



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

WORKING PAPER

AIDC/NAM/ICD/3 — WP/02  
24/02/20

**Third NAM/CAR Air Traffic Services Inter-facility Data Communication (AIDC) and North American Interface Control Document (NAM/ICD) Implementation Follow-up Meeting (AIDC/NAM/ICD/3)**  
Mexico City, Mexico, from 25 to 28 February 2020

**Agenda Item 2: Joint Meeting with ANI/WG AIDC Task Force (AIDC/TF)**

**FPL MONITORING GROUP DATA COLLECTION ANALYSIS, 2019-2**

(Presented by FPL Monitoring Group Rapporteur)

**EXECUTIVE SUMMARY**

The FPL Monitoring Group was created during the 4th NACC/WG meeting in 2014 as an ad-hoc group of the AIDC Task Force of the ANI/WG. It addresses flight planning issues that impact AIDC Implementation. This working paper presents the results of the last data collection done by the group to review flight plan errors in the region.

|                              |   |
|------------------------------|---|
| <b>Action:</b>               | Suggested actions are presented in Section 5.   |
| <i>Strategic Objectives:</i> | <ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li></ul>   |
| <i>References:</i>           | <ul style="list-style-type: none"><li>• Fourth North American, Central American and Caribbean Working Group Meeting (NACC/WG/4) (Ottawa, Canada, 24 to 28 March 2014)</li></ul> |

**1. Introduction**

1.1. The FPL Monitoring Group was created during the Fourth North American, Central American and Caribbean Working Group Meeting (NACC/WG/4) meeting in 2014 as an ad-hoc group of the AIDC Task Force of the ANI/WG. It addresses flight planning issues that impact AIDC Implementation.

1.2. A regular task of this group is the collection of flight plan error data and the presentation of statistics that reflect the current status of flight plan error occurrence. This paper summarizes the latest data collection results.

**2. Data collection details**

2.1. The latest data collection took place from 13 to 19 October, 2019. It was the second data collection of that year.

2.2. The data is collected using a simple excel file to record date of the flight, call-sign, originating address, the error detected, and any comment from the State. Samples of data are taken during one hour at different times of the day. The total numbers of flight plans during the times of collection are also recorded, in order to serve as a reference of the error occurrence rate.

2.3. After the data is received from each State it is consolidated into one table. Since there are significant differences in the amount of data submitted by each State, the result for each State is expressed in percentages, to minimize the bias. These are referred to as “relative” values. As an example, suppose that four States submitted data as follows:

| <b>State</b> | <b>Errors</b> | <b>Total Processed</b> |
|--------------|---------------|------------------------|
| State 1      | 12            | 100                    |
| State 2      | 18            | 200                    |
| State 3      | 120           | 1000                   |
| State 4      | 450           | 5000                   |

In terms of percentage, State 1 has  $12/100 = 12\%$  errors; State 2 has  $18/200 = 9\%$  errors. Since there are four States, each one will be assigned 25% of the weighted total. Thus, the weighted number of errors for State 1 will be  $12\%$  of  $25 = 3$ ; for State 2 will be  $9\%$  of  $25 = 2.25$ . The table will end up as follows:

| <b>State</b>  | <b>Errors</b> | <b>Total Processed</b> |
|---------------|---------------|------------------------|
| State 1       | 3             | 25                     |
| State 2       | 2.25          | 25                     |
| State 3       | 3             | 25                     |
| State 4       | 2.25          | 25                     |
| <b>Totals</b> | <b>10.5</b>   | <b>100</b>             |

As can be seen, in terms of proportion States 1 and 3 have the same error rates, as also States 2 and 4 have. A total error rate of 10.5% is the expected value among all States.

2.4. There are also results presented using the absolute values, without using any weighting; these are referred to as “absolute” values. They serve as a reference for the relative values.

### **3. Data collection results discussion**

3.1. The data collection results are presented in Appendix A. Following are comments of the graphs presented.

3.2. The first graph, “Correct vs Incorrect, Relative values”, presents the percent of correct flight plans. As we can see, the proportion of errors is at 13%. This does not represent an advance in flight plan error reduction over the last years.

3.3. The next graph, “Errors by Originator type”, presents the amount of flights with errors committed by ANSPs, airspace users (airlines) or both. The numbers represent amount of flight plans, not individual errors. As can be seen, a greater proportion of errors are originated by the airspace users. This could be a direct result of the growing practice of accepting the electronic flight plan message directly from the airline, instead of originating them from the departure ATS unit, so this is not a surprise.

