

The controller shall inform all pilots about:

- The closest and suitable aerodrome considering aircraft situation
- Selected landing aerodrome details as soon as possible including runway in use, length, elevation
- Weather information of landing aerodrome including wind, visibility, ceiling and QNH

In addition, the action for the controller shall be for private pilots:

- Check the fuel selector
- Check mixture
- Check fuel pump
- Check cabin heating and venting

<b>A</b>	Acknowledge and ensure that the fire emergency is well-understood
<b>S</b>	Establish and maintain separation from other traffic and terrain
<b>S</b>	Impose silence on your control frequency, if necessary; and do not delay or disturb urgent cockpit action by unnecessary transmissions
<b>I</b>	Inform the adjacent ATC units if the aircraft is approaching or is near to their areas of responsibility;
<b>S</b>	Provide maximum support to the flight crew
<b>T</b>	Allow the flight crew sufficient time to manage the emergency

## 3.2. Landing gear problem

There are several possible situations:

- Gear cannot be extended or gear is partially extended
- Gear is extended but gear indication on cockpit panel is wrong
- No retraction of the gear is possible after take-off
- Gear collapse with subsequent airframe damage.

Commercial airliners use complex retractable landing gears. The inboard system provides light indication regarding the status of the landing gear: a green light when the landing gear is down and locked and a red light when there is a discrepancy between the gear lever and landing gear positions. The unsafe indication might be the first sign of a problem related to the proper preparation of the landing gear for landing.

The controller shall anticipate the following consequences:

- Pilot in command can decide to go-around if the gear indication on cockpit is wrong
- Pilot can request a low pass for visual gear inspection by the tower
- Pilot can perform manual gear extension
- Pilot can decide asking alternate airfield, land on departure airfield or continue to destination when no gear retraction is possible

The actions for the controller shall be:

- Prepare for a low pass
- Clear the runway
- Ask the flight crew if they want to continue to fly with permanently extended gear or not

<b>A</b>	Acknowledge the gear problem, ask for the crew's intentions when the situation permits, and establish whether the crew is able to extend the gear into locked position
<b>S</b>	Separate the aircraft from other traffic, prioritize it for landing and keep the active runway clear of departures & arrivals
<b>S</b>	Silence the non-urgent calls (as required) and use a separate frequency if possible (not applicable for IVAO)
<b>I</b>	Inform the airport emergency services and inform the adjacent ATC units if the aircraft is approaching or is near to their areas of responsibility;
<b>S</b>	Support the flight experiencing gear problems with any information requested and deemed necessary
<b>T</b>	Provide time for the crew to assess the situation. Do not press them with non-urgent matters.

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