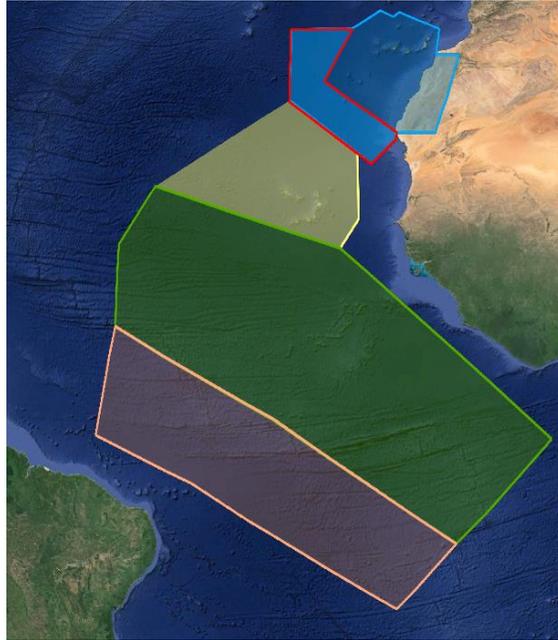


**APPENDIX – H**  
**FLIGHT LEVEL OCCUPANCY IN THE EUR/SAM CORRIDOR FOR 2018**



**Figure 1.** EUR/SAM Area

- The information related to dates, months, and times is obtained from the first waypoint where the flight is referred. The criteria and information used to perform this study, both global and per FIR, are the same.

**AIR TRAFFIC STATISTICS IN THE EUR/SAM AREA – CANARIAS FIR**

Next table shows the number of flights belonging to EUR/SAM or random/transversal traffic (Canarias FIR). The total number of flights registered in the EUR/SAM area of Canarias FIR has been **2776** flights. Most of them are considered traffics belonging to EUR/SAM Corridor (93.6 % of total). The percentages are kept independently of the traffic increase.

|              | Canarias FIR |       |             |       |
|--------------|--------------|-------|-------------|-------|
|              | MARCH 2018   | %     | AUGUST 2017 | %     |
| EUR/SAM      | 2597         | 93.6% | 2242        | 92.6% |
| TRANSVERSAL  | 22           | 0.8%  | 26          | 1.1%  |
| RANDOM       | 157          | 5.7%  | 154         | 6.4%  |
| <b>TOTAL</b> | <b>2776</b>  |       | <b>2422</b> |       |

**Table 1.** Global Figures of Flights – EUR/SAM Area – Canarias FIR

The following table shows, for the most significant airlines in terms of registered figures, the number of flights and percentage referred to the total number of registered flights in the EUR/SAM Area – Canarias FIR during the studied period.

| TRAFFIC PER AIRLINE IN CANARIAS FIR |         |         |          |
|-------------------------------------|---------|---------|----------|
| AIRLINE                             | FLIGHTS | % TOTAL | % EURSAM |
| TAP                                 | 591     | 21.3%   | 21.0%    |
| AEA                                 | 226     | 8.1%    | 7.1%     |
| IBE                                 | 214     | 7.7%    | 6.6%     |
| TOM                                 | 186     | 6.7%    | 6.7%     |
| TAM                                 | 176     | 6.3%    | 6.3%     |
| AFR                                 | 131     | 4.7%    | 4.4%     |
| DLH                                 | 78      | 2.8%    | 2.6%     |
| TCV                                 | 74      | 2.7%    | 2.7%     |
| TUI                                 | 72      | 2.6%    | 2.6%     |
| KLM                                 | 69      | 2.5%    | 2.2%     |
| TFL                                 | 62      | 2.2%    | 2.2%     |
| AZU                                 | 53      | 1.9%    | 1.9%     |

Table 2. Global Figures per airline – Canarias FIR

On the other hand, considering the foreseen evolution of EUR/SAM Corridor, several additional analyses have been accomplished for each FIR:

- **Flight level distribution- Canarias FIR**

Flight level FL350 was the most required one. Likewise, the 24% of traffic in Canarias FIR was cleared to FL340 or below.

