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**AIR NAVIGATION SERVICES
GENERAL
CONDUCT OF VISUAL APPROACHES AT NIGHT**

This AIC replaces AIC 40.5 dated 13-11-2014

1. BACKGROUND

- 1.1 There have been several accidents worldwide where pilots conducting visual approaches at night, even with the aerodrome in sight, have crashed into terrain. This AIC provides information for pilots when considering the use of visual approaches at night.
- 1.2 The International Civil Aviation Organization (ICAO), in the Procedures for Air Navigation, Air Traffic Management (Doc 4444, PANS-ATM) defines a Visual Approach as an approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed in visual reference to terrain.
- 1.3 The Namibian AIP as a reference for pilots, and the corresponding Air Traffic Control (ATC) documents, authorise the conduct of a visual approach, when conditions permit, from 25NM from the aerodrome.
- 1.4 ICAO and ATC documents specify that in conducting a visual approach, the pilot must maintain visual reference to terrain.

2. DISCUSSION

- 2.1 In accordance with ICAO standards, when conducting a visual approach, pilots are required to maintain visual reference to terrain. When conducting a visual approach at night, it is often difficult to meet this requirement, even if a pilot has the aerodrome in sight.
- 2.2 According to the Flight Safety Foundation, 30% of approach-and-landing accidents occur during the conduct of visual approaches or during the visual segment of an instrument approach.
- 2.3 During a visual approach at night, fewer visual references are usable, and visual illusions and spatial disorientation occur more frequently. Visual illusions, such as the 'black hole effect',

affect the flight crew's vertical and horizontal situational awareness, particularly on base leg, and when turning final.

- 2.4 The black hole effect typically occurs during a visual approach conducted on a moonless or overcast night, over water or over dark, featureless terrain where the only visual stimulus are lights on or near the airport. The absence of visual references in the pilot's near vision affects depth perception and causes the illusion that the airport is closer than it actually is, and thus the aircraft is too high. The pilot may respond to this illusion by conducting an approach below the correct flight path – i.e., a low approach.
- 2.5 When requesting or accepting a visual approach, the flight crew should always be aware of the surrounding terrain and man-made obstacles. At night, for example, with an unlighted hillside between a lighted area and the runway, the flight crew may not see the rising terrain.
- 2.6 At night, whenever an instrument approach is available (particularly an instrument landing system (ILS) approach), the instrument approach should be preferred to a visual approach.
- 2.7 In addition, where an ATC radar service is available, radar vectoring to an instrument approach should be preferred to a visual approach.
- 2.8 The following should be discussed and understood for safe visual approaches, particularly at night:
 - a. Weighing the time saved against the risk;
 - b. Awareness of all weather factors;
 - c. Awareness of surrounding terrain and obstacles;
 - d. Awareness of airport environment, airport and runway hazards;
 - e. Ensuring stabilised approach parameters of an instrument approach are attained and maintained during the visual approach i.e. fully stabilised by the final approach fix or by 1000 feet above aerodrome elevation;
 - f. Adherence to defined Pilot Flying (PF)/Pilot Not Flying (PNF) task sharing for acquisition of visual references and for flying the visual segment. This includes:
 - i. Monitoring by PF of outside visual cues (including PAPI where available) while transiently referring to instruments to support and monitor the flight path during the visual segment; and
 - ii. Monitoring by PNF of head-down cues for effective cross-check and back-up (i.e., for calling any excessive-parameter-deviation).
 - g. Some nights and some terrain are darker than others. Excellent visibility conditions can still result in no visible horizon or contrast between sky and ground.

3. CONCLUSION

- 3.1 In summary, always know where the aircraft is in relation to terrain, and know how high you need to fly to avoid unseen terrain and obstacles. Remain aware of illusions that can lead to spatial disorientation— they can affect anyone. Know how to avoid and recover from illusions by relying on instrument flight. Finally, in preference to flying a visual approach at night, choose an instrument approach procedure, and where ATC radar is available, ask for radar vectors to final.