

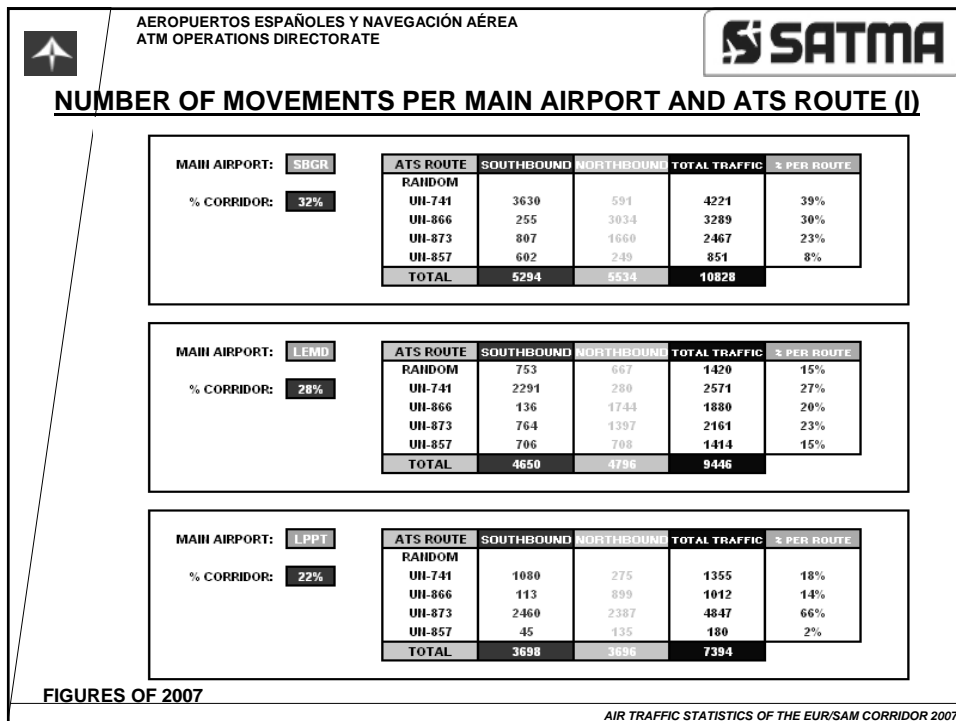
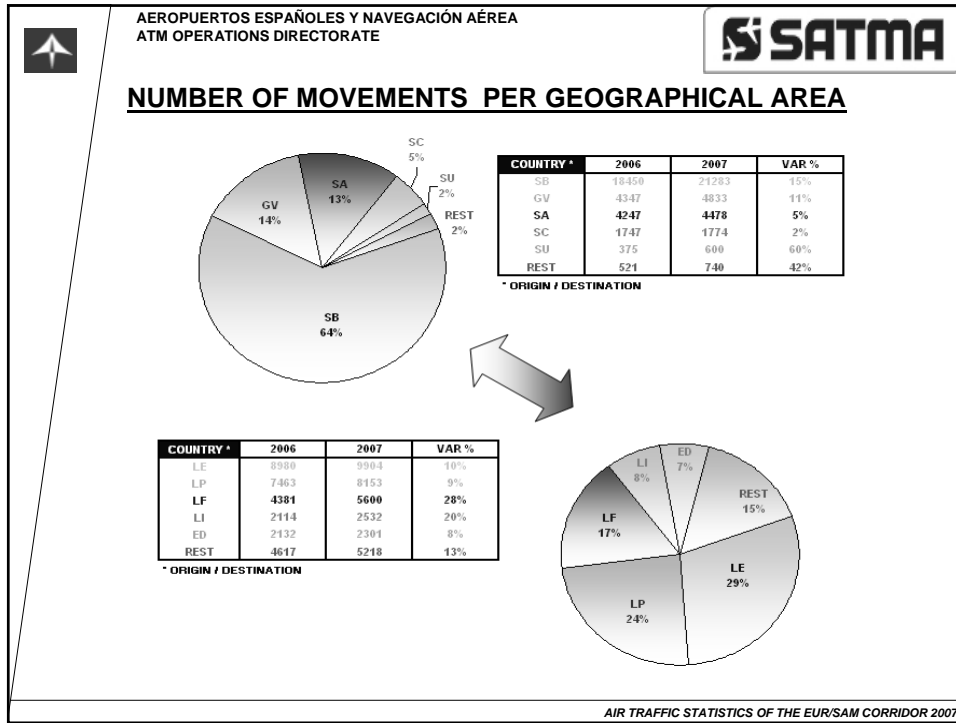
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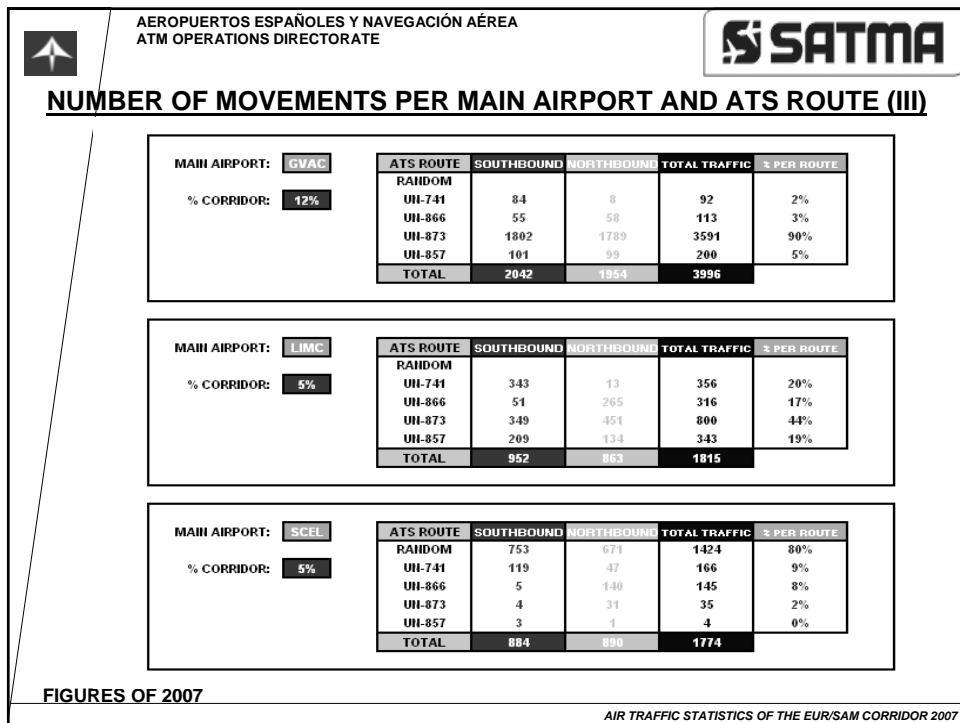
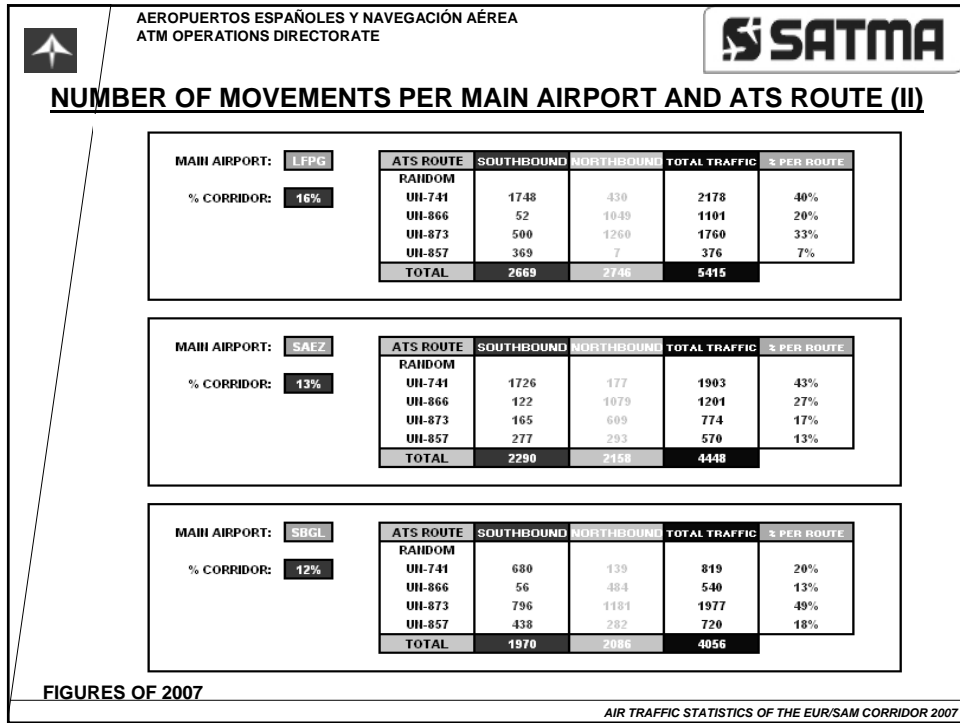
SATMA


