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Agenda Item: B.4.1.6 **INFORMATION PAPER** **WP No: 80**
IFATCA'25

International Civil Aviation Organization (ICAO) Flight Operations Panel (FLTOPSP)

Presented by
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SUMMARY

This Information Paper presents a report about the activities caried by the ICAO Flight Operations Panel (FLTOPSP) in 2023 after the Montego Bay (Jamaica) 62nd IFATCA Conference.

1. INTRODUCTION

1.1. ICAO's work on updating Annexes, PANSs, Manuals, Circulars and Docs or on the development of new ones is provided through the Air Navigation Commission (ANC) which forwards Job Cards (JCs) to the several Panels that were established for this purpose.

1.2. IFATCA has its own representative in many of these Panels and their Working Groups and Sub-Groups.

1.3. The Flight Operations Panel (FLTOPSP) is mainly focused on keeping Annex 6 and Doc 8168 (PANS-OPS) up to date with all relevant new developments and to provide advice to other Panels about flight operations and aircraft management. This work is being carried with the support of other Sub-Groups of experts.

1.4. After the 63rd IFATCA 2024 Conference, there have been two meetings, one in Washington DC (USA) on May 28th to 31st, which I missed even though being able to provide feedback and collect documents, and one in Montréal on January 20th to 24th 2025 which I attended regularly.

1.5. The following is the list of the items discussed during the 2024-2025 FLTOPSP meetings:

- Code 7500
- Cold temperature correction (CTC)
- Frequency spectrum and radio altimeters
- Runway Safety On-board Technology Implementation (RSOTI)
- All-Weather Operations (AWO) related tasks
- Re-structuring and rewrite of PANS-OPS Vol III
- Use of the terminology "authorization", "approval" and "acceptance"
- Volcanic Ash operational considerations

- Helicopter operation related tasks
- Ramp inspections
- Alignment of Annex 6, Parts I and III
- Commercial Air transport Airship
- Single pilot operations and eMCO
- Runway incursion
- Non-EDTO Operations
- PBN Operations
- Competency-Based Training and Assessment (CBTA) implementation for all licences
- Automation dependency
- Disabled aircraft removal
- LED lights
- Runway starter extension
- Language proficiency
- Accident and incident reporting
- Dangerous goods
- Procedure design gradient
- PBN Manual (Doc 9613)
- Performance-based Aerodrome Operating Minima (PBAOM)
- Update the Manual on the Implementation of the Security Provisions for Annex 6 (Doc 9811)
- Ramp Inspections
- Use of electronic certificates and other documents
- Restructure and review of PANS-OPS, Volume III
- Review and revision of the Manual of All-Weather Operations (MAWO) to advance helicopter specific guidance
- Development of Annex 6 Part III Provisions for Additional/Technical Crew Member
- Development of helicopter specific safety risk management
- Areas of authorized operations
- Improving helicopter safety and security job card
- Global Aeronautical Distress and Safety System (GADSS)

1.6. This document will report about ATM-affecting topics only. All other material has been reported to the EB and may be consulted upon request.

1.7. All the pictures hereby shown are abstract from the FLTOPSP WPs and do just represent proposals of amendment to existing regulations. Unless specifically stated, they do not represent actual operational and/or authorized procedures.

2. DISCUSSION

2.1. Code 7500

2.1.1. A WP was presented by the Secretary of ATMOPSP regarding controller-pilot interaction in the event of an aircraft squawking, or believe squawking, mode A code 7500. Then another WP was presented providing additional information on a false alarm event and follow up actions taken at national level.

