

INTERNATIONAL CIVIL AVIATION ORGANIZATION



REPORT OF THE ATS ROUTE DEVELOPMENT COORDINATION MEETING RELATING TO THE ATLANTIC OCEAN RANDOM ROUTING RNAV AREA (AORRA) ENTRY/EXIT POINTS AND ASSOCIATED CONTINENTAL ATS ROUTES

**SANDTON, JOHANNESBURG, SOUTH AFRICA,
26 – 28 OCTOBER 2010**

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PART I – HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The ATS Route Development Coordination meeting was convened at IATA offices at Sandton, Johannesburg, South Africa from 26 to 28 October 2010. The meeting was held jointly with ICAO and the International Air Transport Association (IATA) at which IATA member airlines also participated as concerned airspace users.

2. OPENING

2.1 The Meeting was opened with welcoming remarks by Mr. David Labrosse, Air Traffic Management/Search and Rescue Consultant, ESAF Regional Office and Mr. Gaoussou Konate, IATA Regional Director for Safety Operations and Infrastructure AFI. The objectives of the meeting were addressed at this stage.

3. ATTENDANCE

3.1 The meeting was attended by a total of fourteen (14) participants from four (5) States (Angola, Botswana, Namibia, South Africa and USA) and two (2) international organizations (ASECNA and IATA).

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Harry Roberts, Air Traffic Management Specialist from Air Traffic and Navigation Services (ATNS) of South Africa. Mr. David Labrosse, ATM/SAR Consultant, ESAF Regional Office was the Secretary of the meeting and was supported by IATA AFI Regional Office for Safety, Operations & Infrastructure.

5. LANGUAGE

5.1 Discussions were conducted in the English language and documentation was also issued in the English language.

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6. AGENDA

6.1 The following Agenda was adopted:

Strategic Objective	Agenda Item No.	Subject
	1	Welcome by ICAO and IATA
	2	Introduction of participants
	3	Election of Chairman
	4	Application of the “Lab” concept
	5	Success story: First Meeting of the PBN Route Network Development Working Group (PRND WG/1)
	6	Flexible ATS Routes concept
	7	Objective of ATS Route Development Coordination Meeting
	8 8.1 8.2 8.3	Implementation AORRA entry/exit gates Route structure connecting AORRA entry/exit gates LOA's/LOP's
	9	Closing of the meeting

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PART II: REPORT ON AGENDA ITEMS

REPORT ON AGENDA ITEM 1: WELCOME BY ICAO AND IATA

1.1 In the opening remarks, the meeting was reminded that ICAO Air Navigation Commission is fully committed to the objective of the organisation to reduce the aviation industry's CO₂ emission by 2% annually until the year 2050.

REPORT ON AGENDA ITEM 2: INTRODUCTION OF PARTICIPANTS

2.1 Each participant made an introduction with a brief description of their respective job function within their organizations. The list of participants is at **Appendix B** to this Report.

REPORT ON AGENDA ITEM 3: ELECTION OF CHAIRMAN AND SECRETARIAT.

3.1 The meeting unanimously elected Mr Harry Roberts, ATM Specialist (South Africa), as Chairperson to facilitate the proceedings of the user/provider ATS route coordination process.

3.2 The meeting reviewed the provisional agenda as proposed at paragraph 6 to the History of the Meeting. The agenda was subsequently adopted.

REPORT ON AGENDA ITEM 4: APPLICATION OF THE “LAB” CONCEPT

4.1 IATA proposed the use of the “Lab” concept which would be applied during the next three days of the meeting and this approach was agreed. This involves a process whereby participants are assigned to find solutions to specific challenges that are identified and can only leave the premises once all the tasks have been satisfactorily completed.

REPORT ON AGENDA ITEM 5: SUCCESS STORY: FIRST PBN ROUTE NETWORK DEVELOPMENT WORKING GROUP MEETING (PRND WG/1)

5.1 The attention of the meeting was drawn to the outcome of the First PBN Route Network Development Working Group Meeting, Johannesburg, 13-16 July 2010. Route proposals were coordinated in advance and those with decision-making authority from member States were invited to participate. The outcome of the PRND WG/1 Meeting is as follows:-

- An agreement on 30 routes to be implemented on fast track, with 21st October 2010 as the target date;
- The CO₂ potential annual savings are estimated to be over 60,000 tonnes for the 30 new routes.

REPORT ON AGENDA ITEM 6: FLEXIBLE ATS ROUTES CONCEPT (FLEX ROUTES)

6.1 The meeting was appraised on the concept of current flight planning systems that are designed in varying degrees to take into account the following planning criteria:

- Upper winds;
- Aircraft performance profiles;
- Airspace Rules, RVSM, Parity of Flight;
- User charges;