NUMBER OF MOVEMENTS PER AIRCRAFT OPERATOR

AIRCRAFT OPERATOR	TRAFFIC OF 2006	TRAFFIC OF 2007	% VARIATION 2006 - 2007
TAP	5332	6306	18.3%
IBE	4068	4550	11.8%
TAM	1574	3430	117.9%
AFR	2311	2993	29.5%
ARG	1289	1435	11.3%
TCV	1412	1355	-4.0%
MPD	271	1159	327.7%
AEA	425	1056	148.5%
VRII	0	875	
DLH	584	789	35.1%
LAIH	707	740	4.7%
REST	11714	9020	-23.0%


AIR TRAFFIC STATISTICS OF THE EUR/SAM CORRIDOR 2007







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MAIN CITY PAIRS


CITY PAIR	TOTAL	% TOTAL
SAEZ <-> LEMD	3171	9.4%
SBGR <-> LFPG	2911	8.6%
SCEL <-> LEMD	1720	5.1%
SBGR <-> LEMD	1578	4.7%
SBGL <-> LFPG	1421	4.2%
SBGR <-> EGLL	1368	4.1%
GVAC <-> LPPT	1329	3.9%
SBGL <-> LEMD	1103	3.3%
SBGR <-> EDDF	1096	3.3%
SBGR <-> LPPT	1048	3.1%
SBGL <-> LPPT	954	2.8%
SBGR <-> LIMC	887	2.6%
SBRF <-> LPPT	875	2.6%
SBSV <-> LPPT	809	2.4%
SBFZ <-> LPPT	801	2.4%
SBGR <-> EHAM	705	2.1%
SAEZ <-> LFPG	697	2.1%
SBNT <-> LPPT	674	2.0%
SUMU <-> LEMD	599	1.8%
GVNP <-> LPPT	554	1.6%

FIGURES OF 2007

AIR TRAFFIC STATISTICS OF THE EUR/SAM CORRIDOR 2007



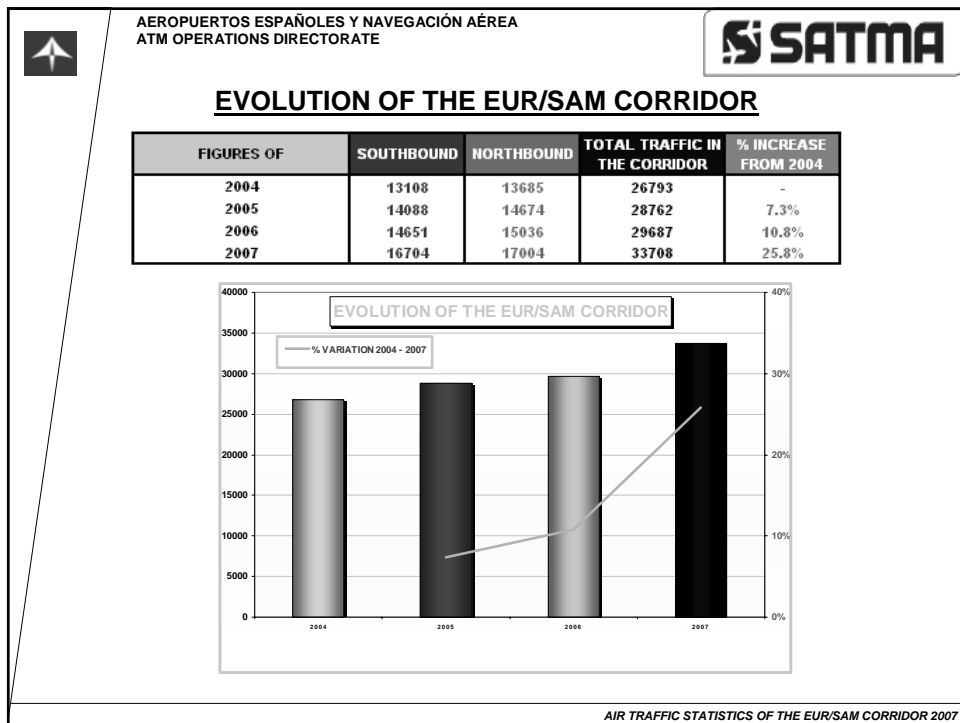
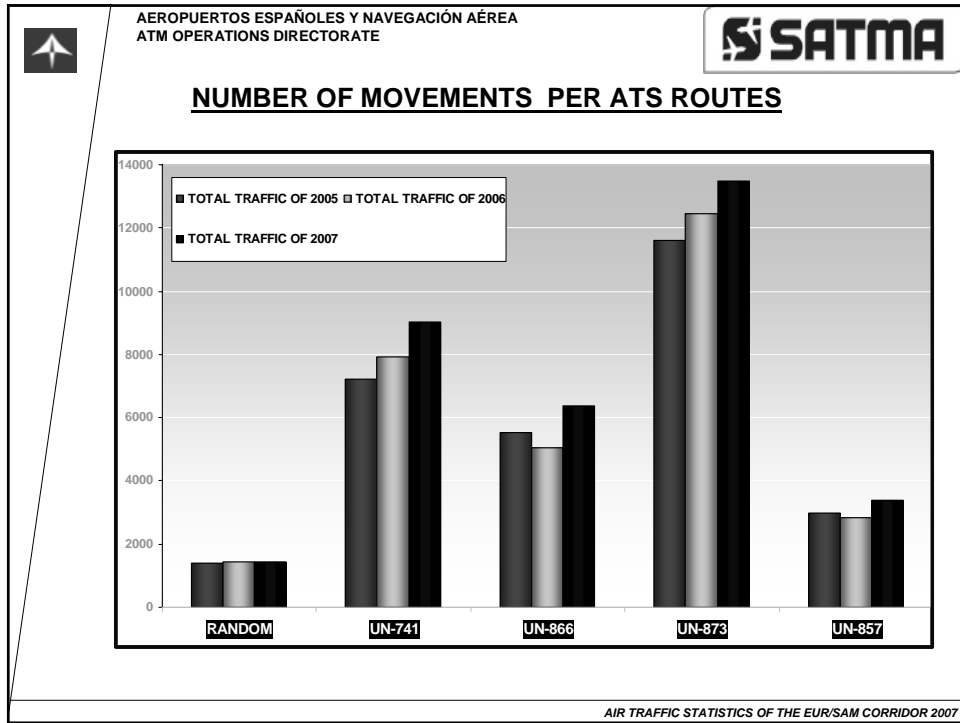
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NUMBER OF MOVEMENTS PER ATS ROUTES


ATS ROUTE	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC				ROUTE % VARIATION 2006 - 2007
	FIGURES OF		FIGURES OF		FIGURES OF	% OCCUPANCY	FIGURES OF	% OCCUPANCY	
	2006	2007	2006	2007					
RAIOMD	803	753	626	671	1429	4.8%	1424	4.2%	0%
UII-741	4882	7568	3053	1471	7935	26.7%	9039	26.8%	14%
UII-866	1412	637	3625	5752	5037	17.0%	6389	19.0%	27%
UII-873	5685	5883	6757	7601	12442	41.9%	13484	40.0%	8%
UII-857	1869	1863	975	1509	2844	9.6%	3372	10.0%	19%

AIR TRAFFIC STATISTICS OF THE EUR/SAM CORRIDOR 2007





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GLOBAL FIGURES


JANUARY – MARCH 2008

MONTH	SOUTHBOUND		NORTHBOUND		TOTAL TRAFFIC IN THE CORRIDOR					% VARIATION		
	2007	2008	2007	2008	2006	DAILY	2007	DAILY	2008	DAILY	2006 - 2007	2007 - 2008
JANUARY	1290	1590	1373	1796	2694	86	2663	85	3386	109	-1%	27%
FEBRUARY	1239	1452	1248	1683	2364	84	2487	88	3135	108	5%	26%
MARCH	1404	1531	1360	1757	2633	84	2764	89	3288	106	5%	19%
APRIL	1321		1293		2485	82	2614	87			5%	
MAY	1270		1336		2488	80	2606	84			5%	
JUNE	1244		1289		2403	80	2533	84			5%	
JULY	1414		1495		2339	75	2909	93			24%	
AUGUST	1449		1558		2474	79	3007	97			22%	
SEPTEMBER	1403		1441		2301	76	2844	94			24%	
OCTOBER	1478		1388		2416	77	2866	92			19%	
NOVEMBER	1581		1527		2498	83	3108	103			24%	
DECEMBER	1611		1696		2592	83	3307	106			28%	
AVERAGE	1392	1524	1417	1745	2474	81	2809	92	3270	108	14%	24%

