

APIRG/16 REPORT

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**REPORT OF
THE SIXTEENTH MEETING OF THE
AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG/16)**

(Rubavu, Rwanda, 19-23 November 2007)

PREPARED BY THE SECRETARY OF APIRG

NOVEMBER 2007

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TABLE OF CONTENTS

	Page
Table of Contents	i
List of Conclusions	iv
List of Decisions	vii
 PART 1 – HISTORY OF THE MEETING	
Venue and Date	1
Officers and Secretariat	1
Attendance	3
Agenda	3
Conclusions and Decisions	4
 PART II – REPORT ON AGENDA ITEMS	
Agenda Item 1: Election of Chairperson and Vice-Chairpersons	5
Agenda Item 2: Follow-up on the outcome of APIRG/15 Meeting	
2.1 Review of action taken by the Air Navigation Commission and the Council on APIRG/15 Meeting	5
2.2 Review status of implementation of APIRG/15 Conclusions and Decisions	5
Agenda Item 3: Global and inter-regional activities	
3.1 ICAO Business Plan	5
3.2 Global Aviation Safety Plan (GASP)	6
3.3 Global Air Navigation Plan (GANP)	7
3.4 Outcome of the 36th session of the ICAO Assembly on air navigation issues	8
3.5 Outcome of the 13th informal meeting on the improvement of air traffic services over the South Atlantic (SAT/13) and related follow-up activities	8
Agenda Item 4: AFI regional air navigation planning and implementation issues	
4.1 Aerodrome operational planning (AOP)	9
4.2 Communications, navigation and surveillance (CNS)	13
4.3 Air traffic management (ATS, AIS and SAR) including RVSM implementation	22
4.4 Aeronautical meteorology (MET)	26
4.5 AFI Comprehensive Implementation Plan for Aviation Safety in Africa (AFI Plan)	33

	Page
Agenda Item 5:	Air navigation safety and deficiencies
	5.1 Review and update the list of deficiencies in the air navigation fields..... 34
	5.2 National and regional efforts to remove identified deficiencies 36
Agenda Item 6:	Special AFI Regional Air Navigation (SRAN) Meeting 36
Agenda Item 7:	Terms of reference (TOR) and future work programme..... 36
Agenda Item 8:	Any other business..... 37

APPENDICES

Appendix A	List of Participants
Appendix B	Follow-up to APIRG/16 Conclusions/Decisions – Action Plan
Appendix C	Status of implementation of Conclusions of APIRG/15 and those outstanding from Previous meetings
Appendix D	Terms of reference of the APIRG Performance-Based Navigation Task Force (APIRG PBN/TF)
Appendix E	FANS 1/A Operational Manual
Appendix F	Terms of reference of APIRG RVSM Implementation Task Force (APIRG RVSM/TF)
Appendix G	AFI RVSM strategy/action plan for implementation of reduced vertical separation minima in the Africa-Indian Ocean Region
Appendix H	Framework and guidance material for the establishment of the centralized AFI Region AIS Database (AFI-CAD)
Appendix I	Implementation of non-implemented routes including RNAV routes
Appendix J	WAFS regional procedures and FASID Tables 5, 6 and 7
Appendix K	SADIS strategic assessment tables for the AFI Region 2007–2011
Appendix L	Terms of reference of the AFI OPMET Management Task Force
Appendix M	AFI regional OPMET data banks and SIGMET requirements
Appendix N	SIGMET tests procedures
Appendix O	Regional meteorological procedures

	Page
Appendix P	List of deficiencies in the air navigation fields a) AOP b) ATM/(ATS/AIS/SAR) c) CNS d) MET
Appendix Q	Terms of reference, work programme and composition of the aerodrome Operational Planning Sub-Group (AOP/SG)
Appendix R	Terms of reference, work programme and composition of the of ATS/AIS/SAR Sub-Group
Appendix S	Terms of reference, work programme and composition of the Communications, Navigation and Surveillance Sub-Group (CNS/SG)
Appendix T	Terms of reference, work programme and composition of the Meteorology Sub-Group (MET/SG)

LIST OF CONCLUSIONS

Number	Title	Page
16/1	TRAINING SEMINARS ON ECCAIRS.....	6
16/3	DEVELOPMENT OF STATE PBN IMPLEMENTATION PLANS.....	7
16/4	DESIGNATION OF CONTACT PERSON FOR PBN IMPLEMENTATION	8
16/5	IMPLEMENTATION OF THE ICAO PROVISIONS ON LANGUAGE PROFICIENCY.....	8
16/6	HARMONIZATION OF PIRG WORK PROGRAMMES.....	9
16/7	COOPERATIVE APPROACH IN CONDUCTING ORNITHOLOGICAL STUDIES	10
16/8	RESCUE AND FIRE FIGHTING EQUIPMENT FOR DIFFICULT TERRAIN	10
16/9	AERODROME EMERGENCY PLANS	11
16/10	COOPERATIVE APPROACH FOR THE EVALUATION OF RUNWAY STRENGTH AND MEASUREMENT OF RUNWAY FRICTION CHARACTERISTICS	12
16/11	AERODROME CERTIFICATION PROCESS – AERODROME CERTIFICATION AND SAFETY MANAGEMENT SYSTEMS REGULATIONS.....	13
16/13	AFTN IMPLEMENTATION SPECIFICATIONS	15
16/14	IMPLEMENTATION OF ATN/IPS (TCP/IP)	15
16/15	AERONAUTICAL USE OF PUBLIC INTERNET FOR NON-TIME CRITICAL APPLICATIONS	15
16/16	IMPLEMENTATION/INTERCONNECTION OF SADC/2, NAFISAT AND AFISNET VSAT NETWORKS.....	15
16/18	COOPERATION BETWEEN NEIGHBOURING STATES IN IMPLEMENTING VHF RADIO COVERAGE EXTENSION	16
16/20	STATES PARTICIPATION IN IATA VHF COVERAGE SURVEYS.....	17
16/21	IMPLEMENTATION OF GNSS EN-ROUTE AND NON-PRECISION APPROACH OPERATIONS.....	18
16/22	RECORDING OF GNSS PARAMETERS	18
16/23	AERONAUTICAL INFORMATION RELATED TO GNSS	18

LIST OF CONCLUSIONS

Number	Title	Page
16/28	AFI CNS SYSTEMS IMPLEMENTATION STRATEGIES	20
16/31	COLLECTIVE APPROACH FOR THE MANAGEMENT OF CNS/ATM SYSTEM ELEMENTS	21
16/32	ESTABLISHMENT OF AN AFI FREQUENCY SPECTRUM MANAGEMENT GROUP	21
16/33	FANS 1/A OPERATIONAL MANUAL FOR APPLICATION IN THE AFI REGION.....	22
16/36	AFI RVSM IMPLEMENTATION – FUNDING	23
16/37	AFI RVSM STRATEGY/ACTION PLAN.....	23
16/38	IMPLEMENTATION OF THE REQUIRED CNS INFRASTRUCTURE TO SUPPORT THE IMPLEMENTATION OF RVSM IN THE AFI REGION.....	23
16/39	TARGET DATE FOR AFI RVSM IMPLEMENTATION	23
16/40	TRAINING GUIDELINES FOR AIS PERSONNEL.....	24
16/41	FRAMEWORK AND GUIDANCE MATERIAL FOR THE ESTABLISHMENT OF AFI-CAD.....	24
16/42	DEVELOPMENT OF AFI CAD BUSINESS MODEL AND FINANCIAL MODEL	24
16/43	SEMINARS/WORKSHOPS ON THE PROVISION OF DIGITAL ELECTRONIC TERRAIN AND OBSTACLE DATA	24
16/44	THE EUROCONTROL EAD URS FOR APPLICATION IN AFI REGION.....	24
16/45	IMPLEMENTATION OF ATC SERVICE	25
16/46	IMPLEMENTATION OF THE NON-IMPLEMENTED ROUTES INCLUDING RNAV ROUTES	25
16/47	PARTICIPATION OF SAR EXPERTS IN THE ATS/AIS/SAR SUB-GROUP AND INCLUSION OF SAR ACTIVITIES IN THE COMPREHENSIVE REGIONAL IMPLEMENTATION PLAN FOR AVIATION SAFETY IN AFRICA (AFI PLAN).....	26
16/48	RESPONSE BY STATES TO ICAO AFI REGIONAL OFFICES STATE LETTERS	26
16/49	TRAINING SEMINAR ON THE USE OF ICING, TURBULENCE AND CONVECTIVE CLOUDS FORECASTS IN GRIB2 CODE FORM.....	27

LIST OF CONCLUSIONS

Number	Title	Page
16/51	SADIS FTP ACCOUNTS	28
16/52	AVAILABILITY ON SADIS OF ASHTAM AND NOTAM RELATED TO VOLCANIC ASH (VA).....	28
16/53	SADIS STRATEGIC ASSESSMENT TABLES	28
16/56	ADOPTION OF PROCEDURES FOR CONDUCTING SIGMET TESTS FOR THE AFI REGION	30
16/57	SIGMET WORKSHOPS	30
16/58	LEGAL FRAMEWORK FOR AERONAUTICAL METEOROLOGICAL SERVICES.....	30
16/59	SUPPORT TO STATES TO IMPLEMENT QUALITY MANAGEMENT SYSTEMS (QMS).....	31
16/60	REGIONAL METEOROLOGICAL PROCEDURES.....	32
16/62	REVIEW AND UPDATING OF FASID TABLE MET 1A.....	32
16/63	DELETION OF FASID TABLE MET 2B.....	33
16/65	COMPREHENSIVE REGIONAL IMPLEMENTATION PLAN FOR AVIATION SAFETY IN AFRICA (AFI PLAN)	34
16/66	REVIEW OF THE LIST OF INTERNATIONAL AIRPORTS IN THE AFI ANP	35
16/67	ELIMINATION OF AIR NAVIGATION DEFICIENCIES	36
16/68	MEMBERSHIP OF APIRG.....	37

LIST OF DECISIONS

Number	Title	Page
16/2	ESTABLISHMENT OF AN APIRG PERFORMANCE-BASED NAVIGATION TASK FORCE (APIRG/PBN/TF).....	7
16/12	SURVEY ON AFS PERFORMANCE.....	14
16/17	SURVEYS ON MISSING FLIGHT PLANS	15
16/19	SURVEYS OF AMS VHF COVERAGE.....	16
16/24	AFI GNSS IMPLEMENTATION STRATEGY	18
16/25	NAVISAT PROJECT	19
16/26	STATUS OF IMPLEMENTATION OF AFI AERONAUTICAL SURVEILLANCE PLAN FOR EN-ROUTE ACC	19
16/27	ESTABLISHMENT OF AN AFI AERONAUTICAL SURVEILLANCE IMPLEMENTATION TASK FORCE	19
16/29	ACTIVITIES OF AFI CNS/ATM IMPLEMENTATION COORDINATION GROUPS (ICGS)	20
16/30	HARMONIZATION OF TARGET DATES OF IMPLEMENTATION OF AFI OPERATIONAL SYSTEMS	20
16/34	APPELLATION OF THE CURRENT ATM SUB-GROUP TO REVERT TO THE ORIGINAL NAME OF ATS/AIS/SAR SUB-GROUP	22
16/35	RENAMING THE APIRG/RVSM/RNAV/RNP/TF	22
16/50	INDICATION OF THE TYPE OF VSAT IN THE FASID TABLE MET 7: IMPLEMENTATION OF SADIS IN THE AFI REGION.....	27
16/54	AFI OPMET MANAGEMENT TASK FORCE (AFI-OPTMET/M TF).....	29
16/55	INCLUSION OF REGIONAL OPMET DATA BANKS AND SIGMET REQUIREMENTS IN THE AMBEX HANDBOOK.....	29
16/61	INTRODUCTION OF 30-HOURS TAF IN THE AFI REGION.....	32
16/64	COORDINATION BETWEEN WMO REGIONAL ASSOCIATION I (AFRICA) AND APIRG ON AERONAUTICAL METEOROLOGY	33
16/69	MEMBERSHIP TO APIRG SUBSIDIARY BODIES	37

PART I — HISTORY OF THE MEETING

1. VENUE AND DATE

1.1 The sixteenth meeting of the AFI Planning and Implementation Regional Group (APIRG/16) was held at Lake Kivu Serena Hotel, Rubavu District, Rwanda, from 19 to 23 November 2007, at the kind invitation of the Government of the Republic of Rwanda.

2. OFFICERS AND SECRETARIAT

2.1 The meeting re-elected Mr. Mohamed Chérif from Tunisia as Chairperson; Mr. Fidèle Manga Fouda from Cameroon as first Vice-Chairperson and Mr. M.R. Alloo from the United Republic of Tanzania as second Vice-Chairperson. Paragraph 1.1, under Agenda Item 1 of this report, also refers.

2.2 Mr. G. Moshabesha, ICAO Regional Director, ESAF Office, Nairobi served as the Secretary. He was assisted by Mr. A.O. Guitteye, ICAO Regional Director, WACAF Office, Dakar; Mr. V.D. Zubkov, Chief, Planning and Global Coordination Office and Mr. H. Pretorius, Technical Officer, Planning and Global Coordination Office, both from ICAO Headquarters, Montreal; and by the following Regional Officers from the Dakar and Nairobi Regional Offices:

Mr. A.J. Kharuga	Regional Officer, Air Traffic Management (ATM), Nairobi
Mr. B.M. Sekwati	Regional Officer, Meteorology (MET), Nairobi
Mr. J.C. Waffo	Regional Officer, Aerodromes, Air Routes and Ground Aids (AGA), Dakar
Mr. P. Zo'o Minto'o	Regional Officer, Communications, Navigation and Surveillance (CNS), Dakar

2.3 The discussions were conducted in English and French and the meeting documentation was issued in both languages. Translation and simultaneous interpretation services were provided under the supervision of Mr. J. Belinga, Aviation Language Consultant. Mrs. Patricia B. Basse served as Administrative Officer for the meeting.

2.4 The meeting was opened by the Honourable Minister of Infrastructure of the Republic of Rwanda, Ambassador Stanislas Kamanzi who, on behalf of the Government of the Republic of Rwanda, welcomed the participants to the meeting and expressed his deep appreciation for the large turn out of delegates. He also thanked ICAO for choosing Rwanda to host APIRG/16, a major aviation event for the AFI Region.

2.5 The Minister seized the opportunity to assure the aviation community that Rwanda has left its dark history of genocide behind. Rwanda today ranks among the safest places, possibly in the world, he added.

2.6 The Minister further underscored the fact that, as an ICAO Contracting State, Rwanda is highly committed to the promotion and enhancement of civil aviation safety and security by implementing the provisions of the Chicago Convention and its Annexes. Also, Rwanda fully recognizes the benefit of modern technologies to the world of aviation and in particular Africa.

2.7 He concluded his address by wishing delegates a pleasant stay in Rwanda, a land of many hills, and successful deliberations and declared the APIRG/16 Meeting officially open.

2.8 During the opening ceremony, several other speakers addressed the meeting.

2.9 Mr. Joshua Mbaraga, Director General of the Rwanda Civil Aviation Authority (RCAA), welcomed APIRG/16 participants to Rwanda and to Rubavu District.

2.10 He gave a brief background history of the RCAA under the Ministry of Infrastructure, which became an autonomous institution vested with legal responsibility in 2004. He also indicated that the RCAA vision is to make Rwanda a regional hub for air transport operations by ensuring aviation safety and security and conducive air transport and airport environment with the aim of promoting tourism and trade for a sustainable economic growth.

2.11 Mr. Mbaraga concluded his address by extending his apologies to the delegates for last minute change of venue of APIRG/16 to Rubavu due to accommodation constraints in Kigali and wished participants an enjoyable stay in Rwanda.

2.12 Speaking on behalf of the AFCAC President, Mr. Mesfin Fikru, AFCAC Vice-President for the Eastern Sub-region and Director General of the Ethiopian Civil Aviation Authority conveyed the AFCAC Bureau greetings to APIRG/16 participants. He focused on the new AFCAC autonomous status from 1 January 2007. He underscored the importance of aviation safety and security, facilitation, air law, environmental protection as well as the integration of air transport systems in Africa as called for in the Yamoussoukro Declaration. Mr. Fikru stressed that they constituted major challenges which, together with ICAO, AFCAC shall take up, hence the necessity for enhanced cooperation between the two Organizations.

2.13 The AFCAC Representative concluded his address by urging ICAO to deploy aviation safety officers at ICAO Regional Offices in Africa with a view to tackling high aviation accidents rates on the continent, a source of major concern to the aviation industry.

