



**Agenda Item 3: Report of activities and deliverables of the Interop TF and Subgroups**

**METHODOLOGY TO QUANTIFY ERRORS IN FLIGHT PLANS**

(Prepared by the Ad-hoc Group of the ATM/FPL Subgroup)

<b>SUMMARY</b>	
<p>This working paper presents a methodology for data collection to quantify errors in flight plans and associated messages, in order to obtain indicators and measure the level of mitigation achieved with the adoption of measures indicated in the ATM/FPL Roadmap.</p>	
<b>References</b>	
<ul style="list-style-type: none"> <li>• GT INTEROP/3 Meeting (Virtual, 14 to 17 March, 2022).</li> <li>• SAM/IG/27 Meeting Final Report (Virtual, 31 May to 3 June, 2022).</li> <li>• Meeting of the Ad-hoc group of the ATM/FPL subgroup (Virtual, 25 August, 2022).</li> <li>• Roadmap version 2.2</li> </ul>	
<b>ICAO Strategic Objectives:</b>	<p><i>A – Safety</i>  <i>B – Air Navigation Capacity and Efficiency</i></p> <p><i>ASBU: COMI-B0/7 (AMHS) and FICE-B0/1 (AIDC)</i></p>

**1. Background**

1.1 Within the framework of the SAM Region Implementation Group (SAM/IG), the ATM/FPL Subgroup of the Interoperability Task Force (GT Interop) was activated to deal with matters related to error mitigation and duplicity/multiplicity of flight plans, as well as issues related to the centralization of flight plan management and associated messages.

1.2 During the Twenty-Seventh Workshop/Meeting of the Implementation Group (SAM/IG/27), held from 31 May to 3 June, 2022, it was established the need to develop a common methodology to quantify errors in the flight plans and associated messages, in order to obtain indicators to measure the mitigation level achieved by adopting measures of the ATM/FPL Roadmap.

1.3 Through a series of observation processes, the Air Navigation Service Providers have identified a considerable number of erroneous, duplicate or incorrectly addressed flight plans that are transmitted to the automated ATS/AIS systems for processing and validation of flight plans. In this sense, the Ad-hoc monitoring group was formed to analyze and coordinate mitigation and solution actions, made up of representatives from Argentina, Chile, Ecuador, Panama and Peru.

## 2. FPL Monitoring Group

2.1 States will designate personnel from the ATS and/or AIS area for FPL monitoring and will be responsible for:

- a) Complete the annexes and provide statistical data on the errors detected in the completion of flight plans in their State.
- b) Report duplicate/erroneous FPL issues that occur in your State.
- c) Supervise and monitor the execution of the action plan for the FPL mitigation/solution.
- d) Participate in periodic teleconferences to review the progress and propose the necessary modifications.

2.2 The personnel designated by the State may be supported by representatives of other States who may access the list of focal points of the monitoring group presented in **Annex D**.

## 3. Methodology

The methodology for collecting flight plan data in the ATS control center system would be as follows:

### *Automatic system*

3.1 The States that have automatic error reporting systems will record the data in the forms of Annex A, Annex B and Annex C.

### *Manual System*

3.2 The technical staff responsible for extracting data from the FDP/AIS/COM flight plan processors will send via email on Fridays to the FPL monitoring delegates the flight plan files entered into the automated air traffic control systems in digital format (.txt or .xls).

*Note: States that have automated systems from the manufacturer INDRA can find the information in the following directories:*

*/local/<proj\_id>/fdp/exec/historical*  
*/local/<proj\_id>/fdp/exec/aftns*  
*/local/<proj\_id>/fdp/exec/records*

3.3 The review of the information will be carried out by means of text editors (Notepad) or applications for reading data using search filters that allow the information requested in the forms to be easily quantified during a period of three months.