AIR TRAFFIC STATISTICS OF THE EUR/SAM CORRIDOR 2007




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AIR TRAFFIC STATISTICS OF THE EUR/SAM CORRIDOR 2007

AIR TRAFFIC STATISTICS OF THE EUR/SAM CORRIDOR 2007


APPENDIX D



AEROPUERTOS ESPAÑOLES Y NAVEGACIÓN AÉREA
ATM OPERATIONS IRECTORATE

**ANALYSIS OF THE NEW AIR TRAFFIC
ROUTES REALLOCATION AFTER THE
IMPLEMENTATION OF UN741 AND UN866 AS
UNIDIRECTIONAL ROUTES**

ANALYSIS OF THE NEW AIR TRAFFIC ROUTES REALLOCATION
AFTER THE IMPLEMENTATION OF UN741 AND UN866 AS UNIDIRECTIONAL ROUTES

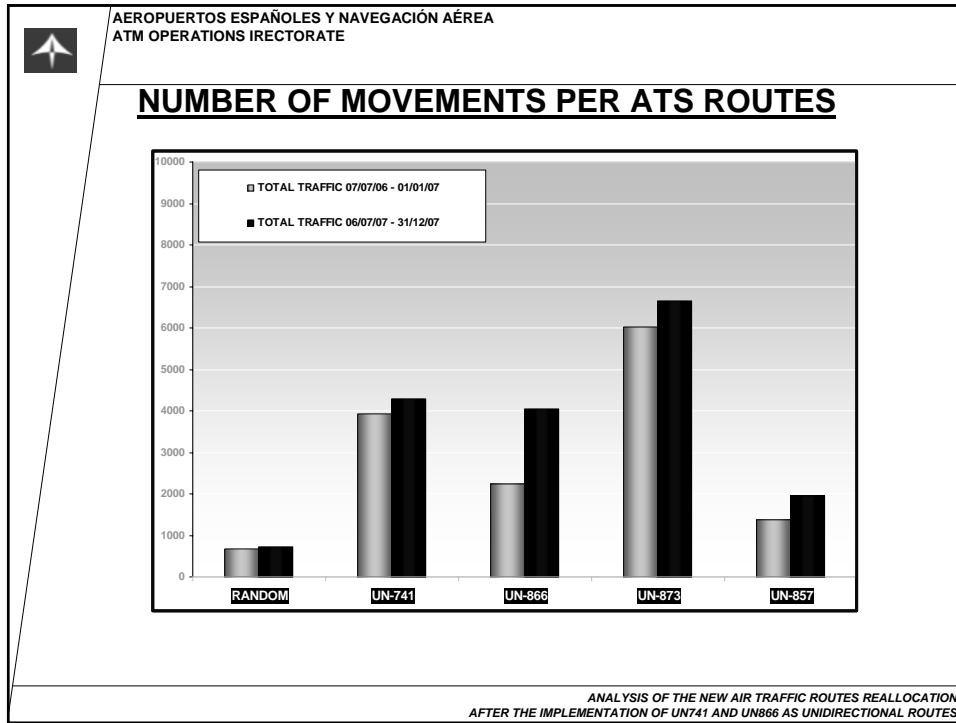


AEROPUERTOS ESPAÑOLES Y NAVEGACIÓN AÉREA
ATM OPERATIONS IRECTORATE

NUMBER OF MOVEMENTS PER ATS ROUTES

ATS ROUTE	TOTAL TRAFFIC IN THE EUR/SAM CORRIDOR		% VARIATION
	FIGURES OF THE PERIOD: 07/07/06 - 01/01/07	FIGURES OF THE PERIOD: 06/07/07 - 31/12/07	
RANDOM	683	711	4%
UH-741	3935	4296	9%
UH-866	2231	4040	81%
UH-873	6022	6652	10%
UH-857	1364	1960	44%
TOTAL TRAFFIC	14235	17659	24.1%

ANALYSIS OF THE NEW AIR TRAFFIC ROUTES REALLOCATION
AFTER THE IMPLEMENTATION OF UN741 AND UN866 AS UNIDIRECTIONAL ROUTES




AEROPUERTOS ESPAÑOLES Y NAVEGACIÓN AÉREA
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OCCUPANCY PER ATS ROUTE

ATS ROUTE	% OCCUPANCY IN THE EUR/SAM CORRIDOR	
	FIGURES OF THE PERIOD: 07/07/06 - 01/01/07	FIGURES OF THE PERIOD: 06/07/07 - 31/12/07
RANDOM	4.8%	4.0%
UN-741	27.6%	24.3%
UN-866	15.7%	22.9%
UN-873	42.3%	37.7%
UN-857	9.6%	11.1%

ANALYSIS OF THE NEW AIR TRAFFIC ROUTES REALLOCATION
AFTER THE IMPLEMENTATION OF UN741 AND UN866 AS UNIDIRECTIONAL ROUTES

AEROPUERTOS ESPAÑOLES Y NAVEGACIÓN AÉREA
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AVERAGE PER DAY

ATS ROUTE	AVERAGE PER DAY IN THE EUR/SAM CORRIDOR	
	FIGURES OF THE PERIOD:	FIGURES OF THE PERIOD:
	07/07/06 - 01/01/07	06/07/07 - 31/12/07
RANDOM	4	4
UH-741	22	24
UH-866	12	22
UH-873	34	37
UH-857	8	11

ANALYSIS OF THE NEW AIR TRAFFIC ROUTES REALLOCATION
AFTER THE IMPLEMENTATION OF UN741 AND UN866 AS UNIDIRECTIONAL ROUTES

AEROPUERTOS ESPAÑOLES Y NAVEGACIÓN AÉREA
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CONCLUSIONS

- **THE IMPLEMENTATION OF UNIDIRECTIONAL ROUTES HAS BEEN SUCCESSFUL WITH AN ATS MORE EFFICIENT**

BUT DUE TO SPECIALLY HIGH INCREASE OF TRAFFIC IT IS NECESSARY TO CONSIDER TWO TOPICS:

- A) **RECALCULATE UNTIL WHEN IS SAFE THE CURRENT STRUCTURE OF THE CORRIDOR**
- B) **ADOPT AS RELEVANT TARGET THE IMPLEMENTATION OF RNP-4 IN THE CORRIDOR**

ANALYSIS OF THE NEW AIR TRAFFIC ROUTES REALLOCATION
AFTER THE IMPLEMENTATION OF UN741 AND UN866 AS UNIDIRECTIONAL ROUTES



AEROPUERTOS ESPAÑOLES Y NAVEGACIÓN AÉREA
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***ANALYSIS OF THE NEW AIR TRAFFIC
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ANALYSIS OF THE NEW AIR TRAFFIC ROUTES REALLOCATION
AFTER THE IMPLEMENTATION OF UN741 AND UN866 AS UNIDIRECTIONAL ROUTES

APPENDIX E

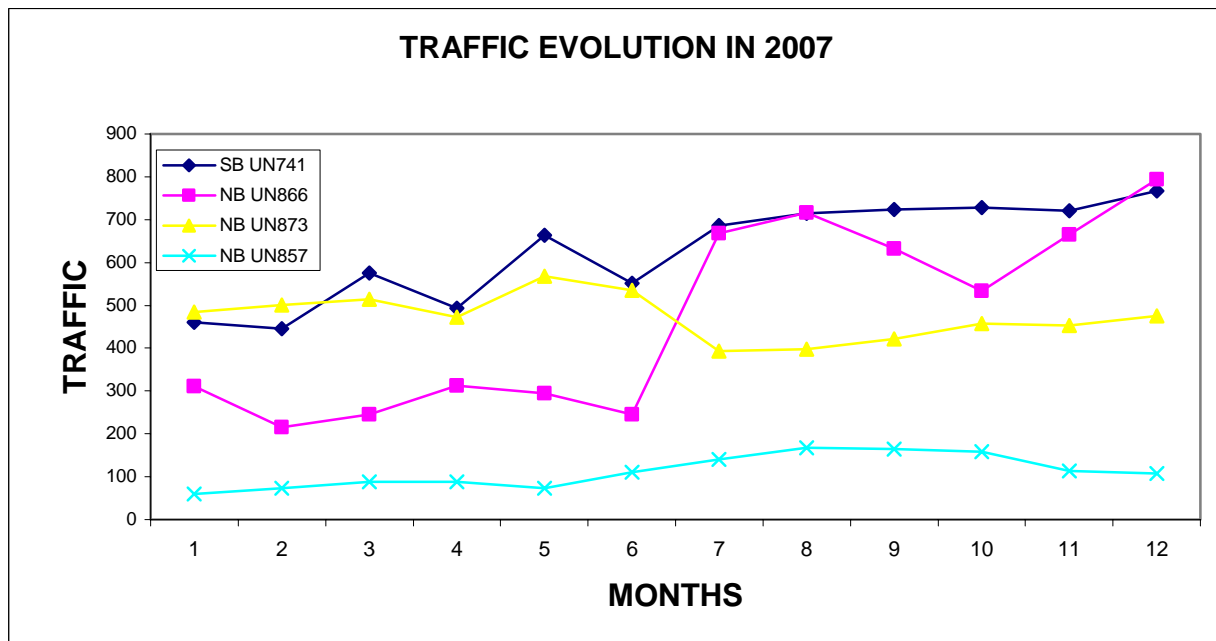
IMPACT OF UN741 AND UN866 IMPLEMENTATION AS UNIDIRECTIONAL ROUTES IN THE OCEANIC DAKAR FIR

1. Traffic statistics

- UN741

1.1 Since the implementation of UN741 as unidirectional route on 05th July 2007, southbound traffic (SB) on this route has increased by 56% for 2007.