3.4. The next graph, “Errors by Type, Absolute values”, shows the distribution of error types among the occurrences. Historically flight plan duplication has always been the most frequent error, with 46% occurrence. Other notable errors are also labelled in the graph.

3.5. The “Errors by Type, Relative values” graph is similar to the previous one, with the exception of showing relative values. There is not much variation with the graph for absolute values, with the exception of the “No alternate aerodrome” error, which is overwhelmingly more than the previous graph. This is due to the fact that this error was very frequent among States that reported a small amount of total flight plans processed. Also the error “ICAO Doc 4444 format incorrect” is more frequent in the graph of absolute values than in relative values; this reflect the opposite case, in which a certain State with a large amount of total flight plans processed swings the graph in their direction, when in proportion it is not a very frequent error elsewhere. This is how relative and absolute values complement each other to “complete the picture” of what is happening.

3.6. The next graph, “Flight plans with multiple errors”, presents the number of flight plans with multiple errors. It is important to note the large number of flight plans with multiple errors, which also is a factor to take into account when evaluating the percentage of errors.

3.7. The next two graphs depict the proportion of errors relative to the airline or company corresponding to the call sign, regardless of if the originator is the airline or the ATS unit. Only the top ten values are presented. In these graphs, “GA” represents General Aviation, and “#N/A” represents those flight plans in which the company was not determined at the time of the analysis. It is important to see the great amount of flight plans belonging to general aviation, in both graphs.

3.8. The final two graphs present the distribution of errors according to the originating address. Also only the top ten are included in each one. The addresses that appear are very similar between graphs, and most are from airspace users, in accordance to the explanation in item 3.

## **4. Conclusions**

4.1. From the analysis of the data above, several conclusions can be extracted:

- a) The bulk of flight plan origination, and thus error occurrence, has shifted from the ATS units to the airspace users.
- b) The proportion of each type of error is more or less uniform among States.
- c) There is a significant occurrence of multiple errors in flight plans.
- d) General aviation is an important contributor to flight plan errors. Taking into account that in most cases general aviation submits flight plans through third party channels, this gives us the disadvantage of not being able to address them directly, but also the advantage that there are single points of contact that could help us control these errors.

- e) Given that the focus of errors is now on the airspace users, feedback on a case by case basis is fundamental to reducing errors gradually but definitely, by any means available (“REJ” messages or directly addressing a PoC, among other possibilities). States and airspace users are encouraged to establish a communication channel between them for the purpose of exchanging this feedback.