3.4 Once the files have been received, the FPL monitoring delegates will enter the information requested in Annex A for the record of FPL entered into the ATS system that will consist of country, daily date, total of the flight plans entered into the ATS system (overflights, arrivals/international departures and domestic flights), total number of flight plans with errors and the percentage of errors.

*Note: INDRA system files*

- *Daily total number of total flight plans entered into the ATS system:*  
*Field: TOTAL FPL*  
*System file: HISTORICAL.2022.08.10 (example)*  
*Search filter: (FPL-*

- *Total daily number of flight plans entered with error to the ATS system.*  
*Field: TOTAL ERRORS*  
*System file: HISTORICAL.2022.08.10 (example)*  
*Search filter: **FPL CORRECTION***

3.5 For the recording of data in Annex B of duplicate flight plans, the highest percentage of errors calculated during the week will be taken as a sample and will consist of the following fields:

- Condition
- Date
- Flight ID
- Overflight, takeoff or arrival
- Originator's AFTN/AMHS address
- Number of duplicate flight plans
- Registration of AIDC messages codes LRM-RMK/07/07/ , which means that the adjacent control center has a duplicate flight plan.
- Log of AIDC messages code LRM-RMK/06/07/, which means that the adjacent control center does not have a flight plan.
- Observations

*Note: INDRA Systems Files*

- *The control centers that have AIDC coordination may make the report through:*

*Field: LRM-07/07*  
*System file: HISTORICAL.2022.08.10 (example)*  
*Search filter: (**LRM-RMK/07/07**)*

*Field: LRM-06/07*  
*System file: HISTORICAL.2022.08.10 (example)*  
*Search filter: (**LRM-RMK/06/07**)*

3.6 The data collection in Annex C for the registration of flight plans with errors from the different boxes will take the sample with the highest percentage of errors during the week and will consist of the following fields:

- Condition
- Date
- Flight ID
- Box 7 - Aircraft identification
- Box 8 - Rules and Type of flight
- Box 9 - Aircraft type and wake turbulence category
- Box 10/18 - Equipment and capabilities
- Box 15 - Speed or level
- Box 15 - SID&STAR
- Box 15 - Route
- Box 16 - Alternate aerodrome
- DBM ATS
- AIS FPL
- ICAO FPL
- RVSM
- EOBD

- Others (Not listed)

#### **4. Information sent to the ATM/FPL group rapporteur**

4.1 The files with the data entered in the annexes will be sent the week after the information has been obtained via e-mail by a delegate from each State to the address (xxxxx@xxxx).

4.2 The forms are prepared in "EXCEL" spreadsheet format and will be completed so that all the events of the requested period be ordered chronologically and in a single digital form.

4.3 If any State in the Region has an application that creates lists of duplicate or erroneous flight plans in some other format, it is essential that it be in a tabular format that allows automated data processing.

4.4 The forms are intended for data collection, to obtain a sample of FPL's for analysis and evaluation in order to reduce duplication/multiplicity and errors in flight plans in air traffic services systems.

4.5 All the fields of the form must be filled in, except those contained under the heading "Optional Field/Observations/Others", which should only be filled in if there is any additional condition.

#### **5. Recommendations**

##### *Measures to optimize flight plan management*

5.1 Bearing in mind that airlines have automated and streamlined the preparation of flight plans from their AFTN/AMHS dispatch centers, States of the SAM Regions should take into account that this mechanism better facilitates the reception and processing of flight plans to ANSP units.

5.2 Carry out the correct routing of flight plans to automated control centers, listing the AFTN routing requirements in their aeronautical information publication (AIP).

5.3 Carry out a complete analysis to determine if the current automated ATS systems comply with the 2012 flight plan format, especially in what has to do with the correlation of boxes 10 and 18.

##### *ATC Database Configuration*

5.4 The databases of the automated systems of the control centers and ATS/AIS flight plan validators must be configured in accordance with the amendments published in each AIP within the AIRAC publication periods.