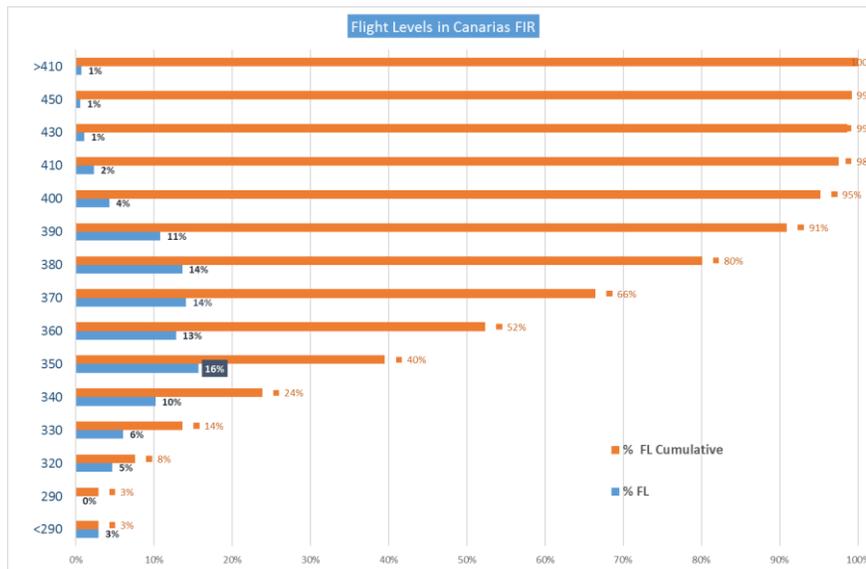


Figure 2. Distribution the Flight Levels in EUR/SAM Corridor – Canarias FIR

Note that to prepare this assessment only FL in the border of FIR was considered.

- **Traffic load- Canarias FIR**

Next chart shows a summary of traffic load registered in Canarias FIR where bars represent the number of aircraft that entered in the FIR per hour. The orange curve represents the maximum number of aircrafts that entered in the FIR per hour. The peak periods of traffic are 00-02 and 13-14 UTC. Likewise, the peak hour was 01 with 16 flights.

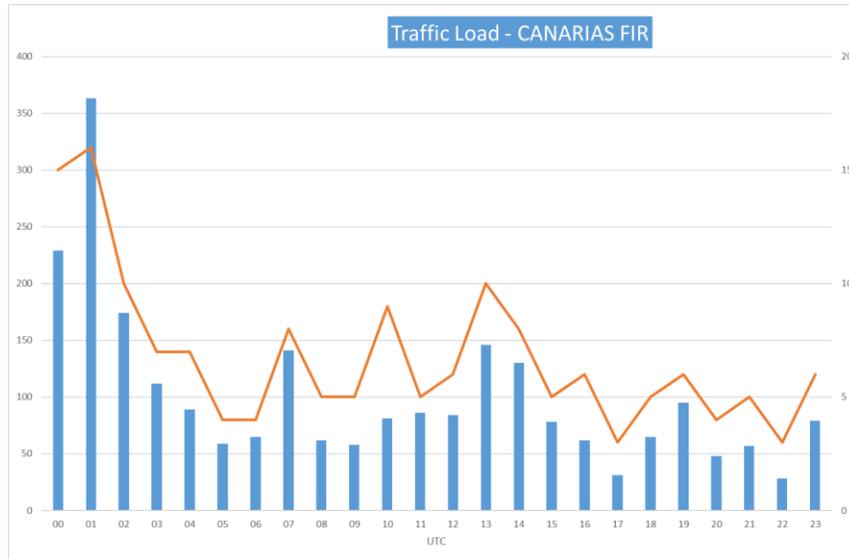


Figure 3. Traffic load in EUR/SAM Corridor – Canarias FIR

- **Traffic distribution per ATS Route– Canarias FIR:**

The following figures and tables try to sum up the operational data provided to SATMA. In Canarias FIR the main flow is via IPERA (UN873), afterwards this traffic planned other ATS routes depending on their origin/destination. UN741 and UN866 have also relevant figures but less than the first one due to their unidirectional characteristic. Note that UN857 figures have already overcome UN741 and UN866, even though it is a bidirectional route. Finally, it is remarkable that Canarias FIR registered several “random routes” which are based on published DCT.

| TRAFFIC    | RANDOM | UN741 | UN866 | UN873 | UN857 | TRANSVERSAL |
|------------|--------|-------|-------|-------|-------|-------------|
| NORTHBOUND | 55     | 0     | 333   | 806   | 202   | 22          |
| SOUTHBOUND | 102    | 200   | 0     | 846   | 210   |             |
| TOTAL      | 157    | 200   | 333   | 1652  | 412   | 22          |