2.14 Mr. Mohamed Chérif, APIRG Chairperson and Chief Executive Officer of the Tunisian Civil Aviation and Airports Authority (ANSP) thanked the Rwandese Authorities for the warm hospitality extended to delegates. He focused on the challenges African States will have in order to contribute to the implementation of the ICAO Strategic Objectives. He recalled, the great importance given by the 36th Session of the ICAO Assembly to the safety issues in the AFI Region. The APIRG Chairperson further indicated that APIRG/16 will need to prepare inputs to the Special AFI Regional Air Navigation (SRAN) meeting.

2.15 Mr. Geoffrey Moshabesha, Secretary of APIRG and ICAO Regional Director for the Eastern and Southern Africa Office, welcomed the delegates to the APIRG/16 meeting and conveyed the greetings of the President of the Council of ICAO and Secretary General of ICAO. He expressed appreciation to the Government of the Republic of Rwanda for accepting to host the meeting and for the excellent arrangements made for the delegates.

2.16 The Secretary of APIRG further outlined the terms of reference of APIRG. He also highlighted the challenges facing air transport in the AFI Region, developments in ICAO in relation to support to the Region and progress in the implementation of APIRG Conclusions and Decisions.

2.17 Finally, Mr. V.D. Zubkov, Chief, Planning and Global Coordination Office at ICAO Headquarters in Montreal, informed participants about the recent key developments, including relevant

decisions of the 36th Session of ICAO Assembly with specific priorities to the AFI Region and in particular, the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan). He stressed that APIRG will have to contribute to the AFI Plan and the forthcoming Special AFI RAN Meeting. He underscored the importance of Global Aviation Safety Plan (GASP), Global Air Navigation Plan (GANP), Audit Review Board Results as well as close cooperation with implementation partners .

3. ATTENDANCE

3.1 The meeting was attended by 127 participants from 34 AFI States and 8 regional and international organizations, namely: the Agency for the Safety of Air Navigation in Africa and Madagascar (ASECNA), the AFI Regional Monitoring Agency (ARMA), the East African Community (EAC), the International Air Transport Association (IATA), the International Federation of Airline Pilots' Association (IFALPA), the International Federation of Air Traffic Controllers Associations (IFATCA) and the Société Internationale de Télécommunications Aéronautiques (SITA). The Federal Aviation Administration (FAA) attended as an Observer.

3.2 The list of participants is provided in **Appendix A**, attached hereto.

4. AGENDA

4.1 The meeting adopted the following Agenda:

Agenda Item 1: Election of Chairperson and Vice-Chairpersons

Agenda Item 2: Follow-up on the outcome of APIRG/15

- 2.1 Review of the actions taken by the Air Navigation Commission (ANC) and the Council
- 2.2 Review of the status of implementation of APIRG/15 Conclusions and Decisions

Agenda Item 3 Global and inter-regional activities

- 3.1 ICAO Business Plan
- 3.2 Global Aviation Safety Plan
- 3.3 Global Air Navigation Plan
- 3.4 Outcome of the 36th Session of the ICAO Assembly on air navigation issues
- 3.5 Outcome of the Thirteenth informal meeting on the improvement of Air Traffic Services over the South Atlantic (SAT/13) and related follow-up activities

Agenda Item 4: AFI Regional Air Navigation Planning and implementation issues

- 4.1 Aerodrome Operational Planning (AOP)
- 4.2 Communications, Navigation and Surveillance (CNS)
- 4.3 Air Traffic Management (ATS, AIS and SAR) including RVSM implementation
- 4.4 Aeronautical Meteorology (MET)
- 4.5 Comprehensive AFI Regional Implementation Plan

- Agenda Item 5:** Air Navigation Safety and Deficiencies
5.1 Review and update the list of deficiencies in the air navigation fields
5.2 National and regional efforts to remove the identified deficiencies
- Agenda Item 6:** Special AFI Regional Air Navigation (RAN) Meeting
- Agenda Item 7:** Terms of reference and future work programme of APIRG
- Agenda Item 8:** Any other business

5. CONCLUSIONS AND DECISIONS

5.1 APIRG records its actions in the form of conclusions and decisions with the following significance:

- a) conclusions deal with matters which, in accordance with the group's terms of reference, merit directly the attention of States or on which further action will be initiated by ICAO in accordance with established procedures; and
- b) decisions deal with matters of concern only to APIRG and its contributory bodies.

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PART II — REPORT ON AGENDA ITEMS

AGENDA ITEM 1: ELECTION OF CHAIRPERSON AND VICE-CHAIRPERSONS

1.1 The Meeting re-elected the following members by acclamation:

Mr. Mohamed Chérif	Chairman
Mr. Fidèle Manga Fouda	First Vice-Chairman
Mr. M.R. Alloo	Second Vice-Chairman

AGENDA ITEM 2: FOLLOW-UP ON OUTCOME OF APIRG/15

2.1 **Review of the action taken by the Air Navigation Commission (ANC) and the Council on APIRG/15 meeting report**

2.1.1 The meeting reviewed the actions taken by the ANC (hereafter referred to as the Commission) and the Council on the Report of APIRG/15, which was held in Nairobi, Kenya, from 26 to 30 September 2005.

2.1.2 The Group specifically noted the actions taken by the Council in relation to the next Special AFI RAN Meeting tentatively scheduled for the 4th quarter of 2008 and requested that the Agenda to be developed by the Commission, be made available as soon as practical.

2.1.3 Concluding its review, the meeting thanked the Council and the Commission for their valuable guidance on various activities of APIRG, which would be taken into account in the development of an ongoing action plan for the Region at **Appendix B**.

2.2 **Review status of implementation of APIRG/15 Conclusions and Decisions**

2.2.1 The meeting reviewed the progress made on Conclusions and Decisions of APIRG/15 including those outstanding from APIRG/14 and other previous meetings of the Group.

2.2.2 The actions taken by the States and the Secretariat on the above mentioned Conclusions and Decisions were reviewed and the updated list is provided in **Appendix C**.

2.2.3 The meeting acknowledged that significant progress had been made in completing the required action on outstanding APIRG Conclusions and Decisions and recommended continued action for completion of the outstanding items on the list.

AGENDA ITEM 3: GLOBAL AND INTER-REGIONAL ACTIVITIES

3.1 **ICAO Business Plan**

3.1.1 During a presentation by the Chief of the Planning and Global Coordination Office (PCO), the Group was informed that the goal of implementing the ICAO Business Plan is to attain a result-oriented, performance-based organization and to introduce new working methods by ensuring the efficient and prudent use of limited resources. It was noted that on advice from the Council, all Bureaux and Regional Offices have initiated the development of their own Operational Plans in which critical

tasks are broken down into smaller contributing tasks. Consequent changes to the work and reporting format of APIRG have also been identified. The ICAO Business Plan, in conjunction with Operational Plans, is aimed at performance-based accountability for all Bureaux and Regional Offices.

3.2 Global Aviation Safety Plan

3.2.1 The Group was provided with a presentation on the recent development of the ICAO Global Aviation Safety Plan (GASP) that provides a common frame of reference for all stakeholders in order to allow a more proactive approach to aviation safety and help coordinate as well as to guide safety policies and initiatives worldwide in order to reduce the accident risks for civil aviation.

3.2.2 The meeting was informed that the GASP was finalized on the basis of the Global Aviation Safety Roadmap developed by the Industry Safety Strategy Group and that it includes twelve Global Safety Initiatives (GSIs) which support the implementation of the ICAO Strategic Objectives. Each initiative relies on a set of best practices, metrics and maturity levels defined in the Global Aviation Safety Roadmap to ensure that implementation makes full use of the collective experience of the aviation community and that progress is measured in a transparent and consistent way. The GASP follows an approach and philosophy which is consistent with the Global Air Navigation Plan (Doc 9750) and calls for a collaborative approach in the formulation of an action plan that defines, at the regional, subregional and national levels, the specific activities that should take place in order to improve safety.

3.2.3 The Group agreed that States should apply the GASP and the Global Aviation Safety Roadmap principles and objectives and implement its methodologies in partnership with all concerned stakeholders to reduce the number and rate of aircraft accidents.

3.2.4 The meeting was informed that ICAO established the Accident/Incident Data Reporting (ADREP) system to collect information on accidents and incidents in 1976. From that time, the system has evolved to meet changes in information technology and the aviation industry. In 2004, ICAO adopted the ECCAIRS software developed by the Joint Research Centre of the European Union in Ispra, Italy, as its platform to operate the ADREP system. The ECCAIRS system was developed in close cooperation with ICAO with the aim of implementing taxonomies developed in ICAO to facilitate the exchange of occurrence data between States and ICAO. Eventually, other organisations may also benefit from the use of ECCAIRS.

Note: Accident/Incident Data Reporting (ADREP System) – European Coordination Centre for Aviation Incident Reporting Systems (ECCAIRS)

3.2.5 The Group noted that ICAO continues to provide the ADREP compatible ECCAIRS application (presently available in English, French and German only) to States upon request and will endeavour to continue providing training courses upon request from States. Host States, however, will need to cover the associated costs for the instructors. In this connection, Regional Directors are encouraged to have regional office staff attend ECCAIRS courses and become certified users of the ADREP/ECCAIRS system. The Group requested that training seminars should be held in the Region and that the software should be distributed during the seminars. The meeting then adopted the following Conclusion:

CONCLUSION 16/1: TRAINING SEMINARS ON ECCAIRS

That the ICAO Regional Offices for the AFI Region arrange for the conduct of ECCAIRS seminars in English and French.

3.3 Global Air Navigation Plan

Increasing the efficiency of PIRGs

3.3.1 The Group was informed about the ongoing work on a revision of the Terms of Reference and reporting method of the Planning and Implementation Regional Groups (PIRGs). It was noted that it had not been possible to table a report to Council and that the guidelines and rules of procedure (i.e.-Handbook) of each PIRG, including the status of observers and members, would have to be amended accordingly when new Terms of Reference would be approved by the Council.

3.3.2 With regard to security, the Group agreed that this was very specific and therefore required very specialized expertise and, as such, did not fit into the activities of the PIRGs. The Group instructed the Secretariat to develop an action plan based on the approved report, and the Action Plan is at **Appendix B**.

Performance - Based Global ATM System: Performance-Based Navigation (PBN)

3.3.3 The meeting was provided with the details on the establishment of the Performance-Based Navigation (PBN) concept in the context of a performance-based Global ATM System, the benefits of PBN, recent actions taken by ICAO at the Global and Regional levels regarding PBN implementation and what role the APIRG and States in conjunction with their stakeholders must play in PBN implementation.

3.3.4 The Group when discussing PBN agreed that there was an urgent need for the establishment of a new Task Force to deal with the new concept of Performance-Based Navigation (PBN), developed its terms of reference and named it the APIRG/PBN/TF . It thus formulated the following Decision:

DECISION 16/2: ESTABLISHMENT OF AN APIRG PERFORMANCE-BASED NAVIGATION TASK FORCE (APIRG/PBN/TF)

That an APIRG PBN Task Force, with terms of reference as outlined in Appendix D to this report, be established to develop a PBN implementation plan for the AFI Region and address related regional PBN implementation issues.

3.3.5 The meeting was informed that in order to familiarize States and stakeholders with the PBN concept a series of seminars would be organised. The target audience for these seminars are airspace planners, pilots, air traffic controllers and procedure designers, among others.

3.3.6 The meeting recalled Assembly Resolution A36-23 which calls for States to develop a PBN implementation plan by 2009, geared towards achieving the global PBN implementation performance objectives. It noted that it was essential that the PBN implementation plan be developed in full cooperation and coordination with all stakeholders, including regulators, ANS Providers, aerodrome operators, air operators and others, as appropriate. In order to address the intent of A36-23 the meeting formulated the following Conclusions:

CONCLUSION 16/3: DEVELOPMENT OF STATES PBN IMPLEMENTATION PLANS

That the Regional Offices encourage States to begin development of their State PBN implementation plans in harmony with the development of the AFI Regional PBN

implementation plan being coordinated by the AFI PBN Task Force for submission to APIRG.

CONCLUSION 16/4: DESIGNATION OF CONTACT PERSON FOR PBN IMPLEMENTATION

That, by 28 February 2008, States designate a focal contact person responsible for Performance-Based Navigation implementation and provide details of the contact person to ICAO Regional Offices for the AFI Region.

3.4 Outcome of the 36th Session of the ICAO Assembly on air navigation issues

Language Proficiency Requirements

3.4.1 The meeting was provided with the progress report on the implementation of the language proficiency requirements. The results of two surveys that were conducted to determine States' level of implementation were described, as well as the ICAO initiatives to support implementation. The meeting recalled *Assembly Resolution A36-11 and the Standards of Annex 1, Annex 6, Annex 10 and Annex 11 and the ICAO State Letter AN 12/44.6-07/68 dated 26 October 2007* calling for the urgent need for States to implement these provisions. In this regard, APIRG developed the following Conclusion:

CONCLUSION 16/5: IMPLEMENTATION OF THE ICAO PROVISIONS ON LANGUAGE PROFICIENCY

That:

- a) **as a matter of urgency, the States concerned implement the intent of Assembly Resolution A36-11 and the Standards of Annex 1, Annex 6, Annex 10 and Annex 11 in response to the ICAO State Letter AN 12/44.6-07/68 dated 26 October 2007;**
- b) **States implement the language provisions with a high level of priority and ensure that flight crews, air traffic controllers and aeronautical station operators involved in international operations maintain language proficiency at least at ICAO Operational Level 4; and**
- c) **States provide data concerning their level of implementation of the Language Proficiency Requirements to ICAO.**

3.5 Outcome of the Thirteenth informal meeting on the improvement of air traffic services over the South Atlantic (SAT/13) and related follow-up activities

3.5.1 The Meeting was apprised of the outcome of the thirteenth informal coordination meeting on the improvement of Air Traffic Services over the South Atlantic (SAT/13) which was held in Las Palmas, Canary Island (Spain), from 24 to 27 April 2006, and related follow up action taken by SAT States. It recalled that the SAT Group was assigned the role of CNS/ATM Implementation Coordination Group (ICG) for areas of routing AR-1 and AR-2.

3.5.2 In the field of air traffic management (ATM), the Meeting reviewed the achievements reached so far through the SAT mechanism, including the implementation of 10-minute longitudinal separation, RNAV/RNP/10, RVSM (in EUR/SAM Corridor), and Phase 1 of the Atlantic Ocean Random RNAV Routing Area (AORRA) by Angola, Argentina, Brazil, South Africa and Uruguay (2007)

allowing for increased efficiency of air navigation and significant fuel savings over the South Atlantic Ocean.

3.5.3 In the field of communications, navigation and surveillance (CNS), the meeting noted the latest developments concerning the South Atlantic Ocean FIRs Satellite Telecommunications Network (CAFSAT) dedicated to aeronautical fixed service (AFS) communications between SAT centres. The following issues were mainly addressed by SAT/13: implementation of ATS/DS links Atlantico/Luanda, Las Palmas/Nouadhibou and Las Palmas/Nouakchott; interoperability between aeronautical VSAT networks; numbering plan for the AFI Region; use of ATS-N5 protocol in EUR-SAM corridor; interconnection of VSAT networks; amendments to AFI and SAM AFTN Routing Directories; harmonization of CNS/ATM systems evolution tables; FANS/1-A interoperability activities; and implementation of ATS Messaging Handling System (AMHS).

3.5.4 The meeting commended the work carried out by the SAT Group, a key interregional mechanism between AFI, EUR, NAM and SAM Regions, and the efforts made by States and Organizations to provide continued support to SAT implementation activities. However, after noting some difficulties in coordinating the implementation of SAT Conclusions and Decisions, mainly due to the informal nature of the SAT mechanism, the meeting recommended that common issues such as harmonization of air navigation plans, implementation of global plan initiatives and development of performance objectives, should be included in the work programmes of the relevant PIRGs and their auxiliary bodies. The following Conclusion was formulated:

CONCLUSION 16/6: HARMONIZATION OF PIRG WORK PROGRAMMES

That the relevant ICAO Regional Offices ensure that common issues such as harmonization of air navigation plans, implementation of global plan initiatives and development of performance objectives, are included in the work programmes of AFI and relevant adjacent SAM PIRGs and their auxiliary bodies.

AGENDA ITEM 4: AFI REGIONAL AIR NAVIGATION PLANNING AND IMPLEMENTATION ISSUES

4.1 Aerodrome Operational Planning (AOP)

Review of the Report of the Seventh meeting of the Aerodrome Operational Planning Sub-Group (AOP/SG/7)

4.1.1 The seventh meeting of the Aerodrome Operational Planning Sub-Group was held from 10 to 13 July 2007 in Dakar, Senegal. The meeting was attended by 26 delegates from 10 States and 2 international organizations. The meeting reviewed the status of implementation of aerodrome services, facilities and equipment and noted that despite the significant progress made by many States, as indicated in the list of deficiencies, more efforts are still required. The meeting was also informed that the ICAO audits currently being conducted within the framework of the ICAO Universal Safety Oversight Audit Programme (USOAP) under the comprehensive systems approach have by and large, confirmed the existence of these deficiencies. The major issues were discussed further as follows:

Bird hazard reduction

4.1.2 Various States have made substantial progress as a result of emphasis being placed on the conduct of ornithological studies before deciding on the measures to avert the problem. Bird hazard control units have been established at several airports with varying levels of resources based on the

seriousness of the problem. Environmental management within the aerodrome and its vicinity has been recognized as a necessary tool towards effective reduction of the hazard. Nevertheless, it was obvious that more efforts need to be deployed as bird strikes are still recorded. Neighbouring States were advised to consider cooperative arrangements, where possible, to deal with the hazard especially in those cases where migratory birds were the predominant culprit and where because of the geographical features of States, such birds could fly from one State to the other in a short time.

