



First approach to 2009 Collision Risk Assessment within the EUR/SAM Corridor





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Introduction





Introduction

- SATMA performs periodical studies to ensure a safe application of RVSM and RNP10 in EUR/SAM Corridor.
- SATMA has been working on 2009 collision risk assessment but it has not been possible to finish it for SAT15 Meeting.
- Nevertheless, a preliminary analysis of some safety related parameters is presented.





Data required for 2009 Collision Risk Assessment





Data required for 2009 Collision Risk Assessment

- Data needed to make 2009 study consist of the entire year 2009 traffic information and LHDs provided by States.
- It was expected to receive traffic data before the 15th of January 2010.
- Most of traffic information were received after that date, with the latest update at the end of March 2010:

Locations	Available traffic information	Comments
Canaries UIR	1 st January 2009-31 st December 2009	-
SAL Oceanic UIR	1 st January 2009-31 st December 2009	-
Dakar Oceanic UIR	1 st January 2009-30 th June 2009	No crossing traffic
	1 st September 2009-31 st October 2009	No crossing traffic
Atlantic-Recife FIR/UIR	1 st January 2009-31 st December 2009	-





Data required for 2009 Collision Risk Assessment

- Data available on that date is considered adequate to perform the safety assessment.
- Nevertheless, the delay in the reception of required traffic has made it impossible for SATMA to present the complete study in SAT 15.
- Study will be delivered as soon as feasible, in any case before the next SAT Meeting.





Preliminary analysis of some safety related parameters





Preliminary analysis of some safety related parameters

- Notice that this presentation just provides guidance on the evolution of some parameters and it is NOT the Collision Risk Safety Assessment.
- Taking into account that the total vertical risk in the previous study was higher than the TLS due to operational errors, special attention has been paid to operational risk parameters.





Preliminary analysis of some safety related parameters

- Operational vertical collision risk:
 - Total traffic in Canaries UIR in 2009 has decreased around 20% if it is compared to data used in previous study (10th July '07-10th July '08).
 - Large height deviations have been used to estimate the total vertical collision risk. This estimation is mainly based on time spent at incorrect flight level.
 - Only data from Atlantic-Recife include an estimation of this time. It is necessary to use default values for the rest of deviations:
 - Coordination error and detection of the aircraft when entering the UIR: 10 minutes.
 - Coordination error and undetected aircraft in the UIR: The duration of the flight in that UIR.





Preliminary analysis of some safety related parameters

- Summarizing LHDs reported by States:
 - From January 2009 to June 2009:

Locations	N° LHDs	Time spent wrong level	N° levels crossed	Reasons
Canaries UIR	2	0.333 h.	0	Coordination errors
Sal UIR	1	1.162 h.	1	Coordination errors
Dakar UIR	8	2.379 h.	0	Coordination errors
Atlantic-Recife UIR/FIR	15	1.200 h.	0	Coordination errors

- From July 2009 to December 2009 (after SAT14/TF1):

Locations	N° LHDs	Time spent wrong level	N° levels crossed	Reasons
Canaries UIR	2	0.333 h.	0	Coordination errors
Sal UIR	7	1.167 h.	0	Coordination errors
Dakar UIR	19	6.908 h.	0	Coordination errors
Atlantic-Recife UIR/FIR	6	1.551 h.	0	Coordination errors





Preliminary analysis of some safety related parameters

- All LHDs are due to a coordination errors between ATC units.
- Total time spent at a wrong level has not decreased after SAT14/TF1.
- Main contribution to the operational risk is due to the time spent at an incorrect flight level.
- Operational vertical collision risk is directly proportional to the vertical overlap probability:

$$P_z^{wl}(S_z) = \frac{t_{wl}}{T} P_z(0)$$

- t_{wl} is the total time spent at a wrong level.
- T is the total number of flight hours.





Preliminary analysis of some safety related parameters

- In previous report.
 - Only LHDs from Atlantic-Recife with 3.672 hours at incorrect flight level, t_{wl} , and 123985 flight hours.
 - The contribution to the risk in the whole Corridor was $4.7 \cdot 10^{-8}$.

$$N_{wl}^{CORRIDOR'09} \gg TLS$$

- Taking into account new parameters introduced.
 - t_{wl} is higher than the one in the previous study (15.033 h. vs. 3.672 h.).
 - T, total flight time has decreased.
 - P_z will be higher and as variations in the rest of operational collision risk parameters are not expected to be so important,

$$N_{wl}^{CORRIDOR'10} \gg TLS$$





Conclusions and recommendations





Conclusions and recommendations

- Although detailed and exact calculations need to be performed, it can be anticipated that problems relating coordination errors and total vertical collision risk are not solved and that adequate corrective actions should be taken to reduce this type of errors.
- The complete collision risk assessment will be delivered as soon as feasible and in any case before the next SAT Meeting.
- For future assessments it would be desirable that data were periodically received being due before day 15th of the following month.