Table 3. Distribution per ATS Route – Canarias FIR

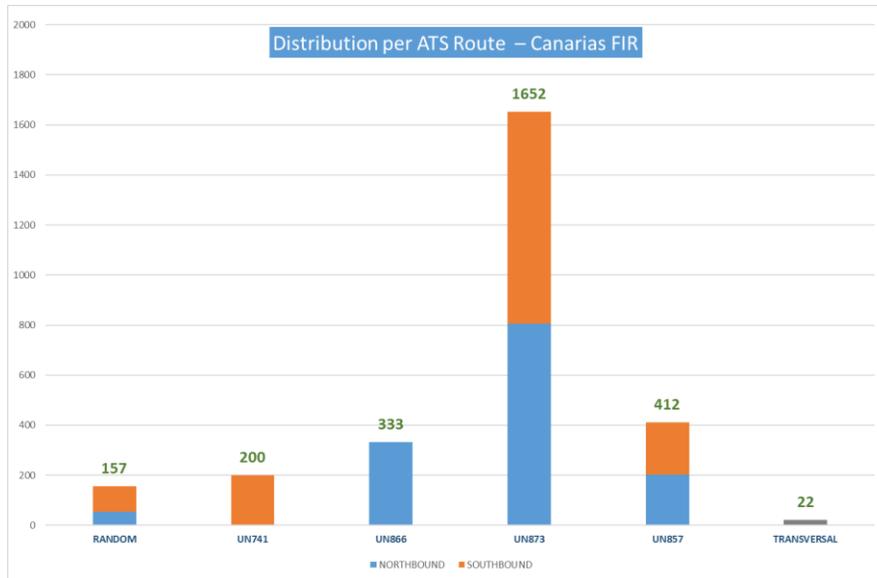


Figure 4. Distribution per ATS Route – Canarias FIR

- **Main Flows - Canarias FIR**

| TRAFFIC FLOWS | FLIGHTS | %     |
|---------------|---------|-------|
| SAMAR IPERA   | 669     | 24.2% |
| IPERA VASTO   | 393     | 14.2% |
| IPERA SAMAR   | 321     | 11.6% |
| TENPA KONBA   | 229     | 8.3%  |
| NELSO EDUMO   | 175     | 6.3%  |
| TERTO IPERA   | 115     | 4.2%  |
| TERTO GUNET   | 113     | 4.1%  |
| GUNET SAMAR   | 74      | 2.7%  |
| GUNET VASTO   | 63      | 2.3%  |
| SAMAR GUNET   | 52      | 1.9%  |
| TENPA BIMBO   | 46      | 1.7%  |
| TENPA VASTO   | 44      | 1.6%  |

Table 4. TRAFFIC FLOWS – Canarias FIR

**AIR TRAFFIC STATISTICS IN THE EUR/SAM AREA – SAL OCEANIC FIR**

Next table shows the number of flights belonging to EUR/SAM or random/transversal traffic (Sal Oceanic FIR). The total number of flights registered in the EUR/SAM area of Sal Oceanic FIR has been **4108** flights. The number of flights belonging to EUR/SAM corridor is similar to Canarias FIR. The random traffic registered a significant figure to be taking into account by the SAT group. Regarding the evolution of the occupancy in the corridor, the random traffic has decrease respect last year.

|              | SAL OCEANIC FIR |       |             |       |
|--------------|-----------------|-------|-------------|-------|
|              | MARCH 2018      | %     | AUGUST 2017 | %     |
| EUR/SAM      | 2689            | 65.5% | 2350        | 58.4% |
| TRANSVERSAL  | 471             | 11.5% | 461         | 11.5% |
| RANDOM       | 948             | 23.1% | 1210        | 30.1% |
| <b>TOTAL</b> | <b>4108</b>     |       | <b>4021</b> |       |

**Table 5.** Global Figures of Flights – EUR/SAM Area – Sal Oceanic FIR

The following table shows, for the most significant airlines in terms of registered figures, the number of flights and percentage referred to the total number of registered flights in the EUR/SAM Area – Sal Oceanic FIR during the studied period.

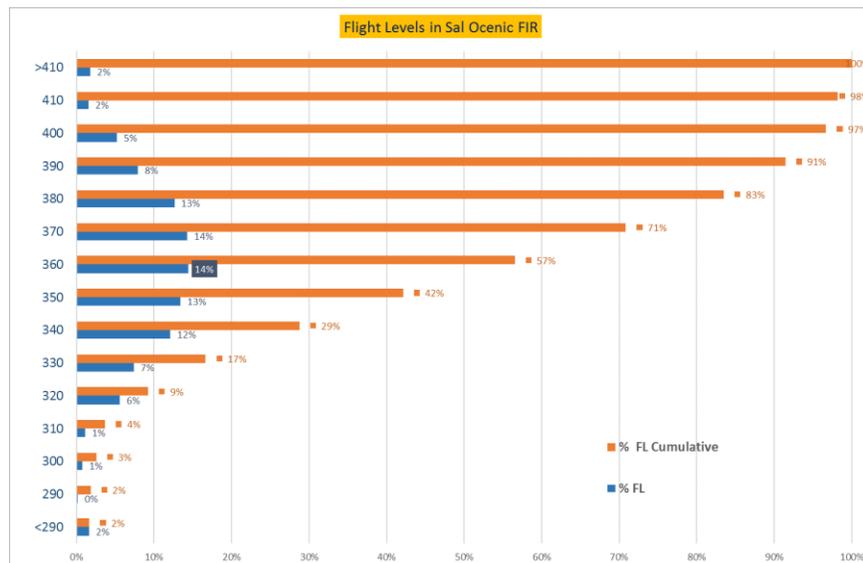
| TRAFFIC PER AIRLINE IN SAL OCEANIC FIR |         |         |          |
|--|---------|---------|----------|
| AIRLINE                                | FLIGHTS | % TOTAL | % EURSAM |
| TAP                                    | 778     | 18.9%   | 14.2%    |
| TAM                                    | 289     | 7.0%    | 4.2%     |
| IBE                                    | 240     | 5.8%    | 4.5%     |
| AEA                                    | 238     | 5.8%    | 4.8%     |
| AFR                                    | 225     | 5.5%    | 3.0%     |
| TOM                                    | 186     | 4.5%    | 4.5%     |
| KLM                                    | 151     | 3.7%    | 1.6%     |
| BAW                                    | 147     | 3.6%    | 0.7%     |
| SAA                                    | 113     | 2.8%    | 0.0%     |
| LAN                                    | 110     | 2.7%    | 0.9%     |
| DLH                                    | 108     | 2.6%    | 1.8%     |
| TCV                                    | 106     | 2.6%    | 2.4%     |

**Table 6.** Global Figures per airline – Sal Oceanic FIR

On the other hand, considering the foreseen evolution of EUR/SAM Corridor, several additional analyses have been accomplished for each FIR:

- **Flight level distribution – Sal Oceanic FIR**

Flight level FL360 was the most required one. Likewise, the 28% of traffic in SAL Oceanic FIR was cleared to FL340 or below.