4.1.3 With regard to reporting of bird strikes to the ICAO Bird Strike Information System (IBIS), it was acknowledged that the situation had not improved and that States must be reminded to put in place effective reporting systems not only for their own risk assessment but also for their required input to the global database. The meeting therefore reaffirmed the relevance of APIRG/15, Conclusion 15/1 and developed the following Conclusion:

CONCLUSION 16/7: COOPERATIVE APPROACH IN CONDUCTING ORNITHOLOGICAL STUDIES

That neighbouring States should where appropriate and possible, consider cooperative arrangements in the conduct of ornithological studies.

Rescue and fire fighting services (RFFS)

4.1.4 The meeting noted that the number of international airports which do not have the required level of protection, as indicated in the AFI Facilities and Services Implementation Document (FASID) decreased. In addition there has been some improvement in the provision of the necessary rescue tools and equipment and protective material.

4.1.5 The meeting noted that although airports recognize that the strategic objective of the rescue and fire fighting service is saving lives, a number of airports are not allocating sufficient resources towards training, developing, maintaining and facilitation of the staff to be able to achieve that objective. This is more prevalent at airports located close to large bodies of water. The meeting underscored the need for States' regulating authorities to develop appropriate regulations to govern the RFFS' needs for such aerodromes, which are many in the AFI Region. Airports close to marshy and mangrove areas were advised to consult the guidance material developed by ICAO and other civil aviation authorities to determine the effective, efficient and appropriate facilities and equipment. In addition, such States should negotiate and enter into memoranda of understanding with other public and private agencies that have facilities that could be used for such purposes like the navy, yacht clubs, marine services, etc.

4.1.6 With regard to the issue of RFFS staffing, the meeting reiterated the need for States to develop appropriate regulations to address issues such as RFFS staff selection criteria; training curricula and certification; and requirements for periodic medical examination.

4.1.7 In light of the above, the meeting reaffirmed the relevance of the APIRG/15, Conclusion 15/2, and developed the following Conclusion.

CONCLUSION 16/8: RESCUE AND FIRE FIGHTING EQUIPMENT FOR DIFFICULT TERRAIN

That States which have aerodromes located close to large bodies of water or marshy land or mangrove areas develop and enforce the requirements for minimum rescue and fire fighting facilities and equipment considered necessary taking into account the critical aircraft and corresponding physical topography at the airport concerned.

Aerodrome Emergency Plan (AEP)

4.1.8 The meeting noted that there was no substantial improvement in the implementation of this requirement. The integrity of the AEPs, where they exist, was questionable and at many airports only draft AEPs were available for an excessively long time. It was also not quite evident why there was this state of affairs as this activity did not require substantial financial resources. After discussions and clarification of the aerodrome operator's responsibilities, the meeting outlined the need, based on previous experience in the Region, to expedite the finalization and approval of AEPs through the conduct of local workshops with all the stakeholders.

4.1.9 The meeting noted that in some cases no full-scale emergency exercise had been conducted for a long time and when conducted it was doubtful if they were really full-scale exercises, as called for in Annex 14, Volume I. In some occasions, these exercises were not followed up by an elaborate critique and feedback session and eventual amendment of the AEP. The meeting therefore reaffirmed the relevance of APIRG, Conclusion 15/3 and further developed the following Conclusion:

CONCLUSION 16/9: AERODROME EMERGENCY PLANS**That:**

- a) **States consider the organization of local workshops with all departments and organizations concerned in order to facilitate coordination, finalization and approval of their aerodrome emergency plans;**
- b) **States, which have not done so, ensure that all international aerodromes in that State develop an approved aerodrome emergency plan; and**
- c) **both the ESAF and WACAF Regional Offices shall conduct a survey to ascertain which airports still have not implemented this requirement and convene a meeting with States concerned to discuss this issue further.**

Aerodrome pavement strength and characteristics

4.1.10 The issue of inadequate pavement strength facing many aerodromes in the Region was discussed and the meeting acknowledged that complete rehabilitation of runways was in many States beyond the responsibility and means of airport operators, given the high cost involved. Consequently, concerned States were urged to give priority to the allocation of the necessary resources needed for major *maintenance programmes* or pavement rehabilitation, if required. Efforts being made or have been made in many States in the Region were noted and encouraged.

4.1.11 The lack of determination and reporting of runway pavement bearing strength and friction characteristics was also discussed as well as the inconsistencies of the AIPs with respect to the corresponding data. The meeting noted difficulties facing many States to acquire the appropriate equipment for measuring these characteristics and recommended that States should consider cooperative arrangements for acquiring such equipment. The meeting also agreed that provisions should be taken by CAAs to ensure the accuracy of the related information and other aerodrome data published in the AIP. The meeting consequently developed the following Conclusion.

CONCLUSION 16/10: COOPERATIVE APPROACH FOR THE EVALUATION OF RUNWAY STRENGTH AND MEASUREMENT OF RUNWAY FRICTION CHARACTERISTICS

That neighbouring States consider cooperative arrangements for activities related to pavement strength evaluation and surface friction characteristics measurement, including the acquisition of associated equipment, as appropriate.

Aerodromes certification and safety management

4.1.12 The meeting recalled Annex 14, Volume I — *Aerodrome Design and Operations* wherein standards requiring aerodromes used for international operations are to be certified through an appropriate regulatory framework and, as part of the certification process, certified aerodromes are to have a Safety Management System (SMS) in operation. The meeting further noted the harmonization, through Amendment 8, which became applicable from 23 November 2006, of the safety management requirements in Annex 14, Volume I, with those of Annex 6 — *Operation of Aircraft* and Annex 11 — *Air Traffic Services*, and the new section requiring States to establish a safety programme and an acceptable level of safety, as well as the implementation, by the aerodrome operator, of a safety management system at certified aerodromes.

4.1.13 In reviewing the status of implementation of the requirements for aerodrome certification and safety management, the meeting was apprised of Assembly working paper A36-WP/14 on the status of global implementation of these requirements, based on the survey carried out by ICAO Secretariat through the Regional Offices. This survey revealed the low level of implementation of these requirements among States. This trend was corroborated by the results of USOAP audits conducted under the comprehensive system approach where, out of the 18 States so far audited, at the time of the meeting, in the AFI Region, only 3 had partially (at various degrees) implemented aerodrome certification and SMS requirements. The meeting also noted that even where the State indicated to have fully implemented the requirement for certification, both the USOAP audits and regular programme missions carried out by Regional Office staff had shown that in many cases the regulatory framework was inadequate.

4.1.14 The meeting identified the main reasons for this low level of implementation which are, inter alia, the lack of an adequate legal/regulatory framework, in particular due to outdated legislation: inadequate power delegation to DGCA's to regulate airport authorities; the lack of formal and duly approved certification process; insufficient autonomy of DGCA's and lack of expertise due to inability to attract and retain qualified staff; inadequate structure of DGCA's and lack of separation between regulatory and operational functions. In addition to these factors reflecting the poor safety oversight capability of States, the meeting also underscored that a number of States are not acting in consultation with their airport operators nor have they established a framework for such consultations that would lead to the development of a realistic implementation action plan based on a realistic gap analysis.

4.1.15 The meeting noted the concern expressed by the Technical Commission of the 36th Session of the ICAO Assembly, when reviewing A36-WP/14, on the relatively low level of global implementation of aerodrome certification, including SMS. Consequently, the meeting urged States to undertake certification of aerodromes, as a matter of priority and to ensure that SMS is introduced at their aerodromes.

4.1.16 The need for more guidance material and assistance to States was recognized. In this regard, the meeting noted the suggestions made during the 36th Session of the ICAO Assembly to conduct additional workshops/seminars on aerodrome certification and aerodrome safety management system, including the development of uniform, harmonized additional guidance material. In this

connection, the meeting noted that three seminars/workshops on aerodrome certification were being planned by ICAO to be held in the Regions within the next 2008 – 2010 triennium.

4.1.17 The meeting also noted some initiatives taken by individual States or through regional groupings such as ASECNA, CEMAC, EAC (CASSOA), SADC and UEMOA (most COSCAPs have been established under these groupings) to address identified problems. In this context, effective restructuring or reorganization in progress at many civil aviation administrations to become autonomous agencies was noted. Efforts made by some States to have in place a regulatory framework including, inter alia, guidance material for technical regulatory staff such as an aerodromes inspector' handbook, were noted and encouraged, including the will expressed by these States to share their experiences and documents with other States. In view of the foregoing, the meeting developed the following Conclusion:

CONCLUSION 16/11: AERODROME CERTIFICATION PROCESS – AERODROME CERTIFICATION AND SAFETY MANAGEMENT SYSTEMS REGULATIONS

That:

- a) States be encouraged to exchange their experiences in implementing the aerodrome certification requirement;
- b) CAAs, which have not done so, consider putting in place a consultation framework with their airport operator with a view to developing a realistic action plan for the implementation of the aerodrome certification requirement based on a carefully considered gap analysis;
- c) States, which have not done so, ensure the development, approval and publication of aerodrome certification and SMS regulations as well as formal certification process defining steps to be followed for the certification of aerodromes; and
- d) ICAO further assist States in organizing training courses for aerodrome inspectors.

4.2 Communications, Navigation and Surveillance (CNS)

Review of the Report of the second meeting of the Communications, Navigation and Surveillance Sub-Group (CNS/SG/2)

4.2.1 The meeting reviewed the Report of the second meeting of the APIRG Communications, Navigation and Surveillance Sub-Group (CNS/SG/2), which was held in Dakar, Senegal from 22 to 25 May 2007, and was attended by 57 delegates from 18 States and 3 international organizations. APIRG was informed that CNS/SG/2 did not discuss matters related to the transition from AFTN to ATN taking into account the on-going ICAO work on the related guidance material. However, with respect to the AFI ATN architecture, the meeting noted that Ethiopia is upgrading the current Addis Ababa AFTN main centre to be fully compliant with an ATN environment.

Communications - Aeronautical Fixed Telecommunications Network (AFTN)

4.2.2 The meeting reviewed the implementation status and the performance of the AFTN in the AFI Region, and noted the following overall assessment:

- **Circuit availability rates:** Statistical data made available to CNS/SG/2 showed that the recommended minimum availability rate of 97% (AFI/7, Rec. 9/3 refers) was still far from being met by a large number of AFTN circuits.
- **Modulation rates:** The requirement for a minimum modulation rate of 1200 bauds was yet to be met for the following AFTN main circuits: Addis-Ababa/Nairobi, Addis Ababa/Niamey, Cairo/Nairobi, Cairo/Tunis and Johannesburg/Nairobi. In addition, the same requirement was also yet to be met for Addis-Ababa/Jeddah (AFI/MID) and Nairobi/Mumbai (AFI/ASI-APAC) interregional circuits, whereas the inter-regional circuit Johannesburg/Ezeiza had been implemented by Argentina and South Africa using CAFSAT network.
- **Transit time statistics:** The requirements of 5 minutes maximum for high priority messages and 10 minutes maximum for other messages was being met progressively as circuits were being upgraded. However, in many cases, very long transit times continued to affect the transmission of flight safety related messages (such as flight plans, NOTAMs, etc.)

4.2.3 The meeting formulated the following Decision:

DECISION 16/12: SURVEY ON AFS PERFORMANCE

That the ICAO Regional Offices in Dakar and Nairobi coordinate the conduct of regional surveys on AFS performance in order to ascertain that AFTN and ATS/DS continue to meet agreed performance requirements.

Implementation specifications

4.2.4 The meeting reviewed the AFI rationalized AFTN current and planned features as prescribed by APIRG/15, including: category of circuit (main circuit, tributary circuit, station circuit), circuit type (landline teletype writer, analogue (LTT/A), landline teletype writer, digital (LTT/D), landline data circuit, analogue (LDD/A), landline data circuit, digital(LDD/D), radio teletype circuit (HF) (RTT), satellite circuit /digital or analogue (SAT/D, SAT/A), circuit signalling speed circuit protocol (ITU X25), data transfer code (ITA-2 or IA-5), aeronautical network served (AFTN or ATN), implementation target date.

4.2.5 In so doing, the meeting particularly discussed the relevance of maintaining the use of X25 circuit protocol, an ICAO standardized bit oriented protocol (BOP), and recognized that many States had implemented or planned to implement emerging technologies such as frame relay (FR) protocol. It also noted on-going activities related to the implementation of Internet Protocol Suite (IPS) in the ATN (ground-ground) in the North America and Europe Regions, and the potential benefits associated with the use of Internet Engineering Task Force (IETF) IPS standards in terms of flexibility in implementing ATN on actual requirements and growth potential. Accordingly, the meeting agreed that AFI States should be encouraged to consider implementing ATN/IPS Standards (even if they are not yet formally adopted by ICAO) in order to avoid, to the maximum extent possible, interoperability difficulties with an ATN/OSI system; and that AFI States should be informed on these developments, should they wish to redirect their investments in implementing ATN towards the IPS based ATN. Additionally, the meeting called upon States to consider the possible use of the public Internet for aviation applications in accordance with the relevant provisions in ICAO Annexes 3, 10 and 15, and *Guidelines on the Use of the Public Internet for Aeronautical Applications* (Doc 9855). In view of the above, the meeting formulated the following Conclusions:

CONCLUSION 16/13: AFTN IMPLEMENTATION SPECIFICATIONS

That:

- a) AFI AFTN specifications prescribed by APIRG/15 be amended to reflect emerging technologies and new communication bit-oriented protocols; and
- b) The further use of X.25 protocol be discouraged in the AFI Region.

CONCLUSION 16/14: IMPLEMENTATION OF ATN/IPS (TCP/IP)

That AFI States should implement ATN/IPS (TCP/IP) Standards to the maximum extent possible in order to avoid interoperability difficulties with an ATN/OSI system.

Note: Indications are that ICAO SARPs related to ATN/IPS should be available by end of 2008.

CONCLUSION 16/15: AERONAUTICAL USE OF PUBLIC INTERNET FOR NON-TIME CRITICAL APPLICATIONS

That AFI States consider the use of the public Internet for non-time critical applications in accordance with relevant provisions in ICAO Annexes 3, 10 and 15, and Doc 9855.

Use of VSAT technology

4.2.7 The meeting noted that a number of AFI States were considering the use of the implemented or emerging VSAT networks (AFISNET, SADC/2, CAFSAT, NAFISAT and domestic VSAT networks) to solve the current deficiencies affecting the implementation of ANP requirements for AFS links. The following Conclusion was formulated:

CONCLUSION 16/16: IMPLEMENTATION/INTERCONNECTION OF SADC/2, NAFISAT AND AFISNET VSAT NETWORKS

That States and international organizations concerned expedite the implementation and interconnection of SADC/2, NAFISAT and AFISNET VSAT networks as soon as possible, in order to increase AFS (AFTN and ATS/DS) connectivity and efficiency, thus improving flight coordination and management in the AFI Region.

Missing flight plans

4.2.8 Mindful of the regional surveys to be conducted on missing flight plans in the AFI Region, a safety-related issue, the meeting recommended that AFTN aspects be investigated during the projected surveys to determine their possible impact of AFTN performance on flight plan unavailability within the Region. The following Decision was therefore formulated:

DECISION 16/17: SURVEYS ON MISSING FLIGHT PLANS

That the ICAO Regional Offices in Dakar and Nairobi carry out the necessary coordination to ensure that due account is taken of AFTN technical and operational aspects in the conduct of surveys relating to missing flight plans in the AFI Region.

Guidelines for VSAT networks

4.2.9 The meeting noted that, as part of ICAO work on the harmonization of implementation activities relating to the use of VSAT networks, and following Conclusion 5/17 of the ALLPIRG/5 meeting, some guidelines on performance of VSAT networks had been prepared for use by States to establish a basis for planning and basic system design of such networks in support of aeronautical ground-ground communications. These guidelines for the performance of VSAT networks are provided in *Appendix 4A* to the CNS/SG/2 Report.

