



**Fourth GREPECAS–RASG-PA Joint Meeting and
 Twenty-second Meeting of the CAR/SAM Regional Planning and Implementation Group
 (GREPECAS/22)**

Virtual Phase (Asynchronous, 16 September to 11 October 2024)
 In-Person Phase (Lima, Peru, 20 to 22 November 2024)

Agenda Item 4: Air Navigation - Global and Regional Developments

**PROGRESS OF ECUADOR ON KEY PERFORMANCE INDICATORS
 MANAGING: KPI06 IN-ROUTE AIRSPACE CAPACITY**

(Presented by Ecuador)

EXECUTIVE SUMMARY	
This document presents the results of the development of KPI 06 regarding the capacity of the FIR/UTA Guayaquil in terms of hourly capacity, the immediate airflow control measures implemented, as well as the medium and short term strategies to increase ATC Sector capacity.	
Action:	Suggested actions are presented in Section 3.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"> • Safety • Air Navigation Capacity and Efficiency • Economic Development of Air Transport • Environmental Protection
<i>References:</i>	<ul style="list-style-type: none"> • Doc 9750, Global Air Navigation Plan (GANP) • Doc 9971, ICAO's Collaborative Air Traffic Management Handbook. • Regions' Air Navigation Plan CAR/SAM

1. Introduction

1.1 Pursuant to Conclusion 21/04 of the GREPECAS/21 Meeting (Santo Domingo, November 14-17, 2023), which adopted the “Actions for the advancement of Volume III of the CAR SAM Regional Air Navigation Plan; where mechanisms were established and optimized for data collection and management of KPIs to be inserted in the Planning Tables of Volume III.

1.2 As part of the program of activities of the Regional Project RLA/06/901, the operational staff of FMU Guayaquil attended several training sessions to strengthen and/or consolidate the implementation of

the ATFM service in Ecuador and the strategic, pre-tactical and tactical phases of the ATFM service, in addition to the post-operational analysis.

1.3 Since 2015 the FMU Guayaquil established the Runway Capacities (development of KPI 09) of the main airports of Ecuador with a periodic annual update, in the same way the levels of air demand (development of KPI 10) have been monitored comparing them with the established capacity limits; concluding that in the main airports of Ecuador: Mariscal Sucre Intl. (Quito), José Joaquín de Olmedo Intl. (Guayaquil), Eloy Alfaro Intl. (Manta), Alternativo Cotopaxi Intl. (Latacunga) there is no significant congestion at the airport level, except in specific situations such as some runway closure, weather conditions, etc.

1.4 After the global pandemic of COVID19, the recovery of aeronautical activity and air demand levels for the current period have reached and even surpassed the levels prior to 2019. This situation can be evidenced by the congestion at airport level at the main regional hubs such as Tocumen (Panama), Jorge Chavez (Lima), Merino Benitez (Santiago de Chile) and El Dorado (Bogota).

1.5 Since 2019 FMU Guayaquil established the ATC Sector Capacities (development of KPI 06) of the FIR/UTA Guayaquil and other TMAs, with a periodic annual update, likewise the air demand levels have been monitored comparing them with the established capacity limits; concluding that due to the geographical location of Ecuador, the airspace of the FIR/UTA Guayaquil presents MODERATE / HIGH levels of air demand due to the exchange of AIR TRAFFIC FLOW between the main regional HUBs. See **Appendix A**.

1.6 During the Second Follow-up Workshop on the development of Vol. III of the Regional Air Navigation Plan (RANP), held virtually from September 9-10, 2024, Ecuador presented its Key Performance Indicators (KPIs), based on data from 7 months of 2024. See **Appendix B**.

2. Analysis

2.1 For the calculation of KPI06 (En-route airspace capacity), we applied the methodology to determine the ATC SECTOR capacity for the FIR/UTA Guayaquil, resulting in an hourly capacity of 44 aircraft at 100%.

2.2 Air Demand Parameters are defined as follows:

- a) Low Demand below 50% of capacity,
- b) Moderate demand: between 50% and 80% of capacity,
- c) High demand: greater than 80% of capacity.

2.3 Since January 2024 the FMU Guayaquil has conducted a daily and permanent monitoring of the air demand of the ATC SECTOR (ACC1) related to the airspace of the FIR/UTA Guayaquil. As a result of this monitoring, several intervals with MODERATE/HIGH demand have been detected that produced imbalances between demand/capacity values:

- a) from 00H00 UTC to 02h00 UTC
- b) from 17h00 UTC to 20h00 UTC
- c) from 21h00 UTC to 22h00 UTC

2.4 Considering that the HIGH DEMAND values represent air congestion that leads to an increase in the workload of Air Traffic Controllers during the hours described in the analysis, as a Flow Management Initiative (TMI), an air flow control was established for all traffic entering the airspace of the FIR/UTA

Guayaquil in the NORTH-SOUTH direction from 23h30 UTC until 02h00 UTC, with the purpose of maintaining the balance between demand/capacity and operational safety levels.