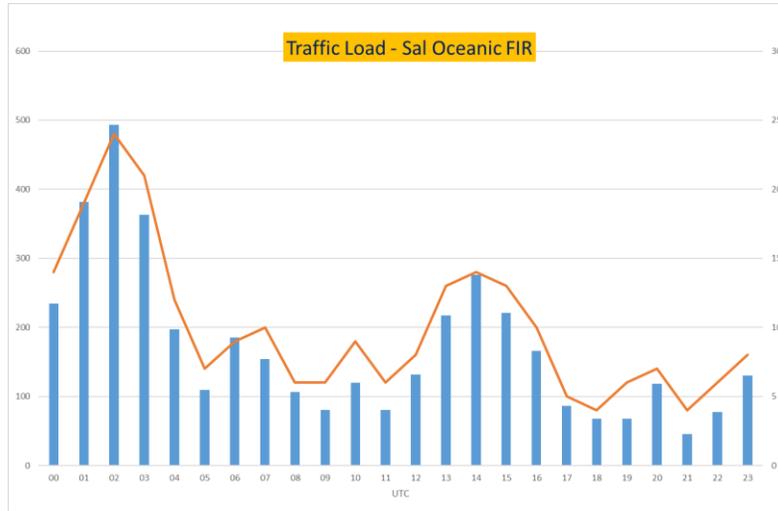


**Figure 5.** Distribution the Flight Levels in EUR/SAM Corridor – Sal Oceanic FIR

Note that to prepare this assessment only FL in the border of FIR was considered.

- **Traffic load – Sal Oceanic FIR**

Next chart shows a summary of traffic load registered in Sal Oceanic FIR where bars represent the number of aircraft that entered in the FIR per hour. The orange curve represents the maximum number of aircrafts that entered in the FIR per hour. The peak periods of traffic are 23-03 and 13-14 UTC. Likewise, the peak hour was 01 with 20 flights.



**Figure 6.** Traffic load in EUR/SAM Corridor – Sal Oceanic FIR

- **Traffic distribution per ATS Route– Sal Oceanic FIR:**

The following figures and tables try to sum up the operational data provided to SATMA. In Sal Oceanic FIR the main flow is via IPERA (UN873). In addition, it is remarkable that Sal Oceanic FIR registered a relevant traffic by random route.

| TRAFFIC    | RANDOM | UN741 | UN866 | UN873 | UN857 | TRANSVERSAL |
|------------|--------|-------|-------|-------|-------|-------------|
| NORTHBOUND | 283    | 0     | 343   | 839   | 210   | 471         |
| SOUTHBOUND | 665    | 211   | 0     | 863   | 223   |             |
| TOTAL      | 948    | 211   | 343   | 1702  | 433   | 471         |

