



Agenda Item 3: Implementation of Air Traffic Flow Management (ATFM) and improvement of procedures for flow coordination between units

ATFM PROCESS IN SAM REGION

(Presented by IATA)

SUMMARY	
This working paper presents proposals to improve the effectiveness of ATFM process in SAM region, by application of the ICAO Doc 9971, and requests immediate application of the Conclusion SAM/IG/19-1. This working paper recommends the implementation of ATM procedures to enhance ATC effectiveness and optimize the use of airport infrastructure.	
References:	
<ul style="list-style-type: none">• GREPECAS/18 Meeting• SAM/IG Meetings	
ICAO Strategic Objectives:	<i>A - Safety E - Environmental protection</i>

1. **Introduction**

1.1 Several GREPECAS and SAM/IG/meetings have specified significant inefficiencies caused by the ATFM process in SAM Region, as well the habitual use of NOTAMs serving as a tool to implement ATFM measures.

1.2 GREPECAS/18 (Punta Cana, Dominican Republic, 9 – 14 April 2018) considered as of utmost importance the implementation of the actions specified in **conclusion SAM/IG/19-01**.

Conclusion SAM/IG/19-1: Application of flow management initiatives (TMIs) in situations that temporarily affect ATS capacity in a designated airspace or airport used by international aviation

That SAM States make utmost efforts to:

- a) Strengthen the functions of Flow Management Positions (FMPs) or Units (FMUs) with resources and trained personnel empowered to coordinate with ATS services the application of ATFM initiatives (TMIs) in situations that generate air traffic capacity/demand imbalances caused by scheduled or unforeseen events;

- b) Issue instructions and/or directives that ensure that any ATFM initiative (TMI) to be coordinated is taken from ICAO Doc 9971, using the least restrictive methods available to minimize the impact on international flights, in coordination with ATFM units or those replacing them in adjacent SAM States;
- c) Refrain from using NOTAMs to establish flow control measures, with the only exception when they are required as part of ATS mitigation actions for a period not to exceed twenty-four (24) hours, during which period NOTAMs should be replaced with ATFM initiatives generated and agreed by FMPs/FMUs, and which should be managed through ATFM messages; and
- d) Submit the actions carried out in accordance with the paragraphs above to the ATFM workshop/meeting and the SAM/IG/20 meeting, scheduled for the second semester of 2017.

2. NOTAM as “ATFM Measures” in the SAM/IG Meetings

2.1 After a reduction on the misuse of NOTAM as “ATFM measure”, in 2019 this practice was reinitiated, mainly in the airspace covering “Pacific” portion of the SAM Region. A picture of this situation is presented as **Appendix A**.

2.2 Once again, there will be a need to discuss the best practices on the application of correct ATFM measures or if it would be better to apply the published contingency plan, taking into consideration that in some cases this plan would be less restrictive to the users.

3. ATFM Measures

3.1 ICAO has published guidance material to implement and operate ATFM on a global basis, as Doc. 9971, Manual on Collaborative Air Traffic Flow Management, refers. However, the SAM ATFM implementation has not followed this important guidance, since most of States are applying measures disagree with the ICAO document, as well as there is no harmonization for the use of such measures.

3.2 The Annex 11 — Air Traffic Services recommends in paragraph 3.7.5.2 that “ATFM should be implemented on the basis of regional air navigation agreements or, if appropriate, through multilateral agreements. Such agreements **should make provisions for common procedures** and common methods of capacity determination”. Unfortunately, so far there is no common ATFM procedures in place in SAM and the procedures applied individually by each State are not based on the recommendations of Doc. 9971.

3.3 Coordination between FMU/FMP and/or ACCs is not adequate. One example is the flight LAN 592 – SCEL/MDPC, on May 05, 2019. Based on the NOTAM published by Colombia, the FPL was presented through UG 430; However, Peru has published a NOTAM, based on the same communication problem in Bogota FIR, requiring that all aircraft must use UL780 to enter in Bogotá FIR. The mentioned flight was advised that the FPL must be changed when the taxi was already started, indicating also a lack of proper coordination between ATFM/ATC facilities of Chile and Peru. This miscoordination caused 4 hours delay on this flight. More details are provided in the **Appendix B**.