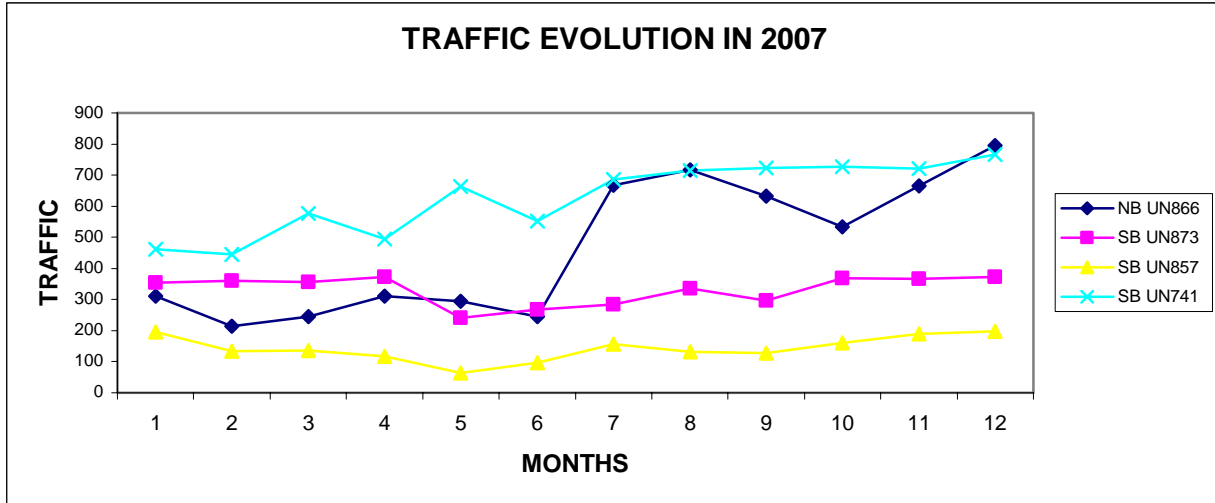
1.2 At the same time northbound (NB) traffic on UN866 (DEKON →AMDOL), UN873 (TASIL → POMAT), UN857 (ERETU → BOTNO) have increased respectively by 64%, 15.6% and 49.6% for 2007.



- UN866

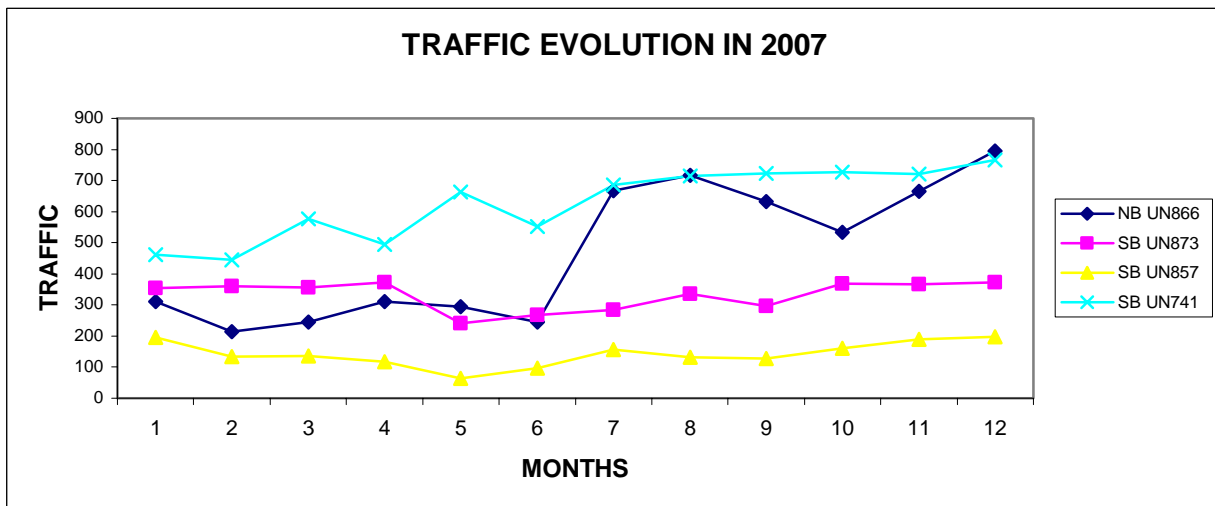
1.3 Since the implementation of UN866 as unidirectional route on 05th July 2007, northbound traffic has raised by 64% for 2007.

1.4 At the same time southbound traffic on UN873 (POMAT → TASIL), UN857 (BOTNO → ERETU) have increased respectively by 0.5% and 3.7% for 2007.



- Corridor Global traffic

1.5 15.6% traffic growth is noted in the corridor for 2007.



2. Traffic distribution analysis

2.1 The implementation of the UN741 and UN866 unidirectional routes has involved the segregation of the traffic which followed these routes.

2.2 Regarding the global traffic growth in the corridor and the curves above:

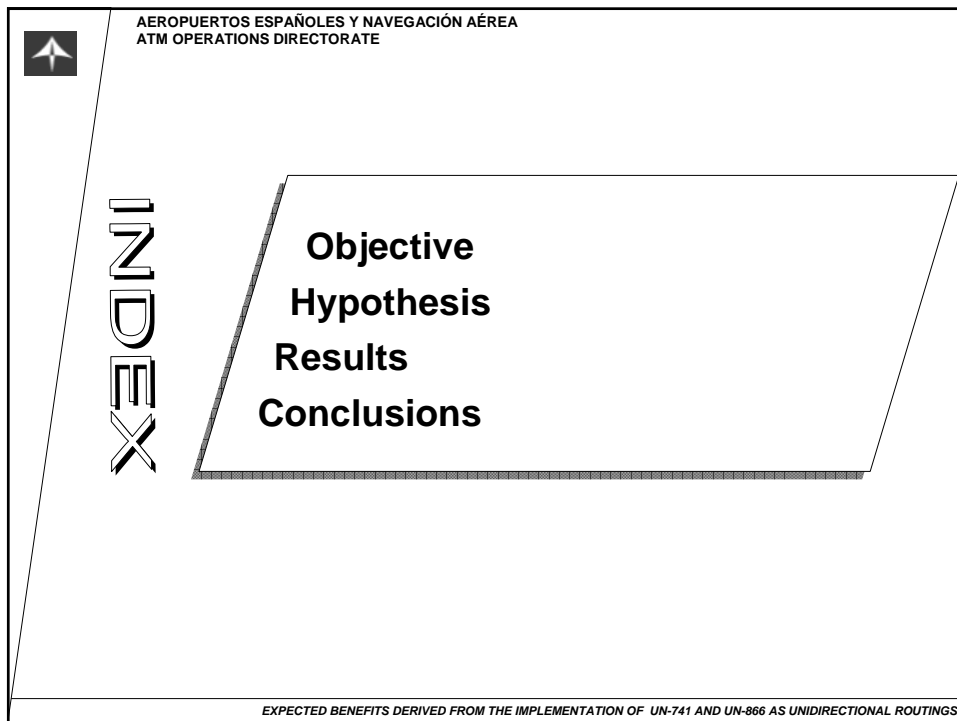
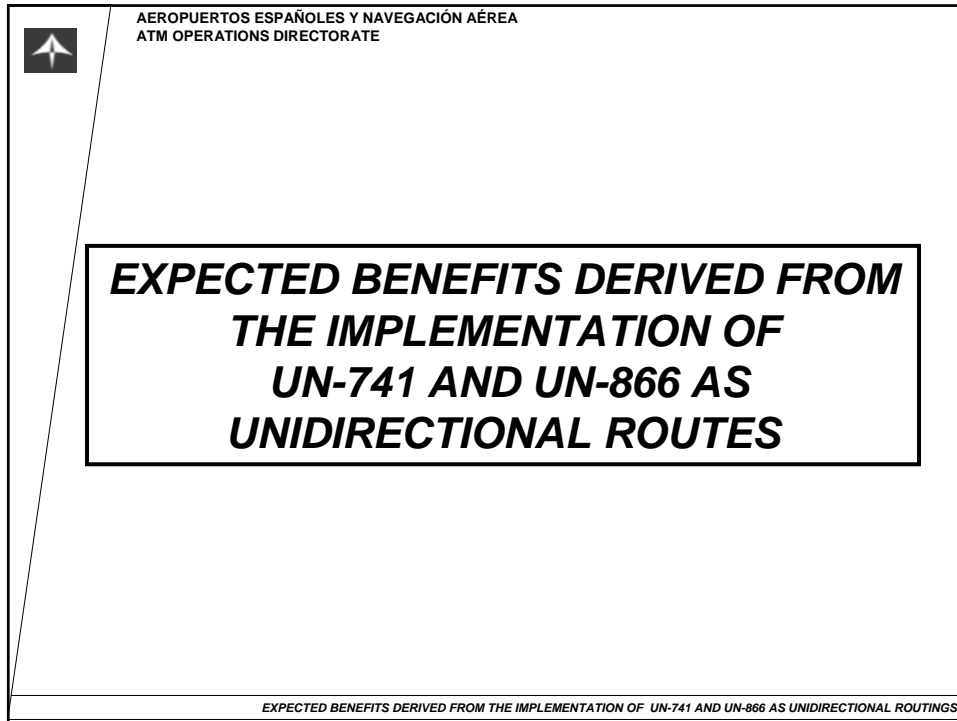
- Northbound traffic which followed UN741 route has moved to the UN866 unidirectional route and UN857 route (ERETU → BOTNO);
- Southbound traffic which followed UN866 route has moved to UN741 route (KENOX → NANIK);
- UN741, UN866 and UN873 routes remain the most used routes.