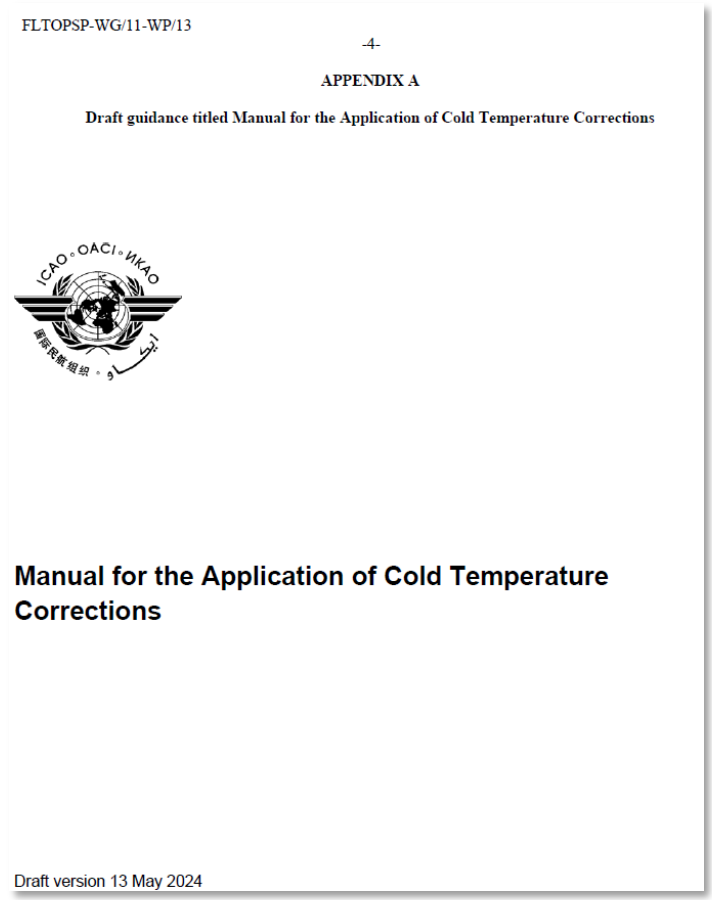
2.1.2. FLTOPSP agreed on the importance to come back to basic, and the importance for all stakeholders to reply (ATC, pilots) and recall the importance of human factors. Considering that it is a security issue, communication should be as efficient and minimalist as possible.

2.1.3. The WP itself discussed the need for effective mitigating measures, including clarification of “PANS-OPS Volume III (Doc 8168) to encourage pilots to use the ICAO standardized phraseology and also support pilots to pay careful attention, especially when setting codes around 7500 or 7700.”

2.2. Cold temperature correction (CTC)

2.2.1. The WP presented by the CTC WG is the draft guidance material 'Manual for the application of CTC', complementing the proposal for amendment to Annex 4, PANS-ATM and PANS-OPS Volume III. The FLTOPSP identified some possible improvement of the guidance material to further clarify pilot and ATC responsibility in case an aircraft is vectored by a controller.

2.2.2. The FLTOPSP recommends extending CTC-WG consultation to the IFPP in order to possibly include some of their proposal in the future guidance material ('Manual for the application of CTC').



FLTOPSP-WG/11-WP/13

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APPENDIX A

Draft guidance titled Manual for the Application of Cold Temperature Corrections

Manual for the Application of Cold Temperature Corrections

Draft version 13 May 2024

2.3. Commercial air transport airship draft job card

2.3.1. FLTOPSP was presented to a draft Job Card to develop SARPS to support airship international commercial air transport in Annex 6, PANSOPS but also in other ICAO SARPS, PANS and Guidance documents.

2.3.2. The FLTOPSP questioned its ability to take on the responsibility of such an ambitious JC. The secretariat explained that it would probably be a matter of sharing activities between Panels, with reporting back to the FLTOPSP. Besides, it was emphasized that this job card would be in line with ICAO's strategic objectives and could make it possible to study hybrid or electric propulsion systems. The FLTOPSP agreed to review the draft job card and provide further comments to the Secretariat.

2.3.3. Several new airship designs have begun the certification process, while other designs are still in the development phase. All these designs are intended to be used in international commercial air transport passenger or cargo operations, with the ability to carry up to 100 passengers or 60 tonnes of cargo. With their non-traditional propulsion methods, these airships are expected to contribute to the ICAO long-term aspirational goal of net-zero carbon emissions by 2050.

2.3.4. FLTOPSP proposed to establish a Job Card to enable harmonized implementation of these machines into international commercial air transport as it is necessary to establish the appropriate Standards and Recommended Practices, as well as review and possibly amend PANS and guidance material.

2.4. PBN operations

2.4.1. The FLTOPSP agreed on the need to expand the RNAV and RNP navigation specifications (nav specs) for States on PBN implementation to address impacts of GNSS interference, jamming and spoofing. Such updates to the manual would embrace known, approved, alternate means of compliance to each nav spec and encourage States' widespread adoption of multi-sensor RNAV and RNP operations.