3.4 Doc. 9971 item 2.2.6 recommends that “ATFM measures should be applied in a timely manner and **generally only for the period when expected air traffic demand exceeds the capacity** in the constrained area. ATFM measures **should be kept to the minimum** and, whenever possible, be applied selectively only to that part of the system that is constrained” Unfortunately, there are several “ATFM measures” being applied on daily basis for long durations.

3.5 Doc. 9971 indicates that “ATFM and contingency arrangements are closely interlinked: a) **ATFM provides a process for mitigating the effects of disruption in an ATM systems resource**”; In most of the SAM States, there is no specific ATFM measures to mitigate contingencies in SAM. Normally, the adopted contingency measures are applied based on the most possible restrictive option, as, for example, minutes-in-trail: 10 minutes separation independent of FL. In these situations, it is better to apply the contingency plan, which is normally less restrictive than the “ATFM measure”.

3.6 It is important to note that ATM planning is part of the ATFM process. Doc. 9971 item 4.1.3.1 shows that “three elements of ATM planning must feed the ATFM system: traffic forecast, performance targets, and the general output of ATM planning ... Measures taken in this step include:

- a) reviewing airspace design (route structure and ATS sectors) and airspace utilization policies to look for **potential capacity improvements**;
- b) reviewing the technical infrastructure to assess the possibility of **improving capacity**. This is typically accomplished by upgrading various ATM support tools or enabling **navigation, communication or surveillance infrastructure**;
- c) reviewing and updating **ATM procedures induced by changes to airspace design and technical infrastructure**;
- d) reviewing **staffing** practices to evaluate the potential for matching staffing resources with workload and the eventual need for adjustments in staffing levels; and
- e) reviewing the training that has been developed and delivered to ATFM stakeholders”.

It is very important to observe that ATFM is not wholly based of demand restriction, but also of capacity improvements.

3.7 Doc. 9971 Item 4.2.1 specifies that “managing traffic flows means more **than simply applying ATFM measures**. Flow management entails implementing an ATFM solution, which is the **combination of capacity optimization and ATFM measures**. ATFM is therefore a process where, confronted with an imbalance between demand and capacity, consideration is **first given to optimizing the capacity**, and then to choosing and implementing ATFM measures when the imbalance cannot be resolved otherwise”. Unfortunately, the most common ATFM solutions applied by SAM States restricts demand.

3.8 Doc 9971 item 4.5.1.4 specifies that “ATFM measures should generally **only apply during periods when demand exceeds capacity** and **should not apply on a routine basis**. The frequent application of ATFM measures suggests an imbalance between ATM capacity and traffic demand, **which should be addressed in a more strategic fashion**”. There are ATFM measures that have been applied for long durations, routinely, causing operational inefficiency and inadequate use of installed capacity. One example of ATFM measure published by NOTAM for a long time is attached as **Appendix C**.

3.9 Doc 9971 item 4.5.1.6 specifically addresses Ground Delay Programme (GDP). “It is a flexible programme, and its form may therefore vary depending on the needs of the ATM system. GDPs are best developed in a **collaborative manner** even though they are typically administered and managed by an FMU or a national/international ATFM centre. When a GDP is scheduled **to last for several hours, the likelihood of slots having to be revised increases, as conditions could change**. There should therefore be a system in place to advise AUs and/or pilots of departure slots as well as of any changes to the GDP” There are some states that apply GDP permanently or for several hours, independently of demand/capacity unbalance. This practice causes inefficiency and poor utilization of installed capacity, since there is a tendency for application of non-optimal values of ATC capacity and airport infrastructure.