3. Conclusion

- Air traffic controllers workload has decreased slightly: management of the traffic on these routes is more comfortable;
- Increasing of the number of satisfied flight level changes requests: more aircraft use optimal flight level.

3.1 The meeting is invited to take note of this information.

APPENDIX F




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OBJECTIVE

AFTER NINE MONTHS OF EXPERIENCE WITH THE NEW UNIDIRECTIONAL SYSTEM IN UN741 AND UN866, ALL DATA ABOUT THE NEW AIR TRAFFIC DISTRIBUTION AND FLIGHT LEVEL ALLOCATION IS AVAILABLE AND, COMPARING THIS INFORMATION WITH THE PREVIOUS BI-DIRECTIONAL SYSTEM, THE BENEFITS IN TERMS OF FUEL SAVINGS AND CO₂ EMISSIONS REDUCTIONS WILL BE SHOWN IN THIS STUDY.


EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS

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HYPOTHESIS I

1. AIRCRAFT DISTRIBUTION IN THE EUR/SAM CORRIDOR FOR THE PERIOD JANUARY 2007 - MARCH 2008:

MODEL AIRCRAFT	%
A34X	13.9%
A33X	13.4%
B74X	5.2%
B76X	5.1%
B77X	4.4%
A31X	3.6%
MD11	2.5%
B75X	0.3%
OTHER	1.5%

THEREFORE, A340 WAS SELECTED AIRCRAFT TO PERFORM THIS STUDY.

EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS




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HYPOTHESIS II

2. OPTIMUM ALTITUDE, IS THE ALTITUDE AT WHICH AIRCRAFT CAN FLY MORE NAUTICAL MILES PER 1000 KG OF FUEL, SO FOR AN A340:

- A DIFFERENCE, IN FUEL CONSUMPTION, OF 3.6 KG/MIN BETWEEN THE OPTIMAL FLIGHT LEVEL AND THE NEARER (2000 FT).
- A DIFFERENCE, IN FUEL CONSUMPTION, OF 6.6 KG/MIN GPM BETWEEN THE OPTIMAL FLIGHT LEVEL AND 4000 FT (DATA OBTAINED OF THE GUIDANCE MATERIAL AND BEST PRACTICES FOR FUEL AND ENVIRONMENTAL MANAGEMENT – DATA OF IATA).

EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS



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HYPOTHESIS III


3. THE FUEL PRICE INCREASED DRAMATICALLY FROM THE SECOND HALF OF 2007 AND DURING 2008. NEVERTHELESS, A PRICE OF \$1.89 USD/GAL IS THE LAST AVAILABLE OFFICIAL INFORMATION (DATA OF IATA BEGINNING OF 2007).

4. FLIGHT DATA IS OBTAINED FROM SATMA.

5. IN SPITE OF THE SPECTACULAR INCREASE OBSERVED IN THE SECOND HALF OF 2007 AND BEGINNING OF 2008, THIS STUDY HAS BEEN PERFORMED WITH A MORE CONSERVATIVE GROWTH RATE:

- a) THE NORMAL CASE IS A FORECAST FROM 2008 TO 2015 WITH A 7% INCREASE PER YEAR.
- b) THE OPTIMIST CASE IS A FORECAST TO 2015 WITH A 10% INCREASE PER YEAR.

EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS




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HYPOTHESIS IV

6. TO ASSES THE BENEFITS OBTAINED, THE STUDY OF NM FLOWN AT NOT OPTIMAL FL PRESENTED IN SAT13 HAS BEEN UPDATED WITH REAL DATA OF THE TRAFFIC FLOWN SINCE 5TH JULY 2007:

- a. TWO REFERENCED DAYS: 13TH APRIL OF 2007 AND 28TH SEPTEMBER OF 2007. BOTH DAYS WERE FRIDAYS, HAD THE SAME NUMBER OF MOVEMENTS (90) AND TRAFFIC DISTRIBUTION PER ATS ROUTE.
- b. THE FLIGHT LEVEL REFERENCE WAS OBTAINED FROM ORIGINAL FLIGHT PLANS AND SPANISH RADAR INFORMATION.

EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS


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HYPOTHESIS V

7. IF THE BI-DIRECTIONAL CONFIGURATION SHOULD BE IN FORCE (COMPARED WITH CURRENT STRUCTURE):

- THE PENALISATION OF NM FLOWN AT NOT OPTIMAL FL SHOULD BE MORE THAN 5000 NM PER DAY.
- THIS NUMBER OF NM FLOWN AT NON OPTIMAL FLIGHT LEVEL SHOULD INCREASE DRAMATICALLY UP TO 2015.
- IT WISHES TO EMPHASIZE THAT THE IMPLEMENTATION HAS AFFECTED IN THE DISTRIBUTION PER ATS ROUTE WITH MORE IMPACT ON UN857.

EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS


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RESULTS

1. RESULT OF FUEL SAVING EXPRESSED IN \$ USD:


FUEL SAVING (\$ USD)	AVERAGE PER YEAR	2008	2015	2008-2015
NORMAL CASE (7%)	1,500,363	1,228,438	1,729,415	12,002,901
OPTIMIST CASE (10%)	2,028,952	1,572,719	2,321,298	16,231,614

2. RESULT OF CO2 EMISSIONS SAVING EXPRESSED IN TONS-CO2:

CO2 EMISSIONS SAVING (TON CO2)	AVERAGE PER YEAR	2008	2015	2008-2015
NORMAL CASE (7%)	5399	4800	8342	55022
OPTIMIST CASE (10%)	9826	5998	11310	73437

EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS

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CONCLUSIONS

1. THIS RESULTS, CLEARLY POSITIVES, SHOWS IMPORTANT FUEL AND CO2 EMISSIONS SAVINGS (BOTH CASES).
2. THE AIR COMMUNITY REDUCES ITS CO2 EMISSIONS ANTICIPATING THE NEW FORESEEN RESTRICTIONS.
3. THEREFORE, THE IMPLEMENTATION OF UN741 AND UN866 AS UNIDIRECTIONAL ROUTES HAS BECOME AN IMPORTANT BENEFIT FOR ALL AIR NAVIGATION STAKEHOLDERS.

EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS

 AEROPUERTOS ESPAÑOLES Y NAVEGACIÓN AÉREA
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**EXPECTED BENEFITS DERIVED FROM
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EXPECTED BENEFITS DERIVED FROM THE IMPLEMENTATION OF UN-741 AND UN-866 AS UNIDIRECTIONAL ROUTINGS

APPENDIX G

GUIDELINES FOR THE PREPARATION OF A CONTINGENCY PLAN FOR THE EUR/SAM CORRIDOR

1.1 Beginning of the contingency situation

When a specific ACC of the EUR-SAM Corridor starts a contingency situation will proceed as follows:

1. Will inform, by all its possible and quickest means, to its concern ACC's about its contingency situation, specifying that the general contingency procedures of the EUR-SAM Corridor and the specific contingency procedures reflected in the contingency annex to its LOA's are in force.
2. Will inform to its collateral ACC's about the real situation of the air traffic under its responsibility, as well as the information about the estimated traffic at the moment that the contingency situation started.
3. A common NOTAM notifying the contingency situation in the EUR-SAM Corridor will be published by the ACC in a contingency situation as well as by the rest of ACC's of the Corridor. This common NOTAM will refer to the published AIC concerning the EUR/SAM Contingency Plan and indicates relevant procedures to be applied. A model of this common NOTAM is specified in Annex A.
4. Each ACC of the EUR-SAM Corridor, shall broadcast via ground/air published VHF/ HF frequencies the contingency situation experienced in the specific ACC to all the air traffic under its responsibility. This broadcast should also include the details about the applicable contingency procedures.