**5. Suggested Actions**

5.1. The Meeting is invited to:

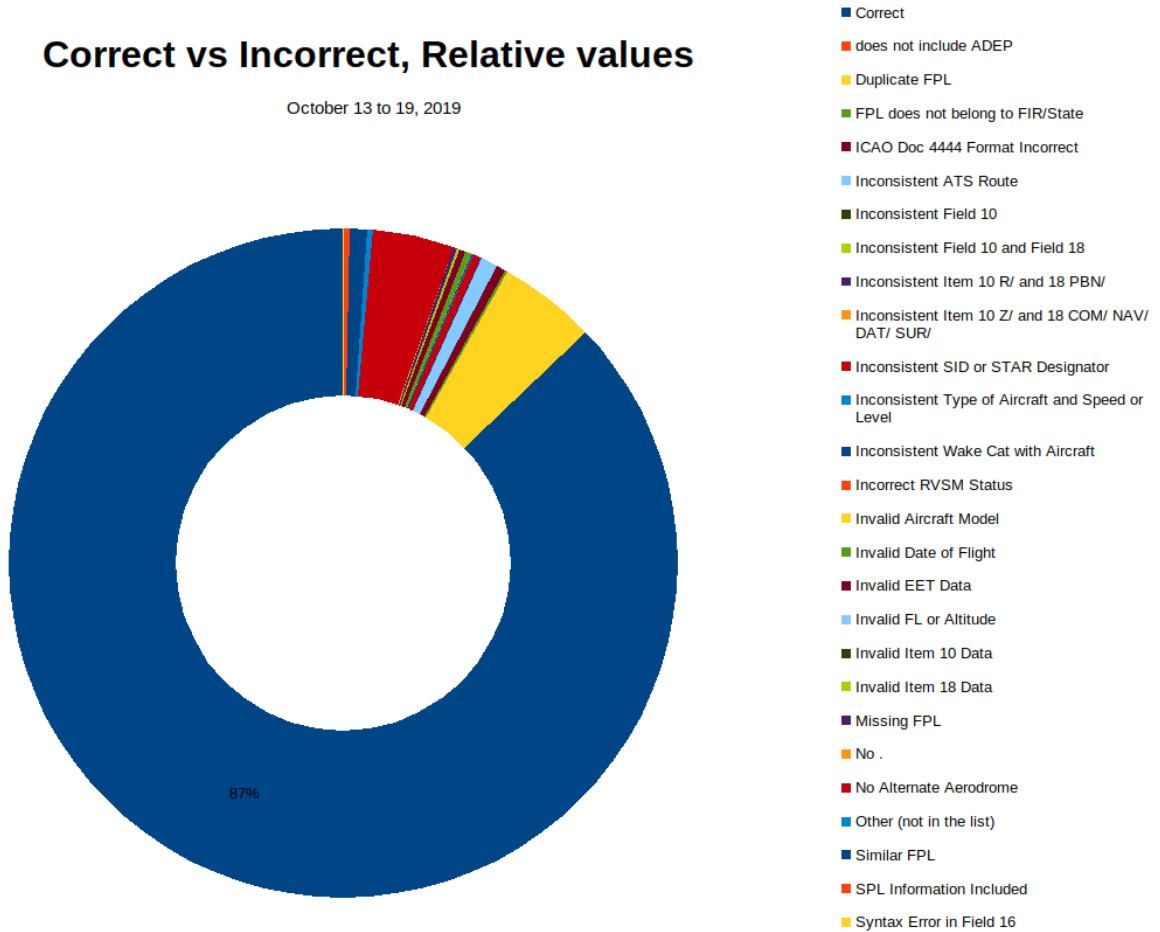
- a) Consider and comment on the information presented in items 1 and 2.
- b) Consider and comment on the conclusions in item 3, including the action item in 4).