**Table 7.** Distribution per ATS Route – Sal Oceanic FIR

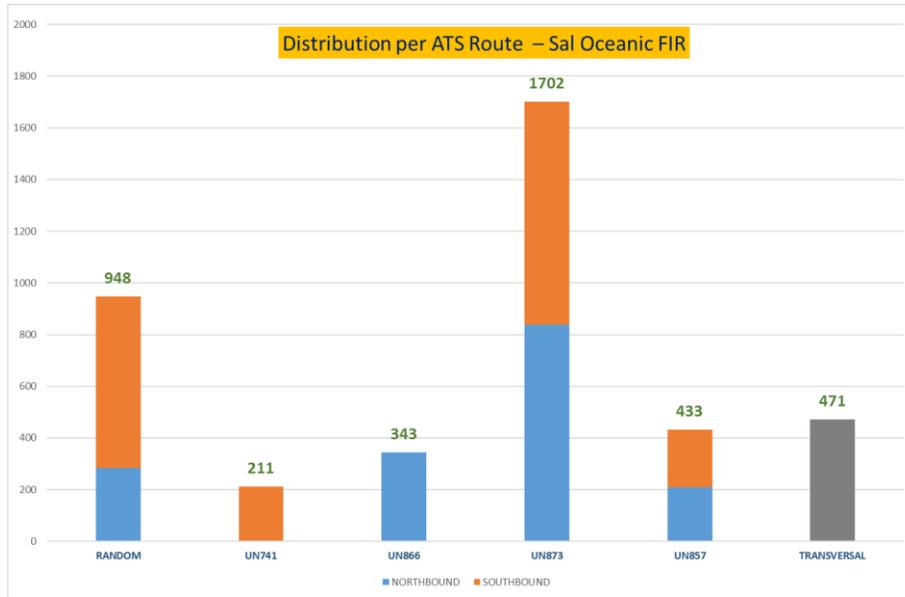


Figure 7. Distribution per ATS Route – Sal Oceanic FIR

- **Main Flows – Sal Oceanic FIR**

| TRAFFIC FLOWS | FLIGHTS | %     |
|---------------|---------|-------|
| IPERA POMAT   | 408     | 11.2% |
| POMAT IPERA   | 402     | 11.1% |
| AMDOL TENPA   | 311     | 8.6%  |
| CVS IPERA     | 259     | 7.1%  |
| ULTEM BIKOM   | 207     | 5.7%  |
| IPERA CVS     | 207     | 5.7%  |
| ULTEM XUVIT   | 195     | 5.4%  |
| EDUMO KENOX   | 140     | 3.9%  |
| GUNET BOTNO   | 134     | 3.7%  |
| BIKOM ULTEM   | 132     | 3.6%  |
| IPERA BVT     | 121     | 3.3%  |
| BOTNO GUNET   | 113     | 3.1%  |

Table 8. TRAFFIC FLOWS – Sal Oceanic FIR

### AIR TRAFFIC STATISTICS IN THE EUR/SAM AREA – DAKAR OCEANIC FIR

Next table shows the number of flights belonging to EUR/SAM or random/transversal traffic (Dakar Oceanic FIR). The total number of flights registered in the EUR/SAM area of Dakar Oceanic FIR has been **3608** flights. The random traffic has registered a significant figure to be taking into account by the SAT group. Regarding the evolution of the occupancy in the corridor, the distribution per flow is kept.

|              | DAKAR OCEANIC FIR |       |             |       |
|--------------|-------------------|-------|-------------|-------|
|              | MARCH 2018        | %     | AUGUST 2017 | %     |
| EUR/SAM      | 2038              | 56.5% | 1965        | 56.8% |
| TRANSVERSAL  | 67                | 1.9%  | 38          | 1.1%  |
| RANDOM       | 1503              | 41.7% | 1455        | 42.1% |
| <b>TOTAL</b> | <b>3608</b>       |       | <b>3458</b> |       |

**Table 9.** Global Figures of Flights – EUR/SAM Area – Dakar Oceanic FIR

The following table shows, for the most significant airlines in terms of registered figures, the number of flights and percentage referred to the total number of registered flights in the EUR/SAM Area – Dakar Oceanic FIR during the studied period.

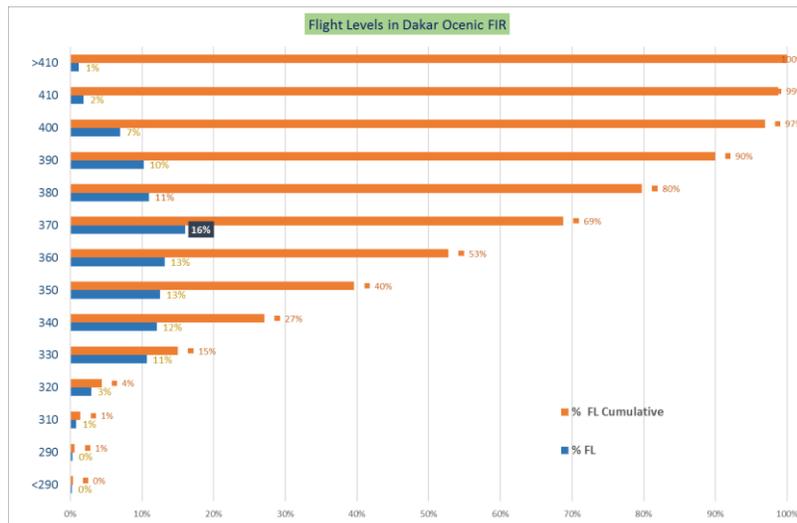
| TRAFFIC PER AIRLINE IN DAKAR OCEANIC FIR |         |         |          |
|--|---------|---------|----------|
| AIRLINE                                  | FLIGHTS | % TOTAL | % EURSAM |
| TAP                                      | 601     | 16.7%   | 12.7%    |
| IBE                                      | 365     | 10.1%   | 5.4%     |
| TAM                                      | 345     | 9.6%    | 6.7%     |
| AFR                                      | 284     | 7.9%    | 4.4%     |
| AEA                                      | 259     | 7.2%    | 5.7%     |
| AZA                                      | 249     | 6.9%    | 0.5%     |
| DLH                                      | 175     | 4.9%    | 2.3%     |
| KLM                                      | 170     | 4.7%    | 2.9%     |
| BAW                                      | 160     | 4.4%    | 2.1%     |
| ARG                                      | 125     | 3.5%    | 0.7%     |
| LAN                                      | 109     | 3.0%    | 1.3%     |
| SWR                                      | 60      | 1.7%    | 0.1%     |

**Table 10.** Global Figures per airline – Dakar Oceanic FIR

On the other hand, considering the foreseen evolution of EUR/SAM Corridor, several additional analyses have been accomplished for each FIR:

- **Flight level distribution – Dakar Oceanic FIR**

Flight level FL370 was the most required one. Likewise, the 27% of traffic in Dakar Oceanic FIR was cleared to FL340 or below.