5.5 That the pertinent aeronautical information of the State be available to the users involved in the preparation of flight plans and/or in the management of automated ATS systems, and that said States, when planning amendments to the aeronautical information, carry out coordination and communications as soon as possible with the other States and users involved.

##### *Error mitigation measures and display of indicators*

5.6 That the inconsistencies and duplicity of the flight plans be reported to the operators so that they take immediate measures to correct the information sent.

5.7 Development of training workshops for dispatch personnel and ARO/AIS personnel on the correct validation of the flight plan boxes and their importance in the AIDC coordination process and ATS systems.

5.8 That the purchasers of new automated systems request from the manufacturers the correct validations in the FDP according to the FPL 2012 format and the development of automatic data analysis tools that include a group of system data study functions (for example, traffic statistics, tests and verification of data, events and logs).

5.9 Establish a reporting mechanism to regularly provide feedback to operators on the number and causes of rejection and errors in flight plans, prior to establishing agreements to send the FPL directly to the ARO/AIS offices.

5.10 Before delegating responsibility for the direct submission of flight plan messages, air navigation service providers should consider conducting a trial with new operators, with the ARO/AIS office, using a central AFTN/AMHS address to receive the messages for an initial manual validation.

5.11 With the support of the ICAO/SAM Regional Office, the possibility of obtaining a repository within the ICAO web portal for displaying indicators on the subject, and the creation of a digital data collection form in which users can obtain real-time information on indicators and statistical data regarding duplicate or erroneous FPLs.

## **6. Suggested actions**

6.1 The Meeting is invited to:

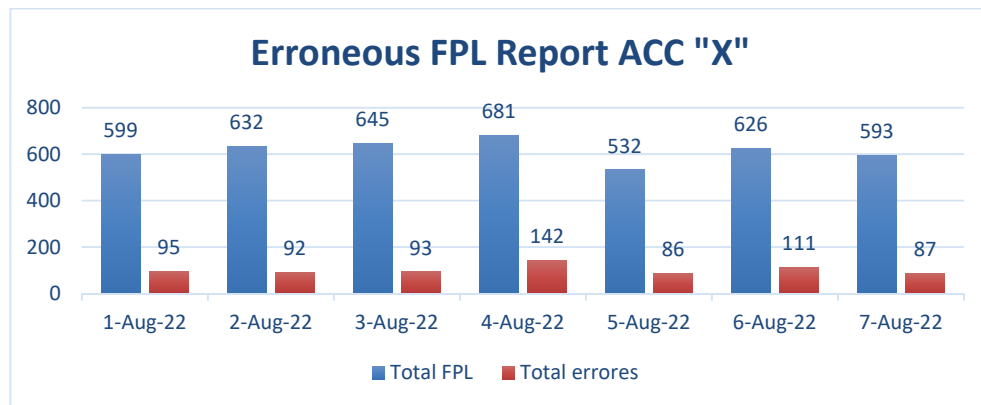
- a) consider the information presented in this paper;
- b) discuss the actions that can be derived from the information presented;
- c) any other action deemed necessary.



