



Agenda Item 2: Optimisation of SAM airspace

**IMPLEMENTATION OF SIMULTANEOUS APPROACHES ON RUNWAYS 17L AND 17R
OF THE ARTURO MERINO BENÍTEZ (SCEL) AIRPORT**

(Presented by Chile)

SUMMARY

This information paper presents the “Plan for the implementation of simultaneous approaches on runways 17L/17R of the Arturo Merino Benítez (AMB) airport of Santiago, Chile”.

References:

- Doc 9643, Manual on simultaneous operations on parallel or near-parallel instrument runways (SOIR)
- FAA Order 8260.3D - US Standard for Terminal Instrument Procedures (TERPS)
- Eighth Amendment to the 15th edition of the Procedures for Air Navigation Services – Air traffic management (PANS-ATM, Doc 4444).

1. Background

1.1. The Arturo Merino Benítez airport of Santiago (SCEL) has two parallel runways (17L/35R and 17R/35L) 1570 m apart. Since the construction of the second runway in 2005 to conduct major maintenance on the main runway, they have operated as one, without simultaneous operation procedures of any type’.

1.2. The number of operations, the existing terrain around the airport, and the little flexibility offered by conventional departure and arrival procedures based on the limited ground aids available in the TMA were the main reasons why simultaneous approaches were not considered from the beginning.

1.3. Following the development of PBN, with all its possibilities, and considering the number of certified aircraft operating in SCEL, a process started to explore the possibilities of improving instrument procedures at the airport. In the meantime, the 8th amendment to the 15th edition of ICAO Doc 4444 (PANS-ATM) incorporated new criteria for approach operations in parallel or near-parallel runways, including the possibility of using RNP APCH in addition to ILS procedures.

1.4. In turn, FAA Order 8260.3D introduced the “Established on RNP (EoR)” concept, whereby the ATC could discontinue the 1000ft or 3NM separation once the aircraft was established in the approved PBN segment of an approach.

1.5. In view of the above and in order to increase the capacity of the Arturo Merino Benítez

airport through an efficient use of runways, considering increased demand, the DGCA, with the support of LATAM Airlines (which conducts 60% of airport operations) has developed a Plan for the implementation of simultaneous approaches on runways 17L/17R as follows.

2. Analysis

2.1. The plan prepared by the DGCA comprised three well-defined stages:

- First stage: "Simultaneous segregated parallel operations" (arrivals on 17L and departures on 17R),
- Second stage: "Simultaneous independent parallel approaches under VMC", and
- The third stage will incorporate: "Simultaneous dependent parallel approaches under IMC".

2.2. The first stage was implemented in February 2019, with the publication of new ILS approaches, which contemplate a missed approach from runway 17L diverging by 30° from departures from runway 17R. In addition to this publication, several airspace modifications had to be made, namely:

- relocation of visual corridors,
- establishment of new HLDGs, and
- proper training of ATCs and pilots in this new operational modality.

2.3. This first stage allowed a reduction of take-off taxi times and distance between successive approaches, thus increasing runway capacity. Accordingly, the NOTAM on flow control for capacity reasons that was being published for aircraft arriving to SCEL was completely eliminated. Consequently, timeliness of airlines improved significantly in Q1 and Q2 of 2019. Since the airport has only two runways and the number of departures *versus* arrivals is well balanced, this configuration proved the most beneficial.

2.4. Since there are times during the day in which the demand for arrivals is much higher than the demand for departures, stages 2 and 3 are aimed at achieving simultaneous parallel approaches, each under different visibility and ceiling conditions, through the introduction of new PBN approach procedures, to allow for the use of runway 17R as mixed runway (arrivals and departures) and 17L only for landings.

2.5. To this end, an RNP AR approach has been designed for arrivals from the south of SCEL to runway 17R (23% of operations). This, together with the ILS approach for traffic coming from the north (which includes domestic flows, and flights from Argentina and Peru), will permit simultaneous parallel approaches. See description and graphs in Appendices A, B, and C to this paper.

2.6. This RNP AR procedure will be implemented as a simultaneous procedure using the "Established on RNP" concept, that is, it does not contemplate the ATC incorporating the two aircraft through vectors 1000ft apart until they are established in the respective localizer to proceed to approach, but rather contemplates that an aircraft flying a PBN APCH is already established on a lateral path from which it will not deviate, even when turning to intercept the final approach. The ATC and the pilots of LATAM Airlines assessed the procedure at the Santiago CAE, with highly positive results for terrain warning, flyability, and workload. Internal validation is now expected to start, as required by the DGCA.

2.7. As in any new implementation, data needs to be collected, and the introduction of a new concept for pilots and ATC is not an easy task. Therefore, it has been decided that this second stage will take place under VMC.

2.8. An analysis of weather reports of the last 20 years shows that the percentage of reports of visibility above 5000 m has increased, accounting for 94.4% of METAR information issued in 2018, resulting in a very high percentage of time of potential use of the project.

	1999-2008	2014	2018
Vis < 800	2.8%	1.6%	1.2%
800 <= Vis < 3000	5.8%	5.3%	2.7%
3000 <= Vis < 5000	6.8%	7.1%	1.6%
5000 < Vis	82.0%	86.0%	94.5%

2.9. Accordingly, independent simultaneous approaches will be conducted applying visual separation. The required visibility must be no less than 5000m and the cloud ceiling must be no less than 5000ft.