**Figure 8.** Distribution the Flight Levels in EUR/SAM Corridor – Dakar Oceanic FIR

Note that to prepare this assessment only FL in the border of FIR was considered.

- **Traffic load – Dakar Oceanic FIR:**

Next chart shows a summary of traffic load registered in Dakar Oceanic FIR where bars represent the number of aircraft that entered in the FIR per hour. The orange curve represents the maximum number of aircrafts that entered in the FIR per hour. The peak periods of traffic are 02-05 and 22-23 UTC. Likewise, the peak hour was 032 with 26 flights.

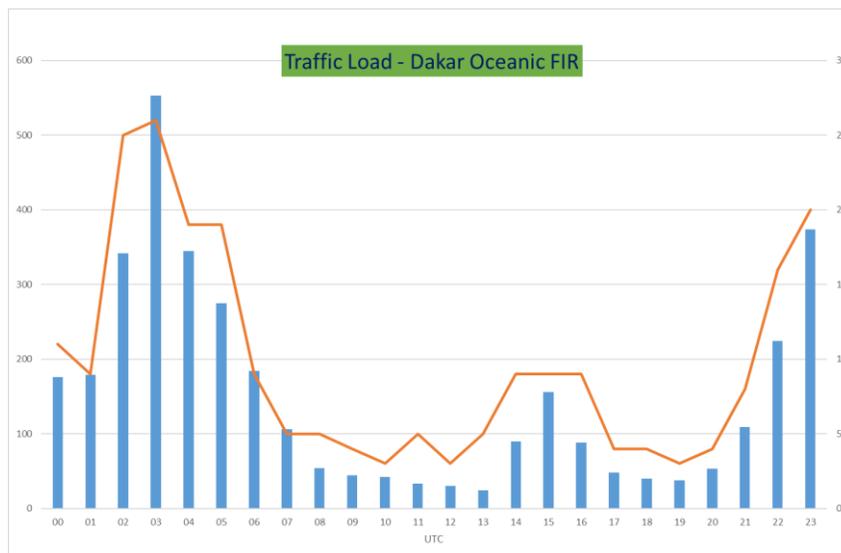


Figure 9. Traffic load in EUR/SAM Corridor – Dakar Oceanic FIR

- **Traffic distribution per ATS Route – Dakar Oceanic FIR:**

The following figures and tables try to sum up the operational data provided to SATMA. In Dakar Oceanic FIR the main flow is random route.

| TRAFFIC           | RANDOM | UN741 | UN866 | UN873 | UN857 | TRANSVERSAL & EASTERN |
|-------------------|--------|-------|-------|-------|-------|-----------------------|
| <b>NORTHBOUND</b> | 831    |       | 334   | 451   | 141   | 67                    |
| <b>SOUTHBOUND</b> | 672    | 477   |       | 486   | 149   |                       |
| <b>TOTAL</b>      | 1503   | 477   | 334   | 937   | 290   | 67                    |

Table 11. Distribution per ATS Route – Dakar Oceanic FIR

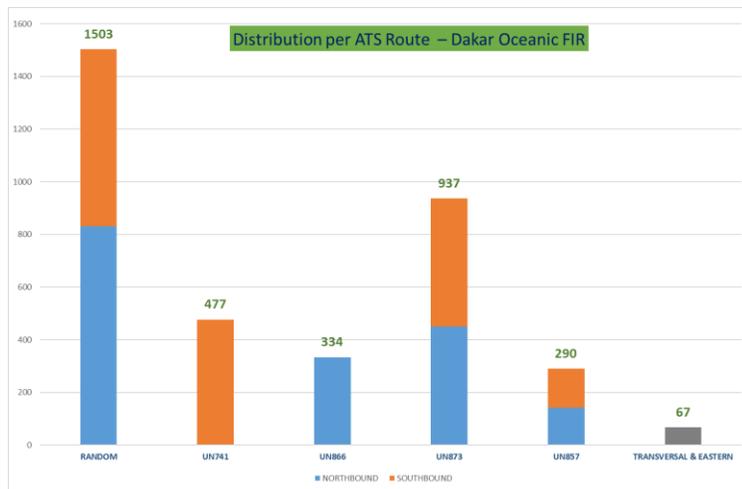


Figure 10. Distribution per ATS Route – Dakar Oceanic FIR

- **Main Flows – Dakar Oceanic FIR**

| TRAFFIC FLOWS | FLIGHTS | %     |
|---------------|---------|-------|
| KODOS TAROT   | 550     | 15.8% |
| POMAT TASIL   | 452     | 12.9% |
| TASIL POMAT   | 451     | 12.9% |
| TAROT KODOS   | 347     | 9.9%  |
| DEKON AMDOL   | 303     | 8.7%  |
| XUVIT NANIK   | 212     | 6.1%  |
| KENOX NANIK   | 167     | 4.8%  |
| MOVGA BIKOM   | 151     | 4.3%  |
| BOTNO ERETU   | 146     | 4.2%  |
| ERETU BOTNO   | 131     | 3.8%  |
| BIKOM MOVGA   | 126     | 3.6%  |
| BIKOM NANIK   | 68      | 1.9%  |