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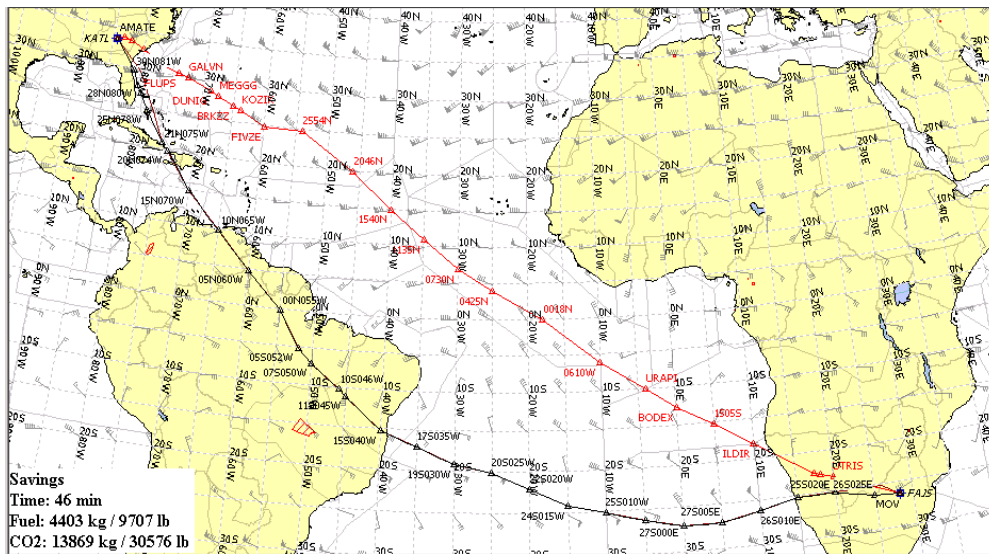
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- AIS features, airways, restricted areas;
- Notice to Airmen (NOTAMs);
- Significant weather avoidance (volcanic ash, storms, etc);
- Extended twin-engine operating requirements (ETOPS).

6.2 It was specifically noted that fixed routes were insensitive to the variables listed in 6.1 above, when compared to flex routes, thus the need for operators to move towards a more dynamic-and flexible routing structure.

6.3 A Flex Route (also called Random Route, User Preferred Route, Free Route or 4D Trajectory) may be described as a non-fixed route calculated on a daily basis to provide the most efficient flight profile or trajectory on a given city pair or through a specific volume of airspace. The Flex Routes can comprise any combination of elements, including but not limited to: named waypoints, latitude/longitude, existing airways, ground based nav aids or other significant points. Flex Routes can be considered as fixed routes of the day” and once filed and approved by the ATC, the Flex Route remains effectively “locked-in”¹. The Flex Routes concept draws its applicability from GPI-7, an ICAO Global Plan Initiative.

6.4 The figure below depicts the Atlanta – Johannesburg route comparing the time, fuel burn and CO2 emissions for the fixed and Flex Route. The savings shown provide a conservative example of the benefits of Flex Routes. The Flex Route in this case uses a combination of Latitudes/Longitudes (over the oceanic airspace) and fixed waypoints (over the African domestic airspace).



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REPORT ON AGENDA ITEM 7: OBJECTIVE OF ATS ROUTE DEVELOPMENT COORDINATION MEETING

7.1 The meeting was reminded of the Objectives of ATS Route Development Coordination Meeting which was to:

- Create AORRA Entry/Exit Gates to enable transitions from Oceanic airspace to Domestic airspace using flexible routings;
- Build direct routes between the entry/exit gates mentioned above in the Atlantic Oceanic Random RNAV Area (AORRA), Windhoek FIR, Luanda FIR and Johannesburg FIR;
- Harmonize implementation.

Agenda Item	ENTRY/EXIT Gates to AORRA	Transitional Routes to AORRA	FIRs Crossings	Remarks
1	S06 (S06 00 E010 24 13.66)	(NATAR-S06)	Luanda	New
2	ONTAR (S 09 37.7 E011 23.1)	(ONTAR)--ETBON--VHU-(UV858)	Luanda	New
3	S12 (S12 00 E011 20.8)	(S12)-VUB-ANVAG-UTADI-GBV	Luanda, Namibia, Botswana	New
4	S13 (S13 00 E011 19.4)	(S13)-VUB-ANVAG-UTADI-GBV	Luanda, Namibia, Botswana	New
5	EGNAB (S14 25.5 E011 17.4)	(EGNAB)-(UN184)-(GBV)	Luanda, Namibia, Botswana	New
6	S16 (S16 00 E011 15.2)	(S16)-(UNPIP)-(UN184)-(GBV)	Luanda, Namibia, Botswana	New
7	S17 (S17 00 E0 011 13.7)	(S17)-DETUX-(UL435)	Luanda, Namibia	New
8	IBLOK (S18 47.6 E011 40.5)	(i) (IBLOK)-DETUX-(UL435) (ii) (IBLOK)-(WHV)- (UG653)-	Namibia	Review Bi-directional
9	S20 (S 20 00 E012 06.7)	(S20)-(WHV)	Namibia	New
10	S21 (S21 00 E0012 28.6)	(i) (S21)-(WHV)- (ii) (S21)-(WBV)-(ETUSO)-(UN181)	Namibia	Review Bi-directional
11	S22 (S22 00 E0012 50.9)	(S22)-(WBV)- (ETUSO)-(UN181)	Namibia	Review Bi-directional
12	NIBEK (S22 58.5 E013 12.9)	(NIBEK)-(WBV)-(ETUSO)-(UN181)	Namibia	Review Bi-directional
13	S24 (S24 00 E013 36 20)	(S24)-DCT-(UBVEM)-(UN181)	Namibia, Botswana	Bi-directional
14	S25 (S25 00 E013 36.4)	(S25)-(KTV)-(AVUSA)-(UQ19)	Namibia, Johannesburg	Review Bi-directional
15	NIGAM (S26 33.9 E013 59.8)	(NIGAM)-(KTV)- (AVUSA)-(UQ19)	Namibia, Johannesburg	Review Bi-directional

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REPORT ON AGENDA ITEM 8: IMPLEMENTATION

8.0.1 The meeting agreed that all the ATS route requirements submitted by users merited high priority implementation.

8.0.2 Cognizant of the need to implement the agreed ATS routes as soon as possible, the meeting agreed that the ATS routes at **Appendix A** to this report be implemented as of AIRAC date of 13 January 2011, using temporary ATS route designators. The meeting agreed that publication date for the routes will be 16 December 2010.