2.5. 5G Interference

2.5.1. The current state of coexistence of 5G operations in the C-band and radio altimeters addresses the safety of global airspace and will require international cooperation between United Nations bodies, regulators (aviation and telecommunications) and relevant industries, to ensure that future spectrum reallocation is determined in transparent and thoughtful manner.

2.5.2. RTCA and European Organisation for Civil Aviation Equipment (EUROCAE) are working on updated minimum operational performance standards for the radio altimeter. Their goal is to develop interference tolerance standards, using state-of-the-art avionics designs, to improve the robustness of future radio altimeters to existing and planned in-band and out-of-band interference; however, the new standards may not resolve all possible interference effects from current and future deployments near the radio altimeter band.

2.6. Wake Energy Retrieval

2.6.1. Wake Energy Retrieval (WER) operations in cruise can enable significant fuel burn savings and associated CO_2 emission reduction without additional ground infrastructure or aeroplane sensors. The principle relies on an aeroplane harvesting a part of the energy from the wake vortex generated by a leading airplane.

2.6.2. Many issues with ATM due to separation standards modification required for such operations. There's the need for an ICAO concept of operations (CONOPS), based on the progress of existing initiatives as to review and analyse the impact to the current ICAO provisions and to develop a WER Manual which shall be aligned with relevant ICAO PANS (ATM, OPS, Annex 2…).

2.7. Mitigations Of GNSS Vulnerabilities in Europe

2.7.1. Since GNSS is the main navigation system supporting PBN (the only one, for some applications), a PBN contingency amounts in practice to a GNSS contingency focused on-air navigation is needed. At European level, GNSS contingencies have been addressed by different European institutions, spreading recommendations and best practices to minimize their impact.

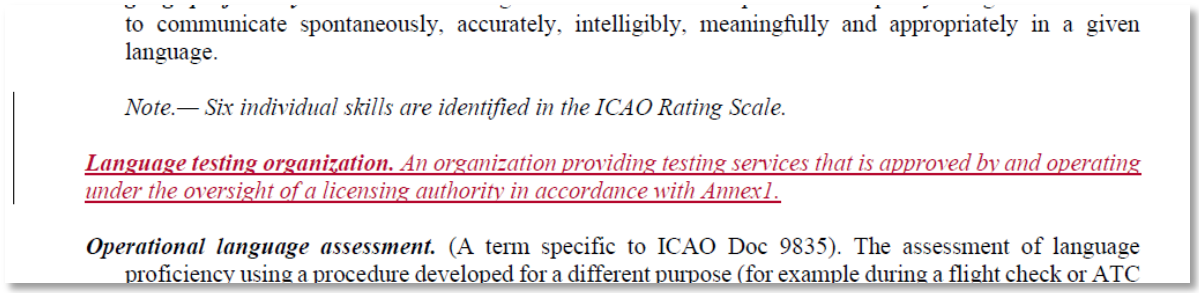
2.8. Autonomous Distress Tracking: Preparing For Implementation In 2025

2.8.1. The Global Aeronautical Distress and Safety System (GADSS) is intended to mitigate challenges in the global air navigation system regarding the timely identification and localization of aircraft in distress. Beginning in January 2025, ICAO Standards pertaining to GADSS autonomous distress tracking (ADT) will become applicable. Preparation and coordination across the aviation community will facilitate global implementation by the compliance date.

2.9. Proposed update to chapter 6 of Doc 9835 Language Proficiency Requirements

2.9.1. After the Manual on the Implementation of ICAO Language Proficiency Requirements (Doc 9835) was first published in 2004, States have relied on this document for information on how to fulfil the language proficiency requirements. The tests and associated methodologies used for language proficiency assessments were anyhow not standardized. Therefore, some differences regarding the quality of the English language knowledge might occur for the personnel receiving the same level of language proficiency assessment.

2.9.2. A proposed Language Testing Organizations (LTOs) was suggested as a basis for aviation and licensing authorities. The Doc 9835 update proposes to define in the glossary the term “language testing organization” and by inserting the abbreviation “LTO”.



to communicate spontaneously, accurately, intelligibly, meaningfully and appropriately in a given language.