**Table 12.** TRAFFIC FLOWS – Dakar Oceanic FIR

**AIR TRAFFIC STATISTICS IN THE EUR/SAM AREA – ATLANTICO FIR**

Next table shows the number of flights belonging to EUR/SAM or random/transversal traffic (Atlantico FIR). The total number of flights registered in the EUR/SAM area of Atlantico FIR has been **3876** flights. Eastern –Western flows are based on ATS Routes, that afterwards entry/exit in random areas Dakar Oceanic FIR. Regarding the evolution of the occupancy in the corridor, the distribution per flow is kept.

|                 | ATLANTICO FIR |       |             |       |
|-----------------|---------------|-------|-------------|-------|
|                 | MARCH 2018    | %     | AUGUST 2017 | %     |
| EUR/SAM         | 1977          | 51.0% | 1856        | 54.8% |
| TRANSVERSAL     | 32            | 0.8%  | 42          | 1.2%  |
| EASTERN-WESTERN | 1681          | 43.4% | 1373        | 40.5% |
| RANDOM          | 186           | 4.8%  | 116         | 3.4%  |
| <b>TOTAL</b>    | <b>3876</b>   |       | <b>3387</b> |       |

**Table 13.** Global Figures of Flights – EUR/SAM Area – Atlantico FIR

The following table shows, for the most significant airlines in terms of registered figures, the number of flights and percentage referred to the total number of registered flights in the EUR/SAM Area – Atlantico FIR during the studied period.

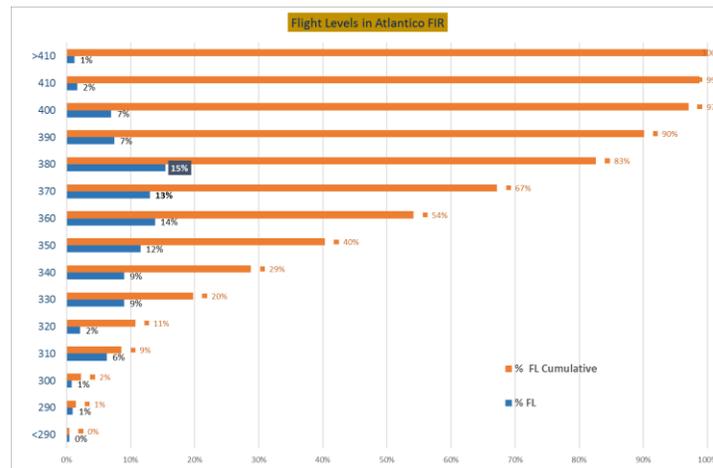
| TRAFFIC PER AIRLINE IN ATLANTICO FIR |         |         |          |
|--------------------------------------|---------|---------|----------|
| AIRLINE                              | FLIGHTS | % TOTAL | % EURSAM |
| TAP                                  | 586     | 15.7%   | 12.1%    |
| TAM                                  | 363     | 9.7%    | 6.3%     |
| IBE                                  | 342     | 9.1%    | 5.0%     |
| AFR                                  | 283     | 7.6%    | 4.4%     |
| AEA                                  | 257     | 6.9%    | 5.5%     |
| AZA                                  | 214     | 5.7%    | 0.4%     |
| DLH                                  | 166     | 4.4%    | 2.2%     |
| BAW                                  | 165     | 4.4%    | 1.9%     |
| KLM                                  | 164     | 4.4%    | 2.8%     |
| ARG                                  | 114     | 3.0%    | 0.7%     |
| UAE                                  | 112     | 3.0%    | 0.0%     |
| LAN                                  | 100     | 2.7%    | 1.3%     |

**Table 14.** Global Figures per airline – Atlantico FIR

On the other hand, considering the foreseen evolution of EUR/SAM Corridor, several additional analyses have been accomplished for each FIR:

- **Flight level distribution – Atlantico FIR**

Flight level FL380 was the most required one. Likewise, the 29% of traffic in Atlantico FIR was cleared to FL340 or below.