Communications – Air Traffic Services Direct Speech Communications (ATS/DS)

4.2.10 The meeting reviewed the implementation status and the performance of ATS/DS in the AFI Region, and recalled that a number of AFI States were considering the use of the implemented or emerging VSAT networks (AFISNET, SADC1/2, CAFSAT, and NAFISAT) to solve the current deficiencies affecting the implementation of AFI ANP requirements for ATS/DS links.

4.2.11 Concerning AFISNET, the meeting noted that a technical evaluation of this network was conducted by ICAO through a special implementation project (SIP) in 2006, the recommendations of which will be analyzed by the established Satellite Network Management Committee (SNMC).

Aeronautical mobile service (AMS)*VHF communications*

4.2.12 The meeting recalled that, in accordance with AFI/7 Rec. 5/12, VHF coverage was required along all ATS routes, and that remote VHF stations should be used where necessary. It welcomed regional initiatives aimed at implementing, maintaining and monitoring remote VHF stations throughout the AFI Region, including VHF surveys. In this connection, ASECNA and IATA plans were presented to the meeting. The meeting also took cognizance of the results from IATA's VHF coverage survey of 3-23 September 2007.

4.2.13 The meeting emphasized the need for close cooperation between air navigation service providers (ANSPs) at FIR boundaries. Such cooperation should include issues such as coordination of frequency assignment, conduct of surveys and interference monitoring.

4.2.14 The meeting therefore formulated the following Conclusions and Decision:

CONCLUSION 16/18: COOPERATION BETWEEN NEIGHBOURING STATES IN IMPLEMENTING VHF RADIO COVERAGE EXTENSION

That AFI States and Air Navigation Service Providers cooperate in addressing all aspects related to the implementation of VHF coverage facilities at FIR/airspace boundaries, including regulatory, environmental and maintenance aspects, in compliance with AFI/7 Recommendation 5/12 and APIRG/12 Conclusion 12/16.

DECISION 16/19: SURVEY ON AMS VHF COVERAGE

That the ICAO Regional Offices in Dakar and Nairobi coordinate the conduct of regional surveys on AMS/VHF coverage by States and international organizations in order to ascertain that VHF frequencies are free of harmful interference and to initiate remedial action with States concerned as necessary.

CONCLUSION 16/20: STATES PARTICIPATION IN IATA VHF COVERAGE SURVEYS

That States cooperate and provide their support to VHF coverage surveys to be carried out by IATA in the AFI Region, initially every 18 months.

HF communications

4.2.15 The Meeting recognized the need for retaining reliable HF voice communications facilities, taking into consideration the impossibility to ensure total VHF coverage in some areas such as oceanic areas and remote continental areas.

*Aeronautical Radio Navigation Service**Follow-up of APIRG/15 Conclusions on GNSS implementation*

4.2.15 The meeting was informed that, when reviewing the Report of APIRG/15, the Commission had noted the opposition of IATA to the implementation of a satellite-based augmentation system (SBAS) in the AFI region, known as the Interregional SBAS over AFI (ISA), and the lack of consensus among States, and accordingly instructed the Secretariat to prepare documentation on this subject. Based on the documentation thus provided, the Commission considered the following options mindful of the recommendation in the *Global Navigation Satellite System (GNSS) Manual* (Doc 9849) Paragraph 1.5.2¹, and taking into account the results of several studies addressing cost-benefit considerations in connection with SBAS implementation in the AFI Region:

- **Option A:** Delaying consideration of the ISA until further cost-benefit analysis in coordination with users demonstrates a conclusive need. This option would have the additional advantage that it would benefit from operational experience with the EGNOS system and associated aircraft equipment and procedures that would be gained in the EUR region (the primary service area of EGNOS). This option would result in a prolongation of the current Phase I of the AFI GNSS strategy, which allows the use of Basic GNSS (GPS augmented with ABAS) from en-route down to NPA. The prolongation would be consistent with the fact that Phase I has effectively not been completed properly and uniformly throughout the Region.
- **Option B:** Introducing the ISA with a reduced infrastructure that would enhance en-route/NPA performance but would not enable APV. This option would enhance the availability of GNSS service compared to the current situation, as the required level of integrity would be available for a greater percentage of time. It would also reduce considerably the ground infrastructure costs, compared to full ISA implementation, as only a small number of monitoring stations would be required, while at the same time it could represent a first step towards full implementation. However, the actual benefits generated by this option would be significantly smaller compared to a full infrastructure, and would still be conditional on the level of aircraft equipage with SBAS receivers, and subject to the related uncertainties;
- **Option C:** Proceeding with full-scale introduction of the ISA, consistently with Phase II of the AFI GNSS strategy (2006 – 2011), which envisages availability of SBAS APV everywhere in the region.

¹ GNSS Manual (Paragraph 1.5.2) suggests that, if the cost-benefit analysis conducted as a part of the introduction of a GNSS augmentation system is not conclusive, or is not positive for one of the participants, service providers, regulatory authorities and users should examine the various available options to find the best solution.

4.2.17 Technical aspects, cost-benefit issues, institutional arrangements and user consensus issues were also considered by the ANC. A number of other issues exist that raise the level of uncertainty of the overall cost-benefit assessment, such as the impact of the ionosphere on GNSS performance in low-latitude areas, the complexity of the ground infrastructure and of the institutional arrangements required and the lack of user consensus.

4.2.18 Based on the above considerations and in light of its discussion of this topic, **Option A** presented in paragraph 4.2.16 above was recommended approach for the AFI Region.

4.2.19 Furthermore, the meeting recognized that en-route use of basic GNSS was not yet approved in a majority of AFI States, and NPA procedures and/or related regulatory texts had not yet been published. It also noted that the requirement for the recording of GNSS parameters was not met by the States that have approved GNSS-based procedures.

4.2.20 The meeting therefore formulated the following Conclusions and Decision:

CONCLUSION 16/21: IMPLEMENTATION OF GNSS EN-ROUTE AND NON-PRECISION APPROACH OPERATIONS

That AFI States continue their efforts to implement GNSS applications for en-route and non-precision approach operations as part of Phase 1 of AFI GNSS Strategy. In so doing, particular attention should be accorded to meeting all GNSS implementation requirements, including establishment of GNSS legislation, regulatory framework, and approval and monitoring procedures.

CONCLUSION 16/22: RECORDING OF GNSS PARAMETERS

That AFI States that approve GNSS-based operations ensure that GNSS data relevant to those operations are recorded as recommended in ICAO Annex 10, Volume I, Chapter 2, para. 2.4.3. Particularly, for GNSS core systems, the following monitored items should be recorded for all satellites in view:

- a) observed satellite carrier-to-noise density;
- b) observed satellite raw pseudo-range code and carrier phase measurements;
- c) broadcast satellite navigation messages, for all satellites in view; and
- d) relevant recording receiver status information.

CONCLUSION 16/23: AERONAUTICAL INFORMATION RELATED TO GNSS

That when implementing GNSS-based operations, AFI States ensure that the relevant aeronautical information is provided to the users as appropriate.

DECISION 16/24: AFI GNSS IMPLEMENTATION STRATEGY

That the action taken by the Commission on APIRG/15, Conclusions 15/18, 15/19 and 15/20 be referred to the AFI GNSS Implementation Task Force for updating the AFI GNSS Strategy and progressing its work accordingly.

NAVISAT Project

4.2.21 The meeting was provided with updated information on the NAVISAT Project by Egypt, and noted Egypt's request for assistance to those NAVISAT Project studies which would require inputs from AFI States. It accordingly formulated the following Decision:

DECISION 16/25: NAVISAT PROJECT**That:**

- a) **the progress report on NAVISAT Project submitted to APIRG/16 be referred to the AFI GNSS Implementation Task Force for consideration in addressing its work programme as required; and**
- b) **while monitoring the work being done by MIDANPIRG on the NAVISAT Project, APIRG coordinate with MIDANPIRG the assistance to project studies requiring inputs from the AFI Region, should the need arise.**

Aeronautical Surveillance

4.2.22 Under this agenda item, the meeting acknowledged the need to include the status of implementation of the AFI surveillance infrastructure in the review of CNS system performance. It came to the realization that, unlike en-route operations, a comprehensive surveillance plan for terminal areas (TMAs) and aerodromes operations had not been developed for the AFI Region. The meeting accordingly formulated the following Decisions:

DECISION 16/26: STATUS OF IMPLEMENTATION OF AFI AERONAUTICAL SURVEILLANCE PLAN FOR EN-ROUTE ACCs

That the status of implementation of the AFI aeronautical surveillance plan for en-route operations be included in the review of CNS system performance.

DECISION 16/27: ESTABLISHMENT OF AN AFI AERONAUTICAL SURVEILLANCE IMPLEMENTATION TASK FORCE

That an AFI Aeronautical Surveillance Implementation Task Force (AS/I/TF) be established with the following terms of reference:

- a) **Determine the operational performance requirements for aeronautical surveillance in the AFI Region, including en-route, terminal areas (TMAs) and aerodromes operations;**
- b) **Identify and quantify near term and long term benefits of relevant surveillance candidate systems; and**
- c) **Develop a consistent draft AFI surveillance implementation plan including recommended target dates of implementation, taking into account availability of SARPs and readiness of airspace users and air navigation service providers for a coordinated implementation of service as required.**

Notes:

1. *The Task Force should be of multidisciplinary nature to cover all aspects related to its assigned work.*
2. *While undertaking the task, with a view to avoiding any duplication, the Task Force should take into account:*
 - a) *the work being undertaken by ICAO Panels; and*
 - b) *the relevant RAN recommendations and APIRG Conclusions and Decisions pertaining to aeronautical surveillance;*
3. *The Task Force should complete its work in coordination with APIRG ATS/AIS/SAR and CNS Sub-Groups, and present the results to the next meeting of APIRG.*
4. *In assessing the readiness of airspace users, take into account business aviation usage.*

Communications, navigation and surveillance (CNS) systems Implementation Strategies

4.2.23 The meeting acknowledged the need for updating the CNS implementation strategies as contained in the AFI CNS/ATM Implementation Plan (Doc 003), taking due account of the revised ICAO Global Air Navigation Plan (9750) and AFI ATM operational objectives; and to harmonize the target dates of implementation of AFI operational system (e.g. RVSM, RNAV/RNP, ADS-C/CPDLC, ADS-B operations).

4.2.24 In this connection, the meeting recognized the difficulties encountered in maintaining a consistent CNS/ATM Implementation Plan for the AFI region following the dismantlement in 2003 of the APIRG CNS/ATM Sub-Group and Implementation Coordination Groups (ICGs). The following Conclusion and Decisions were formulated:

CONCLUSION 16/28: AFI CNS SYSTEMS IMPLEMENTATION STRATEGIES

That the CNS implementation strategies described in the AFI CNS/ATM Implementation Plan (Doc 003) be updated taking due account of the revised ICAO Global Air Navigation Plan (Doc 9750) and AFI ATM operational objectives.

DECISION 16/29: ACTIVITIES OF AFI CNS/ATM IMPLEMENTATION COORDINATION GROUPS (ICGs)

That the CNS/ATM Implementation Coordination Groups (ICGs) established by APIRG for each area of routing should pursue their assigned work in accordance with Doc 003 provisions.

DECISION 16/30: HARMONIZATION OF TARGET DATES OF IMPLEMENTATION OF AFI OPERATIONAL SYSTEMS

That:

- a) **the CNS Sub-Group should harmonize target dates with ATM/AIS/SAR/SG regarding operational system implementation in the AFI programme; and**

b) reference CNS and ATM implementation documents reflecting disparity in dates should be amended accordingly.

4.2.25 The meeting called upon AFI air navigation service providers (ANSPs) to adopt a collective approach and speak in a single voice on issues of common interest related to the implementation of CNS elements of the CNS/ATM systems (such as service level agreements with ATN service providers, system availability, etc.) in order to facilitate the implementation of a coordinated and effective CNS infrastructure. The following Conclusion was formulated accordingly:

CONCLUSION 16/31: COLLECTIVE APPROACH FOR THE MANAGEMENT OF CNS/ATM SYSTEM ELEMENTS

That the air navigation service providers (ANSPs) adopt a collective approach and speak in a single voice on issues of common interest related to the implementation of CNS elements of the CNS/ATM systems (such as service level agreements with ATN service providers, system availability, etc.).

Frequency spectrum issues

4.2.26 The meeting noted with satisfaction the outcome of International Telecommunication Union (ITU) World Radio Communication Conference 2007 (WRC07) (Geneva, Switzerland, 23 October – 16 November 2007) on issues of critical interest to civil aviation. It commended the efforts made by States and international/regional organizations to participate in related preparatory activities at the national/regional level, including seminars and workshops, and to include aviation personnel in their delegations at WRC07, which contributed to the success of the conference for civil aviation.

4.2.27 The meeting recalled APIRG/15, Conclusion 15/26, and reminded the States of the need to provide the ICAO Regional Offices with the names and addresses (telephone, fax, electronic mail address) of their designated focal points of contact for ITU matters.

4.2.28 The meeting also agreed to establish a Frequency Spectrum Management Group to address issues related to aeronautical spectrum management and control under the coordination of the ICAO Regional Offices.

CONCLUSION 16/32 : ESTABLISHMENT OF AN AFI FREQUENCY SPECTRUM MANAGEMENT GROUP

That an AFI Frequency Spectrum Management Group (AFI/FSMG) be established under the coordination of the ICAO Secretariat in order to address issues of common interest related to aeronautical spectrum management and control.

Development of regional performance objectives in the CNS field

4.2.29 The meeting agreed to include in the work programme of the CNS Sub-Group the development and validation of regional performance objectives and associated monitoring tools and parameters in order to address the Global Plan Initiatives (GPIs) pertaining to aeronautical telecommunications. An initial draft of such regional performance objectives prepared by the CNS Sub-Group was submitted to the meeting.

4.3 Air Traffic Management (ATS, AIS and SAR) including RVSM implementation

Consideration of the Conclusions and Decisions of the ATS/AIS/SAR/SG/9 meeting report and its future work programme

4.3.1 The APIRG meeting considered the review done by the ATS/AIS/SAR SG on its previous Conclusions/Decisions relating to ATS/AIS/SAR in the light of developments in order to keep them current and limit their number to a minimum consistent with the progress achieved in their implementation. The Group noted the validity of the Conclusions and Decisions in the ATS/AIS and SAR fields at **Appendix C**. The Group was apprised of the development of the FANS 1/A Guidance material for application in the AFI Region and formulated the following Conclusion:

CONCLUSION 16/33: FANS 1/A OPERATIONAL MANUAL FOR APPLICATION IN THE AFI REGION

That :

- a) **The FANS 1/A Operational Manual for application in the AFI Region at Appendix E be applied in the AFI Region; and**
- b) **South Africa manages the FANS 1/A Operational Manual for the AFI Region.**

4.3.2 The Group was informed that it was necessary to revert to its original name in order to reflect its scope in the fields of ATS/AIS/SAR. It was also considered necessary to revise its tasks in order to include the PBN. In view of the creation of the PBN Task Force (para 3.3.4 refers) it was considered also necessary to rename and revise the tasks of the RVSM/RNAV/RNP TF. In view of the foregoing the Group formulated the following Decisions:

DECISION 16/34: APPELLATION OF THE CURRENT ATM SUB-GROUP TO BE REVERTED TO THE ATS/AIS/SAR SUB-GROUP:

That the appellation of the current ATM Sub-Group be reverted to the ATS/AIS/SAR Sub-Group. Its revised Terms of Reference are at Appendix R.

DECISION 16/35: RENAMING THE APIRG/RVSM/RNAV/RNP/TF

That the existing APIRG RVSM/RNAV/RNP Task Force shall be re- named the APIRG RVSM Task Force with the revised Terms of Reference at Appendix F to this report.

Implementation of RVSM in the AFI Region

4.3.3 The Group was apprised of the progress towards the implementation of RVSM arising from the RVSM/RNAV/RNP Task Force meetings. It was recalled that in order to implement ATC service it was necessary to have adequate and reliable CNS infrastructure at the disposal of the ATC personnel. It was recalled that reliable, safe, and well-established ATC service was a pre-requisite for the implementation of RVSM. Furthermore, having taken account of:

- a) the completion of the activities in the AFI RVSM Strategy/Action Plan;
- b) the approval by the Commission of AFI RVSM Regional SUPP's (Doc7030/4) relating to RVSM in June 2007;

- c) noting the TF proposal for alternative approach for the achievement of the TLS;
- d) considering the results of the second CRA submitted by the NLR, which indicated progressive improvement on the Collision Risk (from 65×10^{-9} to 15×10^{-9} and to eventually reach the TLS of 5×10^{-9});
- e) recognizing the TF recommendation to implement RVSM at the current result, with ANC approval ;
- f) the awareness of the Task Force action to implement additional measures to continue to improve after system safety and;
- g) the awareness of the fact that a third CRA will be submitted in early January 2008 to quality assure the CRA results, the Group thus formulated the following Conclusions:

CONCLUSION 16/36: AFI RVSM IMPLEMENTATION – FUNDING

That IATA member airlines continue to finance within the available funds to support specific projects relating to the RVSM implementation effort in order to improve safety and economy of air traffic in the AFI region and keep the task force informed accordingly.