Note.— Six individual skills are identified in the ICAO Rating Scale.

Language testing organization. *An organization providing testing services that is approved by and operating under the oversight of a licensing authority in accordance with Annex1.*

Operational language assessment. (A term specific to ICAO Doc 9835). The assessment of language proficiency using a procedure developed for a different purpose (for example during a flight check or ATC

2.10. Use of LED technology in visual aids

2.10.1. The paper from FLTOPSP mentioned that advanced aircraft use Enhanced Flight Vision Systems (EFVS) to improve flight safety, flight efficiency and aerodrome accessibility during periods of low visibility. However, there is no requirement to use an imaging sensor that is near-infrared capable.

2.10.2. The impact of LEDs on EFVS capabilities is still subject to testing activities as aviation specifications are still under development. The flight crew need to know the technology that is used by ground lighting systems to take full advantage of airborne capabilities.

2.11. Runway Starter Extension

2.11.1. Runway Starter Extension (RSE) is a term used for an area located prior to the normal start of the runway which, under certain conditions, provides aircraft with additional length for take-off only. Already in use in some States based on national regulations, there are substantial differences in characteristics and operational requirements, which can create confusion and lead to safety issues.

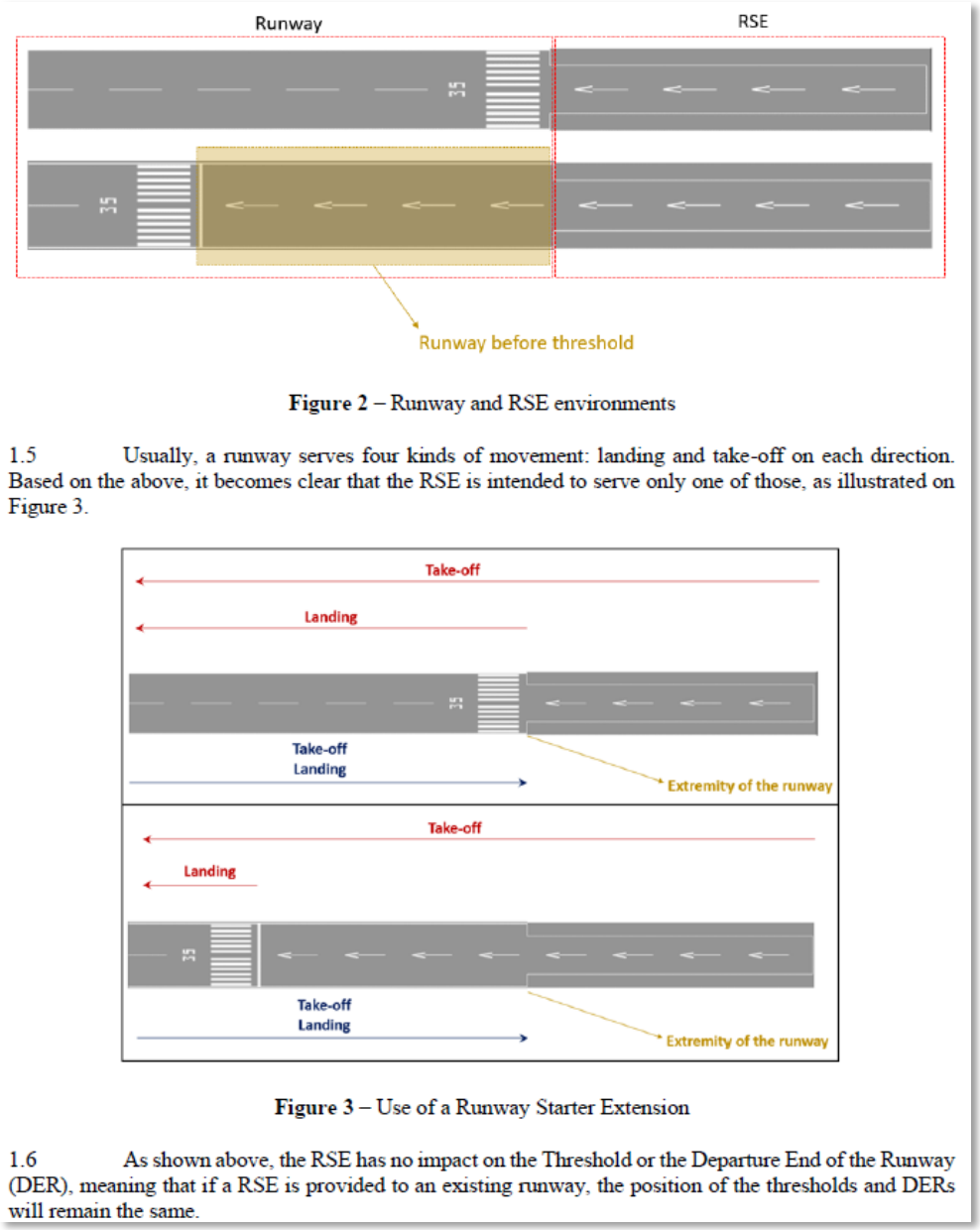


Figure 2 – Runway and RSE environments

1.5 Usually, a runway serves four kinds of movement: landing and take-off on each direction. Based on the above, it becomes clear that the RSE is intended to serve only one of those, as illustrated on Figure 3.

Figure 3 – Use of a Runway Starter Extension

1.6 As shown above, the RSE has no impact on the Threshold or the Departure End of the Runway (DER), meaning that if a RSE is provided to an existing runway, the position of the thresholds and DERs will remain the same.

2.11.2. RSE has no impact on runway length. The RSE length will only be added to the known take-off distances: Take-off Runway Available (TORA), Take-off Distance Available (TODA) and Accelerate-Stop Distance Available (ASDA).

2.11.3. Concerns regarded the Low Visibility Operations and the position of the aircraft on the runway which might be close to the Localizer and disturb its signal.

2.12. PBN landings safety recommendations