3.10 Doc. 9971 item 4.5.1.8 addresses Minutes-in-trail (MINIT) and miles-in-trail (MIT). “These items are tactical ATFM measures and are expressed as the number of minutes or miles between each successive aircraft at an airspace boundary point. The **workload** associated with its compliance falls on the **air traffic controller** because of potential upstream network effects. As such, **regular usage of MINIT or MIT may indicate that more appropriate ATFM measures should be used in their places**”.

4. **ATM procedures to optimize the use of available ATC and Airport Infrastructure**

4.1 Some initiatives are being taken by SAM States to apply new procedures that optimize the use of available ATC and Airport Infrastructure.

4.2 One example is the AGILE GRU project. One of the objectives of the AGILE GRU project is to reduce the daily application of ATFM Measures (Miles-in-Trail; Ground Delay Program) for traffic flying from/into GRU, through the following implementations:

- a) Reduction of separation minima on final approach to 3 NM;
- b) Reduction of separation between departures; and
- c) Implementation of Segregated Operations under VMC.

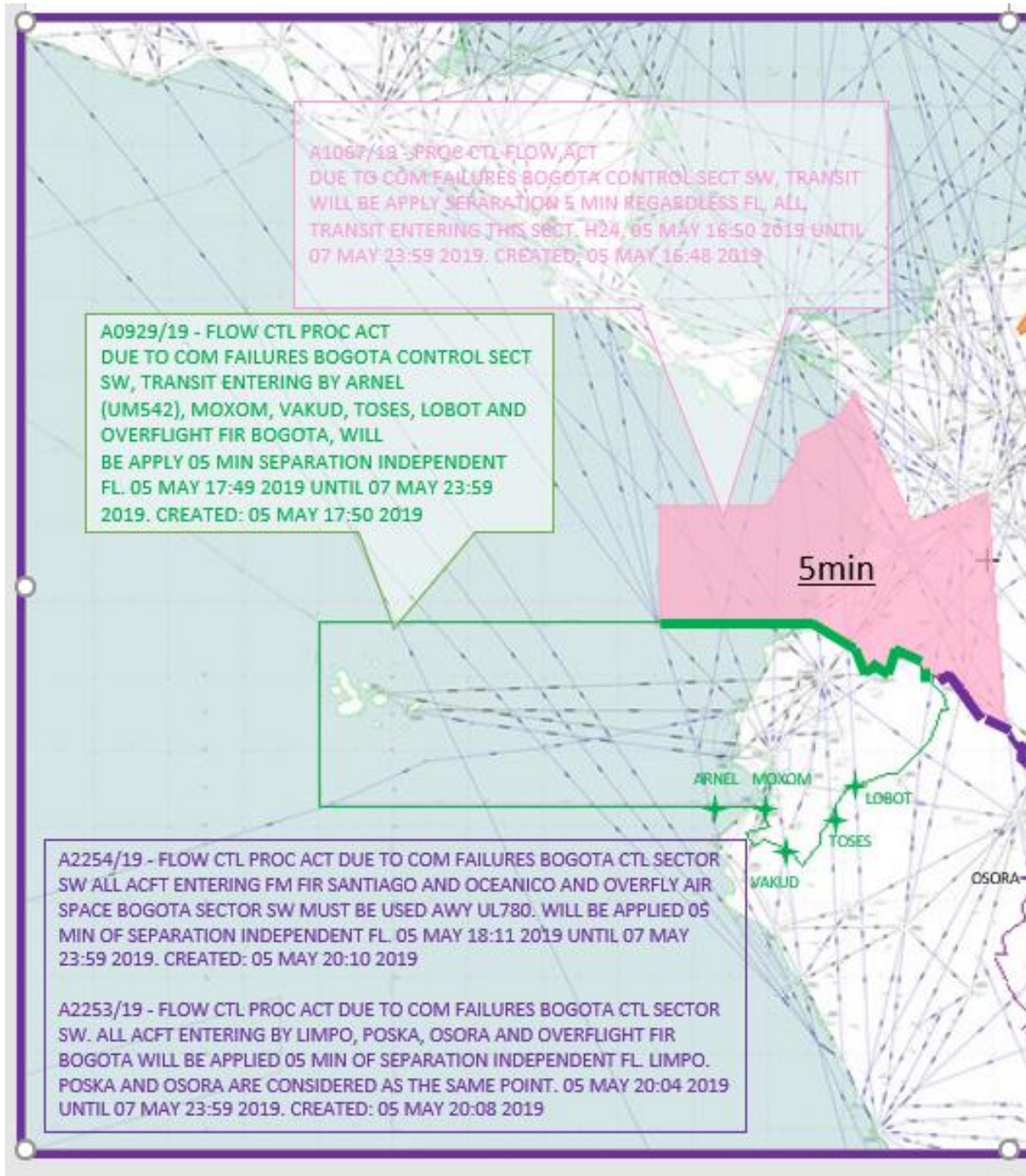
4.3 Even after the aforementioned implementations, the key performance indicators in GRU have showed a worse performance in GRU in the summer 2019if compared with summer 2018 (refers to IP presented by Brasil-IATA). This worse performance was caused by severe weather in the Sao Paulo Area (three times more rain in summer 2019). This unexpected result has led the AGILE GRU project to include in its work program the development of a Severe Weather Avoidance Plan (SWAP). This will be an example of planned ATFM contingency measure, based on playbook, which will mitigate the impact of the severe weather in SAO TMA. In this sense, it is important to observe the importance of the use of Key Performance Indicators to verify if a project effectively reaches the proposed strategic objectives.