**ANNEX B**

Daily Log – Total FPLs and Total Errors

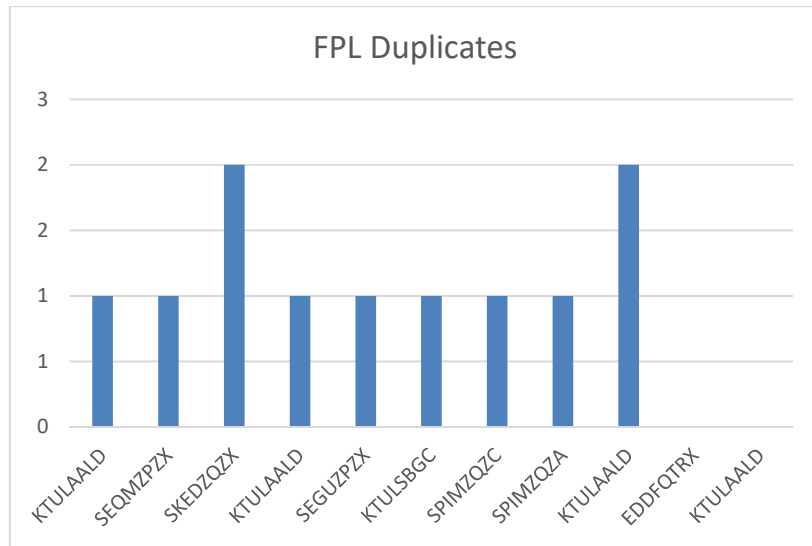
REGISTRO DE PLANES DE VUELO				
PAIS				
Fecha	Total FPL	Total errores	Porcentaje	Observaciones
1-ago-22	599	95	16%	
2-ago-22	632	92	15%	
3-ago-22	645	93	14%	
4-ago-22	681	142	21%	Para revision de errores
5-ago-22	532	86	16%	
6-ago-22	626	111	18%	
7-ago-22	593	87	15%	
8-ago-22	646	107	17%	
9-ago-22	598	95	16%	
10-ago-22	562	98	17%	
11-ago-22	461	92	20%	Para revision de errores
12-ago-22	544	93	17%	
13-ago-22	460	54	12%	
14-ago-22	462	76	16%	
15-ago-22	549	98	18%	
16-ago-22	649	91	14%	
17-ago-22	611	102	17%	
18-ago-22	666	116	17%	
19-ago-22	444	91	20%	Para revision de errores
20-ago-22	561	98	17%	
21-ago-22	417	57	14%	
22-ago-22	600	95	16%	
23-ago-22	617	100	16%	
24-ago-22	697	134	19%	Para revision de errores
25-ago-22	684	124	18%	
26-ago-22	626	107	17%	
27-ago-22	550	80	15%	
28-ago-22	470	54	11%	
29-ago-22	564	86	15%	
30-ago-22	589	87	15%	
31-ago-22	636	97	15%	



**ANNEX C**

Duplicate FPLs Report

Reporte de FPL Duplicados								
Estado	Fecha	ID del vuelo	OVR/DEP/ARR	Dirección Originador	FPL Duplicados	LRM/07/07	LRM/06/07	Observaciones
Ecuador	4-ago-22	AAL2162	DEP	KTULAALD	1			2FPL
				SEQMZPZX	1			
		AAL2163	ARR	SKEDZQZX	2			4 FPL
				KTULAALD	1			
		LNE1534		SEGUZPZX	1			
				KTULSBGC	1			
		AAL379	OVF	SPIMZQZC	1			4 FPL
				SPIMZQZA	1			
				KTULAALD	2			
		QTR8164	DEP	EDDFQTRX	0	SKEDAIDC		
		AAL588	DEP	KTULAALD	0		SKEDAIDC	



### ANNEX D

#### FPL record with errors

REGISTRO DE PLANES DE VUELO CON ERROR "ESTADO"																
Fecha	ID FLIGHT	Operador	Casilla7 (Callsign)	Casilla8 Flight rules	Casilla9 Acft/wake	Casilla10/18	Casilla15 Speed/level	Casilla 15 SID/STAR	Casilla15 Route	Casilla 16 AD ALTR	ATS DBM	AIS FPL	ICAO FPL	RVSM	EOBD	OTROS
4/9/2022	LNE1354	LNE				1										PBN/ Ext fix
	AAL932	AAL							1							Invalid sid
	N4753	PRI									1					No Star
	HCCTD	PRI										1				No valid
	HK1234	PRI											1			Invalid
	N568M	PRI			1		1									Invalid
	LPE2163	LPE					1									Invalid
	HCAKG	PRI		1												Y
	AAL931	AAL													1	No RVSM
	AMX894	AMX														Invalid