8.0.3 As the South African Civil Aviation Authority representative was not able to be present during the final stages of the meeting, South African could not commit on the agreed publication date. IATA undertook to facilitate coordination with South Africa CAA which would possibly include publication of AIP information within Johannesburg FIR on the AIRAC date of 16 December 2010, in order to synchronise publication with the other three States involved.

8.0.4 The meeting agreed with the ATS routes trajectories as reflected in the list at **Appendix A** to this report. However, it was noted that some requirements had to be modified for various reasons. In this regard, the meeting noted that the performance of the AFI Region ATS route network processes would be measured by how closely it came to achieving 100% of the user preferred trajectories. Accordingly, the meeting agreed that States/ANSPs should continue to give attention to ATS routes which do not meet user-preferred profiles.

8.05 In order to best meet the user requirements and cognizant of the ICAO performance-based approach, the meeting agreed that the application of the PBN concept is favoured over conventional ATS routes.

8.06 It was highlighted that States/ANSPs remain responsible for safety assessments associated with ATS Routes implementation (Ref. Paragraph 2.27.5 of Annex 11). Furthermore, ICAO guidance material, including the PBN Manual and the Manual on Airspace Planning Methodology for the Determination of Separation Minima (Doc 9689), were also available for reference.

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REPORT ON AGENDA ITEM 8.1: AORRA ENTRY/EXIT GATES

8.1.1 In order to enhance access to and from the AORRA, the meeting agreed on the implementation of additional entry and exit points within the areas of responsibility of concerned States, as well as establishing continental routes.

8.1.2 The following entry/exit gates will be implemented in the Luanda (Angola) Flight Information Region (FIR) in addition to the existing gates:

POSITION	DESCRIPTION	LATITUDE	LONGITUDE
5NLC			
UTSAG	Entry/Exit	S08 49 32.87	E011 13 38.90
DUGRA	Entry/Exit	S11 39 36.00	E011 20 34.00
EPMES	Entry/Exit	S13 00 0.0	E011 19.4
ETLOV	Entry/Exit	S16 00 0.0	E011 15.2

8.1.3 The following entry/exit gates will be implemented in the Windhoek Flight Information Region (FIR) in addition to the existing gates:

POSITION	DESCRIPTION	LATITUDE	LONGITUDE
5NLC			
NEVEP	Entry/Exit	S20 20 00	E012 14 04.44
ETUDU	Entry/Exit	S21 40 00	E012 43 21.18
ANTEP	Entry/Exit	S24 00.0	E013 36.4
DULGO	Entry/Exit	S25 00.0	E013 59.8

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REPORT ON AGENDA ITEM 8.2: ROUTE STRUCTURE CONNECTING AORRA ENTRY/EXIT GATES

8.2.1 In order to support the published gates, the meeting agreed on the implementation of additional Air Traffic Service (ATS) routes.

8.2.2 The following ATS routes will be implemented in the Luanda Flight Information Region (FIR) in addition to the existing route system:

UT371 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
UTSAG	Entry/Exit	S 08 49 32.87	E011 13 38.90	
VNA	VOR	S 08 50.7	E013 14.8	

UT372 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
ABAPU	FIR/FIR	S17 49 38.36	E019 02 1.59	
ETOKI	X UA617	S15 11 1.18	E016 35 50.67	
ILGOL	X UR987; UN187	S12 42.1	E014 23.2	
APKAT	X UJ614	S11 40 3.58	E013 21 54.83	
IBLUD	X UN190; UW874	S11 09 28.94	E012 51 58.90	
ANSUS	TMA	S10 30 59.52	E012 07 24.25	
ONTAR	Entry/Exit	S09 37.7	E011 23.1	

UT399 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
VNA	VOR	S08 50.7	E013 14.8	
ANSUS	TMA	S10 30 59.52	E012 07 24.25	
DUGRA	Entry/Exit	S11 39 36	E011 20 34	

UT373 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
ANVAG	FIR/FIR	S17 22.0	E015 45.6	
UB	NDB	S14 55.4	E013 35.9	
APGAL	X UN190; UW874	S13 20 24.98	E012 29 40.63	
DUGRA	Entry/Exit	S11 39 36	E011 20 34	

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UT374 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
UB	NDB	S14 55.4	E013 35.9	
EVUKU	X UN190/UW87 9	S13 54.6	E012 23.7	
EPMES	Entry/Exit	S13 00.0	E011 19.4	

UT375 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
EVUVI	FIR/FIR	S17 24 1.17	E014 21 22.15	
OKBIK	X-UN190	S16 35.8	E012 34.7	
ETLOV	Entry/Exit	S16 00.0	E011 15.2	

8.2.3 The following ATS routes will be implemented in the Windhoek Flight Information Region (FIR) in addition to the existing route system:

UT372 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
AVOGU	FIR/FIR	S20 01 7.67	E021 00 0.88	
EVESO	Reporting point between restricted areas	S18 17 0.72	E019 28 1.37	
ABAPU	FIR/FIR	S17 49 38.36	E019 02 1.59	

UT373 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
OTAVI	X UA617	S19 09.3	E017 03.5	
ANVAG	FIR/FIR	S17 22.0	E015 45.6	

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UN184 Bi-directional

Note:

- a) Position UNPIP and RC have been withdrawn.
- b) Position UTADI has been replaced by position DUPKI

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
DUPKI	FIR/FIR	S21 43.6	E021 00.5	
TIDAD	XUA404	S21 18.2	E020 20.6	
OTAVI	X-UA617	S19 09 21	E017 03 29	
ANTAB	X-UR987	S18 37.0	E016 10.0	
EVUVI	FIR/FIR	S17 24 1.17	E014 21 22.15	