5. **Suggested action**

5.1 The Meeting is invited to:

- a) Apply as a matter of urgency **Conclusion SAM/IG/19-1**, including elimination of all NOTAMs related to Flow Control Measures.
- b) Agree, as a high priority task, the development of a new CAR/SAM ATFM CONOPS, including a new strategy of combining capacity optimization and correct application of ATFM measures.
- c) Agree that SAM States implement ATM procedures to increase ATC effectiveness and optimize the use of airport infrastructure.

APPENDIX A



NOTAM PUBLISHED BY COLOMBIA

SKED / BOGOTA FIR/UIR

05 MAY 2019 06:12-07 MAY 2019 23:59

*PROC CTL FLOW ACT

DUE TO COM FAILURES BOGOTA CONTROL SECT SW, TRANSIT WILL BE ACCEPTED THUS: PANAMA FIR DEST GUAYAQUIL FIR VIA

UL780 FL330, GUAYAQUIL FIR DEST PANAMA FIR VIA UL780 FL320,

LIMA FIR DEST PANAMA FIR VIA UN420 FL360 AND FL380, PANAMA

FIRDEST LIMA FIR VIA UN420 FL310 AND FL350, LIMA FIR DEST

BARRANQUILLA FIR VIA UG430 FL280 AND FL320, BARRANQUILLA FIR

DEST LIMA FIR FL330 AND FL390, GUAYAQUIL FIR DEST MAIQUETIA

FIR VIA UA550 FL300 AND FL340, MAIQUETIA FIR DEST GUAYAQUIL

FIR VIA UA550 FL290 AND FL370. WILL BE APPLY SEPARATION 15 MIN

REGARDLESS FL, ALL TRANSITS MUST BE LEVELED 40 NM BEFORE THE TRANSFER POINT"