2.5 This significant increase in air operations not only implies congestion at the airport level of the main HUBs within the SAM Region, but is also congesting the airspace of the Adjacent Control Centers. Consequently, it is identified the unavoidable need for integration and coordination at CROSSBORDER level of the ATFM units in the Region.

3. Suggested Action

3.1 States participating in the Meeting are invited to take note of the information presented while stressing the importance of:

- a) Calculate, establish and publish KPI06 airspace capacity limits.
- b) Promote and strengthen the integration at CROSSBORDER level of the ATFM units of the Region.
- c) Plan and develop projects that lead to increase the capacity of ATC SECTORS that already present congestion, such as: airspace redesign, opening of new control sectors, optimization of air-ground telecommunications, automatic coordinations, etc.
- d) Develop and establish training plans that guarantee the optimum number of Air Traffic Controllers within each ATS unit, avoiding loss of ATC SECTOR capacity due to lack of personnel.

APPENDIX A

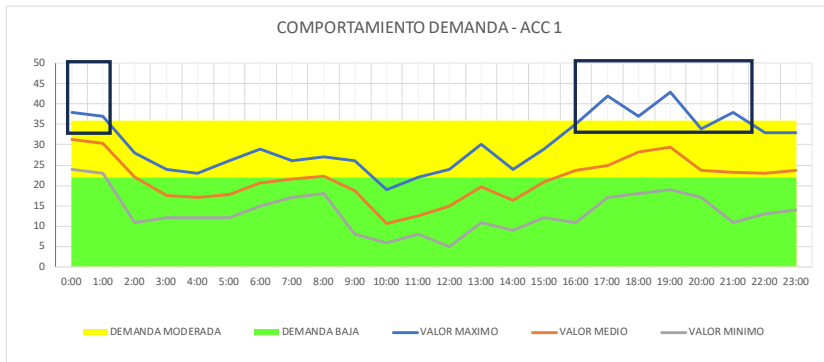
Air Demand Monitoring - August 2024 (FIR/UTA Guayaquil)

SECTOR ATC	DIA	FECHA	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
ACC 1	jueves	01/08/2024	38	29	22	16	18	15	15	17	25	21	13	16	13	21	20	23	21	23	30	32	18	18	17	26
	viernes	02/08/2024	30	31	20	18	16	12	15	21	19	15	10	10	15	22	15	20	17	17	31	30	21	24	32	28
	sábado	03/08/2024	34	28	23	20	20	14	24	17	20	16	17	17	12	16	21	24	31	26	26	34	28	23	20	14
	domingo	04/08/2024	28	24	21	17	17	17	19	20	27	20	17	15	10	23	15	25	22	17	27	35	24	27	25	24
	lunes	05/08/2024	34	37	26	18	20	17	22	21	21	18	14	12	18	18	9	12	11	20	24	24	26	25	15	18
	martes	06/08/2024	24	29	20	19	12	20	17	20	20	15	8	11	20	28	18	21	22	25	32	27	22	11	26	21
	miércoles	07/08/2024	25	29	21	13	14	17	23	23	24	19	13	15	17	21	10	25	30	17	36	36	25	26	26	18
	jueves	08/08/2024	38	25	22	16	15	14	16	19	22	21	10	9	19	18	14	23	24	24	32	30	19	19	28	23
	viernes	09/08/2024	30	35	17	17	21	13	22	25	23	21	9	16	20	18	12	26	25	24	37	33	27	20	19	27
	sábado	10/08/2024	28	33	24	14	21	20	20	23	20	20	8	13	20	25	20	22	29	31	34	35	31	23	24	20
	domingo	11/08/2024	28	32	23	16	15	24	25	25	24	19	10	10	11	19	18	23	24	32	32	30	27	29	25	22
	lunes	12/08/2024	36	33	26	20	20	20	21	21	27	26	19	12	19	28	24	15	26	22	25	23	27	30	23	27
	martes	13/08/2024	35	32	22	12	16	26	29	23	21	20	9	13	14	24	18	19	21	29	24	20	20	20	25	23
	miércoles	14/08/2024	38	33	24	19	16	19	21	25	23	24	10	8	20	20	17	20	21	24	29	28	21	27	21	23
	jueves	15/08/2024	29	29	24	17	19	25	21	22	22	16	8	10	17	16	14	22	28	25	33	27	18	18	23	22
	viernes	16/08/2024	32	33	28	20	12	16	27	26	23	19	11	12	19	20	19	22	24	27	32	30	30	21	33	27
	sábado	17/08/2024	30	27	23	18	14	17	24	17	22	22	11	8	20	28	21	21	35	33	30	42	28	16	23	26
	domingo	18/08/2024	34	28	25	24	15	20	18	21	24	18	7	22	10	25	20	21	26	30	32	37	27	25	25	28
	lunes	19/08/2024	34	35	26	18	21	16	22	24	21	18	6	10	8	12	9	12	17	20	23	27	18	17	13	21
	martes	20/08/2024	28	30	22	15	15	22	17	23	22	20	10	10	23	16	14	20	25	27	21	23	17	24	17	20
	miércoles	21/08/2024	30	24	11	20	16	16	23	21	22	18	10	12	12	14	17	16	20	24	19	22	18	17	19	25
	jueves	22/08/2024	29	32	20	13	18	25	17	17	18	20	8	11	8	12	14	16	18	25	22	23	19	22	22	27
	viernes	23/08/2024	34	29	21	22	23	14	18	25	21	8	7	11	8	14	15	19	24	22	32	30	25	34	25	29
	sábado	24/08/2024	31	34	22	14	16	16	19	19	18	13	10	18	15	21	21	23	28	33	28	43	34	29	28	22
	domingo	25/08/2024	29	32	26	17	19	14	18	25	25	20	6	17	12	17	16	27	25	28	31	27	21	27	20	28
	lunes	26/08/2024	25	29	23	19	19	23	28	24	26	22	9	9	11	12	21	29	22	18	22	23	18	14	21	21
	martes	27/08/2024	30	31	20	20	14	20	21	22	25	20	15	12	13	13	20	23	24	23	23	23	29	27	22	22
	miércoles	28/08/2024	37	23	20	16	15	14	20	21	23	18	11	10	13	19	18	16	16	19	22	19	21	25	30	27
	jueves	29/08/2024	31	31	21	19	16	14	21	21	23	20	15	9	5	16	19	21	17	20	27	25	20	21	17	20
	viernes	30/08/2024	31	31	28	20	17	17	21	19	18	19	8	14	24	30	13	25	22	23	33	34	22	38	33	33
	sábado	31/08/2024	27	32	14	19	18	13	17	20	22	17	11	15	19	26	19	29	34	42	32	37	27	17	25	25