CONCLUSION 16/37: AFI RVSM STRATEGY/ACTION PLAN

That the updated AFI RVSM strategy/action plan at Appendix G be circulated to States for quality assurance.

CONCLUSION 16/38: IMPLEMENTATION OF THE REQUIRED CNS INFRASTRUCTURE TO SUPPORT THE IMPLEMENTATION OF RVSM IN THE AFI REGION

That in view of the implementation of RVSM and provision of ATC service, States are urged to implement the required supportive CNS infrastructure namely; ATS DS circuits, AMS and appropriate NAVAIDS as soon as possible, but not later 3 July 2008.

CONCLUSION 16/39: TARGET DATE FOR AFI RVSM IMPLEMENTATION

That the target date for implementation of RVSM in the AFI Region will be 25 September 2008.

Note: The RVSM Pre-implementation Safety Case (PISC) document will be forwarded to the Commission for consideration as soon as possible, but not later than 28 February 2008

Consideration of the Conclusions/Decisions AIS/MAP Task Force and the AFI-CAD Study Group

4.3.4 The Group was apprised of the Conclusions/Decisions of the AIS/MAP Task Force and its AFI CAD Study Group particularly the development of the centralized AFI Region AIS Database (AFI-CAD) Program, taking into account the intent of APIRG/15, Conclusion 15/43 at its meetings and it advanced its programme. The meeting considered the ATS/AIS/SAR Sub-Group Conclusions 9/10, 9/11, 9/12, 9/13 and 9/14. The Group thus adopted the following Conclusions:

CONCLUSION 16/40: TRAINING GUIDELINES FOR AIS PERSONNEL

That:

- a) ICAO expedite the publication of the revised Training Manual (Doc.7192), Part E-3 as recommended by the AIS/MAP Divisional Meeting in 1998 (Doc. 9733), so as to facilitate the introduction of the basic requirements for States to consider the licensing issue of their AIS personnel; and
- b) ICAO expedite the development of AIS training guidance material relating to the implementation of CNS/ATM system.

CONCLUSION 16/41: THE FRAMEWORK AND GUIDANCE MATERIAL FOR THE ESTABLISHMENT OF AFI-CAD

That the framework and guidance material at Appendix H be adopted for the AFI Region for the establishment of the centralized AFI Region AIS Database.

CONCLUSION 16/42: DEVELOPMENT OF AFI CAD BUSINESS MODEL AND FINANCIAL MODEL

That ICAO provide appropriate experts to assist the AFI CAD Study Group to develop a business model and financial model for the AFI CAD.

CONCLUSION 16/43: SEMINARS/WORKSHOPS ON THE PROVISION OF ELECTRONIC TERRAIN AND OBSTACLE DATA.

That ICAO organize seminars/workshops on the provision of Digital Electronic Terrain and Obstacle Data in accordance with the new provisions in Annex 15.

CONCLUSION 16/44: THE EUROCONTROL EAD URS FOR APPLICATION IN AFI REGION

That the APIRG adopt the EUROCONTROL EAD URS as a basis for the AFI CAD URS taking into account the AFI requirements.

Review of implementation of the Area Control Service

4.3.5 The Group was apprised of the ICAO provisions relating to the urgent need to implement Area Control Service in the Region in respect of AFI/ 7, Rec. 5/21.

4.3.6 The Group was informed that the status of implementation of the area control service has been encouraging. The Group recalled that the Statement of the Basic Operational Requirements and Planning Criteria in AFI Region required that area control service should be provided for all IFR flights along all ATS routes to be used by international aircraft operations, except where the type and density of traffic do not justify the provision of such service. Furthermore, the Statement requires that approach control service should be provided at all aerodromes used for international aircraft operations and that

control areas should be established so as to encompass at least the climb to cruising levels of departing aircraft and the descent from cruising level of arriving aircraft. APIRG however, considered it necessary to request the few States that have not done so, to implement these provisions as soon as possible but not later than 3 July 2008. Based on the foregoing, the Group formulated the following Conclusion:

CONCLUSION 16/45: IMPLEMENTATION OF ATC SERVICE

That States which have not yet done so, implement ATC service along all ATS routes contained in Table ATS 1 of the AFI Plan (Doc 7474) as soon as possible, but not later than 3 July 008 in the spirit of AFI/7 Rec. 5/21.

Review of the ATS Routes including RNAV Routes and their Status of the implementation

4.3.7 The Group was apprised of the good progress so far achieved by the implementation of the ATS routes in the AFI Region by most States. However there were still a few States that required to implement some segments of the ATS routes. The Group was presented with requirements of new RNAV ATS from the Gulf area through continental Africa to the Atlantic Ocean Random Routing Area (AORRA). The Group was of the view that this requirement would be adequately addressed through the existing Protocol by the Secretariat. In view of the foregoing the Group developed the following Conclusion:

CONCLUSION 16/46: IMPLEMENTATION OF THE NON-IMPLEMENTED ROUTES INCLUDING RNAV ROUTES

That States concerned implement the ATS routes at Appendix I as soon as possible, but not later than AIRAC date of 3 July 2008.

Review of the implementation of ICAO requirements in the field of Search and Rescue (SAR)

4.3.8 Under this agenda item the Group was apprised of the status of implementation of the ICAO provisions relating to search and rescue services. It was noted with concern that some few of the provisions had remained unimplemented for decades and the meeting was of the view that States should now be sensitized on the need to take remedial action.

Conclusions of the Search and Rescue (SAR) Conference in the AFI Region

4.3.9 The Group recalled that since 2002, a number of technical cooperation activities have been implemented in Africa, under the leadership of ICAO and AFCAC and was presented with the Conclusions of the Search and Rescue (SAR) Conference held in Saint Denis, La Réunion, in September 2007.

4.3.10 It was noted with satisfaction that the conference reviewed and adopted a set of template SAR documentation that has then been posted on the ICAO/AFCAC SAR Project website (www.icao.int/SARAfrica).

4.3.11 In reviewing the Conclusions of the conference, the meeting noted the recommendation with regard to the establishment of a specific SAR Sub-Group. APIRG recalled that the ATS/AIS/SAR Sub-Group was an established group charged with SAR issues in the Region. However, it was agreed that SAR specialists did not always attend the meetings of the Group and that States should be encouraged to include SAR specialists in their delegations. It was noted with concern that some States do not have

permanent SAR structures within their civil aviation authorities. It was also noted that there is a lack of training in the SAR field. To this end, the Group supported the inclusion of SAR activities in the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan). In light of this, the meeting agreed to the following Conclusion:

CONCLUSION 16/47: PARTICIPATION OF SAR EXPERTS IN THE ATS/AIS/SAR SUB-GROUP AND INCLUSION OF SAR ACTIVITIES IN THE COMPREHENSIVE REGIONAL IMPLEMENTATION PLAN FOR AVIATION SAFETY IN AFRICA (AFI PLAN)

That:

- a) States, which have not done so, include SAR experts to participate in the work programme of the APIRG ATS/AIS/SAR Sub-Group;
- b) States, which have not yet done so, establish permanent SAR structures within national civil aviation authorities as a priority; and
- c) ICAO and AFCAC ensure that the Conclusions of the SAR Conference in La Réunion, be taken into account in the AFI Plan as far as possible.

Consideration of specific air navigation planning and implementation problems and the review of air navigation field deficiencies

4.3.12 The Group, using the approved methodology, updated the list of deficiencies in the ATS, SAR and AIS/MAP fields.

4.4 Aeronautical meteorology (MET)

4.4.1 The Group was presented with the Report of the eighth meeting of the Meteorology Sub-Group (MET/SG/8) held at the ICAO Eastern and Southern African Office (ESAF), Nairobi, Kenya, from 25 to 27 June 2007.

Review of APIRG Conclusions and Decisions

4.4.2 The Group made an in-depth review of its Conclusions and Decisions in Meteorology which were developed at the APIRG/15 Meeting and those outstanding from its previous meetings under Agenda Item 2.2.

4.4.3 The meeting also noted the efforts made by States to implement the Conclusions and Decisions of the MET/SG adopted by APIRG, in particular by ASECNA Member States. However, there was great concern that many States did not respond to the State letters issued by the ICAO AFI Regional Offices regarding the follow-up on the status of implementation of these Conclusions and Decisions as well as on other matters of the AFI ANP implementation. States were urged to respond promptly to ICAO State letters as this would facilitate good planning and decision-making for the AFI Region.

CONCLUSION 16/48: RESPONSE BY THE STATES TO ICAO AFI REGIONAL OFFICES STATE LETTERS

That States respond promptly to ICAO AFI Regional Offices State letters that solicit information on the status of implementation of the relevant Decisions of the MET/SG and

the MET-related Conclusions and Decisions of APIRG as well as on other implementation issues in the MET field.

The world area forecast system (WAFS) in the AFI Region

4.4.4 The Group reviewed the implementation of WAFS in the AFI Region on the basis of the reports from the WAFS Operations Group (WAFSOPSG) and the Satellite Distribution System Operations Group (SADISOPSG). The meeting also took note of information provided by the World Area Forecast Centre (WAFS), London, on the recent and forthcoming developments in WAFS and SADIS.

4.4.5 In this regard, the meeting noted the draft amendment to WAFS regional procedures and to FASID Tables MET 5, MET 6 and MET 7, as presented in **Appendix J** to this report, and included the proposed Tables together with the regional procedures related to WAFS in the next amendment to AFI ANP/FASID.

4.4.6 Within the framework of the development of WAFS, the Group noted the trial forecasts of icing, turbulence and convective clouds being generated routinely in GRIB2 code form at the WAFSCs that should be evaluated by the users through a formal feedback mechanism. To encourage the appropriate use of these new forecasts in GRIB2 code form, it was considered desirable to convene regional training seminars. Niger offered to host the seminar in French in Niamey. The Group formulated the following Conclusion:

CONCLUSION 16/49: TRAINING SEMINAR ON THE USE OF ICING, TURBULENCE AND CONVECTIVE CLOUDS FORECASTS IN GRIB2 CODE FORM

That the WAFS London Provider State be invited, in coordination with ICAO and WMO,, to provide training seminars on the use of icing, turbulence and convective clouds forecasts in GRIB2 code form, to AFI States.

Note: It is suggested that seminars be convened in 2010 and conducted in both English and French (Niger offered to host the French seminar).

4.4.7 The Group agreed that the implementation of the SADIS second generation VSAT (SADIS 2G) should be reflected in the list of the status of implementation of SADIS in the amended FASID Table MET 7, as presented in **Appendix J** to this report. In this regard, the meeting amended the FASID AFI MET 7 Table and formulated the following Decision:

DECISION 16/50: INDICATION OF THE TYPE OF VSAT IN THE FASID TABLE MET 7: IMPLEMENTATION OF SADIS IN THE AFI REGION

That information related to the type of the VSAT station be included in the FASID Table MET 7 of the AFI Plan, as presented in Appendix J to this report.

4.4.8 The meeting noted with satisfaction the efforts made by ASECNA on the implementation of SADIS Second Generation VSATs (SADIS 2G) and SADIS FTP together with the SADIS workstation software in its 17 Member States by the end of December 2007 and encouraged other States to follow these initiatives.

4.4.9 The meeting was informed that the SADIS FTP service was operationally launched in July 2005, which offers approved SADIS users with an alternative, high-quality internet-based solution

for receiving WAFS and OPMET data. The SADIS FTP service is an ICAO-approved distribution system and an integral part of the SADIS service, complementing, and providing a backup for the SADIS 1G and 2G satellite services. To assist users intending to access this service, the meeting formulated the following Conclusion:

CONCLUSION 16/51: SADIS FTP ACCOUNTS

That approved SADIS users in the AFI Region who have internet capabilities and do not have an active SADIS FTP account write to the SADIS Provider State to have an access account.

4.4.10 The Group was concerned on the low availability on the SADIS of ASHTAMs and NOTAMs related to volcanic ash (VA) and urged States in the Region to provide the information when available. ICAO AFI Regional Offices were requested to bring this to the attention of concerned States. The Group then formulated the following Conclusion:

CONCLUSION 16/52: AVAILABILITY ON SADIS, OF ASHTAM AND NOTAM RELATED TO VOLCANIC ASH (VA)

That, in order to improve the availability on SADIS, of ASHTAMs and NOTAMs related to VA, the ICAO AFI Regional Offices in the AFI Region remind States of the requirement to transmit all ASHTAMs and NOTAMs related to VA to the AFTN address EGZZVANW.

4.4.11 The meeting reviewed the SADIS Strategic Assessment Tables, as presented in **Appendix K**, regarding the current and projected data volumes for the period 2007-2011. The Group agreed that the projections were appropriate and formulated the following Conclusion:

CONCLUSION 16/53: SADIS STRATEGIC ASSESSMENT TABLES

That the AFI SADIS Strategic Assessment Tables, as presented in Appendix K to this report, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements.

OPMET information exchange management

4.4.12 The meeting noted that the AMBEX scheme was introduced several years ago and has since been operational. The scheme is operating sufficiently well in certain AFI regions, but telecommunications circuit performance and adherence by States to procedures is still a challenge in some areas. Initially, there were monitoring periods of data availability and quality. For several years now, there has been no regular monitoring. Other regions like EUR, ASIA/PAC and now MID have established OPMET information exchange management groups. The Group agreed that there was merit to establish a similar group in the AFI Region to ensure sustained availability of high quality OPMET information to users.

4.4.13 The meeting recalled that APIRG/12, through Decision 12/66, and APIRG/15, through Conclusion 15/89, called for the establishment of OPMET databanks at Dakar, Senegal, and Pretoria, South Africa. The databanks have been established and are operational. These OPMET databanks have the capacity to undertake systematic monitoring of the availability and regularity of OPMET data. The monitoring should be best conducted by the OPMET databanks. The AFI Region could benefit from

monitoring procedures for the regular OPMET exchange (METAR and TAF), which have been developed in the EUR and ASIA/PAC Regions. These procedures include performance indicators (PIs) for compliance, availability and regularity of the scheduled, routine OPMET information (METAR (SA) and TAF (FT)).

4.4.14 The Group agreed that, in order to improve data availability and quality as well as to put in place objective monitoring procedures, an AFI OPMET Management Task Force (AFI OPMET/M TF) be established with the terms of reference and work programme, as presented in **Appendix L**. The meeting adopted the following Decision:

DECISION 16/54: AFI OPMET MANAGEMENT TASK FORCE (AFI OPMET/M TF)

That an AFI OPMET Management Task Force be established with the terms of reference and work programme, as presented in Appendix L to this report.

4.4.15 The meeting was informed that Regional OPMET Data Banks (RODBs) have been established in Dakar, Senegal, and Pretoria (Johannesburg), South Africa and are operational. The Group expressed its appreciation to ASCENA and South Africa for their efforts. The meeting agreed that it is important to reflect their role in the exchange of OPMET information in the AMBEX Handbook.

4.4.16 Equally important is the need to reflect how SIGMET information is exchanged in the region. The meeting recalled that SIGMET information is critical weather information for aircraft in flight and as such it should be distributed to other ICAO regions and made available to the Inter-regional OPMET Gateway (IROG), Toulouse, France. It was agreed that the exchange of this information also be reflected in the AMBEX Handbook. The Group formulated the following Decision:

DECISION 16/55: INCLUSION OF REGIONAL OPMET DATA BANKS AND SIGMET REQUIREMENTS IN THE AMBEX HANDBOOK

That the operations of the AFI Regional OPMET Data Banks and SIGMET requirements be reflected in the AMBEX Handbook as per the text at Appendix M.

Provision of tropical cyclones and volcanic ash advisories for the AFI Region

4.4.17 The meeting discussed the issuance of volcanic ash advisories by Volcanic Ash Advisory Centre (VAAC), Toulouse, the SIGMETs to be issued by the associated meteorological watch offices (MWOs) and the need for routine volcanic ash tests. The Group recalled APIRG/15, Conclusion 15/90 on the need to carry out such tests. The requirement for such tests is due to the fact that the occurrence of volcanic ash events are irregular and the operational personnel involved in procedures used in area control centers (ACCs), MWOs, and VAACs may not be able to participate in real events for many years.