ORIGINAL FPL BASED ON NOTAM PUBLISHED BY COLOMBIA

FPL original

(FPL-LAN592-IS

-B789/H-SDE1E2GHIJ4J5M1RWXYZ/LB1D1V1

-SCEL1155

-N0492F340 DONTI2B DONTI UT131 ENLOP/N0493F340 UT131 ATEDA UL302 JCL/N0493F350

UM414 AMVEX UL305 TAP UT228 PLG UG430 ORBAB/N0458F320 UG430 CZU/N0486F370 UW5

SATMI UM525 VESKA VESKA2B

-MDPC0712 MDSD

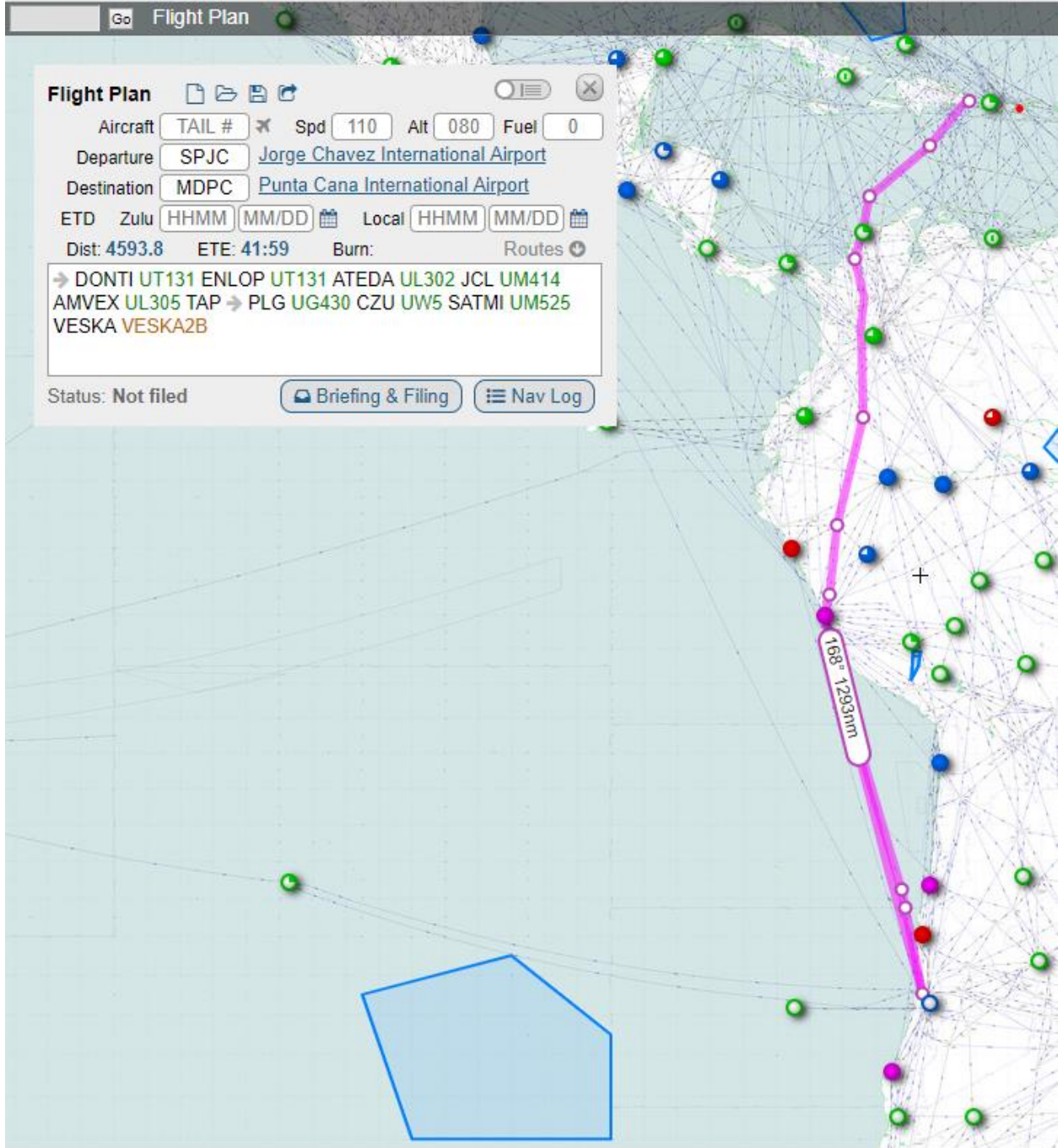
-PBN/A1B1D1S2 NAV/RNVD1E2A1 DAT/1FANS DOF/190505 REG/CCBGN EET/SCFZ0047 SPIM0208