1.2 General procedures during the contingency situation

Pilots flying in a contingency airspace in the EUR-SAM Corridor should follow IFBP (In flight Broadcast Procedure) as specified below:

- a) must be in permanent contact by the pilot – to - pilot frequency (123,45 MHz).
- b) Reports positions or estimates and the beginning and the end of the climb/ descent phases
- c) Maintain a watch for conflicting traffic, both visually and by reference to ACAS.
- d) Turn on all aircraft exterior lights.
- e) Keep the SSR transponder on all times.
- f) Climb and descend phases must be clearly performed at the right side of the route axis. They are also required to apply the lateral deviation off-set procedures as specified in relevant AIC published by the EUR/ SAM corridor States.

1.3 Contingency ATS routes of the EUR-SAM Corridor

In the event of an ATS contingency situation of one specific ACC of the EUR-SAM Corridor, the air traffic will be allocated with the restricted use of flight levels and routes directionality as it is described hereafter. The operational procedures applicable between the ACC in contingency and its collateral at the moment that the contingency situation begins will be specified in the contingency annex to the LoA's between both ACC's. This contingency annex must be in accordance with these general procedures.

During a contingency situation of one specific ACC, the collateral ACC's of the one in contingency will allocate the air traffic flows towards the one in contingency using exclusively the following ATS routes and flight levels:

- a) Route UN741
 - Southbound only.
 - Flight Level availability.- FL 300, FL340, FL360 and FL380 (exclusively EVEN FL).
- b) Route UN866
 - Northbound only.
 - Flight Level availability.- FL 290, FL330, FL350, FL370 and FL390 (exclusively ODD FL).
- c) Route UN873
 - Southbound only.
 - Flight level availability.- FL 300, FL340, FL360 and FL380 (exclusively EVEN FL).
- d) Route UN857
 - Northbound only.
 - Flight Level availability.- FL 290, FL330, FL350, FL370 and FL390 (exclusively ODD FL).
- e) RANDOM route
 - Traffic flying the RANDOM Route will not be accepted and must be allocated in one of the ATS routes described above.
- f) Crossing traffic (East- West)
 - Westbound.- FL320 exclusively.
 - Eastbound.- FL310 exclusively.

After that the contingency airspace is flown, the adjacent ACC can accommodate the air traffic according to the ATS routes directionality and flight levels establish.

1.3 Contingency longitudinal separation minima

The contingency longitudinal separation minima in the EUR/SAM corridor is 20 minutes with Mach number technique:

After the contingency airspace is flown, the adjacent ACC can resume to the normal separation minima (10 minutes with MNT).

1.4 End of contingency procedures

As soon as the reason that caused the contingency situation is solved, the in contingency ACC will inform, by all its possible and quickest means, to its concern ACC's about the end of the contingency situation.

A NOTAM notifying the end of the contingency situation in the EUR-SAM Corridor will be published by the ACC that was in a contingency situation as well as by the rest of ACC's of the Corridor.

In the aim to get a safely and orderly transition from the contingency situation to the normal situation, flow control restriction measures could be applied.

If the recovery from the contingency situation is only partial, but enough to reduce the air traffic restrictions, the in contingency ACC will issue a NOTAM informing about the new situation. In close coordination with its collateral ACC's, new traffic transfer conditions could be agreed.

2.6 ASECNA is improving the ground segment for VSAT links and new programmes are presented in order to get a better service. So Nouakchott/Casablanca, Dakar/Bissau and Dakar/Banjul are already linked via SAT connections as Abiudjan/Luanda and Dakar/Luanda implementations are in progress.

ATS-N5 protocol for EUR/SAM corridor

2.7 The advantages of using an ATS ground voice switching network were presented by Spain, so it was suggested the use of ATS-N5 as the signalling system for ATS ground-ground voice calls in the EUR/SAM corridor (via CAFSAT).

2.8 The experience introducing ATS-N5 between Sal and Las Palmas was discussed by the meeting and it was agreed about the potential benefits to be expected from this protocol that has been already adopted by Euroncontrol. Spain offered any kind of support and documentation to SAT States that consider to take part in these trials.

2.9 ASECNA commented that, although initially they have not been able to participate in the trials, Dakar and Nouakchott VCSS will soon be upgraded to initiate the tests for ATS-N5. All States were invited to follow the trial for common interest.

2.10 Although ATS-N5 works properly for “bilateral” links, it was also noticed that the full potential as switching network only will be met when the AFI regional numbering plan is developed.

Conclusion SAT/14-8 ATS Voice Numbering Plans for AFI Region

That ICAO take the necessary steps to include in the appropriate working group the need to study the implementation of ATS Voice Numbering Plans for AFI Region, as defined by the recommendation contained within the ICAO Manual on ATS Ground-Ground Voice Switching and Signalling (Doc 9804, Chapter 2 Section 2.3).

Conclusion SAT/14-9 Trials for extension of ATS-N5 Voice Switching protocol

Encourage SAT States to participate in the trials for extension of ATS-N5 Voice Switching protocol following the successful implementation of ATS-N5 (via CAFSAT) between Cape Verde and Las Palmas.

Decision SAT/14-10 New Task for the SAT/CNS Working Group

That Task N°8 be added to SAT/CNS Working Group Terms of Reference, as follows: Analyse all aspects related to the implementation of ATS-N5 protocol in the SAT area in accordance with ICAO guidance material contained in ICAO Annex 10 and Doc 9804.

ATS/CPDLC programmes

2.11 SSR and ADS-CPDLC implementation provides real opportunities for ANSP to share surveillance radar or ADS data to enhance air navigation safety particularly at FIR boundaries, pending the availability and the integrity of communications facilities.

2.12 The group realized that ADS/CPDLC was included as part of the technical working group. The present situation, with all States with approved and dimensioned ADS/CPDLC programmes, obliges the technical side of the SAT group to review the vision of the terms of reference in order to focus the efforts in areas of common benefits. ASECNA and the Brazilian delegations proposed to focus next studies on ADS data interchange and on interchange of technical information as first steps to develop a technical guideline for ADS/CPDLC that may fit with all systems in the corridor.

2.13 In that sense, Spain referenced the meeting to the trials performed with Cape Verde sending radar and ADS tracks via CAFSAT (presented in SAT/10 meeting).

Decision SAT/14-11 Reformulation of Task 7 of the SAT/CNS Working Group

That Task N° 7 of SAT CNS Working Group Terms of Reference be reformulated, as follows:

In coordination with ATM/WG , share relevant technical aspects of different ADS/CPDLC systems to be implemented by SAT States addressing issues regarding work methodology, procedures, data interchange, maintenance, etc.

Conclusion SAT/14-12 ADS Data Sharing

That States explore, the concept of ADS Data Sharing for the SAT Area, taking advantage of the potential of existing digital VSAT Networks in the area.

Intelsat IS-801 (CAFSAT) end-of-life

2.14 The meeting agrees on the necessity for an urgent study to analyze the satellite re-allocation of CAFSAT network and member actions required to permit the continuity of the service as a result of the end-of-life of present serving satellite INTELSAT IS-801.

2.15 The existing nodes are spread over two continents and a couple of them are even outside hemispheric coverage of relevant C-band satellites over the Atlantic. IS-801 (328.5°E), has demonstrated to provide optimal coverage for the network topology because it permitted interhemispheric links and global links outside hemi coverage. IS-801 end-of-life is expected by October 2008.

2.16 Now it becomes necessary to search for a new satellite to which CAFSAT services may be migrated. The basic desirable requirements of this satellite shall be:

- a) Operate in standard C-band;
- b) Coverage over Europe, Africa and Central and South America, not far in the geostationary arc to IS-801 to avoid re-allocations of antennae caused by unexpected obstacles in the visibility angles;
- c) Include in the coverage the Northeast region of Brazil and the archipelagos of Canaries, Cape Verde, Acores and Madeira, preferably in hemispheric beams, but at least in global beam with reasonable EIRP and G/T;
- d) Permit beam interconnectivity to replicate present CAFSAT topology;
- e) Permit commercial access to the capacity to the organisms owning and operating CAFSAT stations in member countries;

- f) Permit contract of single carriers as requested; and
- g) Keep a reasonable price, equaling or improving the present amounts paid to INTELSAT, and offering same price to carriers in Hemi beam and global beam.

2.17 Conversation should be initiated with INTELSAT to receive advice on which will be the “natural” substitute of IS-801 thus simplifying technical impact and administrative procedure. It is also necessary to take into account the impact of a satellite change in all and every CAFSAT station. The parameters that shall be taken to meet the new satellite are:

- a) Administrative and regulatory: all CAFSAT station owner shall contract its carrier in the new satellite and be regulatory enabled to do so;
- b) Physical location: It shall be checked that the new satellite selected is visible from the present antenna location without obstacles;
- c) Radiofrequency considerations: Radio devices may permit to tune the new frequencies assigned (in the case of Dakar and Las Palmas diplexers have to be re-tuned), useful power available in the station shall be enough for the new link budget and station G/T shall also meet the reception needs; and
- d) Time life of the new satellite.