4.4.18 The meeting was informed that, due to incomplete addresses to be used for the distribution of volcanic advisories in the AFI region and those addresses used by MWOs for the distribution of the related SIGMET, tests carried out in 2006 were not successful. The meeting felt that urgent action has to be taken to address the issue. The Group agreed that the ICAO Regional Offices in the AFI Region were better placed to undertake the task. The meeting emphasized the importance of training and urged that WMO, in coordination with ICAO and VAAC Toulouse Provider State, arrange for a training workshop on VA SIGMETs. The meeting then formulated the following Conclusions:

CONCLUSION 16/56: ADOPTION OF PROCEDURES FOR CONDUCTING SIGMET TESTS FOR THE AFI REGION

That:

- 1) **the ICAO Regional Offices in the AFI Region:**
 - a) **assume the responsibility for the development of addressees related to the volcanic ash advisories (VAA) coming from the Volcanic Ash Advisory Centre (VAAC), Toulouse, and intended for the AFI Region;**
 - b) **make available to Inter-Regional OPMET Gateway (IROG), Toulouse, WMO Headers that would facilitate the establishment of reception tests for volcanic ash advisories (VAA) within reasonable time limits;**
 - c) **request those States maintaining meteorological watch offices (MWOs) in the AFI Region to implement WMO headings for volcanic ash SIGMET and transmitted by those MWOs, and to make them available to IROG Toulouse; and**
- 2) **the procedures at Appendix N be adopted for use in SIGMETs tests in the AFI Region after action had been completed on items a) to c) above.**

CONCLUSION 16/57: SIGMET WORKSHOPS

That WMO, in coordination with ICAO and VAAC Toulouse Provider State, conduct two training workshops on SIGMET during 2008; one in English and another in French for the AFI Region.

Note: The workshops would address all types of SIGMET, including those related to VA and TC.

New challenges facing AFI meteorological services

4.4.19 The meeting recalled that APIRG/14, under Conclusions 14/37 and 14/38, called for the need to implement cost recovery measures for aeronautical meteorological services by States, including the conduct of seminars by WMO in coordination with ICAO. WMO, in coordination with ICAO, has conducted a series of seminars in cost recovery for aeronautical meteorological services since 1999 in English and French. The Group expressed its appreciation to the support provided by ICAO and WMO to participants at these seminars.

4.4.20 The Group further noted that ASECNA States have been implementing air navigation charges for aeronautical meteorology for several years. However, implementation in some States has been low, rendering the provision of aeronautical meteorological services unsustainable. One area where most aeronautical meteorological services faced impediments is on the legal aspects of undertaking cost recovery without an appropriate legal instrument establishing the aeronautical meteorology entity or cost recovery. The meeting agreed that the situation is far from satisfactory. Following the discussions the Group then adopted the following Conclusion:

CONCLUSION 16/58: LEGAL FRAMEWORK FOR AERONAUTICAL METEOROLOGICAL SERVICES

That States, in implementing cost recovery for aeronautical meteorological services in accordance with APIRG/14 Conclusions 14/37 and 14/38, put in place a national legal

framework for aeronautical meteorological services which include cost-recovery arrangements.

4.4.21 The Group recalled that quality assurance-related standards and recommended practices were first introduced in ICAO Annex 15, to the Convention on International Civil Aviation *Aeronautical Information Services* which became applicable on 6 November 1997. Amendment 72 to ICAO Annex 3 to the Chicago Convention – *Meteorological Service for International Air Navigation* became applicable on 1 November 2001. It introduced recommended practices concerning quality control and management of meteorological information supplied to users and training of meteorological personnel. The provisions recommend conformity with the ISO 9000 series of quality assurance standards. While the ISO 9000 series of quality assurance standards provides a basic framework for the development of a quality assurance programme, the details of such a programme have to be formulated by each Contracting State.

4.4.22 The meeting took note of the action taken by APIRG/14 under Conclusion 14/40 cognizant of the new requirements of Annex 3 — *Meteorological Service for International Air Navigation* which requested the States in the AFI Region to give priority to the implementation of quality management systems (ISO 9000 series of standards).

4.4.23 The Group also noted with appreciation that WMO, in collaboration with ICAO, conducted a Special Implementation Project (SIP) workshop, in English, on quality management for aeronautical meteorological services in Nairobi in May 2006 in English and another one conducted by ASECNA. The workshops were well attended. The Group discussed the recommendations of the workshop and agreed that they would assist the States in their efforts to introduce quality management systems. The meeting was informed that a WMO representative made a presentation on the subject at the MET/SG/8. The Group expressed its appreciation of WMO's efforts in this regard. The Group then formulated the following Conclusion:

CONCLUSION 16/59: SUPPORT TO STATES TO IMPLEMENT QUALITY MANAGEMENT SYSTEMS (QMS)

That WMO, in coordination with ICAO, continue to assist States in implementing QMS in the form of:

- a) seminars on QMS for the Chief Executives of Meteorological Authorities (CEOs) as a priority, and request the CEOs to report on status of implementation on QMS in their services on a regular basis;**
- b) support for more detailed training for personnel who would act as a core group in the region (training of trainers);**
- c) attachments of staff from the region to States that have already adopted QMS through VCP or otherwise; and**
- d) financial resources for engaging consultancy services during the initial stages of implementation, as and when available.**

Review of regional meteorological procedures in AFI ANP/FASID

4.4.24 A review of AFI ANP/FASID regional procedures was made as result of Amendment 74 to Annex 3 and the changes introduced by the third meeting of the World Area Forecast Operations Group (WAFSOPSG/3) and the third meeting of the International Airways Volcano Watch Operations Group (IAVWOPSG/3). The Group endorsed these amendments for implementation.

4.4.25 The Group noted the important changes of the provisions related to the terminal aerodrome forecasts (TAF) in Amendment 74 to Annex 3 which would become applicable on 5 November 2008. The changes included the extension of the TAF period of validity from 24 to 30 hours which was necessary for the new “ultra-long haul” operations. Amendment 74 also introduced the requirement for issuing only one valid TAF for each aerodrome at any time. It was realized that the implementation of the amended TAF provisions would require significant changes in the existing national and regional practices that need to be well coordinated and introduced smoothly throughout the region before the applicability date. The Group then adopted the following Conclusion and Decision:

CONCLUSION 16/60: REGIONAL METEOROLOGICAL PROCEDURES

That the regional meteorological procedures presented at Appendix O to the report replace the existing regional procedures of the AFI ANP/FASID (Doc 7474).

DECISION 16/61: INTRODUCTION OF 30-HOUR TAF IN THE AFI REGION

That international aerodromes in the AFI Region, as applicable in Amendment 74 to Annex 3 in the AFI Region with the capability should issue 30-hour TAF from 5 November 2008, and those with limited capability should advise the Regional Offices accordingly. A further assessment period be extended to June 2009 for those still unable to implement Amendment 74.

4.4.26 The meeting recalled that the SADISOPSG had formulated APIRG/11, Conclusion 11/9 calling for the Secretariat to consider developing a database-oriented version of global FASID Table MET 1A. The database is considered necessary in order to maintain the currency of the database-oriented Annex 1 to the *SADIS User Guide* which contained the requirements for TAF and which should be, by definition, consistent with all FASID Table MET 1A. The Group agreed that, in order to avoid redundancy and possible misleading information, the FASID Table MET 1A should be replaced by simple link (i.e. a URL address) to a global database under the heading FASID Table MET 1A. The meeting was also informed that, in the long-term, this would be applicable to all regional ANPs. The Regional Offices will update the table on an annual basis and in consultation with both the States’ users (IATA, IFALPA) and the MET/SG, as appropriate.

4.4.27 The meeting also agreed that, in order to simplify FASID Table MET 1A, column 6 (“area of coverage of charts”) and column 7 (“AFTN routing areas”), should be deleted since they do not reflect a RAN agreement. The Group then developed the following Conclusion:

CONCLUSION 16/62: REVIEW AND UPDATING OF FASID TABLE MET 1A

That:

- a) **FASID Table MET 1A be replaced by single link (i.e. a URL address) to a global database to be developed by the Secretariat in line with SADISOPSG reflected in APIRG/11, Conclusion 11/9; and**
- b) **Columns 6 and 7 in FASID Table MET 1A (the database to be re-named “Forecasts (TAF and TREND) to be issued for international aerodromes”) be deleted.**

4.4.28 The Group discussed the usefulness of FASID Table MET 2B SIGMET requirements and these are not listed in Annex 1 to the SADIS User Guide. However, in accordance with Annex 3, Appendix 6, para. 1.2.2 SIGMET was required to be disseminated to MWOs and to the SADIS uplink station. The meeting agreed that, if fully implemented, it could be postulated that all States receive the global set of SIGMET. The RAN agreement called for by Appendix 6, para. 1.2.2 is reflected in:

- a) the Basic Operational Requirements and Planning Criteria (BORPC) covering the needs by ATS Units and;
- b) the regional MET provision calling for each MWO to arrange for the transmission to all aerodrome meteorological offices with its associated FIR of its own SIGMET and relevant SIGMET messages for other FIRs, as required for briefing and, where appropriate, for flight documentation.

4.4.29 Under the circumstances it was agreed that, if the above are retained in the ICAO ANP for the AFI Region, there is no requirement for FASID Table MET 2B and that it should be deleted. The Group then formulated the following Conclusion.

CONCLUSION 16/63: DELETION OF FASID TABLE MET 2B

That FASID Table MET 2B be deleted from the ICAO AFI FASID since the requirements for SIGMET are covered in the ANP Basic (BORPC) and regional meteorological procedures.

Coordination with WMO Regional Association I (Africa)

4.4.30 The meeting was informed that, when discussing regional issues on aeronautical meteorology, the WMO at its Fifteenth Congress advocated the establishment of regional groups under the WMO who would collaborate and cooperate with the ICAO PIRGs. The Group welcomed this development and agreed that it would be beneficial for the development of aeronautical meteorology in the region. The Group then formulated the following Decision:

DECISION 16/64: COORDINATION BETWEEN WMO REGIONAL ASSOCIATION I (AFRICA) AND APIRG ON AERONAUTICAL METEOROLOGY

That the Chairperson of the Meteorology Sub-Group liaise with the WMO Rapporteur for Aeronautical Meteorology Programme for Regional Association I (Africa) on matters of common interest, when required.

4.5 Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan)

4.5.1 The meeting noted that the AFI Plan was developed by ICAO in close cooperation with stakeholders aimed at sustained improvement in aviation safety throughout the African continent. It was recalled that the AFI Plan reflects ICAO's overall strategy, as described in the Strategic Objectives and further detailed in the methodology of the Global Aviation Safety Plan (GASP). The Group noted that the AFI Plan will be built on tangible implementation initiatives already occurring in the AFI Region.

4.5.2 The Group was informed that the High-Level Meeting on a Comprehensive Regional Implementation Plan for Aviation Safety in Africa was convened on 17 September 2007 at ICAO Headquarters and was attended by 289 participants from 73 Contracting States and 28 international and

other organizations. The Group reviewed the Declaration and Assembly Resolution related to the AFI Plan.

4.5.3 The meeting noted with satisfaction that the deliberations on the AFI Plan clearly demonstrated a strong willingness to work in partnership for its effective implementation. It was also agreed that the AFI Plan represented the most coordinated and inclusive effort, to date, to address the very serious safety challenges facing Africa. It was recalled that the AFI Plan, which is a cooperative venture, required a firm commitment from African States and tangible expressions of support from other States, industry and other major players in order to succeed.

4.5.4 The Group reviewed the pledges by participants and noted with appreciation that many States and organizations had committed to the achievement of the goals and objectives of the AFI Plan. The Group noted with satisfaction that the AFI Plan will be managed under the supervision of the Senior Regional Director in Africa (Programme Leader) and that a Programme Manager will be appointed to assist him in this task. The Group was informed that a Steering Committee will be established and a work programme for the implementation of the AFI Plan will be prepared. It was noted that, in addition to the ongoing APIRG/16, the Special AFI RAN Meeting planned for 2008 will serve as a checkpoint for implementation.

4.5.5 The Group specifically noted the timely contribution of China to train 300 aviation officers commencing 2008 and requested the Programme Leader to obtain additional information as this could lead to results in the short term in certain areas in the region. It was proposed that the Programme Leader inform AFI States on a regular basis regarding actions taken under the AFI Plan. The meeting agreed to the following Conclusion:

CONCLUSION 16/65: COMPREHENSIVE REGIONAL IMPLEMENTATION PLAN FOR AVIATION SAFETY IN AFRICA (AFI PLAN)

That:

- a) **States support the implementation of the AFI Plan and closely coordinate their efforts with ICAO in order to ensure optimum benefits to aviation safety in Africa and to reduce duplication of efforts;**
- b) **The Programme Leader, as a start, follow up on specific offers to train aviation officers in the region and, as a priority, initiate the process to address known gaps;**
- c) **The Regional Offices accredited to States in Africa inform States on a regular basis regarding actions taken under the AFI Plan.**

AGENDA ITEM 5: AIR NAVIGATION SAFETY AND DEFICIENCIES

5.1 Review and update the list of deficiencies in the air navigation fields

5.1.1 The meeting noted that the Secretariat had created a regional database on deficiencies and attempts to maintain it up-to-date through the various sources available, including IATA and IFALPA. The meeting emphasized the need to validate the deficiencies from other sources than ICAO and the need to make the database accessible to the States. APIRG reminded States to systematically inform the Secretariat on the corrective actions they take and reply to letters sent by the Secretariat for validation of deficiencies so that the database can be kept reliable.

Elimination of Deficiencies in the AOP Field

5.1.2 When reviewing the list of deficiencies in the AOP field, the Group noted with satisfaction the efforts made by some States in spite of the scarcity of resources to eliminate certain deficiencies, in particular with respect to aerodrome fencing and pavement rehabilitation. However, much effort is required in view of the list of deficiencies, which have not decreased significantly due to the low level of implementation of aerodrome certification and safety management requirements.

5.1.3 On the whole, the Group was reminded of the concern expressed by ALLPIRG/5, Gthe Air Navigation Commission and the ICAO Council about persistent deficiencies, in particular those impairing safety. The meeting agreed that priority should be given by States to eliminate the most common and persistent deficiencies.

5.1.4 The meeting finally discussed the case of airports listed in the ANP which are not used or planned to be used for regular international flights and are therefore poorly equipped. To some extent, this contributes to the long list of deficiencies which remain unresolved for a long time. The meeting therefore reaffirmed the relevance of APIRG/12, Conclusions 12/56, 12/57, 12/58 and APIRG/14, Conclusion 14/56, and formulated the following Conclusion:

CONCLUSION 16/66: REVIEW OF THE LIST OF INTERNATIONAL AIRPORTS IN THE AFI ANP

That States make a review of the list of airports included in the AFI ANP and FASID and propose appropriate amendments, including the removal from the Plan of airports not used or planned to be used for international operations, based on current and projected aviation activities.

Elimination of deficiencies in the CNS field

5.1.5 The Group reviewed the list of deficiencies affecting the operation of aeronautical telecommunications in the AFI Region as prepared by the Secretariat on receipt of information from States, relevant international organizations and reports of ICAO missions to States. The Group analysed the progress made in the alleviation of priority “U” and priority “A” deficiencies since APIRG/15, and noted that States had maintained their efforts in solving CNS deficiencies in the AFI Region. However, it was expected that full implementation of SADC/2 and NAFISAT VSAT networks and their interconnection with AFISNET would allow for the elimination of most of the deficiencies still affecting aeronautical fixed services (AFTN and ATS/DS).

5.1.6 The meeting reiterated the need for a step-by-step approach in implementing CNS/ATM system elements by giving priority to solving the deficiencies affecting the current CNS and ATM systems. It recognized that many States were not submitting their replies in a timely manner to State letters calling for updates to the list of deficiencies established by APIRG and its CNS Sub-Group. Accordingly, the Secretariat was requested to ensure that proper coordination is carried out with all AFI States and relevant organizations prior to editing an updated list of all deficiencies. The list of deficiencies in the air navigation fields is available in **Appendix P** to this Report. The following Conclusion was formulated:

CONCLUSION 16/67: ELIMINATION OF AIR NAVIGATION DEFICIENCIES

That States be reminded to adopt a step-by-step approach when implementing air navigation system elements, by giving priority to solving the deficiencies affecting all elements of the system.

5.2 National and regional efforts to remove the identified deficiencies

Harmonization of civil aviation regulations in the East African Community and the Regional Safety and Security Oversight Agency (CASSOA)

5.2.1 The Group when addressing efforts by national and regional organizations was provided with a detailed presentation concerning harmonization of civil aviation regulations in the East African Community region. The harmonization is a positive initiative in line with Article 12 of the Chicago Convention which requires States to keep their rules and regulations uniform in line with those developed under the Convention. It also forms the framework for the regional Civil Aviation Safety and Security Oversight Agency.

5.2.2 The Group expressed its support to the EAC initiative as a contribution in the enhancement of safety and security of the international civil aviation and efficiency of air transport and in particular reduction of accident rates in Africa which is the objective of the AFI Plan endorsed by the 36th Session of the ICAO Assembly.