SKED0425 SKEC0525 TNCF0614 MDSC0638 SEL/JQFK OPR/LAN PER/D RMK/TCAS EQUIPPED

-A/WHITE BLUE RED D/8 E/0835 J/L P/TBN R/UEVE S/M C/GUILLERMO

ELLWANGER GROLLMUS)

ROUTE IN ACCORDANCE TO NOTAM PUBLISHED BY COLOMBIA



APPENDIX B

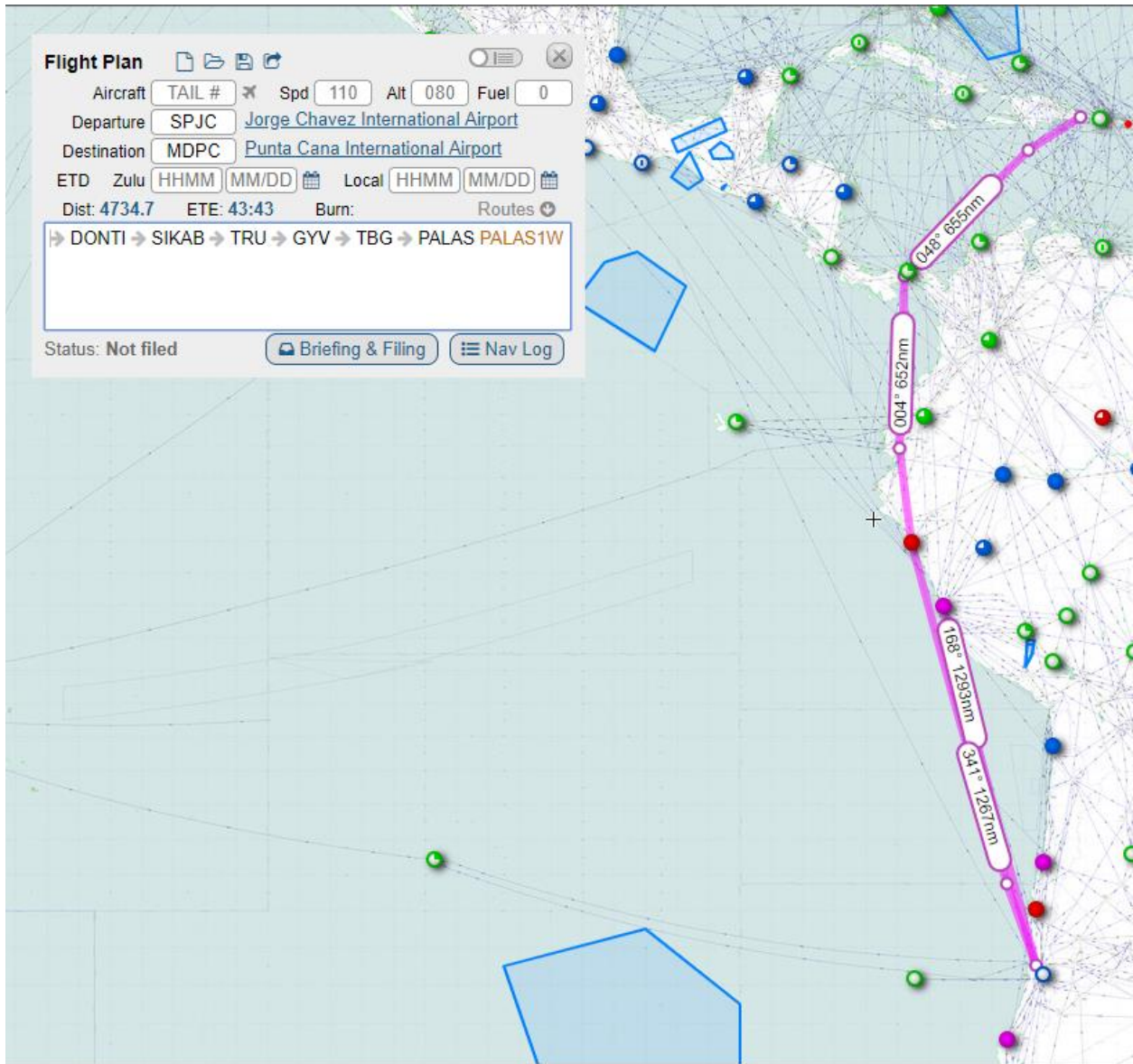
NOTAM PUBLISHED BY PERU

VY80390 050955
 GG SCEL2021
 050954 SCSCYNYX
 (A2238/19 NOTAMR A2237/19
 Q)SPIM/QPFC/A/1/NBO/AE/000/999/1201507707W005
 A)SPIM B)1905050012 C)1905072359
 E)FLOW CTL PROC ACT DUE TO COM FAILURES BOGOTA CTL SECTOR SW
 ALL ACFT ENTERING FM FIR SANTIAGO AND OCEANICO AND OVERFLY
 AIR SPACE BOGOTA SECTOR SW MUST BE USED AWY UL780.
 WILL BE APPLIED 15 MIN OF SEPARATION INDEPENDENT FL)

MODIFIED FPL BASED ON NOTAM PUBLISHED BY PERU

VY80721 051416
 FF SCEL2021
 051414 SCEL2P2X
 (FPL-LAN592-IN
 -B789/H-SDE1E2GHIJ4J5M1RWXYZ/LB1D1V1
 -SCEL1615
 -N0511F300 DONTI2B DONTI UL780 SIRAB/N0515F300 UL780
 TBG/N0519F310 UM597 PALAS PALAS2B
 -MDPC0701 MDSD
 -PBN/A1B1D1S2 NAV/RNVD1E2A1 DAT/1FANS DOF/190505 REG/CC8GN