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APPENDIX

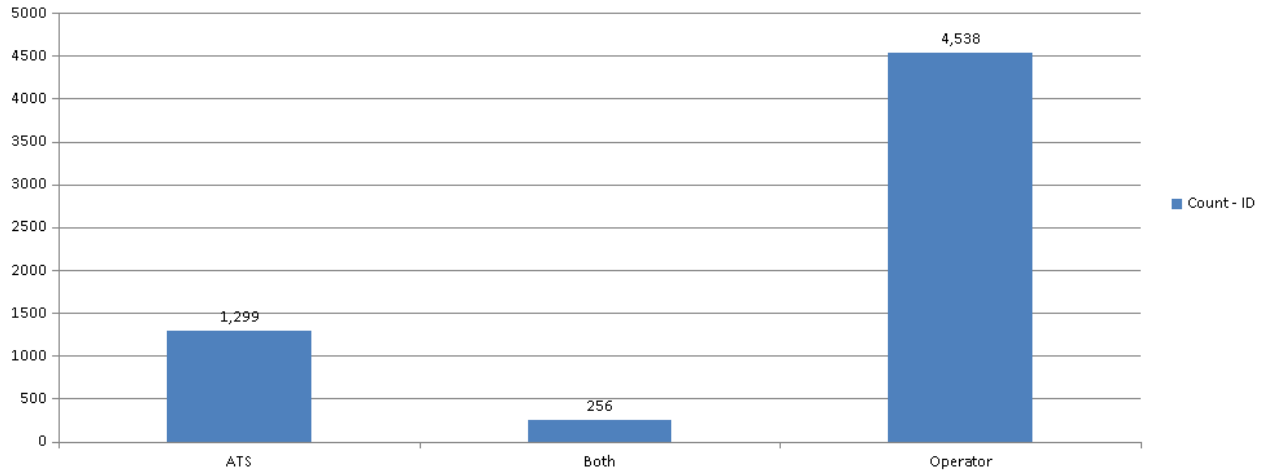
Correct vs Incorrect, Relative values

October 13 to 19, 2019



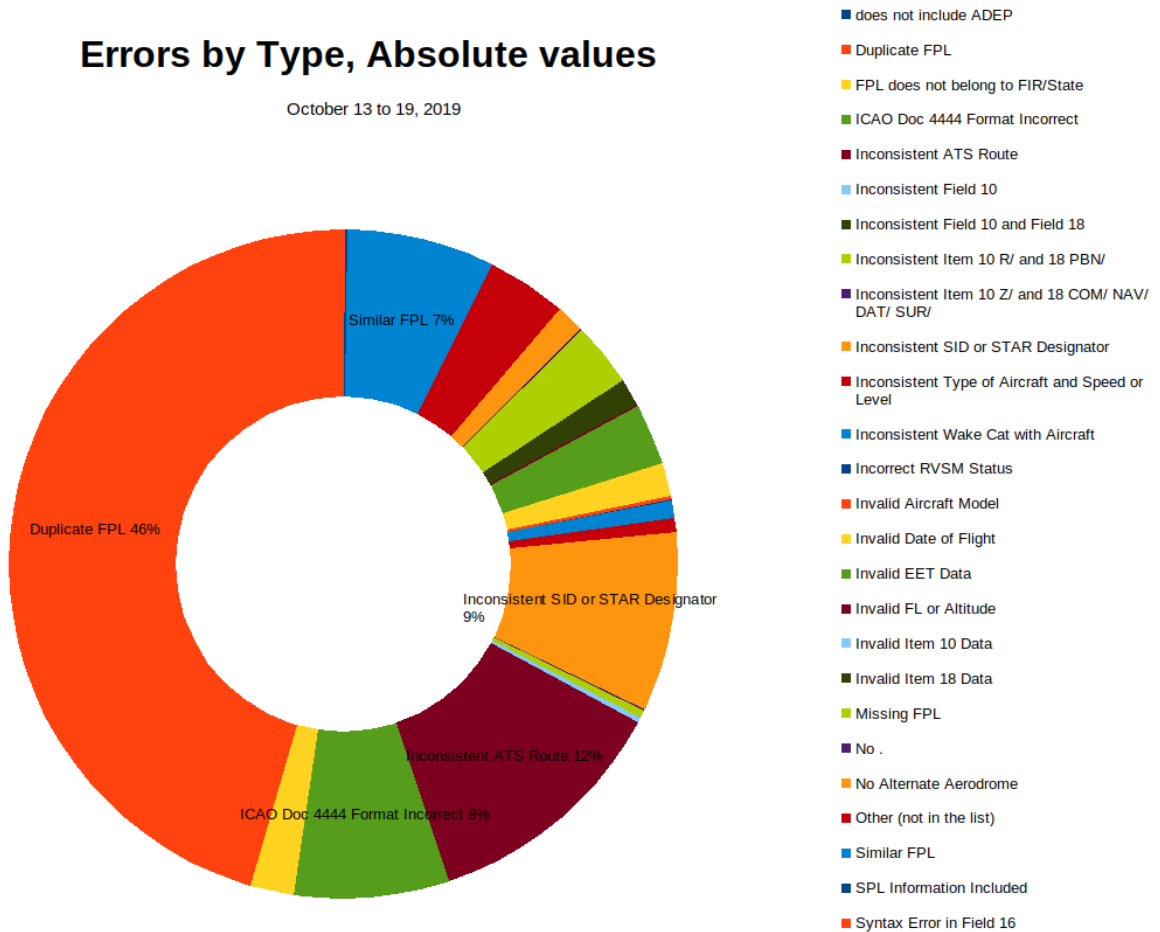
FPL MONITORING GROUP DATA COLLECTION ANALYSIS, 2019-2