2.12.1. The implementation of Performance Based Navigation (PBN) is of great interest to support precise and advanced trajectories within airspaces. ICAO has defined a specific strategy for approaches in its Annex 10 Volume I to promote the use of Approach with Vertical Guidance (APV) operations, particularly those using Global Navigation Satellite System (GNSS) vertical guidance, to enhance safety and accessibility.

2.12.2. Baro-VNAV is based on the combination of on-board Flight Management System (FMS) and GPS Airborne Based Augmentation System (ABAS) for lateral guidance with barometric vertical guidance which relies on the barometric-altimeter reference (QNH mostly) entered manually by the pilot. But recently, several serious Baro-VNAV approach incidents have occurred.

2.12.3. The ICAO recommendation, which is of interest to FLTOPSP, is the following:

> "That ICAO, in collaboration with the manufacturers, authorities and operators, carry out an overall reassessment of the CFIT risk and the associated mitigation measures, in connection with the threat of an incorrect altimeter setting for Baro-VNAV approach operations. These measures could consist of updating the standards and recommended practices and associated documents and defining incentives, or even stipulations, to ensure the development of new safety barriers or the improvement of existing ones".

2.12.4. I made the audience aware of the Baro VNAV Working Paper under development by IFATCA TOC and its suggestion to develop the downlinking of the Barometric Pressure Value within the Mode-S / ADS-B data towards the controllers' CWPs.

2.13. Information on the Quantitative Volcanic Ash (QVA) concentration information service

2.13.1. Many airlines currently have an 'avoidance' policy but may choose to fly over areas of volcanic ash, with certain constraints. Traditionally, all volcanic ash clouds are treated equally, with no consideration of concentration.

2.13.2. There is a big opportunity, especially in active volcanic regions, for airlines to take advantage of QVA, allowing greater flexibility in supporting operations during volcanic ash events. To fully utilise QVA, there will be the need for cultural change for users.

2.13.3. Air traffic controllers will need to be flexible with the advent of QVA, in accommodating aircraft requests, particularly when updated QVA information is issued, for changes in the flight tracks.

2.14. Performance-Based Aerodrome Operating Minima (PBAOM) and update on Runway Classification Group (RCG)

2.14.1. The concept of Performance-Based Aerodrome Operating Minima (PBAOM) allows for a more flexible approach as the minima will be based on the combined capabilities of the ground and airborne facilities. Therefore, inadequate limits within the definition of instrument and non-instrument runways need to be removed.