UT376 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
WHV	VOR	S22 28.6	E017 28.2	
APKEL	X UT2	S22 14 24.61	E017 04 51.02	
UTROL	TMA	S22 00 39.62	E016 43 55.36	
UDGUM	X UN190	S20 07 12.52	E013 41 49.20	
ANVUM	Entry/Exit	S18 47.6	E011 40.5	

UT377 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
WHV	VOR	S22 28.6	E017 28.2	
OKPIS	X UT2	S22 19 41.19	E017 05 10.46	
EXIRO	TMA	S22 09 21.99	E016 39 8.69	
EGRIX	X UN190	S21 05 11.37	E014 00 42.78	
NEVEP	Entry/Exit	S20 20 00	E012 14 4.44	

UT378 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
WHV	VOR	S22 28.6	E017 28.2	
ANTUL	X UT2	S22 25 3.58	E017 05 29.90	
NETOG	TMA	S22 20 7.65	E016 35 39.51	
APGEK	XUN190	S21 57 4.98	E014 17 55.10	
ETUDU	Entry/Exit	S21 40 00	E012 43 21.18	

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UT397 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
WBV	VOR	S22 58.9	E014 38.7	
ETUDU	Entry/Exit	S21 40 00	E012 43 21.18	

UN181 Uni-directional Eastbound

Note: a) UN181 has been extended between WBV and ETUSO

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
ETUSO	Connection to existing UN181	S23 12.7	E015 30.1	
WBV	VOR	S22 58.9	E014 38.7	

UT379 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
WBV	VOR	S22 58.9	E014 38.7	
NIBEK	Entry/Exit	S22 58.5	E013 12.9	

UT391 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
APDOV	FIR/FIR	S24 42 18.80	E019 59 59.18	
GETAP	X UT396	S24 35 35.91	E018 48 24.59	
DUTPU	X UN185	S24 29 36.04	E017 48 5.10	
EPSAG	X UN186	S24 26 39.91	E017 20 1.25	
UNPIN	X UN188	S24 10 54.35	E015 02 29.10	
ANTEP	Entry/Exit	S 24 00.0	E013 36.4	

UT392 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
IMLAN	FIR/FIR	S24 59 7.98	E020 19 41.19	
EPVEP	X UT396	S25 00 30.37	E019 03 54.43	
UDPOB	X UN185	S25 01 17.52	E017 53 11.47	
EVOMO	X UN186	S25 01 28.20	E017 25 34.16	
IMRUG	X UN188	S25 01 7.99	E015 19 10.81	
DULGO	Entry/Exit	S25 00.0	E013 59.8	

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UT394 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
UTANI	FIR/FIR	S27 13 46.73	E021 00 34.80	
IBTOP	X UT396	S27 05 22.14	E020 23 49.99	
KTV	VOR	S26 32.2	E018 06.8	
ETBIR	X UN186	S26 22 56.93	E017 38 45.31	
UTVUM	X UN188	S25 39 44.37	E015 32 04.15	
DULGO	Entry/Exit	S25 00.0	E013 59.8	

UT395 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
KTV	VOR	S26 32.2	E018 06.8	
AVORU	X UN186	S26 32.6	E017 40.3	
APGAS	X UN188	S26 33.9	E015 50.7	
NIGAM	Entry/Exit	S26 33.9	E014 37.2	

8.2.4 The following ATS routes will be implemented in the Gaborone Flight Information Region (FIR) in addition to the existing route system:

UT372 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
GBV	VOR	S24 35.9	E025 49.9	
UVLUK	Replacing ASINK	S24 12.0	E024 42.9	
APKAN	X UA404	S20 45 26.71	E021 38 10.75	
AVOGU	FIR/FIR	S20 01 7.67	E021 00 0.88	

UT391 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
EPMON	X UN181	S24 54 58.97	E022 37 42.67	
APDOV	FIR/FIR	S24 42 18.80	E019 59 59.18	

UT392 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
EPMON	X UN181	S24 54 58.97	E022 37 42.67	
IMLAN	FIR/FIR	S24 59 7.98	E020 19 41.19	

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UT393 Uni-directional Westbound

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
EPMON	X UN181	S24 54 58.97	E022 37 42.67	
GBV	VOR	S24 35.9	E025 49.9	

UN184 Bi-directional

Note:

- ASINK will be withdrawn in Gaborone FIR and replaced with position UVLUK.
- UN184 has been realigned in Gaborone FIR from DUPKI to position UVLUK.
- Position UTADI has been replaced by position DUPKI

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
DUPKI	FIR/FIR	S 21 43.6	E021 00.5	
UVLUK	Replacing ASINK	S24 12.0	E024 42.9	
GBV	VOR	S24 35.9	E025 49.9	

8.2.5 The following ATS route will be implemented in the Johannesburg Flight Information Region (FIR) in addition to the existing route system:

UT394 Bi-directional

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
AVUSA	X UQ19	S27 29.9	E022 13.5	
UTANI	FIR/FIR	S27 13 46.73	E021 00 34.80	

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REPORT ON AGENDA ITEM 8.3: LETTERS OF PROCEDURES/AGREEMENTS

8.3.1 The meeting recognized that much had been achieved over the three days of deliberations and that maintaining the impetus was essential to the ongoing success. The meeting noted with appreciation that some States' ANSPs represented at the meeting had, during the course of the meeting, also discussed and signed updates to their Letters of Procedures/Agreements (LOPs/LOAs). The LOPs/LOAs were signed as follows:

- Windhoek and Gaborone FIR's
- Luanda and Gaborone FIR's
- Luanda and Windhoek FIR's

8.3.2 The meeting noted that the remaining LOPs/LOAs between Johannesburg and neighbouring FIR's will be signed through a process of electronic exchange.

