DESCENT BELOW THE GLIDESLOPE

Recently, several serious incidents have been reported to UK NATS that have occurred when aircraft on final approach have descended significantly below the glide-path. UK AAIB is investigating these incidents, the most recent of which has attracted the attention of the media. None of these incidents were in any way attributable to NATS; however, we are working to identify methods of assisting in the detection and resolution of this type of event. Brief summaries of two of the incidents are outlined below:

Incident 1:

An A310 was being vectored for an ILS Localiser/DME approach (the glide-path was not available). The aircraft had been turned onto a base leg heading and instructed to descend to 2000 FT QNH. The pilot was then given a closing heading to establish on the localiser. After reporting established on the localiser at 10 NM, the aircraft was released for descent with the procedure and transferred to the Tower frequency. Almost immediately following transfer to Tower, the Radar 2 controller noticed that the aircraft had begun to make a left turn, deviating from the final approach track. Radar 2 then contacted Tower to confirm the aircraft's intentions. The pilot reported "affirm, we're turning to the right" but by the time the aircraft reached an 8NM final, the Radar 2 controller recognised that the aircraft was now descending rapidly and, again, alerted the Tower controller, who instructed the aircraft to climb immediately. The lowest altitude observed on radar was 600 FT (approx 2-300 ft AGL) approximately 7 miles from touchdown. The Radar controller then directed the aircraft for a further approach from which the aircraft made a safe landing.

Incident 2:

A B747 was being vectored for an ILS approach and reported established on the localiser at 15 NM, maintaining 4000 FT QNH. The pilot was given clearance to descend further on the ILS, and descent commenced when the aircraft was at 13 NM. Shortly after commencing descent the pilot asked "do you have a problem with the glideslope?" - although the only clearly readable part of this transmission was the callsign and "glideslope". As the aircraft approached 9 NM, the controller realised that it was now indicating Mode C 1800 FT and descending. The controller immediately instructed the pilot to climb to 2000 FT, although the aircraft actually descended further to 1300 FT before levelling out and then commencing climb. Investigation has shown that the aircraft was descending at a rate of 2500 fpm.

Both of these serious incidents were resolved through the prompt action of the controllers on duty, following early recognition that the aircraft were dangerously positioned. The controllers involved should be commended for their swift action in resolving the situation. Work is ongoing to enable better understanding of the full extent and nature of this incident type. In the meantime, controllers should be aware of the potential for this type of event and be prepared to take immediate action should an aircraft be seen to be dangerously positioned, particularly when on final approach.

NATS have in this context issued the following message:

"NATS KEY MESSAGE

- Controllers are reminded to ensure that standard phraseology is used when clearing aircraft to descend for final approach.
- These incidents are not caused by ATC error, but ATC can be very effective in preventing a serious incident from becoming a fatal accident by taking prompt action when it is recognised that an aircraft is dangerously positioned on final approach.
- If such an occurrence happens on final approach, consider issuing climb instructions immediately, before clarifying intentions or pressure setting.
- If such an occurrence is noticed by the Tower controller, be prepared to issue immediate missed approach instructions.
- If such an occurrence is noticed by the Radar controller, following transfer of the aircraft to the Tower frequency, alert the Tower immediately.
- File a safety report. We can only do something about these incidents if we know about them."

PROVISIONS IN ICAO PANS-ATM (DOC 4444) RELEVANT TO THIS TYPE OF INCIDENT, INCLUDE THE FOLLOWING:

8.9.3.6 Aircraft vectored for final approach should be given a heading or a series of headings calculated to close with the final approach track. The final vector shall enable the aircraft to be established in level flight on the final approach track prior to intercepting the specified or nominal glide path if an MLS, ILS or radar approach is to be made, and should provide an intercept angle with the final approach track of 45 degrees or less.

15.7.4.2 In the event an MSAW is generated in respect of a controlled flight, the following action shall be taken without delay:

a) if the aircraft is being provided with radar vectors, the aircraft shall be instructed to climb immediately to the applicable safe level and, if necessary to avoid terrain, be given a new radar heading;

b) in other cases, the flight crew shall immediately be advised that a minimum safe altitude warning has been generated and be instructed to check the level of the aircraft.