5.2.3 The meeting received information on the Cooperative Development of Operation of Continuing Airworthiness Programmes (COSCAPs) in the AFI Region. The Group expressed its appreciation of the efforts made by the regional bodies in establishing the programmes and if fully implemented would change the safety record in the region.

AGENDA ITEM 6: SPECIAL AFI REGIONAL AIR NAVIGATION (RAN) MEETING

6.1 The Meeting recalled with appreciation that the Council agreed on the convening of the next AFI RAN Meeting in 2008. It was recalled that this Special RAN meeting focusing on areas of concern will also serve as a checkpoint for implementation in the Region. The Group was informed that South Africa has formally indicated willingness to host this important event and that the Secretary General of ICAO is following up on the offer. It is anticipated that the meeting will take place in the fourth quarter of 2008 in South Africa.

6.2 The Group was informed that the agenda for the meeting will be approved by the Air Navigation Commission for approval by the Council and that work in this regard has commenced. States will be informed as soon as all arrangements are finalized.

AGENDA ITEM 7: TERMS OF REFERENCE (TOR) AND FUTURE WORK PROGRAMME

7.1 The Group, on considering its future work programme, reviewed the terms of reference, composition and work programme of its subsidiary bodies namely: AOP, ATS/AIS/SAR, CNS and MET Sub-Groups and the PBN, RVSM and OPMET Management Task Forces; and these are at **Appendices Q, R, S, T, D, F and L respectively.**

7.2 The meeting was presented with requests for membership to APIRG and its subsidiary bodies as follows:

- | | |
|--------------------------|------------------------------|
| a) APIRG | Burundi, Rwanda and Zimbabwe |
| b) ATS/AIS/SAR Sub-Group | Rwanda |
| c) CNS Sub-Group | Rwanda |
| d) AIS/MAP Task Force | Roberts FIR and Senegal |

7.3 The applications were supported by the Group, and the following Conclusion and Decision were adopted:

CONCLUSION 16/68: MEMBERSHIP OF APIRG

That the applications from Burundi, Rwanda and Zimbabwe for membership to APIRG be approved.

DECISION 16/69: MEMBERSHIP TO APIRG SUBSIDIARY BODIES

That the Group approve membership of Rwanda to the ATS/AIS/SAR and CNS Sub-Groups and Roberts FIR and Senegal to the AIS/MAP Task Force.

AGENDA ITEM 8: ANY OTHER BUSINESS

8.1 The meeting noted with satisfaction that Mr. Roberto Kobeh González (Mexico) was unanimously re-elected on 19 November 2007 for a full three-year term as President of the Council of ICAO and requested the Secretariat to convey to him their best wishes and full support. The delegates to APIRG/16 expressed their appreciation to the host State for providing excellent facilities through a vote of thanks delivered by the head delegate of Burundi during the closing ceremony.



APPENDIX A

SIXTEENTH MEETING OF THE AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP (APIRG/16)

SEIZIEME REUNION DU GROUPE REGIONAL AFI DE PLANIFICATION ET DE MISE EN ŒUVRE (APIRG/16)

(Rubavu, Rwanda, 19 – 23 November/Novembre 2007)

LIST OF PARTICIPANTS / LISTE DES PARTICIPANTS

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
1.	ALGERIA	Mr. Larfoui Hocine	Directeur	1 Avenue de l'Indépendance, Alger – Algérie	☎ : + 213 70 936478 / 213 21672060 Fax : 213 21671001 E.mail : dena@enna.dz
2.		Mr. Allili Smain	Chef CCR Alger	ENNA – Direction de l'Exploitation de la Navigation Aérienne - BP 70 « D » Dar-El-Beida 16100 Alger - Algérie	☎ : + 213 2167 21 30 Mobile : 061504166 Fax : 213 2167 21 30 E.mail : dena.ccr@enna.dz
3.		Mr. Temmar Redouane	Chef Département AIS	ENNA – DENA B.P. 70 »D » Dar El-Beida Alger, Algérie	☎ : + 021 679646 – 213 70933964 Fax : 021 679646 E.mail : red_termmar@yahoo.fr E.mail : dena-dia@enna.dz
4.	ANGOLA	Mr. Arquimedes Antunes Ferreira	Director for Air Navigation of Angola CAA	Instituto Nacional Da Aviacao Civil Rua Miguel de melo n° 96 6. Andar P.O. Box 569 Luanda – Angola	☎ : +244 912506739 Fax : 244 222 651038 E.mail : arquimedesf@gmail.com
5.		Mr. Nzakimuena S. Manuel	Director Air Navigation Director of Air Navigation - ENANA	Aeroporto Intl 4 de Fevereiro DNAV CCR – Luanda P.O. Box 841 - Angola	☎ : + 244 222 651023 Fax : 244 222 651038 E.mail : manuel.nzakimuena@enana-ao.com
6.		Mr. Diogenes Manuel Silvestre Da Silva	Director of Engineering and Equipment ENANA	Aeroporto Internacional 4 de Fevereiro Direccao de Engenharia E Equipamentos CCR – Luanda P.O. Box 841	☎ : + 222 651177 Fax : 222 354614 E.mail : diogesiiva65yahoo.com.br mailto:arquimedesf@gmail.com
7.	BENIN	Mr. Todjinou Eliezer Koumagnon	Acting for Benin CAA DG	01 BP 305 – Cotonou – Republic of Benin	☎ : + 229 21 300161 Fax : 229 21 300839 E.mail : eliezer_koumagnon_3@hotmail.com
8.	BURKINA FASO	Mr. Edgard Fulgence Ouedraogo	Chief of Air Navigation Service P.I	01 BP 75 ASECNA – Ouagadougou 01	☎ : + 226 70251079 Fax : 226 50306554 E.mail : fulgedgard@yahoo.fr

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
9.	BURUNDI	Mr. Joseph Bangurambona	Directeur CAA - Burundi	Aéroport international de Bujumbura B.P. 694 – Bujumbura - Burundi	☎ : + 257 22 223707 Fax : 257 22 223428 E.mail : rsa@cbinf.com E.mail : bangurambona.joseph@rsa.bi
10.		Mr. Emmanuel Habimana	Chef de Service de la Navigation Aérienne	Aéroport international de Bujumbura B.P. 694 – Bujumbura - Burundi	☎ : + 257 77 750052 / 257 22 224239 Fax : 257 22 223428 E.mail : habiem2001@yahoo.fr E.mail : nav@rsa.bi
11.		Mr. Moise-Hervé Haruburundi	Chef de Services de Télécommunications Aéronautiques	Régie des Services Aéronautiques B.P. 694 Bujumbura - Burundi	☎ : + 257 22 223427 / 257 22223797 Mobile : 257 78823541 Fax : 257 22 223428 / 257 22223428 E.mail : haruburundi@yahoo.fr
12.		Mr. Jean Pierre Niyukuri	Chef de Service Infrastructures	Aéroport de Bujumbura (Régie des Services Aéronautiques) B.P. 694 Bujumbura - Burundi	☎ : + 257 22 222734 / 77 735948 Fax : 257 22223428 E.mail : infra@rsa.bi E.mail : nilijeanke10@yahoo.fr
13.	CAPE VERDE	Mr. Alberto Silva	Air Navigation Inspector	Av. Cidade de Lisboa, 34 – 3°E – Praia Cape Verde	☎ : + 238 2603430 Fax : 238 2611075 E.mail : albertos@acivil.gov.cv
14.		Mr. Agnelo Barbosa	VP Air Navigation	Av. Cidade de Lisboa, 34 – 3°E – Praia Cape Verde	☎ : +238 2619794 Fax :238 2611075 E.mail : abarbosa@acivil.gov.cv
15.		Mr. Jose E. Rodrigues	Administrator ANS	CP58 – SAL Cabo Verde	☎ : + 238 2411135 Fax : 238 2411323 E.mail : jrodrigues@asa.cv
16.	CENTRAL AFRICAN REPUBLIC	Mr. Victor Ngandjiro	Chef de Service Exploitation de la NA	ASECNA B.P. 828 Bangui – Central African Rep.	☎ : + 236 75504819 Fax : E.mail : ngavictor@yahoo.fr
17.	CHAD	Mr. Sarahaoubaye Traouingue	Chef de Division CNS (ADAC) Ministère des Infrastructures – Autorité de l'Aviation civile	B.P. 96 – Ndjaména -Tchad	☎ : + 235 552 54 14 (235) 5525414 Fax : 235 55229 09 E.mail : adac@intnet.td E.mail : sarabaye_kk@yahoo.fr
18.		Mr. Nangde Ngartamyeu Nangmbatnan	Agent à la Direction de l'Aviation Civile	B.P. 96 – Ndjaména -Tchad	☎ : + 235 2525414 Fax : 235 52525414 E.mail : adac@intnet.td
19.	CAMEROON	Mr. Jean-Pierre Kouogueu	Sous Directeur de la Circulation Aérienne	CAA BP 6998 – Yaoundé -Cameroon	☎ : + 237 22303090 / 237 99685666 Fax : 237 22303362 E.mail : jpkouogueu@hotmail.com

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
20.	CONGO	Mr. Albert Nzinziele	Chef de Service MTO	B.P. 218 – ASECNA Brazzaville	☎ : + 242 5361488 Fax : + 242 820050 E.mail : poitsaille_karst@yahoo.fr
21.		Mr. Alain Ngoma Mby	Chef Service Exploitation Navigation Aérienne	B.P. 218 – ASECNA – Congo	☎ : + 242 6676212 Fax : 242 820050 E.mail : alainmbys@yahoo.fr
22.		Mr. Alain Marie-Joseph Moboula	Chef de Division Maintenance Infrastructures radio électriques	ANAC – BP 128 – Congo	☎ : + 242 551 7137 / 242 6222732 Fax : 242 810227 / 81 07 /49 E.mail : moboula@yahoo.fr
23.	COTE D'IVOIRE	Mr. Boa Angaman	Chef Département Navigation Aérienne et Réglementation des Aéroports	12 BP 1385 – Abidjan 12	☎ : + 225 05 3917 15 Fax : 225 21 276341 / 225 21276346 E.mail : boachaang@yahoo.fr
24.	DEMOCRATIC REPUBLIC OF CONGO	Mr. Benny KASONGO	Directeur Technique Adjoint	5 Wenge Q. Rishini, Kinshasa – Democratic Rep. Congo	☎ : + 243 813646404 Fax : 1 4136180420 E.mail : benny.kasongo@ties.itu.int
25.		Mr. Pascal Kep'na IZAI	Directeur de la Navigation Aérienne, Adjoint	Av. Kinsahsa n° 30 C/Mgaliéna, Kinshasa, Democratic Rep. Congo	☎ : + 243 998163945 Fax : E.mail : izai_pascal@yahoo.fr
26.		Mr. Jean T. Muanda Mayala	Chef de Division Navigation aérienne	Av. de l'Aérodrome n° 536 B.P. 6514 Kinshasa – Ndolo commune de Barumbu	☎ : + 243 812161440 Fax : E.mail : jeantheomuanda@yahoo.fr
27.		Mr. Luyeye Ndongbasi	Chef du Bureau Aéroports	Avenue de l'Aérodrome n° 536 B.P. 6514 Kinshasa Ndolo – Commune de Burumbu	☎ : + 243 815018308 Fax : E.mail : ndoluyeye@yahoo.fr
28.	EGYPT	Mr. Ahmed S. Donia	Technical Officer, Head ATC Sector	National Air Navigation Services Company	☎ : +002 02 22657839 / 22657928 Fax : 002 22680627 E.mail : Cairo Kadrytower@yahoo.com
29.		Mr. Ismail Nagy Abdelaziz	Tower and Approach Computer Manager	Cairo Air Navigation Centre (CANC) (National Air Navigation Service Company)	☎ : +002 02 22657915 / 22657910 Fax : 002 22675960 E.mail: abdelaziznagy950
30.		Mr. Mahmoud Mohamed Ahmed Elashmawy	General Manager of Safety & Standards for Navaid Facilities, ECAA	Egypt Civil Aviation Authority (ECAA) Ministry of civil aviation	☎ : + 222 681347 – 22 697 3755 Fax : 2 2678537 / 2 2688332 / 0222678537 E.mail: engmahd@hotmail.com
31.		Mr. Hassan Sadek	General Manager of Air Field & AIS	Egypt, Cairo, Airport Road complex of Ministry of Civil Aviation	☎ : + 2 012 2679387 / 2 02 24045632 Fax : 02 22678537 E.mail :hassansadekand@yahoo.com
32.		Mr. Maged Hassan El- Masry		Egyptian Holding company for airport and Navigation Building	☎ : + 2 02 26960601 Fax : 0202 26960686

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX	
33.	ETHIOPIA	Mr. Mohamed El Kady	Director General Research & Development	National Air Navigation Service Company	☎ : + 202 22 671056 Fax : 202 26373669 E.mail : mohamed.elkady@nansceg.org E.mail: mielkady@hotmail.com	
34.		Mr. Hamdy El-Taweel		79 M. Farg. St. Einstan, Cairo, Egypt	☎ : + 202 26960624 Fax : 202 26960686 E.mail : hamdy_eltaweel@avit.com.eg	
35.		Mr. Girma Yami	Deputy Director General Air Navigation Services	Ethiopian Civil Aviation Authority P.O. Box 978 Addis Ababa, Ethiopia	☎ : + 251 11 6650265 Fax : 251 11 6650281 E.mail : caa.airnav@ethionet.et	
36.		Mr. Lulseged Gulilat	Director, AN Regulation	Ethiopian Civil Aviation	☎ : +251 6650200 Ext : 345/323 Fax : 251 116650281 E.mail : caaairnav@ethionet.et	
37.		Mr. Shimeles Kibreab	Director, ATS	Ethiopian Civil Aviation Authority	☎ : +251 11 6650517 Fax : 251 11 6650515 E.mail : caa.airnav@ethionet.ct	
38.		Mr. Alemu G/Yesus	Director, CNS	Ethiopian Civil Aviation Authority	☎ : +251 11 6650265 Fax : 251 11 6650281 E.mail : caa.airnav@ethionet.ct E.mail : alexgb@ethionet.et	
39.		Mr. Mesfin Fikru	Director General Ethiopian Civil Aviation Authority	P.O. Box 978 – Addis Ababa Ethiopia	☎ : + 251 11 6650252 Fax : 251 11 6650269 E.mail : civil.aviation@ethionet.et	
40.		EQUATORIAL GUINEA	Mr. Bolekia Bueriberi Gil-Esopi	Chef SENA	B.P. 416 Malabo – Equatorial Guinea	☎ : + 240 273944 / 240 092201 Fax :240 093501 E.mail: gilesopi@yahoo.fr
41.		GHANA	Mr. Albert Aidoo Taylor	Director Air Traffic Services	P.O. Box KA16171, Kotoka Int'l Airport – Accra – Ghana	☎ : + 233 21 776079 Fax : 233 21 773293 E.mail : ATaylor@gcaagh.com
42.	Mr. Prince Bismarck Boateng		Director of Engineering	Ghana Civil Aviation Authority PMB, KIA, Accra, Ghana	☎ : + 233 21 760596 Fax : 233 21 793293 E.mail : pbboateng@yahou.co.uk E.mail : pbboateng@gcaagh.com	
43.	KENYA	Eng. Reuben J. Lubanga	Director , Air Navigation Services	c/o KCAA Box 30163 – 00100, Nairobi Kenya Civil Aviation Authority	☎ : + 254 20 827470 / 20 827470 Fax : 254 20 822300 E.mail: rlubanga@kcaa.or.ke	
44.		Ms. Justina M. Nyaga	Manager AIS	P.O. Box 30163 – 00100 Nairobi - Kenya	☎ : +254 20 827470/ - 254 734 557919 Fax : 254 20 822300 E.mail: jnyaga@kcaa.or.ke E.mail : justnyaga@yahoo.com	