8.3.3 The meeting took particular note of the constructive atmosphere that prevailed throughout the ATS route coordination process. In addition to the ATS route requirements submitted by users in advance of the Johannesburg coordination process, the meeting agreed to implement the following ATS routes aimed at reducing flight distances within the proposing FIRs. The routes were regarded as further positive Regional contributions to achieving efficiency in the AFI Region airspace. It is intended for these routes to be included in the ANP through an amendment proposal.

UN190 Bi-directional (Windhoek FIR)

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
OKDOL	FIR/FIR	S17 07.8	E012 44.7	
IXEPA	X UL435	S19 39 21.10	E013 32 48.32	
AXOXU	X UT376	S20 07 12.52	E013 41 49.20	
EGRIX	X UT377	S21 05 11.37	E014 00 42.78	
APGEK	X UT378	S21 57 4.98	E014 17 55.10	
WBV	VOR	S22 58.9	E014 38.7	

UT396 Bi-directional (Windhoek and Johannesburg FIR)

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
WHV	VOR	S22 28.6	E017 28.2	
APGIB	X UN183	S23 34 35.40	E018 10 8.57	
EPRIS	X UN181	S23 57	E018 24.5	
OKLAV	X UT391	S24 35 35.91	E018 48 24.59	
UVMAP	X UT392	S25 00 30.37	E019 03 54.43	
IBTOP	X UT395	S27 05 22.14	E020 23 49.99	
EGNOR	FIR / FIR	S27 29 55.15	E020 39 40.57	
UDLON	X UQ11	S27 43 50.57	E020 48 47.32	
UPV	VOR	S28 24.1	E021 15.6	

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8.3.4 The meeting agreed to suspend UR991 (Namibia and Botswana) by adhering to the following process, in line with the requirement of the AFI ANP:

- The concerned States (termed originating States) should make an ANP amendment proposal in which they will justify their reasons for the proposed withdrawal;
- The discussions and agreement from the coordination meetings will form part of their justification/motivation for the proposal;
- The amendment proposal should be forwarded to the ESAF Regional Office where it will be processed and circulated to States in the Region and some outside that have an interest, as well as international organizations;
- If there are no objections, the proposal will be forwarded to the ICAO Council for consideration.
- The detailed ANP amendment proposal is in the ANP itself.

8.3.5 The meeting agreed to the following action:

- to realign UN 184 from waypoint UVLUK (formerly known as ASINK instead UNBIS (in Gaborone FIR) to mitigate crossing with UN184/UR991 and UG653;
- to remove waypoint ILDIR;
- to realign UT2 between waypoint UNLIL and waypoint ATUPI within Windhoek FIR as follows:

POSITION 5NLC/NAVAID	COMMENT	LATITUDE	LONGITUDE	STATUS
ATUPI	Existing WPT on UT2	S23 10.2	E017 07.9	
ANTUL	X UT378	S22 25 3.58	E017 05 29.90	
OKPIS	X UT377	S22 19 41.19	E017 05 10.46	
APKEL	X UT376	S22 14 24.61	E017 04 51.02	
UNLIL	X UR987	S21 11 11.49	E017 01 38.38	

8.3.6 Noting that some waypoints for FIR crossings have been published with different sets of coordinates by neighbouring States, the meeting agreed that the States concerned should publish the following waypoints with the same coordinates as follows:

- ANVAG (FNAN/FYWH FIR Crossing point): Correct coordinates: S 17 23 30.00 E 015 49 22.03
- ANTOR (FYWH/FBGR FIR Crossing point): Correct coordinates: S 23 04 44.55 E 020 00 00.00
- AKAZU (FNAN/FYWH FIR Crossing point): Correct coordinates: S 17 23 30.00 E 016 51 08.09

8.3.7 As ANVUP is not on the FIR boundary and Angola and DR Congo have published this waypoint using different coordinates, the meeting agreed for ICAO in coordination with IATA to calculate and provide the exact FIR crossing coordinates, obtain a new waypoint designator (5NLC) and mitigate between the two States to publish the same coordinates as provided by ICAO.

8.3.8 Once the new coordinates and the waypoint designator have been published, ANVUP can then be deleted from the Regional plan.

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8.3.9 During the course of the validation process of new 5LNCs by ICAO, it was apparent that some waypoints (5NLC) for FIR crossings were phonetically similar to others in close proximity, with a potential of causing confusion amongst users. After further deliberation, the meeting agreed to change the following waypoints as follows:

- EKBOM changed to NETIL
- UTADI changed to DUPKI
- ASINK changed to UVLUK

8.3.10 Angola made a request for one additional 5LNC for crossing of UM216 & UA617. ICAO issued a waypoint name, ANTUX with the following coordinates:

- S07-39-17.20 E015-46-3.87

8.3.11 The meeting agreed that Jeppesen would be requested to provide Quality Control on all calculated coordinates and designators as presented in Appendix A, and if any significant variation were observed, the participants would be contacted accordingly in order to make the necessary amendment to their AIPs.

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REPORT ON AGENDA ITEM 9: CLOSING OF THE MEETING

9.1 In the closing remarks, the ICAO Secretariat thanked the participants, while acknowledging their positive contribution towards the outcome of the meeting. Special thanks were also expressed to sponsors of the meeting who made it possible for several State/ANSP representatives who were essential to the coordination process, to participate. Reference was also made to AFI Region performance objectives with regard to ATS route development. States/ANSPs that had not signed updated LOPs/LOAs were urged to do so as a matter of urgency.

