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Twenty-Fourth Workshop/Meeting of the SAM Implementation Group (SAM/IG/24) - Regional Project RLA/06/901
(Lima, Peru, 4 to 8 November 2019)

Agenda Item 2: Optimisation of SAM airspace

HARMONISATION OF THE TRANSITION ALTITUDE IN ARGENTINA

(Presented by Argentina)

SUMMARY

The purpose of this working paper is to inform States about the action taken by Argentina through the ANSP EANA SE regarding the analyses associated to the implementation of a uniform transition altitude.

References:

- RAAC 91 – 91.121 / 91.140
- Doc 8168 OPS/611 Vol. I, Operation of aircraft - Flight procedures
- Doc 4444, Air traffic management
- Doc 9426 – AN/924 Air traffic services planning manual
- AIP Argentina - ENR 1.7 Altimeter setting procedures
- SAM/IG/12 - Regional Project RLA/06/901, Optimisation of SAM airspace
- A37-11: Performance-based navigation global goals.

1. Background

1.1 At the Twelfth workshop/meeting of the SAM Implementation Group, held in Lima, Peru on 10-14 October 2013, LATAM (at that time LAN Airlines) highlighted the importance of a harmonised transition altitude within each State in South America.

1.2 Aeronautical organisations worldwide, including EUROCONTROL (UE), FAA (US), SENEAM (MX), CAA (UK), NAV CANADA, Aerocivil (CO), IFALPA, have already taken initial steps for the implementation of a homogeneous transition altitude, and higher than the 3000ft recommended by ICAO in the PANS-OPS Volume 1 (Doc 8168). The air navigation service provider of Argentina, EANA, highlights the importance of this initiative and of studying the feasibility of establishing a harmonised TA at national level.

2. Analysis

2.1 This transition altitude (TA) harmonisation proposal is aimed at improving operational safety and efficiency. The modification of the TA will provide safety and performance benefits, promoting environmental and economic sustainability through improved aircraft arrival and departure procedure design and airspace reconfiguration.

2.2 This project consists in the implementation of a standard 10,000ft TA at national level, with the possibility of regional harmonisation.

2.3 A survey was conducted in the SAM (South American) and in the NAM (North American)

Regions, showing different transition altitudes published for different aerodromes:

Country	Harmonised transition altitude
Chile	Heterogeneous
Brazil	Heterogeneous
Uruguay	Harmonised 3000ft
Peru	Heterogeneous
Ecuador	Heterogeneous
Colombia	Harmonised 18000ft
Venezuela	Heterogeneous
Paraguay	Harmonised 3000ft
Bolivia	Heterogeneous
United States	18000ft
Canada	18000ft
Mexico	18500ft

a) The South American (SAM) Region shows a wide range of transition altitudes, but this is no surprise, considering the geographical context (elevations) and obstacle altitudes at the aerodromes of this Region.

b) In the North American (NAM) Region, the United States and Canada maintain a common transition altitude of 18000ft, while Mexico established a harmonised TA at 18500ft throughout its territory.

2.4 The AIP of Argentina shows different transition altitudes published for the different airports and aerodromes of the country:

Aerodrome	Transition altitude	Aerodrome	Transition altitude
SABE	3000FT	SANC	8000FT
SAAR	3000FT	SAVY	3000FT
SACO	3500FT	SAVE	9000FT
SADF	3000FT	SAZG	3000FT
SADP	3000FT	SAMM	9000FT
SAEZ	3000FT	SAWB	4000FT
SAME	6000FT	SADJ	3000FT
SANT	6500FT	SADM	NIL
SARC	6000FT	SAAP	3000FT
SARE	3000FT	SAOC	3000FT
SARF	3000FT	SANU	5500FT
SARI	3000FT	SAOU	5000FT
SARL	3000FT	SAZY	8000FT
SARP	3000FT	SAMR	5000FT
SASA	9000FT	SAAV	3000FT
SASJ	9000FT	SAZR	3000FT
SAVC	3000FT	SAOS	8600FT

Aerodrome	Transition altitude	Aerodrome	Transition altitude
SAVT	3000FT	SANE	3000FT
SAWE	3000FT	SANR	4000FT
SAWG	3000FT	SAZT	3000FT
SAWH	8000FT	SAVV	3000FT
SAZM	3000FT	SAZV	3000FT
SAZN	3500FT	SAOR	3500FT
SAZS	8000FT	SANC	8000FT

Establishment of a harmonised transition altitude in Argentina

2.5 The plan of EANA S.E. for the implementation of the harmonised transition altitude in Argentina is shown below:

1. Consultation with stakeholders
2. Analysis of collected data
3. Creation of QNH zones in the BAIRES TMA
4. Documentation and IFP update plan

Consultation with stakeholders

2.6 EANA S.E. will start a consultation process with the main stakeholders that would be affected by a homogeneous TA:

1. Templates were developed to capture information on the impact that a harmonised transition altitude of 10000ft would have on their organisations once approved.
2. Sample questionnaires were also developed for the stakeholders to assess the cost and benefits of the project.
3. The questionnaire is to be completed by airline operators, meteorological services, air traffic services (ATS), aeronautical information services (AIS), CNS (communication, navigation and surveillance) services, military aviation and the regulators.
4. The data collection and assessment process shall be standardised for uniformity purposes.

Analysis of collected data

2.7 The data collected by stakeholders will enable the achievement of a common transition altitude for the State, assessing the impact that this implementation will have on the airspace of Argentina.

Implementation of QNH zones

2.8 The implementation of a homogeneous transition altitude will require the establishment of a common QNH zone over one of the main terminal control areas of Argentina, known as "BAIRES", applying a common pressure value for flights that change their *vertical position* reading on *descending* from flight level to altitude, and on *climbing* from altitude to flight level. A zone defined by QNH reading terminals with minimum variation of QNN values may be considered as a “QNH zone”.

Documentation and IFP update plan

2.9 The implementation of a homogeneous TA will require the modification of a significant number of charts, including SIDs/STARs/IACs, to reflect the new transition altitude (TA). In many cases, this will simply entail a modification of the TA legend on the upper part of the table, and of its levels. For those charts where the procedure design imposes vertical restrictions, as in the SIDs that end in an FL, the IFP shall be revised to ensure that the climb continues to be appropriate.

3 Conclusion

3.1 Several studies and analyses by various aeronautical organisations have given positive results and arguments in favour of a harmonised transition altitude, clearly improving safety and allowing for continued implementation of route, procedure and PBN airspace design improvements.

3.2 Performance-based navigation is being implemented worldwide to obtain its benefits. Terminal procedures that apply the PBN concept provide significant safety and efficiency benefits to aircraft operations, including those derived from the implementation of CCO/CDO, if properly designed. However, the lower transition altitude established around aerodromes did not permit a real optimisation of the vertical profile, given the significant variations in transition layer widths. This becomes more complex in case of conflicting arrivals and departures in PBN airspace designed around the aerodrome.

4 Suggested action

4.1 The Meeting is invited to:

a) Take note of the information provided in this working paper;

b) propose standard contents for the harmonised TA implementation proposal;

c) provide States with guidance on compliance with PANS-OPS criteria for the establishment of the transition altitude, taking into account the benefits of medium- and high-level transition altitudes;

d) take note of the information contained in this document, including limitations for harmonised implementation of PANS-OPS criteria related to the establishment of the transition altitude; and

e) share the initiative with neighbouring countries to achieve regional standardisation.

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