2.18 The CNS/WG must face this issue as a matter of urgency as IS-801 will be out of service in October 2008.

2.19 The meeting proposed the creation of a Migration Plan Task Force that may coordinate all steps to be followed for a successful and on time migration. The Terms of reference of this Task force are shown in Appendix A to the Report on Agenda Item 4.

2.20 INSA, as main provider of CAFSAT stations, has offered to contact INTELSAT and perform a study to be delivered to the Migration Plan Task Force no later than 5 June 2008. This study will include, at least:

- a) Proposal of new satellites meeting all requested technical, administrative and commercial constraints; and
- b) Detailed description, station by station of the technical and financial impact of station migration (coverages, bandwidth capability, etc.).

2.21 The decision about new satellite (if several available) should be taken by the Migration Plan Task Force before 15 June 2008.

2.22 Once new satellite has been chosen, a migration plan shall be taken into consideration to permit a rapid change to a new satellite with minimum or negligible operational impact.

2.23 INSA offered to host a meeting in order to find a final migration coordination.

2.24 In this regard, the following conclusions were formulated:

Decision SAT/14-13 Creation of the Migration Plan Task Force

That the Migration Plan Task Force be created to coordinate all aspects related to the migration of services from Satellite IS-801 that will be retired on October 2008. The terms of reference of this WG are presented in Appendix A to the report on Agenda Item 4.

Conclusion SAT/14-14 Resources for the migration process to a new satellite

That States take proper actions to ensure within the framework of the schedule, the availability of equipment, budget and resources, so the migration process may be achieved.

Conclusion SAT/14-15 Trials for the interconnection of AMHS systems

That SAT Members take the necessary actions to initiate trials for the interconnection of AMHS systems.

Agenda Item 3: Communications, navigation and surveillance / Air traffic management (CNS/ATM) Systems

RVSM implementation in the AFI Region

3.1 The meeting noted that the planning and work toward the RVSM implementation in the AFI Region airspace is in the final stages, pending ICAO ANC approval. The implementation of RVSM has been planned for 25 September, 2008 and according with AFI RVSM policy will be implemented throughout the AFI Region, without exception. The AFI States involved were requested to coordinate with the ARMA on a regular basis, in order to ensure a seamless switchover. The complete information is shown at the **Appendix A** to this part of the report.

Review of the SAT/FIT/3 Report

3.2 The meeting reviewed the SAT/FIT/e report, formulating the following Conclusion:

Conclusion SAT/14-16 SAT/FIT/3 Report

The SAT/14 meeting approved the SAT/FIT/3 Report and its conclusions.

APPENDIX A

AFI RVSM IMPLEMENTATION

1. INTRODUCTION

1.1 BackGround to RVSM Implementation in the AFI Region

- Decision 13/38 of APIRG 13 required the establishment of a TASK Force on RVSM and RNAV/RNP Implementation.
- Decision 14/21 of APIRG 14 required States do their utmost to implement RVSM in selected airspaces, as per plan by AIRAC cycle date 20th January 2005 concurrently with the CAR/SAM Region.
- APIRG 15 adopted several conclusions from the meeting all contributing to the completion of tasks and planning before implementation.
- APIRG 16 approved the submission of the PISC to the ANC for implementation approval.

2. DISCUSSION

2.1 In response to the above, the AFI RVSM Task Force, has met on 13 different occasions with one still pending:

- TASK Force 1 – June 2002 – Development of RVSM Implementation Plan
- Task Force 2 – November 2003 – Identified airspaces and limits of RVSM implementation.
- Task Force 3 – April 2004 – Publishing of appropriate information and Legislation
- Task Force 4 – July 2004 – Adoption of AFI Safety Policy and Safety Plan
- Task Force 5 – November 2004 – Go/Delay decision taken to postpone to 19th January 2006
- Task Force 6 – May 2005 - Functional Hazard Assessment Report(FHA) was accepted for inclusion into the Safety Plan
- Task Force 7– August 2005 - Presentation of the interim Collision Risk Assessment report. (CRA). This Task Force meeting delayed the implementation of RVSM to target date 28th September 2006, due to the CRA indicating that the TLS of 5×10^{-9} not being met, specifically with regard to large height deviations and ATS incidents.
- Task Force 8 – October 2005 – Doc 7030 reviewed and amended to include AFI RVSM procedures and draft Regional Switch Over Plan developed.

- Task Force 9 – April 2006 - Ratify Doc 7030 and draft Regional Switch Over Plan as well as to review amendments to Letters of Procedure, AFI RVSM Safety Policy, AFI RMA Manual and to consider the report of the second National Safety Plan Validation Panel (NSPVP). Receive progress reports on the Pre Implementation Safety case and Collision Risk Assessment.
- Task Force 10 - 28 June 2006 – a routine Task Force meeting with lengthy discussions concerning uncoordinated military operations in the Indian Ocean.
- Task Force 11 - 30 November 2006 - a routine Task Force meeting with the final inputs for Doc 7030 with specific reference to the rate of climb procedure in RVSM airspace
- Task Force 12 – 23 April 2008 – a routine Task Force meeting that discussed at length the non receipt of flight plans which has an impact on the Functional Hazard Assessment.
- Task Force 13 – 12 September 2008 – a presentation was made concerning the second CRA which produced the result of a total estimated risk of 15×10^{-9} that equates to a factor of three over the TLS. The decision to request ANC approval, via APIRG, for implementation on 25 September 2008 was taken during this meeting together with the completion of all outstanding tasks.
- Task Force 14 – 27 May 2008 is to finalise any outstanding work and review the switch over plan in detail for State Letter publication.

2.2 Progress with regard to the provision of ATS within the AFI RVSM airspace

- The FHA has been completed and the report accepted, for inclusion into State National Safety Plans as appropriate
- States have been required to prepare National Safety Plans (NSP). Target date end of February 2008. All AFI States have now completed their NSP's and signed which have been lodged with ARMA.
- Workshops have been held in Nairobi and Dakar during July 2005 to assist States with the formulation of their National Safety plan. These NSP's have been submitted to the NSPVP on two occasions and a number of the plans are nearing maturity with practical implementation now required.
- Task Force 7 reviewed the Collision risk assessment during August 2005
- APIRG 15 convened in September 2005 and considered the CRA report. The decision to delay implementation of RVSM to September 2006 was ratified at this meeting. A second CRA has now been completed with a very promising and much improved result.
- The PISC draft report has been reviewed by the project management team at the end of February 2008. The PISC is drawn from the FHA, NSP's and CRA's with some reference to Doc7030.
- Task Force 10/ Stake Holders convened in June 2006 - Go/Delay decision. The decision to delay implementation was taken due to incomplete work and the CRA result.

3. **State of implementation of the AFI Regional Monitoring Agency (ARMA)**

- The ARMA is situated in the Central Airspace Management Unit (CAMU), it is mature as a monitoring unit and is interacting with other monitoring agencies in the execution of its duties. The function of height monitoring commenced in April 2006 with a contract being concluded with AIRINC to supply the necessary height monitoring service for the data required by the ARMA. The height monitoring activities will become more apparent, as the monitoring program is rolled out into the region. A second height monitoring contract is to become effective on 1 May 2008 for another two year period.
- In its second readiness assessment to the RVSM Task Force 6(T/F6) meeting the ARMA reported, that a calculated 55% of AFI registered aircraft have attained RVSM readiness status, improving from 24% at the previous assessment. The calculated 55% of AFI registered aircraft that have received State RVSM operational approval has remained fairly constant. This should improve closer to implementation.
- The traffic sample reveals that 90% of the total aircraft population operating within the proposed flight level band of FL290 to FL410 are RVSM approved, along with 90% of aircraft operators. The AFI Safety policy requires a 90% target of RVSM approved aircraft within the Region to be attained.

4. **Important Items for adjacent Regions to react on**

4.1 The AFI Regional Supplementary Procedures, Doc 7030 5th edition 2008, have now been completed and published by ICAO and the members are urged to ensure that those sections that have an impact on their operations are taken into consideration to ensure a harmonised approach during and after implementation.

4.2 Task Force 14 will be reviewing and amending the AFI switchover plan which will be published by State letter to all affected parties during June 2008. Members are urged to take note of the switchover plan and should ensure that they are informed as to the sequence of events and contact points.

Agenda Item 4: Future work programme**Terms of reference, work programme and composition of the SAT Group (IAS/SG, ATM/WG AND CNS/WG)**

4.1 Under this part of the agenda, the Terms of Reference and the work Programme, of the SAT Group and respective IAS/SG, ATM/WG and CNS/WG were presented. As proposed by the CNS/WG, the SAT Group created a new Working Group called Migration Plan WG. The terms of reference are shown in **Appendix A** to this part of the report.

Conclusion SAT/14-17 Terms of reference, working programme and Composition of the SAT Group Auxiliary bodies

That the term Terms of reference, working programme and Composition of the SAT ATM Working Group (ATM/WG), Study group on the implementation of the airspace structure in the EUR/SAM CORRIDOR (IAS/SG), CNS Working Group (CNS/WG), and Migration Plan Working Group, respectively, are shown in **Appendix A** to this part of the report.