9.2 Mr. Gaoussou Konate, IATA Regional Director Africa – Safety Operations and Infrastructure, echoed the remarks of the Secretariat and thanked the participants and the sponsors for their positive contributions and for the work achieved. He acknowledged the effort and commitment regarding the completed and signed LOPs/LOAs and other parties were urged to follow suit and sign as soon as possible.

9.3 The meeting was reminded that the agreed implementation date for the new routes was 13 January 2011.

9.4 In closing the meeting, the Chairman thanked the participants for supporting his role of facilitating the meeting and for the significant success achieved. The meeting was adjourned at 14:00 hours on 28 October 2010.

**Jeppesen calculations: Bearings (Mag)/Distances (NM) in Red,
NOV 1st, 2010.**

1) UT371 (S08 – VNA)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STAT US	MAGNETIC BEARING	DISTANCE IN NM	FIR
UTSAG		S 08 49 32.87	E 011 13 38.90		096.22°/277.41°	119.99NM	Luanda FIR
VNA	VOR	S 08 50.7	E 13 14.8				Luanda FIR

2) **UT372 (GBV-ONTAR)**

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
GBV	VOR	S 24 35.9	E025 49.9		306.02°/125.98°	65.67NM	Gaborone FIR
UVLUK* <i>(Replaces ASINK)</i>		S 24 12.0	E024 42.9		334.17°/151.15°	267.61NM	Gaborone FIR
APKAN	X UA404	S 20 45 26.71	E021 38 10.75		331.11°/150.73°	56.88NM	Gaborone FIR
AVOGU	FIR crossing	S 20 01 7.67	E021 00 0.88		329.43°/148.53°	135.43NM	Windhoek FIR / Gaborone FIR
EVESO	Between restricted areas	S 18 17 0.72	E019 28 1.37		325.98°/145.81°	36.83NM	Windhoek FIR
ABAPU	FIR crossing	S 17 49 38.36	E019 02 1.59		326.01°/145.50°	211.36NM	Luanda FIR / Windhoek FIR
IMVEX	X UA617	S 15 11 1.18	E016 35 50.67		325.51°/145.34°	196.52NM	Luanda FIR
ILGOL	X UR987; UN187	S 12 42.1	E 14 23.2		321.81°/141.93°	86.12NM	Luanda FIR
APKAT	X UJ614	S11 40 3.58	E013 21 54.83		321.95°/141.95°	42.32NM	Luanda FIR
IBLUD	X UN190; UW874	S 11 09 28.94	E012 51 58.90		316.97°.137.10°	58.24NM	Luanda FIR
ANSUS	TMA	S 10 30 59.52	E012 07 24.25		326.34°/146.37°	68.69NM	Luanda FIR
ONTAR	Entry/Exit	S 09 37.7	E011 23.1				Luanda FIR

Note:

- ASINK renamed to UVLUK
- **UVLUK allocated to replace ASINK**
- UN189 to be suspended: **States to submit letter to ICAO detailing reasons for suspension and proposed effective date.**

3) **UT373** (S11-39 – OTAVI)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
OTAVI	X UA617	S 19 09.3	E017 03.5		335.27° / 154.07 °	130.10NM	Windhoek FIR
ANVAG	FIR/FIR	S 17 23 30.00	E015 49 22.03		327.75° / 147.75 °	192.08NM	Windhoek FIR/Luanda FIR
UB	NDB	S 14 55.4	E013 35.9		333.66° / 153.12 °	114.40NM	Luanda FIR
APGAL	X UN190; UW874	S 13 20 24.98	E012 29 40.63		333.11° / 152.96 °	121.01NM	Luanda FIR
DUGRA		S 11 39 36	E011 20 34				Luanda FIR

Action: publish NOTAM revising ANVAG coordinates (both FIRs)

4) **UT374 (VUB-S13)**

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
UB	NDB	S 14 55.4	E013 35.9		318.71°/138.60°	92.53NM	Luanda FIR
EVUKU	X UN190/UW879	S 13 54.6	E012 23.7		318.42°/138.57°	82.95NM	Luanda FIR
EPMES	Entry/Exit	S 13 00.0	E011 19.4				Luanda FIR

5a) **UN184 & UN375** ((UTADI-(UN184)-S16))

UN184

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
DUPKI * <i>(Replaces UTADI)</i>	FIR/FIR	S 21 43.6	E021 00.5		315.54°/135.38°	45.03NM	Gaborone FIR/Windhoek FIR
TIDAD	XUA404	S 21 18.2	E020 20.6		315.13°/134.86°	225.46NM	Windhoek FIR
OTAVI	X-UA617	S 19 09 21	E017 03 29		311.89°/131.98°	60.08NM	Windhoek FIR
ANTAB	X-UR987	S 18 37.0	E016 10.0		314.19°/134.45°	126.50NM	Windhoek FIR
EVUVI	FIR boundary	S 17 24 1.17	E014 21 22.15				Windhoek FIR/Luanda FIR

UT375

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
EVUVI	FIR boundary	S 17 24 1.17	E014 21 22.15		304.00°/124.72°	112.94NM	Windhoek FIR/Luanda FIR
OKBIK	X-UN190	S 16 35.8	E012 34.7		304.11°/124.58°	84.36NM	Luanda FIR
ETLOV	Entry/Exit	S 16 00.0	E011 15.2				Luanda FIR

Action:

- **UTADI** renamed to **DUPKI**
- **DUPKI** allocated to replace **UTADI**

- Delete UNPIP, realign UJ614 (Windhoek and Luanda)
- UNPIP to be deleted after implementation date