2.14.2. The RCG should develop runway definitions that do not limit the operation of aircraft and support the principles of PBAOM in a manner that instrument approaches can be designed to runways without any navigation ground infrastructure (e.g. RNP approaches to non-instrument runways), or with reduced infrastructure requirements.

2.14.3. To support the application and understanding of the variety of approach operations given the PBAOM principles, a re-naming of the runway types may be considered, e.g. runway service level A, B, C etc. instead of non-instrument, non-precision approach and precision approach runways. However, consensus on such a far-reaching change could not be reached and therefore is not pursued further at this stage.

2.14.4. The proposed definitions of Instrument and Non-instrument runways are as follows:

INSTRUMENT RUNWAYS

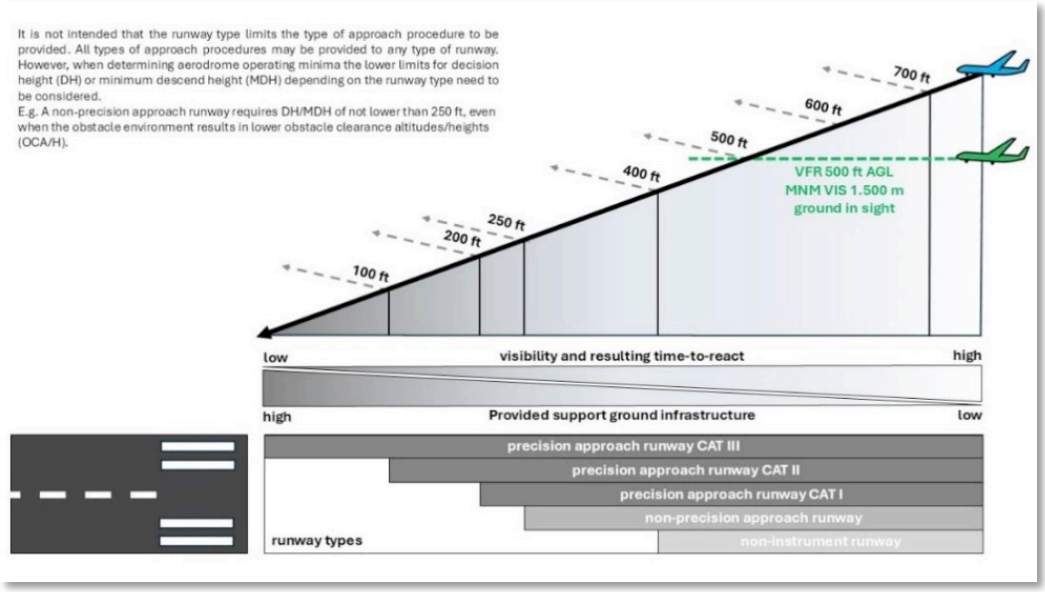
In its current form, the definition of instrument runway refers to type of approaches and visibility criteria, which needs to be adjusted given the PBAOM-principles. The Type A and Type B categorization is removed as it is linked to the re-definition of PBN-approaches which makes this distinction irrelevant. Specifying visibility criteria for non-precision approach runways is inconsistent with rules pertaining to air operations and thus removed. However, visibility criteria for precision approach runways remain adequate as there is a direct correlation between infrastructure elements and visual aids on the one hand and Airport Operating Minima (AOM) on the other hand.

NON-INSTRUMENT RUNWAYS

In its current form, the definition of non-instrument runway allows instrument approaches to be continued in visual meteorological conditions beyond a ‘point’ which is not further specified. As there is no specification on this point, this requires all approaches to continue in VMC below given minima, whatever these minima and the operating rules (VFR, IFR) are, especially because the VMC-criteria are different for different airspaces.

2.14.5. To solve the unintended inconsistency by referring to the rules of the air within the definition, ICAO State Letter 2018/103 proposed to include a 500 ft MDH criterion in the definition of non-instrument runway. The proposal was deferred, and the definition of non-instrument runway remained incomplete, because it does not specify any limitation concerning the “*point beyond which the approach may continue in visual meteorological conditions*”.

2.14.6. The reference to visual and non-visual aids only exists in the definition for instrument runway and therefore could lead to the assumption, that if any kind of runway is served by visual or non-visual aids, this runway automatically must be considered as an instrument runway. This is not the intention of the runway definitions and clarification is needed.