### Errors by Originator Type



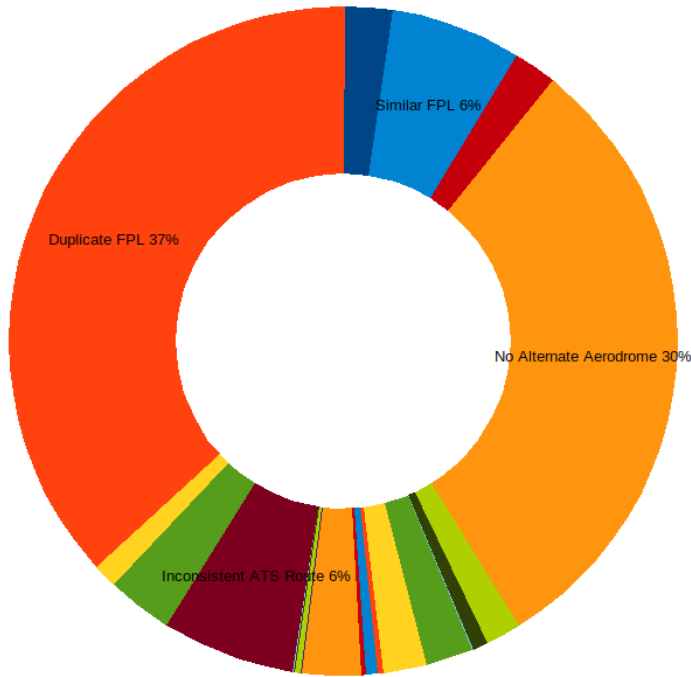
### Errors by Type, Absolute values

October 13 to 19, 2019



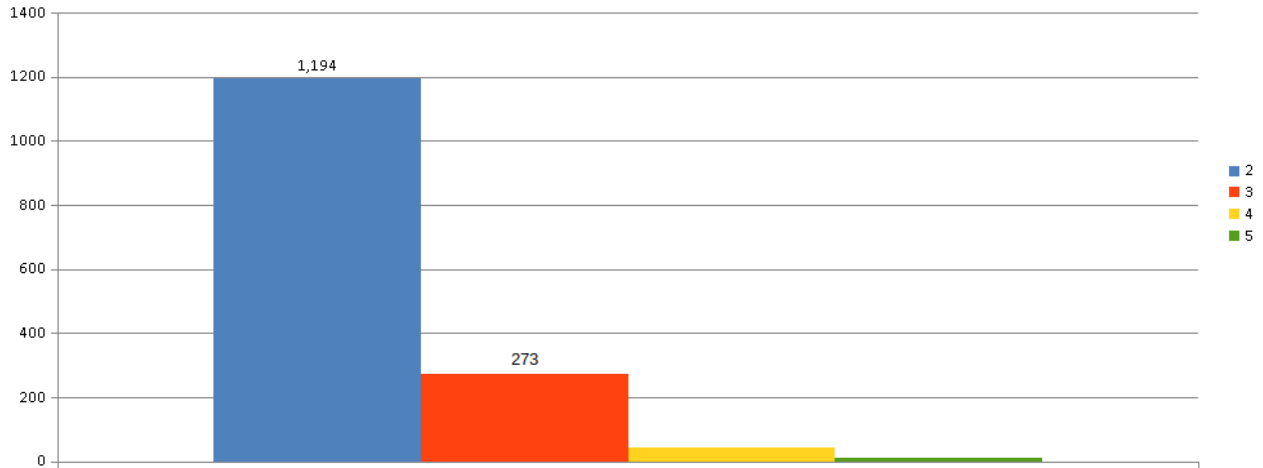
# Errors by Type, Relative values

October 13 to 19, 2019



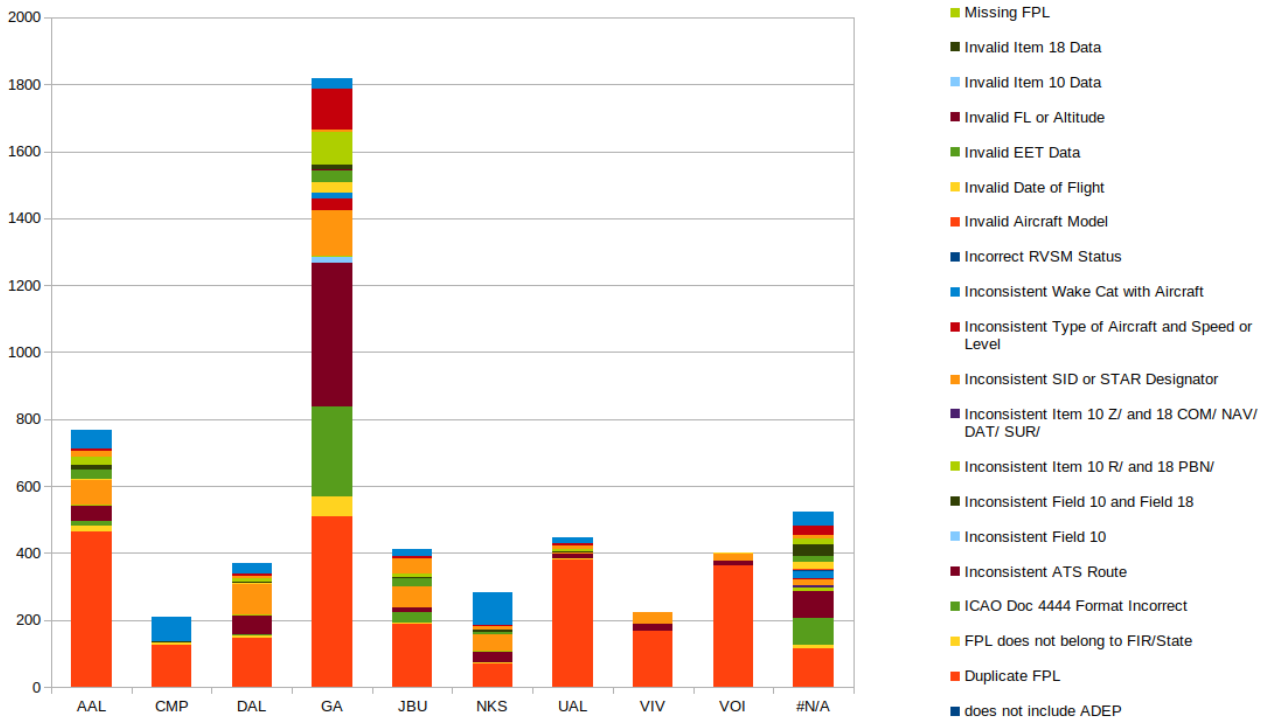
- does not include ADEP
- Duplicate FPL
- FPL does not belong to FIR/State
- ICAO Doc 4444 Format Incorrect
- Inconsistent ATS Route
- Inconsistent Field 10
- Inconsistent Field 10 and Field 18
- Inconsistent Item 10 R/ and 18 PBN/
- Inconsistent Item 10 Z/ and 18 COM/ NAV/ DAT/ SUR/
- Inconsistent SID or STAR Designator
- Inconsistent Type of Aircraft and Speed or Level
- Inconsistent Wake Cat with Aircraft
- Incorrect RVSM Status
- Invalid Aircraft Model
- Invalid Date of Flight
- Invalid EET Data
- Invalid FL or Altitude
- Invalid Item 10 Data
- Invalid Item 18 Data
- Missing FPL
- No .
- No Alternate Aerodrome
- Other (not in the list)
- Similar FPL
- SPL Information Included
- Syntax Error in Field 16

