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### ICAO Obstacle Clearance Panel (OCP) action on Air Navigation Commission (ANC) instructions

In direct consequence of the initial recommendations of the controlled flight into terrain (CFIT) Task Force, released in November 1994, the ANC, 9 March 1995, instructed the OCP to consider the design and presentation of all types of non-precision instrument approach procedures, in particular the need: to take into account the stabilized approach technique and to provide a defined vertical profile to be flown; for a minimum 5 per cent gradient (3° glide path); and for a final approach fix. The ANC also stressed the urgent need for GNSS non-precision instrument approach procedures.

The 11th meeting of the OCP, 17 to 27 March 1997, has provided recommendations for the amendment of *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168), Volumes I and II, on these and other items closely related to the programme for the prevention of CFIT. The next amendment scheduled for PANS-OPS is in 1999, however the flight safety aspect and the urgency for GNSS procedures are such that an amendment to PANS-OPS will be sought for 1998. This is a major step in the ICAO process, however, there are several more steps before the material can appear in print in PANS-OPS. The OCP/11 recommendations will be given an initial review by the ANC in June 1997. Amendment proposals have to be sent to States for comment (August 1997). These comments are provided to the ANC with a final review of the proposals (January 1998). If agreed by the ANC at that stage they are sent to Council with a recommendation for approval as amendments to PANS-OPS (March 1998). A summary of the recommendations of OCP/11, which relate to the programme for the prevention of CFIT is provided below.

### ICAO Council adoption of amendments to Annexes 11, 14 and 15

The Council has recently adopted amendments to three ICAO annexes: Amendment 37 to Annex 11 - Air Traffic Services; Amendment 2 to Annex 14 - Aerodromes, Volume I - Aerodrome Design and Operation; and Amendment 29 to Annex 15 - Aeronautical Information Services concerned with the introduction of the World Geodetic System - 1984 (WGS-84), and the accuracy, quality and integrity of aeronautical data bases. Almost all of these amendments become applicable 6 November 1997. Related amendments to Annex 4 - Aeronautical Charts, have been given their final review by the ANC but will await further amendment proposals for Annex 4, including those concerning terrain presentation on charts, which are being processed. The combined amendments should be sent to Council for adoption, as Amendment 51 to Annex 4, in early 1998. The applicability date for Amendment 51 will be 5 November 1998.

## **RECOMMENDATIONS OF THE OCP/11 MEETING - MARCH 1997**

### **Descent gradient for non-precision approach procedures**

The minimum descent gradient in the final approach segment for a procedure with a final approach fix (FAF) is 4.3 per cent (equivalent to a 2.5° glide path angle). This is new with the intent to eliminate shallow approaches, whilst leaving the designer some flexibility.

The optimum descent gradient in the final approach segment for a procedure with FAF is 5 per cent (equivalent to a 3° glide path angle). The existing material states “the optimum ... should not exceed ...”, this has been restated as “the optimum... is...”.

The existing maximum, where a steeper descent gradient is necessary, is retained, 6.5 per cent (equivalent to a 3.8° glide path angle).

Maximum and minimum rates of descent are proposed for the use of the procedure designer, in establishing the procedure, where there is no FAF. The intent again is to eliminate shallow approaches.

### **Descent gradient for precision approach procedures**

A statement is proposed that any precision approach with a glide path greater than 3.5° is non-standard and is highly undesirable. Specific material on procedure design and operational considerations, including certification of the aeroplane, was included.

### **Length of the final approach segment**

Existing material specifies the maximum distance from the FAF to the threshold is 19 km (10 NM). The proposal is to change this to “the maximum length should not normally be greater than 19 km (10 NM)”. This again gives the procedure designer greater flexibility.

### **Stabilized approach**

Material is proposed to introduce the stabilized approach technique for non-precision approaches with a clear statement that aircraft are not permitted to go below the MDA/H unless able to continue to landing.

### **Alignment of the final approach segment, non-precision straight-in approach**

Current material on the straight-in approach and was considered to be in need of revision. It states that the angle between the final approach track and the runway centre line, for an approach to be considered a straight-in approach, shall not exceed 30°, and the distance between the point of intersection of the approach track and the runway centre line shall not be less than 900 m.

The proposals include a maximum angle of 30° for Cat A and B aircraft, with a maximum of 15° for all other aircraft. The minimum distance from the intersection to the threshold should be 1 400 m. Minimum OCHs for angles above 5°, up to the maximum, are proposed. These minimum OCHs are intended to ensure that the OCH is reached sufficiently prior to the intersection with the runway centre line to complete the alignment turn without overshooting the centre line. This would in fact generally increase the OCH applicable. Any approach procedure outside the proposed angles would be a circling approach, with the appropriate further increase in minima.

There are further proposals in relation to ILS with no glide path and localizer (LLZ) only approaches, to remove the ambiguity between ILS with no glide path available approach procedures and LLZ only approach procedures.

### **Altitude corrections for temperatures below ISA**

More accurate tables were proposed for the correction of published altitudes in temperature conditions below ISA. Further work is intended on altitude corrections for temperature, pressure and wind, which will necessarily include clarification of what is to be considered mountainous terrain. Results of further work will be presented to OPC/12 in 1999.

### **Use of vertical navigation (VNAV) in non-precision approaches**

The use of VNAV, as a means of controlling the final descent on an approach, has been recommended as a subject for future study by the OCP.

**Non-precision approach procedures based on the global navigation satellite system (GNSS)**

The use of GNSS is considered another application of area navigation (RNAV) and much concerned with the introduction of the required navigation performance (RNP) concept. Because of the urgency put on the requirement for GNSS based non-precision approach procedures by the ANC the OCP have proposed material to support the design of RNAV approach procedures based on the use of GNSS.

The State letters giving notice of the amendments to Annexes 11, 14 and 15, concerned with the introduction of WGS-84, and the quality of aeronautical data bases, will be circulated this month. I will provide copies of these letters to CFIT Steering Committee members for information. A result of the adoption of these amendments is that some accuracy figures in the recently published ICAO manual, *Manual of the World Geodetic System 1984 (WGS-84)* (Doc 9674), will have to be amended. I will provide copies of this manual and of an ICAO circular, *Guidelines for the Introduction and Operational Use of GNSS* (Circular 267), which will be available this month, in response to requests.

I will keep you informed on progress with the OCP/11 recommendations. I would remind you that there is still a long way to go in the process. The changes to PANS-OPS will not have been achieved until the amendments are approved by the ICAO Council.

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Richard T. Slatter