Different definitions in precision/non-precision-instrument/non-instrument runway

APPROACH CLASSIFICATION SUMMARY

For definitions not used in this manual, please refer to the referenced documents.

Domain	*Document*		*Operations*				
Approach Operations	Annex 6	Classification	Non-instrument runway type minima[1] <= DH/MDH	250 ft <= DH/MDH < Non-instrument runway type minima[1] ~~(<=250 ft)~~	200 ft <= DH < 250 ft ~~(200 ft<= DA/H <250 ft)~~	100 ft <= DH < 200 ft ~~(<200 ft)~~	DH < 100 ft
			2D or 3D	2D or 3D	3D	3D	3D
			MDA/H or DA/H	MDA/H or DA/H	DA/H	DA/H	DA/H
Runway Type Minima ~~Approach Minima Runway Requirements~~	Annex 14	DH/MDH >= non-instrument runway type minima[1]	Non-instrument RWY				
		DH/MDH >= 250 ft ~~M(DA/H) >=250 ft VIS >= 1000 m~~	Non-precision approach RWY				
		~~DA/~~H >= 200 ft VIS >= 800 m, or RVR >= 550 m	Precision approach RWY, CAT I				
		~~DA/~~H >= 100 ft ~~RVR >= 300 m~~ RVR >= 350 m[2]	Precision approach RWY, CAT II				
		~~DA/~~H >= 0 ft RVR >= 0 m	Precision approach RWY, CAT III				
System Performance, Procedures	Annex 10, PANS-OPS, Volume II, PBN Manual (Doc 9613)		VOR, NDB, LOC and LOC type directional aid w/ GS, RNP APCH (LNAV, LNAV/VNAV, LP, SBAS APV)				
			SBAS CAT I				
			~~PBN (including SBAS),~~ ILS, MLS, GBAS				

Proposed Approach/Runway classification

2.15. Multiple Procedure Design Gradients (PDG) on departures

2.15.1. PANS-OPS, Volume II specifies that when the Obstacle Identification Surface (OIS) on a departure procedure is penetrated, an increased PDG shall be used in the design. This increased PDG shall be reduced to the standard 3.3% at the point past the critical obstacle where obstacle clearance minima are satisfied.

2.15.2. Depending on the obstacle situation on an aerodrome, it can be helpful to provide diverse PDGs on SIDs, starting with the highest climb gradient and lowering the succeeding gradient to a shallower one (but still higher than 3.3%). This would allow aircraft to adjust their vertical climb profile, therefore resulting in lower fuel consumption, less carbon dioxide emission or less noise. Nevertheless, PANS-OPS does not include multiple increased PDGs would be possible in the design of SIDs.

2.15.3. Some States do already publish SIDs with multiple PDGs without receiving negative feedback from airlines and/or ATC.

2.15.4. The IFPP Integration WG is seeking feedback from the FLTOPSP on this suggestion, specifically if there are any negative impacts on the workload of the flight crew if a SID had multiple PDGs.