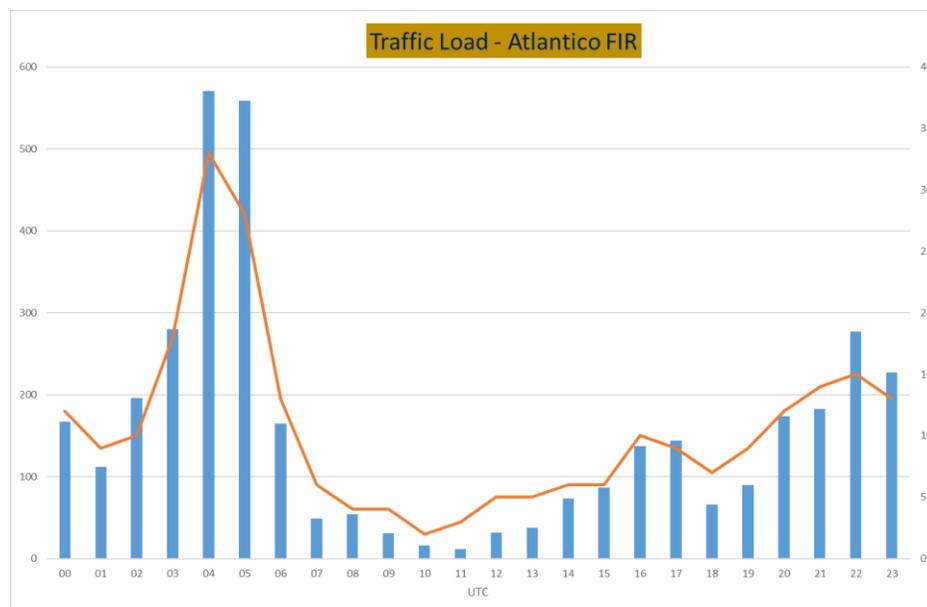


**Figure 11.** Distribution the Flight Levels in EUR/SAM Corridor – Atlantico FIR

Note that to prepare this assessment only FL in the border of FIR was considered.

- **Traffic load – Atlantico FIR:**

Next chart shows a summary of traffic load registered in Atlantico FIR where bars represent the number of aircraft that entered in the FIR per hour. The orange curve represents the maximum number of aircrafts that entered in the FIR per hour. The peak period of traffic is 04-05. Likewise, the peak hour was 04 with 33 flights.



**Figure 12.** Traffic load in EUR/SAM Corridor – Atlantico FIR

- **Traffic distribution per ATS Route – Atlantico FIR:**

The following figures and tables try to sum up the operational data provided to SATMA. In Atlantico FIR the main flow is via IPERA (UN873). Note that western –eastern flow cover a huge area with several ATS routes.

| TRAFFIC    | EASTERN-WESTERN | UN741 | UN866 | UN873 | UN857 | TRANSVERSAL | RANDOM |
|------------|-----------------|-------|-------|-------|-------|-------------|--------|
| NORTHBOUND | 694             |       | 362   | 371   | 117   | 42          | 67     |
| SOUTHBOUND | 679             | 456   |       | 451   | 99    |             | 49     |
| TOTAL      | 1373            | 456   | 362   | 822   | 216   | 42          | 116    |

Table 15. Distribution per ATS Route – Atlantico FIR

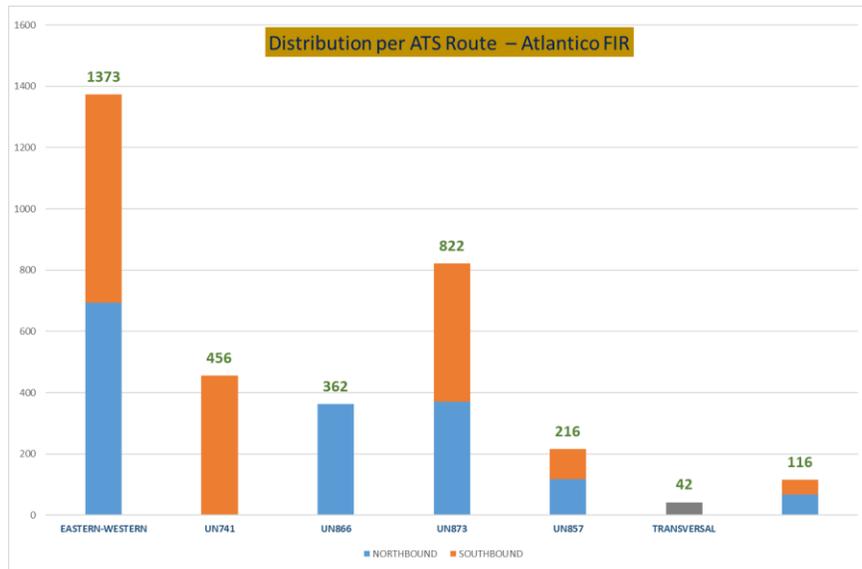


Figure 13. Distribution per ATS Route – Atlantico FIR

- **Main Flows – Atlantico FIR**

| TRAFFIC FLOWS | FLIGHTS | %     |
|---------------|---------|-------|
| NANIK JOBER   | 450     | 13.5% |
| TASIL VUNOK   | 445     | 13.4% |
| VUNOK TASIL   | 370     | 11.1% |
| MAGNO DEKON   | 361     | 10.8% |
| BUTAP CALVO   | 280     | 8.4%  |
| DAKAP MOVGA   | 277     | 8.3%  |
| CALVO BUTAP   | 219     | 6.6%  |
| BUTAP VURBI   | 115     | 3.5%  |
| ERETU UTRAM   | 95      | 2.9%  |
| UTRAM ERETU   | 83      | 2.5%  |
| MOVGA ESLEL   | 73      | 2.2%  |
| MOVGA DAKAP   | 68      | 2.0%  |

Table 16. TRAFFIC FLOWS – Atlantico FIR