 EET/SCF20047 SPIN0205 SEFG0343 SWED0422 MP2L0447 SKEC0532
 TNCF0604 MDCS0626 SEL/JDFK PER/D RMK/TCAS EQUIPPED)

ROUTE IN ACCORDANCE TO NOTAM PUBLISHED BY PERU



APPENDIX C

A1901/19 NOTAMN

Q)SCEZ/QPFCA/I/NBO/E/000/999/3335S08010W621
A)SCEZ B)1905061213 C)1906062359
D)DLY 0000-0400/1100-2359
E) FLW CTL ESTABLISHED, DUE TO POSS CONGESTION

OF TFC AND REDUCE POSS DLA EVENTS IN TMASANTIAGO

FLW CTL IS ESTABLISHED TO ENTER FIR SCEZ,

TFC PROCEEDING FM FIR SAMF MUST KEEP ATLEAST 20 NM

OF SPACING INDEPENDENT OF FL IN EACH TRANSFERENCE POINT

ASIMO-UMKAL. EXC SAN, HUM AND STATE FLT ANDACFT WITH MORE

THAN 9 HR IN FLT

A1824/19 NOTAMR A1532/19

Q)SCFZ/QPFCA/I/NBO/E/000/999/2306S07034W341
A)SCFZ B)1904291643 C)1905112359
D)DLY BTN 0000-0145/1145-1545/1745-2359
E) FLW CTL IS ESTABLISHED TO ENTER FIR SCFZ DESTSCEL TO TFC

PROCEEDING FM FIR SPIM THE SAME POINT BY ALDAX OR ARI SHOULD

KEEP SEPARATION 05 MINUTES EXC SAN HUM ANDSTATE FLT

INSTRUCTIONS: IQUIQUE RDR 128.7MHZ

-END / FIN -