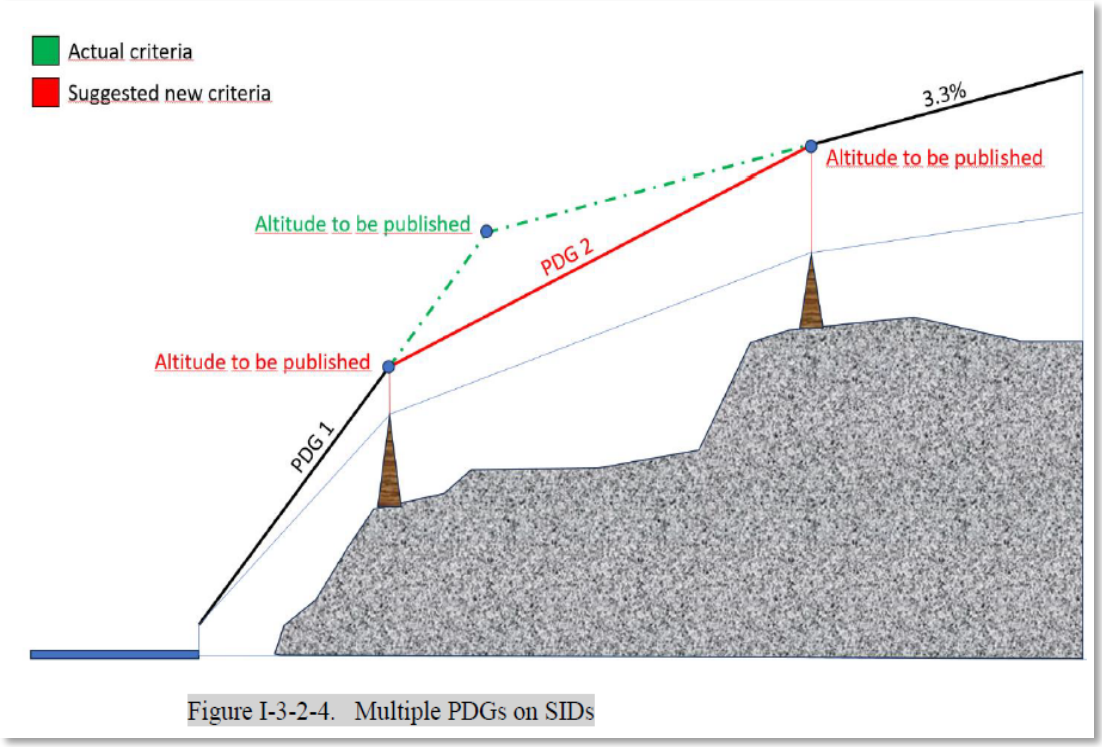


Figure I-3-2-4. Multiple PDGs on SIDs

2.15.5. I suggested the conference to bear in mind that a steeper rate of climb usually allows to get into earlier surveillance service. This might permit anticipated direct routes which could save fuel as well or better than a less steep climb gradient with delayed radar contact which would mandate the traffic to stay on the SID.

2.16. Accident and incident notification to the appropriate investigation authority

2.16.1. The ICAO Accident Investigation Panel (AIGP) suggests clarifying in Annex 6 that the pilot-in-command is responsible for notifying accidents and incidents. During the review of this proposal, FLTOPSP members and advisers identified several difficulties, mainly concerning the type of incidents to be reported and the sharing of responsibility between operator and

pilot. Thus, definitions of “Incident” and “Serious Incident” have been proposed for inclusion into Annex 6 as follow:

ANNEX 6
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

Part I — International Commercial Air Transport - Aeroplanes

CHAPTER 1. DEFINITIONS

…

Incident. An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

Note.— The types of incidents which are of main interest to the International Civil Aviation Organization for accident prevention studies are listed in Annex 13, Attachment C.

…

Serious incident. An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked.

Note 1.— The difference between an accident and a serious incident lies only in the result.

Note 2.— Examples of serious incidents can be found in Annex 13, Attachment C.

2.17. PBN Manual Doc 9613

2.17.1. FLTOPSP recognizes that PBN Manual (Doc 9613) doesn’t cover GNSS disruption guidance, an occurrence that happen frequently. The suggestion was to update the document supporting the concept of coupling GNSS with conventional NavAids and Inertial System (INS). The aircraft airwothiness approval for multi sensor positioning can and do integrate GNSS thus approved INS and DME could support RNAV/RNP operations.

2.17.2. It has been recognized how issues with embracing PBN without GNSS (all RNP nav spec say: “require GNSS”) need to develop consensus on means to predict availability of PBN without GNSS. This is needed by far nowadays that the aviation is experiencing so many security issues (spoofing/Jamming).

3. CONCLUSION

3.1. The extensive use of GNSS in almost every aspect of air transportation has reached a top level and now it is showing its weakness. The ease of corrupting satellite transmission intentionally is creating instability and unpredictability in air navigation such that users are now asking to reanimate conventional ground infrastructure which was considered obsolete too soon.

3.2. On the other hand, human flaws may lead to input error when performing approaches like the Baro VNAV in which the pilot must input the correct altimeter setting. In this case

GNSS is needed for lateral navigation but not for vertical path where an incorrect input from the human side could be catastrophic.

3.3. The Runway Starter Extension should be followed to check whether it could bring issues to the controllers' airport domain.

4. RECOMMENDATIONS

4.1. It is recommended that this report be accepted as an information paper.

~ End of report ~

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