



Civil Aviation Authority
SAFETY NOTICE
Number: SN-2014/002



Issued: 31 January 2014

Unstable Approaches – ATC Involvement

This Safety Notice contains recommendations regarding operational safety.

Recipients must ensure that this Notice is copied to all members of their staff who need to take appropriate action or who may have an interest in the information (including any 'in-house' or contracted maintenance organisations and relevant outside contractors).

Applicability:	
Aerodromes:	All Aerodrome Licence Holders
Air Traffic:	All ATC
Airspace:	Not Primarily Affected
Airworthiness:	Not Primarily Affected
Flight Operations:	Not Primarily Affected
Licensed/Unlicensed Personnel:	Flight Crew

1 Introduction

- 1.1 This Safety Notice supersedes SN-2013/004 (issued 31 January 2013) of the same title which has now expired. It is re-issued in its entirety with a new SN reference number as the content remains valid pending its incorporation into CAP 493 Manual of Air Traffic Services Part 1. Cross references to CAP 493 contained within this SN at paragraph 3.3 have also been updated.
- 1.2 The CAA Safety Plan 2011 to 2013 (www.caa.co.uk/safetyplan), developed in partnership with industry, is a key mechanism to support the CAA's safety strategy and drive improved safety performance. One particular area where the CAA and industry partners are working together closely is that of runway excursion.
- 1.3 The key factors in avoiding a runway over-run or excursion were found to be landing within the touchdown zone in the correct configuration and at the correct speed, and if this could not be ensured then flying a go-around. Other factors that increased the risk included provision of incomplete runway contamination data to pilots, failure to provide compliant runway surface friction characteristics and inadequacy of safety areas surrounding the runway. Of particular interest to ANSPs are safety improvement activities to mitigate the risk of runway excursion by **reducing unstable/de-stabilised approaches**.
- 1.4 Within the CAA Safety Plan the specific action to achieve the desired safety outcome is:

'The CAA, in partnership with industry, to review air traffic control (ATC) procedures and improve ATC Officer (ATCO) training, to minimise the likelihood of ATC contributing to unstable approaches.'

2 Compliance/Action to be taken

- 2.1 All ANSPs providing aerodrome and approach control services are required to ensure that their staff are aware of the safety issues linked to unstable approaches and, as appropriate, bring to their attention the technical documents on the subject listed in paragraph 3.

3 Current Regulatory Requirements

- 3.1 Modern turbo-jet and turbo-prop aircraft are designed to have highly efficient low drag aerodynamic characteristics. This helps reduce fuel consumption but does result in such aircraft needing longer distances for descent and deceleration. Aircraft in flight, particularly large aircraft, possess a great deal of energy that must be dissipated appropriately during descent, landing and rollout. Aircraft must meet certain criteria on approach to be able to land safely, and managing an aircraft during the descent and approach phases essentially becomes a task of energy management. Landing long or landing at excessive speeds can result in an over-run and excessive sink rates or failure to capture the correct vertical profile can contribute to hard landings or Controlled Flight into Terrain (CFIT). In a de-stabilised approach, the rapidly changing and abnormal condition of the aircraft may lead to loss of control.
- 3.2 For each performance criterion, such as speed or rate of descent, aircraft must be within a tolerable 'window' in order for it to be classified as 'stabilised' and continue to land. These criteria are assessed as 'gates' which tend to be established depending on individual airline Standard Operating Procedures (SOPs) and flight conditions. Typically operators require the aircraft to be established on the glide path in the landing configuration at the correct speed at a specified height between 1,500 ft and 500 ft above ground level (agl).
- 3.3 CAP 493 Manual of Air Traffic Services (MATS) Part 1 (www.caa.co.uk/CAP493) has existing provisions relating to 'unstabilised or rushed approaches'; these are found in Section 1, Chapter 13 Speed Control, and in Section 3, Chapter 2 Approach Radar where further guidance can be found on stabilised approaches and their relationship to closing headings and Continuous Descent Approaches.
- 3.4 Inappropriate Air Traffic Control (ATC) actions can contribute to a stable approach becoming unstable due to the following:
- Distance (Time) provision where insufficient track miles are provided for the flight crew to achieve the correct vertical profile and/or aircraft energy during descent;
 - Changes of runway can increase flight deck workload and can significantly affect track mileage to touchdown and may not allow sufficient time for the crew to re-plan the approach;
 - Changes in the type of approach particularly from precision to non-precision can affect the planned descent profile. Typically a non-precision approach requires the aircraft to be stabilised in the landing configuration by the final approach fix. It also requires more preparation and planning by the crew;
 - Inappropriate vectoring that does not allow the correct descent profile to be flown in relation to the Instrument Landing System (ILS), and vectoring which causes the aircraft to intercept the glide path before the localiser. Most aircraft will not lock into the glidepath in this condition, causing the aircraft to 'fly through' the glide path;
 - Incorrect track distance to touchdown resulting in flight crew being unable to calculate their descent and speed profile;
 - Inappropriate use of speed control which adversely affects the crew's capability to manage the aircraft's energy and its descent profile.