APPENDIX A

TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE SAT ATM WORKING GROUP (ATM/WG)

<ul style="list-style-type: none"> Considering the evolutionary implementation of CNS/ATM systems in areas of routing AR1/HA1 and AR2/HA8 <i>as defined in the Global Air Navigation Plan (ICAO Doc 9750)</i>, the Task Force should explore ways and means to achieve further enhancements in ATM capacity and aeronautical telecommunications, and to implement CNS/ATM elements taking into consideration the timescales agreed for these areas of routing. It will be guided by the requirements identified in the AFI and CAR/SAM CNS/ATM Implementation Plans. <i>Note: The Task Force will adopt a pragmatic approach and may set up auxiliary bodies to carry out specific tasks, as necessary.</i> 		
WORK PROGRAMME		
TASK No.	SUBJECT	TARGET DATE
1.	Analyze ATM deficiencies and make proposals for their elimination.	Continuous
2.	Monitor pre-implementation/post-implementation safety assessments (as applicable) for RVSM and RNP operations in the South Atlantic, including adjacent areas.	Continuous
3.	Study and evaluate RVSM, RNP/RNAV procedures applicable in the AFI/CAR/SAM and EUR/SAM Interface areas.	Continuous
4.	Monitor flight plan availability and propose appropriate corrective measures.	Continuous
5.	Oversee FANS 1/A system performance monitoring to ensure that the system continues to meet safety and interoperability requirements and that operations and procedures are working as specified.	Continuous
6.	Carry out studies on the establishment of a central reporting agency (CRA) and related institutional issues	Completed
7.	Harmonize ADS/CPDLC programmes developed by SAT States/FIRs and analyze cost-benefit aspects related to their implementation.	Continuous
8.	Maintain ADS/CPDLC operational guidance material updated.	Continuous
9.	Conduct studies related to the implementation of the Global ATM Operational Concept and other enabling concepts within the SAT area.	Continuous
10.	Continue studies related to the implementation of the AORRA airspace.	Continuous
<ul style="list-style-type: none"> <i>Note: The ATM/WG should take appropriate action on pressing issues and submit its proposal to the SAT/15 meeting.</i> 		
COMPOSITION		
<ul style="list-style-type: none"> <i>The Task Force of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in AFI and SAM routing areas AR1/AH2 and AR2/AH8 as defined in the Global Air Navigation Plan (ICAO Doc 9750), and experts from adjacent FIRs and international organizations.</i> Rapporteur: Spain <i>Tasks Nos. 5, 6, 7 and 8 are assigned to the SAT established FANS-1/A Interoperability Team (FIT) with South Africa as Team Leader.</i> Working arrangements: <i>The ATM/WG should complete its work and submit its proposal to the SAT Group. The ATM/WG should work through electronic correspondence prior to meetings.</i> 		

**TERMS OF REFERENCE, WORKING PROGRAMME AND COMPOSITION OF THE SAT
STUDY GROUP ON THE IMPROVEMENT OF THE AIRSPACE STRUCTURE IN THE
EUR/SAM CORRIDOR (IAS/SG)**

<ul style="list-style-type: none"> To develop a strategy for the short-term, mid-term and long term for the implementation of a new airspace structure in the EUR/SAM Corridor with the end to improve the capacity and efficiency of the operations and to meet users needs. 		
WORK PROGRAMME		
TASK No.	SUBJECT	TARGET DATE
1.	Analyze the current operational situation within the EUR/SAM Corridor taking into account statistics and users needs.	Completed
2.	Explore ways and means to restructure the EUR/SAM Corridor airspace	Completed
3.	Develop a short term plan using the current separation standards based on RNP10, including the implementation of new ATS routes.	Completed
4.	Analyze the advantages of introducing unidirectional ATS routes.	Completed
5.	Study the feasibility of implementing RNP4, using ADS/CPDLC functionalities.	SAT/15
6.	Continue studies to implement a random routing area, using ADS/CPDLC functionalities.	SAT/15
7.	Develop necessary cost benefit analysis for the different options.	SAT/15
8.	Establish means to develop the safety assessment for the different implementation options.	SAT/15
9.	Develop an action plan for the different implementation options.	SAT/15
COMPOSITION		
<ul style="list-style-type: none"> Brazil, Cape Verde, France, Portugal, Senegal, Spain, Trinidad and Tobago, United States, ASECNA and IATA. Rapporteur: Spain. 		
<ul style="list-style-type: none"> Working arrangements: <i>The IAS/SG should take the appropriate action to complete its work and submit its proposals to the next meeting of the SAT Group. The IAS/SG should work through electronic correspondence prior to meetings.</i> 		

TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE SAT CNS WORKING GROUP (CNS/WG)

<ul style="list-style-type: none"> Considering the CAR/SAM and AFI Air Navigation Plans, the SAT CNS/WG should explore ways and means of achieving further enhancements in ATM efficiency within in areas of routing AR1/HA1 AR-2/HA8 as defined in the Global Air Navigation Plan (ICAO Doc 9750), by resorting to emerging technologies and, in particular, by taking advantage of rationalization, integration and harmonization of systems where appropriate. Implementation of new systems should be sufficiently flexible to accommodate existing and future services in an evolutionary and cost-effective manner. The associated institutional arrangements shall not inhibit competition among service providers complying with relevant ICAO Standards, Recommended Practices and Procedures. 		
WORK PROGRAMME		
TASK No.	SUBJECT	TARGET DATE
1.	Analyze CNS deficiencies and make proposals for their elimination.	Continuous
2.	Carry out, as required, studies on the use of existing VSAT networks potentialities to cater for aeronautical telecommunication requirements in the SAT area. Such studies should include coordination issues, service channel interfaces, monitoring and control, system architecture, new services, user interfaces and bandwidth monitoring.	Continuous
3.	Undertake investigations on the lack of flight plans, including individual cases, with emphasis on the aeronautical fixed telecommunication network (links, switching centres, routing directory and transit time statistics).	Continuous
4.	Carry studies and make proposals to achieve end-to-end interoperability of ATM applications, in accordance with the ATM global operational concept.	SAT/15
5.	Evaluate the feasibility of using existing or emerging digital VSAT networks (AFISNET, CAFSAT, REDDIG, SADC, etc.) to support ATS data link applications in an ATN environment.	SAT/15
6.	Considering the implementation time-frames in the AFI and SAM CNS/ATM implementation plans, address cost-benefit aspects for the use of CNS/ATM applications (as required).	Continuous
7.	In coordination with SAT ATM/WG, share relevant technical aspects of different ADS/CPDLC Systems to be implemented by SAT States addressing issues regarding work methodology, procedures, data interchange, maintenance, etc.	SAT/15
8.	Analyze all aspects related to the implementation of ATS-N5 protocol in the SAT area in accordance with ICAO guidance material contained in Annex 10 and Doc. 9804	SAT 15
COMPOSITION		
<ul style="list-style-type: none"> The CNS/WG being of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in the area concerned, experts from adjacent FIRs and international organizations and the aeronautical industry. Rapporteur: Senegal. Task Team leaders: ASECNA (Tasks. Nos.2 and 4), South Africa (Task No.7) Working arrangements: The CNS/WG should complete its work and submit its proposal to the SAT. The CNS/WG should work through electronic correspondence prior to meetings. 		

**TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE SAT MIGRATION
PLAN WORKING GROUP (MP/WG)**

Considering that the IS-801 (CAFSAT Satellite) will be out of service in October 2008, the MP/WG must face this issue as a matter of urgency and develop a Migration Plan that considers all steps to be followed for a successful and on time migration with minimal operative and cost impact.		
WORK PROGRAMME		
TASK No.	SUBJECT	TARGET DATE
1	Study and select available satellites that may meet, in terms of service, coverage and cost, the parameters offered by IS-801 up to date	June 15, 2008
2	Develop a Migration Plan schedule	July 1, 2008
3	Coordinate the perform of D-Day migration in order to minimize the impact on the operative services	September 2008
4	Conduct and coordinate the whole global process	
COMPOSITION		
<ul style="list-style-type: none"> • The MP/WG shall comprise of experts from States with AFSAT stations in service. INSA, INTELSAT and providers as observers. • <i>Team leader and Rapporteur: Spain</i> • <i>Working arrangements: The MP/WG should work through electronic correspondence.</i> 		

Agenda Item 5: Any other business**Dates and venue of the next SAT/14/TF/1 and SAT/FIT/4 Meetings**

5.1 The meeting welcomed the offer of Cape Verde to host the forthcoming SAT/14/TF/1 and SAT/FIT/4 Meetings, tentatively scheduled for January 2009.

5.2 The SAT Group members will be notified of the dates and venue of this meeting in due course.

Dates and venue of SAT/15 meeting

5.3 ICAO will coordinate the venue and dates for the holding of the SAT/15 meeting, to be carried out in the second semester of 2009.