2.10. In accordance with Doc 9643, this second stage under VMC will serve to conduct trials and for ATC and pilots to become familiar with the procedure. The aim is to show that all the required elements, ground equipment, personnel qualification, and ATC procedures, are duly integrated into the general system.

2.11. The third stage, to be started on a date to be advised in due time, will incorporate simultaneous dependent parallel approaches under IMC. A 1.5NM separation minimum will be applied between aircraft in different approach centre lines, since it is not possible to perform a go-around procedure in case of infringement of the NTZ in IMC because of surrounding terrain conditions.

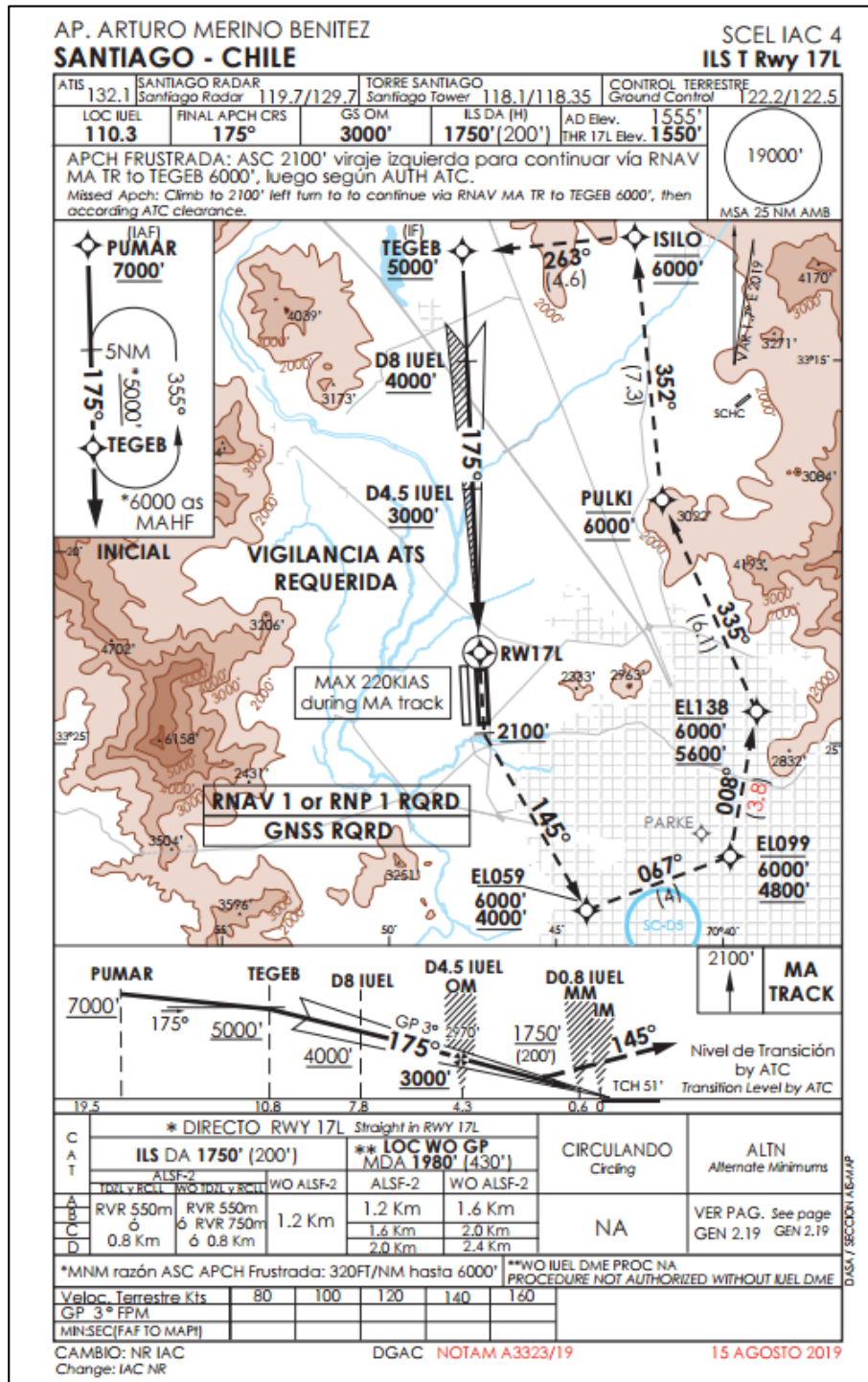
2.12. For better situational awareness management, and taking into account that not all approaches to SCEL meet the criteria for simultaneous operations, a “Note” would be inserted in the corresponding approach chart, specifying the approaches authorised in the adjacent runway for simultaneous operations. As an example, in the “RNAV(RNP) T Rwy 17R” approach chart, a note would state the following: “Simultaneous approach authorised with ILS T Rwy17L, ILS X Rwy17L”, and in the “ILS T Rwy 17L” approach chart, the note would read: “Simultaneous approach authorised with RNAV(RNP) T Rwy 17R” (see applicable charts and more information in annexes).

3. Suggested action

3.1. The Meeting is invited to take note of this information paper in order to encourage States with similar terrain and infrastructure conditions to work together to improve airport capacity in the Region through the implementation of PBN criteria, in accordance with the latest published standards.

APPENDIX B

ILS Rwy 17L chart



APPENDIX C

Draft RNP (AR) Rwy 17R chart