6) **UT376** (WHV-IBLOK)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
WHV	VOR	S 22 28.6	E017 28.2		317°.12/135.67°	25.90NM	Windhoek FIR
APKEL	X UT2	S 22 14 24.61	E017 04 51.02		317.52°/137.46°	23.78NM	Windhoek FIR
UTROL	TMA	S 22 00 39.62	E016 43 55.36		315.22°/135.61°	204.40NM	Windhoek FIR
UDGUM	X UN190	S 20 07 12.52	E013 41 49.20		315.83°/136.21°	139.39NM	Windhoek FIR
ANVUM	Entry/Exit	S 18 47.6	E011 40.5				Windhoek FIR

Action: Namibia to realign UT2

7) **UT377** (WHV-S20:20)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STAT US	MAGNETIC BEARING	DISTANCE IN NM	FIR
WHV	VOR	S 22 28.6	E017 28.2		306.59°/125.24°	23.16NM	Windhoek FIR
OKPIS	X UT2	S 22 19 41.19	E017 05 10.46		305.49°/125.55°	26.25NM	Windhoek FIR
ETOKI	TMA	S 22 09 21.99	E016 39 8.69		305.33°/126.11°	160.87NM	
EGRIX	X UN190	S 21 05 11.37	E014 00 42.78		306.12°/126.76°	109.64NM	Windhoek FIR
NEVEP	Entry/Exit	S 20 20 00	E012 14 4.44				Windhoek FIR

Action: Realign UT2

8) **UT378** (WHV-S21:40)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
WHV	VOR	S 22 28.6	E017 28.2		293.55°/112.29°	21.36NM	Windhoek FIR
ANTUL	X UT2	S 22 25 3.58	E017 05 29.90		292.58°/112.77°	28.09NM	Windhoek FIR
NETOG	TMA	S 22 20 7.65	E016 35 39.51		292.35°/113.51°	129.91NM	
APGEK	XUN190	S 21 57 4.98	E014 17 55.10		293.56°/114.34°	89.63NM	Windhoek FIR
ETUDU	Entry/Exit	S 21 40 00	E012 43 21.18				Windhoek FIR

Action: Realign UT2

9a & 9b **UN181 & UT370** (WBV-NIBEK)

UN181

Uni-directional Eastbound

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
ETUSO		S 23 12.7	E015 30.1		299.68°/121.31°	49.36	Windhoek FIR
WBV	VOR	S 22 58.9	E014 38.7				Windhoek FIR

UT379

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
WBV	VOR	S 22 58.9	E014 38.7		285.03°/104.69°	79.15NM	Windhoek FIR
NIBEK	Entry/Exit	S 22 58.5	E013 12.9				Windhoek FIR

10) **UT391** (X UN181-S24)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
EPMON	X UN181	S24 54 58.97	E022 37 42.67		289.58°/110.28°	144.06NM	Gaborone FIR
APDOV	FIR/FIR	S24 42 18.80	E019 59 59.18		290.31°/110.71°	65.55NM	Gaborone FIR/ Windhoek FIR
GETAP	X UT396	S24 35 35.91	E018 48 24.59		290.59°/111.01°	55.33NM	Windhoek FIR
DUTPU	X UN185	S24 29 36.04	E017 48 5.10		291.02°/111.22°	25.77NM	Windhoek FIR
EPSAG	X UN186	S 24 26 39.91	E017 20 1.25		291.25°/112.40°	126.61NM	Windhoek FIR
UNPIN	X UN188	S 24 10 54.35	E015 02 29.10		292.36°/113.15°	79.52NM	Windhoek FIR
ANTEP	Entry/Exit	S 24 00.0	E013 36.4				Windhoek FIR

11) **UT392** (X UN181-S25)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
EPMON	X UN181	S24 54 58.97	E022 37 42.67		282.73°/103.70°	125.51NM	Gaborone FIR
IMLAN	FIR/FIR	S24 59 7.98	E020 19 41.19		283.69°/104.23°	68.86NM	Gaborone FIR/ Windhoek FIR
EPVEP	X UT396	S25 00 30.37	E019 03 54.43		284.15°/104.75°	64.24NM	Windhoek FIR
UDPOB	X UN185	S 25 01 17.52	E017 53 11.47		284.70°/104.99°	25.09NM	Windhoek FIR
EVOMO	X UN186	S25 01 28.20	E017 25 34.16		285.02°/106.11°	114.80NM	Windhoek FIR
IMRUG	X UN188	S 25 01 7.99	E015 19 10.81		286.12°/106.98°	72.12NM	Windhoek FIR
DULGO	Entry/Exit	S 25 00.0	E013 59.8				Windhoek FIR

Note: PARAG remains as WPT that is not on UN185

12) **UT393** (X UN181- GBV)

Uni-directional Westbound

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
EPMON	X UN181	S24 54 58.97	E022 37 42.67		099.56° /278.11°	176.01NM	Gaborone FIR
GBV	VOR	S 24 35.9	E 25 49.9				Gaborone FIR

13) **UT394** (Agreed AVUSA – S25)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
AVUSA		S 27 29.9	E022 13.5		301.94°/122.00°	66.89NM	Johannesburg FIR
UTANI	FIR/FIR	S27 13 46.73	E021 00 34.80		302.01/122.09°	33.83NM	Johannesburg FIR/ Windhoek FIR
IBTOP	X UT396	S27 05 22.14	E020 23 49.99		302.16°/122.59°	126.95NM	Windhoek FIR
KTV	VOR	S 26 32.2	E018 06.8		307.11°/127.02°	26.84NM	Windhoek FIR
ETBIR	X UN186	S26 22 56.93	E017 38 45.31		306.92°/127.24°	121.98NM	Windhoek FIR
UTVUM	X UN188	S25 39 44.37	E015 32 04.15		311.13°/131.48°	92.51NM	Windhoek FIR
DULGO	Entry/Exit	S 25 00.0	E013 59.8				Windhoek FIR