		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
ACC 1	VALOR MAXIMO	38	37	28	24	23	26	29	26	27	26	19	22	24	30	24	29	35	42	37	43	34	38	33	33
	VALOR MEDIO	31	30	22	18	17	18	21	22	22	19	11	12	15	20	16	21	24	25	28	29	24	23	23	24
	VALOR MINIMO	24	23	11	12	12	12	15	17	18	8	6	8	5	11	9	12	11	17	18	19	17	11	13	14

CAPACIDAD HORARIA SECTOR ATC				
	ACC1	ACC2	APP	FIC
100%	44	40	46	40
90%	40	36	41	36
80%	36	32	36	32
50%	22	20	23	20

ALTA mayor al 80% de la capacidad
MODERADA entre el 50% y 80% de la capacidad
BAJA menor al 50% de la capacidad



INTERVALOS DEMANDA ALTA:
 desde 00h00 UTC hasta 02h00 UTC
 desde 17h00 UTC hasta 20h00 UTC
 desde 21h00 UTC hasta 22h00 UTC

NUMERO DE DÍAS	31	
TOTAL DE HORAS	744	100%
HORAS DEMANDA ALTA	12	1,61%
HORAS DEMANDA MODERADA	335	45,03%
HORAS DEMANDA BAJA	397	53,36%
NO SE REGISTRAN DATOS	0	0,00%

APPENDIX B

KPIs of Ecuador for Vol III of the RANP

(1) STATE	(2) FIR/CTA/TMA /AIRPORT	(3) KPIs											(4) Remarks (indicate baseline year)
		KPI01	KPI02	KPI04	KPI05	KPI06	KPI08	KPI09	KPI10	KPI13	KPI14	KPI15	
ECUADOR	SEQM	84,37%	--					27	15	--	44,23%	++	BASELINE 2024 (ENE-JUL) VAR. 2A
	SEGU	83,12%	--					27	25	--	50,63%	++	BASELINE 2024 (ENE-JUL) VAR. 2A
	FIR GUAYAQUIL			++	++	44 (CHS)	++						BASELINE 2024 (ENE-JUL) CHS= hourly sector capacity
	TMA GUAYAQUIL			++	++	46 (CHS)	++						BASELINE 2024 (ENE-JUL) CHS= hourly sector capacity
	TMA QUITO			++	++	--	++						BASELINE 2024 (ENE-JUL) CHS= hourly sector capacity

— END —