### Flight Plans with Multiple Errors



### Errors by Company, Absolute values

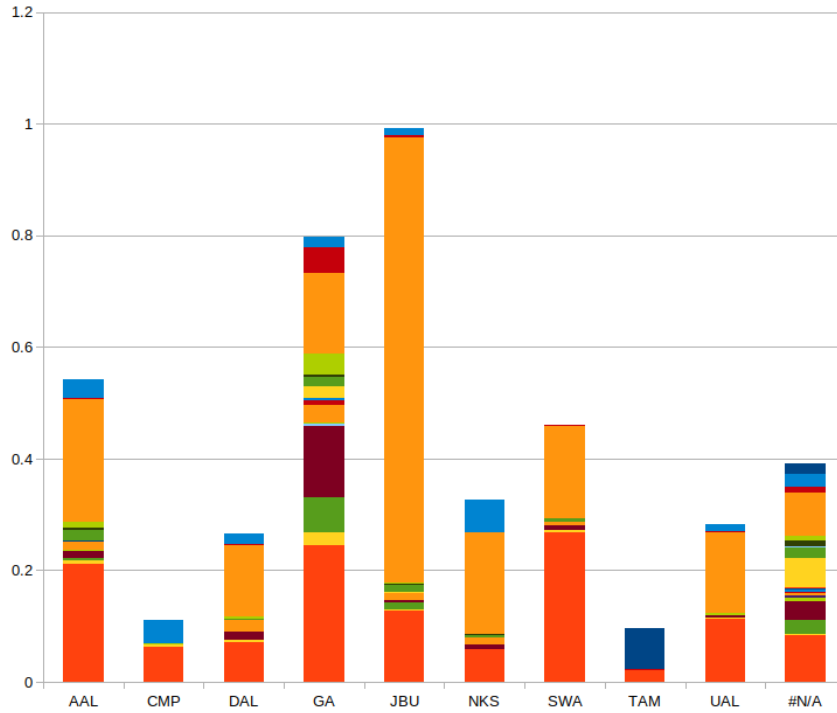
October 13 to 19, 2019





## Errors by Company, Relative values

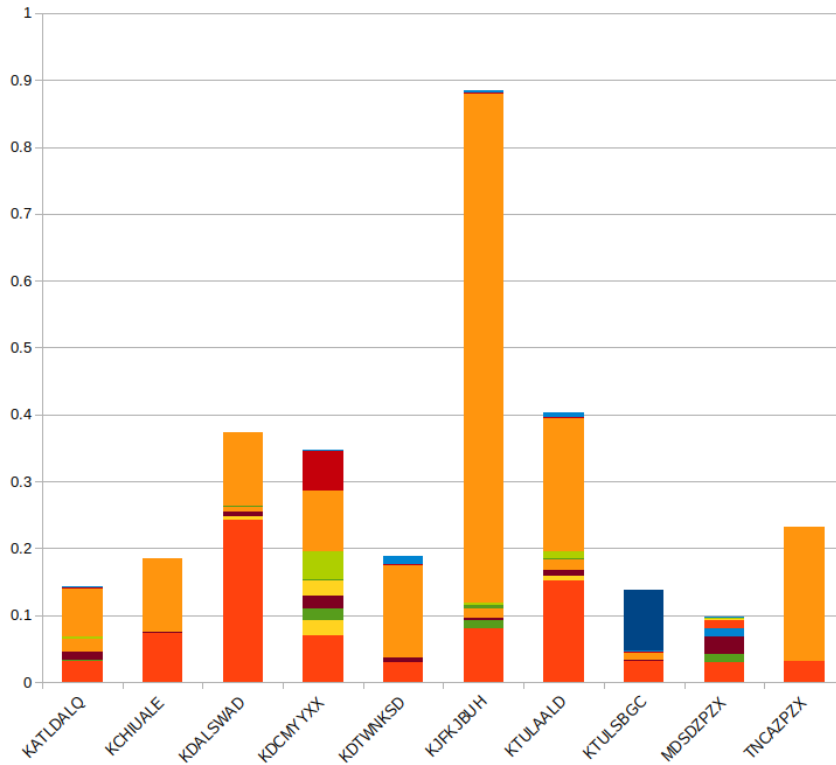
October 13 to 19, 2019



- Syntax Error in Field 16
- SPL Information Included
- Similar FPL
- Other (not in the list)
- No Alternate Aerodrome
- No .
- Missing FPL
- Invalid Item 18 Data
- Invalid Item 10 Data
- Invalid FL or Altitude
- Invalid EET Data
- Invalid Date of Flight
- Invalid Aircraft Model
- Incorrect RVSM Status
- Inconsistent Wake Cat with Aircraft
- Inconsistent Type of Aircraft and Speed or Level
- Inconsistent SID or STAR Designator
- Inconsistent Item 10 Z/ and 18 COM/ NAV/ DAT/ SUR/
- Inconsistent Item 10 R/ and 18 PBN/
- Inconsistent Field 10 and Field 18
- Inconsistent Field 10
- Inconsistent ATS Route
- ICAO Doc 4444 Format Incorrect
- FPL does not belong to FIR/State
- Duplicate FPL
- does not include ADEP

## Errors by Originating Address, Relative values

October 13 to 19, 2019



- Syntax Error in Field 16
- SPL Information Included
- Similar FPL
- Other (not in the list)
- No Alternate Aerodrome
- No .
- Missing FPL
- Invalid Item 18 Data
- Invalid Item 10 Data
- Invalid FL or Altitude
- Invalid EET Data
- Invalid Date of Flight
- Invalid Aircraft Model
- Incorrect RVSM Status
- Inconsistent Wake Cat with Aircraft
- Inconsistent Type of Aircraft and Speed or Level
- Inconsistent SID or STAR Designator
- Inconsistent Item 10 Z/ and 18 COM/ NAV/ DAT/ SUR/
- Inconsistent Item 10 R/ and 18 PBN/
- Inconsistent Field 10 and Field 18
- Inconsistent Field 10
- Inconsistent ATS Route
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- FPL does not belong to FIR/State
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- does not include ADEP

# Errors by Originating Address, Absolute values

October 13 to 19, 2019