14) **UT395** (KTV-NIGAM)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
KTV	VOR	S 26 32.2	E018 06.8		286.06°/106.16°	23.78NM	Windhoek FIR
AVORU	X UN186	S 26 32.6	E017 40.3		285.74°/106.65°	98.18NM	Windhoek FIR
APGAS	X UN188	S 26 33.9	E015 50.7		286.73°/107.47°	65.90NM	Windhoek FIR
NIGAM	Entry/Exit	S 26 33.9	E014 37.2				Windhoek FIR

15) **UT396** (WDH-UPV)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
WHV	VOR	S 22 28.6	E017 28.2		163.67°/343.00°	76.25NM	Windhoek FIR
APGIB	X UN183	S23 34 35.40	E018 10 8.57		163.12°/343.43°	25.93NM	Windhoek FIR
EPRIS		S 23 57	E018 24.5		164.49°/344.93°	44.24NM	Windhoek FIR
OKLAV	X UT391	S24 35 35.91	E018 48 24.59		165.06°/345.45°	28.55NM	Windhoek FIR
EPVEP	X UT392	S25 00 30.37	E019 03 54.43		165.35°/347.27°	143.80NM	Windhoek FIR
IBTOP	X UT395	S27 05 22.14	E020 23 49.99		167.70°/348.07°	28.26NM	Windhoek FIR
EGNOR	FIR / FIR	S27 29 55.15	E020 39 40.57		167.89°/348.12°	16.07NM	Windhoek FIR / Johannesburg FIR
UDLON	X UQ11	S27 43 50.57	E020 48 47.32		167.91°/348.30°	46.65NM	Johannesburg FIR
UPV	VOR	S 28 24.1	E021 15.6				Johannesburg FIR

16) **UN190** (OKDOL WBV)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STAT US	MAGNETIC BEARING	DISTANCE IN NM	FIR
OKDOL	FIR/FIR	S 17 07.8	E012 44.7		172.87°/354.11°	157.73NM	Luanda FIR / Windhoek FIR
IXEPA	X UL435	S19 39 21.10	E013 32 48.32		174.11°/354.45°	29.02NM	Windhoek FIR
AXOXU	X UT376	S 20 07 12.52	E013 41 49.20		174.50°/355.08°	60.42NM	Windhoek FIR
EGRIX	X UT377	S 21 05 11.37	E014 00 42.78		175.02°/355.61°	54.14NM	Windhoek FIR
APGEK	X UT378	S 21 57 4.98	E014 17 55.10		175.64°/357.61°	64.56NM	Windhoek FIR
WBV	VOR	S 22 58.9	E014 38.7				Windhoek FIR

17) **UT397** (S21:40 WBV)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
WBV	VOR	S 22 58.9	E014 38.7		320.97° / 139.80°	132.73NM	Windhoek FIR
ETUDU	Entry/Exit	S 21 40 00	E012 43 21.18				Windhoek FIR

18) **UT399** (VNA – DUGRA)

Bi-directional

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
VNA	VOR	S 08 50.7	E 13 14.8		220.63°/039.72°	119.98NM	Luanda FIR
ANSUS	TMA	S 10 30 59.52	E012 07 24.25		219.82°/040.87°	82.37NM	Luanda FIR
DUGRA	GATE	S 11 39 36	E011 20 34				Luanda FIR

19) UT2 (re-aligned)

POSITION 5NLC	COMMENT	LATITUDE	LONGITUDE	STATUS	MAGNETIC BEARING	DISTANCE IN NM	FIR
ATUPI		S23 10.2	E017 07.9		010.47°/189.78°	45.04NM	Windhoek FIR
ANTUL	X UT378	S 22 25 3.58	E017 05 29.90		009.39°/189.29°	5.36NM	Windhoek FIR
OKPIS	X UT377	S 22 19 41.19	E017 05 10.46		009.23°/189.13°	5.27NM	Windhoek FIR
APKEL	X UT376	S 22 14 24.61	E017 04 51.02		009.67°/188.69°	63.07NM	Windhoek FIR
UNLIL	X URL987;	S21 11 11.49	E017 01 38.38				Windhoek FIR

Additional Actions:

1. Eliminate UR991 (Namibia and Botswana)
2. Realign UN 184 to ASINK (to be renamed) instead UNBIS (Botswana)
3. Remove ILDIR
4. Realign UT2
5. Revise coordinates of
 - ANVAG: S 17 23 30.00 E 015 49 22.03
 - ANTOR: S 23 04 44.55 E 020 00.00.00
 - AKAZU: S 17 23 30.00 E 016 51 08.09
6. Replace
 - EKBOM with NETIL – NETIL allocated to replace EKBOM (to be deleted after 13 Jan 2011)
 - UTADI with DUPKI – DUPKI allocated to replace UTADI (to be deleted after 13 Jan 2011)
 - ASINK with UVLUK – UVLUK allocated to replace ASINK (to be deleted after 13 Jan2011)
7. Obtain correct FIR crossing between Luanda and Kinshasa FIRs for UA617 to
S 0759 23.20 E 020 02 18.11
8. Cancel ANVUP and get new 5LNC for crossing S 07 59 23.20 E 020 02 18.11

ATS ROUTE DEVELOPMENT COORDINATION MEETING - AORRA

(Johannesburg, South Africa, 26 – 28 October 2010)

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