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
45.		Mr. Erastus M. Njogu	Manager ATS	Kenya Civil Aviation Authority P.O. Box 30163 – 00100 – Nairobi	☎ : + 254 20827470/1 Fax : 254 20822300 E.mail : enjoyogu@kcaa.or.ke
46.	LESOTHO	Mr. Andreas Tieho Ntobo	Chief Air Traffic Services	Dept. Of Civil Aviation P.O. Box 629 Maseru 100 – Lesotho	☎ : + 266 22312499 Fax : 266 22310188 E.mail : catco@civilair.gov.ls
47.	MADAGASCAR	Mr. Jérôme Rakotondriana	Chef Service de la Météorologie	ASECNA B.P 46 Ivato – Antananarivo (105) Madagascar	☎ : + 261 331210805 /261 340198550 Fax : 261 202258115 E.mail : jrmasecna@yahoo.fr
48.	MALAWI	Mr. James J. Matemba	Airport Commandant Department of Civil Aviation	Department of Civil Aviation Private Bag B311, Capital City Lilongwe 3, Malawi	☎ : + 265 8826259 Fax : 265 1773279 E.mail : aviationhg@malawi.net
49.	MALI	Mr. Salif Diallo	Directeur de la Réglementation à l'Agence Nationale de l'Aviation civile du Mali	B.P. 227 – Hamdallaye ACI 2000 – Bamako - Mali	☎ : + 223 671 43 10 / 223 229 5942 Fax : 223 229 6177 E.mail : salifalice@hotmail.com E.mail : anacmali@hotmail.com
50.	MAURITANIE	Mrs. Mbayang Guèye	Directrice Générale Adjointe ANAC Mauritanie	ANAC Mauritanie B.P. 91- Nouakchott Mauritanie	☎ : + 222 524 4007 / 524 4005 Fax : 222 524 40 07 / 525 3578 E.mail : mbayanggueye@hotmail.fr
51.		Mr. Mohamed Lemine Ahmed Ivekou	Expert ANAC	ASECNA Mauritanie	☎ : + 222 630 9931 Fax : 222525 1625 E.mail : lemineivekou@yahoo.fr
52.		Mr. Mohamed Abdellahi	Directeur Aéroport et Navigation Aérienne	ANAC Mauritanie B.P. 91 Nouakchott	☎ : + 221 6521491 Fax : 221 5253578 E.mail: mohamedanac@yahoo.fr
53.	MAURITUS	Mr. Mohammad Karimbocus	ATC Supervisor	Mauritius, Dept. of Civil Aviation Mauritius	☎ : + 230 6032000 Fax : 230 6373164 E.mail : civil-aviation@mail.gov.mu E.mail : mkarimbocus@mail.gov.mu
54.	NIGER	Mr. Wade Papa	Chef division météo EAMAC	BP 746 Niamey - Niger	☎ : + 00 227 96268389 Fax : E.mail : Yatt_2000@yahoo.fr
55.		Mr. Mahaman Saloum	Chef de Service Météorologique ASECNA	B.P. 1096 – Aéroport Niamey – Niger	☎ : + 227 94852113 Fax : 227 20735512 E.mail: msaloum1@yahoo.fr
56.		Mr. Abdoulaye Yatta	Chef de Service Exploitation Navigation aérienne	ASECNA – Aéroport B.P. 1096 Niamey – Niger	☎ : + 227 20732382 / 227 94852115 Fax : 227 20735512 E.mail: nigerena@asecna.org
57.	NIGERIA	Mr. Olopha B. Stephen	Director, ATS NAMA	Nigerian Airspace Management Agency	☎ : + 234 8055058000 Fax : E.mail: Pharhema@yahoo.com

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
58.	RWANDA	Mr. Joshua Mbaraga	Director General	Rwanda Civil Aviation Authority Kigali, Rwanda	☎ : + 250 08302477 / 250 585845 Fax : 250 582609 E.mail : info@ca.gov.rw
59.		Mr. Philippe Munyaruyenzi	Transport Policy Officer	BP 24 – Kigali – Rwanda	☎ : + 250 08589299/ 250 585503 Fax : 250 585755 E.mail: Philip-munyaruyenzi@mininfra.gov.rw
60.		Mr. Mugabe Robert	Chief Aerodrome Gisenyi	RCAA P.O.Box 112	☎ : + 250 540480 Fax : E.mail : orbebag@yahoo.com
61.		Mr. Patrick Mihigo	Agent de l'Etat		☎ : + 08649698 Fax :
62.		Mr. Musafiri Gustave	Fonctionnaire		☎ : + 08640577 / Fax : 250 568448
63.		Mr. Alain Micombero	Agent de l'Etat		☎ : + 08528560 / 08736408 Fax : 250 540480
64.		Mr. Mugabo Augustin	Civil Servent		☎ : + 08355620 Fax : 250 540480 E.mail
65.		Mr. Mpagaze Anthony Baguma	Chief Aeronautical communication Rwanda C.A.A	RCAA P.O. Box 1122	☎ : + 250 583441 / 08593882 Fax : 582609 E.mail ampagaze@caa.gov.rw
66.		Mr. Kanobayire Louis	Chief Aeronautical Meteorology	BP 1122 – Kigali	☎ : + 08536700 Fax : 250 582609 E.mail : kano_louis@yahoo.fr
67.		Mr. Boniface Ruhara	Chief Planning RCAA	B.P. 1122 – Kigali, Rwanda	☎ : + 08891000 Fax : 250 582609 E.mail : ruharaboni@yahoo.fr
68.		Mr. Emmanuel Mazimpaka	Secrtaire Executif du Secteur Administratif de Gisenyi District Rubavu secteur	Gisenyi	☎ : + 08457617 Fax : E.mail : Mazimpaka2006@yahoo.fr
69.		Mr. Alphonse Rugengamanzi	Police Nationale	DPU Rubavu	☎ : + 08311440 Fax :
70.		Mr. Patrick Kalisa	Rwanda National Police	DPU Rubavu	☎ : + 0250 08500576 Fax : E.mail : kalisangaho@yahoo.fr
71.		Mr. Karagire Eustache	Chief Technical ASMS/RCAA	B.P. 6752 Kigali, Rwanda	☎ : + 0250 08516068 Fax : E.mail : karagire2020@yahoo.fr

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
72.	SENEGAL	Mr. Papa Atoumane Fall	Directeur de la Navigation Aérienne	B.P. 8184 Aéroport L.S. Senghor	☎ : + 221 33 8695335 Fax : 221 338200403 E.mail : atoumanef@yahoo.com
73.	SOUTH AFRICA	Mr. Levers Mabaso	Director C.A. Monitoring and Compliance	Private Bo x 576 Pretoria 0001	☎ : + 2712 309 3285 Fax : 2712 309 3468 E.mail : mabasol@dot.gov.za
74.		Mr. Harry Roberts	ATM Specialist	Private Bag x15 Kempton Park – RSA 1620	☎ : + 27 11 9610123 Fax : 27 11 9610403 E .mail : harryr@atns.co.za
75.		Mr. Hennie Marais	SM : ATM	Private Bag x 15, Kempton Park, 1620 Gauteng, South Africa	☎ : + 27 11 961 0205 Fax : 27 11 961 0405 E.mail : henniem@atns.ca.za
76.		Mr. Carel Gersbach	SM : CNS	Private Bag x 15 Kempton Park - 1620	☎ : + 27 11 9610100 Fax : 27 11 9610418 E.mail : carelg@atns.co.za
77.		Ms. Nokuthula Gumede	Engineer CNS Planning	P.O. Box 67626 Highveld 0169	☎ : + 27119610248 Fax : E.mail : nokuthula9@atns.co.za
78.		Mr. Ronnie Mothusi	S.A. C.A.A	South African Civil Aviation Authority P.O. Box 4218 The Reeds 0158 South Africa	☎ : + 011 545 1065 Fax : 011 545 1282 E.mail : mothusir@caa.co.za
79.	Mr. William Selebogo	CNS Inspector	Private Bag x 73, Halfway House 1685 – Midrand, South Africa	☎ : + 27 11545 1089 Fax :27 11 545 1451 E.mail : seleboqow@caa.co.za	
80.	SOMALIA (ICAO PROJECT)	Mr. Athanas B. Wanyama	ATS Adviser / Deputy Project Coordinator	c/o ICAORD Nairobi P.O. Box 46294 – 00100, Nairobi	☎ : + 254 20 7622785/6/9 Fax :254 20 7122345 E.mail : wanyamaab@icao.or.ke
81.		Mr. Arthemon Ndikumana	Snr. Airport Maintenance Engineer	c/o ICAORD Nairobi P.O. Box 46294 – 00100, Nairobi	☎ : + 254 20 7622785/6/9 Fax :254 20 7122345 E.mail : arthemon@icao.or.ke
82.		Mr. Mohamed Sheikh Osman Mohamed	Forecaster	P.O. Box 46294 00100 – NBI – Kenya c/o ICAORD Nairobi	☎ : +7622785/6/9 Ext.111 Fax : 254 20 7122345
83.	SUDAN	Mr. Abdel Monem Mohamed Hussein	Vice Director	Khartoum Airport Airways Engeering Directorate Sudan P.O. Box 430	☎ : + 249 918098101 Fax : 249 183783180 E.mail: monaam1@hotmail.com
84.		Mr. Abdulmonem Elsheikh Ahmed	ATCO	P.O. Box 430	☎ : + 00 249 914101 300 Fax : 00 249 183 779125 E.mail : abdulmonem_caa@yahoo.co.uk

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
85.		Mr. Elawad Ibrahim Awad Elkarim	Director of ATC	Khartoum Airport – P.O. Box 430 Sudan	☎ : + 0912231884 Fax :249 784964 E.mail : alawad.caa@gmail.com
86.	TANZANIA	Mr. Mumtazhussein R. Alloo	Director Air Navigation Services	Tanzania Civil Aviation Authority P.O. Box 2819 Dar es Salaam - Tanzania	☎ : + 255 222124654 Fax : 255 222118905 E.mail: malloo@caa.go.tz
87.		Mrs. Valentina Norbert Kayombo	Chief, CNS	Tanzania Civil Aviation Authority P.O. Box 2819 Dar es Salaam - Tanzania	☎ : + 255 22 2115079/80 Fax : 255 22 2118905 E.mail: vkayombo@caa.go.tz
88.	TOGO	Mr. Atisso A. Komlan	Chef Service Navigation Aérienne	ASECNA – Togo – B.P. 123 Lomé – Tokoin Togo	☎ : + 228 2262101 Fax : E.mail: francoisatisso@hotmail.com
89.	TUNISIA	Mr. Cherif Mohamed	President Directeur Général Office Aviation civile et Aéroports	Aéroport Tunis Carthage	☎ : + 00 216 71 782465 Fax : 00 216 71 233923 E.mail : cherif.mohamed@planet.tn
90.		Mr. Hatem Oueslati	Chief of Air Navigation Safety Department	Ministère du transport, Aéroport Tunis Carthage 1080 Tunis - Tunisie	☎ : + 216 97580754 Fax : 216 71806469 E.mail : oveslati_hatem@yahoo.fr
91.		Mr. Elmabti Nizar	Head of FANS service - OACA – Tunisia	Tunis Carthage Int. Aéroport B.P. 13747 Tunis 1080 Tunisia	☎ : + 216 24 086205 Fax : 216 70 729201 E.mail : nizar.elmabti@oaca.nqt.tn
92.		Mr. Ben Abdeselem Mohamed Ali	Head of Air Traffic Control Department	Tunis Carthage International B.P. 13747 Tunis 1080 Tunisia	☎ : + 216 71755000 Fax : 216 70729201 E.mail : mohamed.rejeb@planet.tn
93.	UGANDA	Mr. Muneeza	Manager, Regulations Air Services	P.O. Box 5536 Kampala, Uganda	☎ : + 256 41 4320311 Fax : 256 41 4321401 E.mail : smuneeza@caa.co.ug
94.		Mr. James Kisembo	Manager Met Services Liaison	CAA P.O. Box 5536 Kampala, Uganda	☎ : + 256 414 352000 Fax : 0414 320964 E.mail : jkisembo@caa.co.ug
95.	ZAMBIA	Mr. Chifosho B. Shingalili	Principal Zambia Air Services Training Institute	Zasti, P.O. Box 310198 Lusaka, Zambia	☎ : + 260 1 271293 Fax : 260 1 271293 E.mail :zastipr@zamnet.zm E.mail : b.shingalili1@lycos.com
96.		Mr. Banda Harrison J.	Senior Tels Officer	Civil Aviation Hqs Box 50137 Lusaka – Zambia	☎ : + 260 211 251677 Fax : 260 211 251841 E.mail : harryban16@hotmail.com
97.		Mr. Phiri Ariel Henry	Systems Development Engineer	National Airports Corporation P.O. Box 30175 Lusaka	☎ : + 260 211 271037 Fax :260 0211 271118 E.mail: ariel.phiri@lun.aero

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
98.		Mr. Alex M. Sinyangwe	Senior Air Traffic Control Officer Department of Civil aviation	Department of Civil Aviation P.O. Box 50137, Lusaka, Zambia	☎ : + 260 211 253250 Fax : 260 211 251841 E.mail : aviation@coppernet.zm E.mail : asinyangwe@yahoo.com
99.		Mr. Stanley Sitali	Manager Avionics	National Airport Corp. Ltd Box 30175 Lusaka - Zambia	☎ : + 260 211 271118 Fax : 260 211 271118 E.mail Stanley.sitali@lun.aero
100.		Ms. Mary Peggy Harah	Manager ATS	National Airports Corporation Ltd P.O. Box 30175 Lusaka Zambia	☎ : + 260 211 271018 Fax : 260 211 271018 E.mail : maryharah2005@yahoo.com E.mail : mary.harah@lun.aero
101.		Lt. Col. B. Bwalya	Air Traffic Controller	ZAF Ahq Box 31291 – Lusaka - Zambia	☎ : + 260 211 251433/ + 955743742 Fax : 260 211 271169 E.mail : bokweebwalya@yahoo.co.uk
102.		Lt. Col. S. Simwanda	Commanding Officer	Air Traffic Liaison Unit P.O. Box 31291 Lusaka - Zambia	☎ : + 260 211 271181 / 977789298 Fax : 260 211 271169 E.mail : sekelanji@yahoo.com
103.		Lt. Col. P. M. Kabamba	Chief Air Traffic Controller Department of Civil Aviation Hq	P.O. Box : 31291 Lusaka - Zambia	☎ : + 260 211 253250 / 26 0955991148 Fax : 260 211 253250 E.mail: Petronella_kabamba@yahoo.com E.mail aviation@coppernet.zm
104.		ZIMBABWE	Mr. Admore Chirongoma	ATS Manager	Civil Aviation Authority of Zimbabwe PBag 7716 Causeway, Harare
105.	Mrs. Sylvia Mabodo		Chief AIS Officer	Civil Aviation Authority of Zimbabwe P.Bag 7716 Causeway Harare, Zimbabwe	☎ : + 263 4 585073-86 Fax : 263 4 585100 E.mail: mabodos@caaz.co.zw

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
INTERNATIONAL ORGANIZATIONS					
106.	AFCAC	Mr. Fikru Mesfin	VP Eastern Region	15 Boulevard de la Répub. B.P. 2356 Dakar - Sénégal	☎ : + 221 8232661 Fax : +221 33 8399373 E.mail: cafac@sentoo.sn
107.	ARMA	Mr. Ewels Kevin	ARMA	P/Bag X1 Bonaero Park South Africa 1622	☎ : + 27 11 9286506 Fax : +27 11 9286506 E.mail: afirma@atns.co.za
108.		Mr. Nqaba Ndebele	Database specialist ARMA	P/Bag X1 Bonaero Park South Africa 1622	☎ : + 27 11 928 6433 Fax : 27 11 9286420 E.mail: nqaban@atns.co.za
109.	ASECNA	Mr. Meïssa Ndiaye	Directeur de l'Exploitation	ASECNA DG BP 29266 Dakar - Yoff	☎ : + 33 8695629 Fax : 33 8207495 E.mail : ndiyem@asecna.org
110.		Mr. Maïga Issa Saley	Chef Bureau N.A. – ASECNA Paris	75 rue La Boetic – 75008 Paris	☎ : + 33 6 15284826 Fax :33 1 48411152 E.mail : maigaissasaley@yahoo.fr
111.		Mr. Wodiaba Samaké	Chef Département Navigation aérienne	Direction Exploitation – ASECNA B.P. 8163 – Dakar (Sénégal)	☎ : + 221 33 8695682 Fax : 221 33 8207521 E.mail : samakewod@asecna.org
112.		Mr. François Xavier Salambanga	Chef Service Exploitation des Télécommunications - CNS	BP 8163 – Dakar - Sénégal	☎ : + 221 33 869 5749 / 33 820 7538 Fax :221 33 820 7538 E.mail : salambangafiras@asecna.org E.mail : delmafrank@yahoo.fr
113.		Mr. Dabé Yossanguem	Chef Service Planification	B.P. 8163 Dakar – Yoff - Sénégal	☎ : + 221 33 8695138 Fax : 221 33 8205405 E.mail : yossanguemdab@asecna.org
114.		Mr. Djindil Jude	Chef Service Gestion projets Equipements	PO Box 15598 Dakar – Fann – Sénégal	☎ : + 221 33 8204898 Fax : 221 33 8204898 E.mail : djindiljud@asecna.org E.mail : jule-djindil@orange.sn
115.	Mr. Salomon Pierre Mbella Mbella	Chef Département Maintenance	Direction des Moyens Techniques et de l'informatique – ASECNA B.P. 8163 Dakar-Yoff	☎ : + 221 33 8695176 Fax : 221 33 8201223 E.mail : mbella-mbellapie@asecna.org	
116.	Mr. Siméon Zoumara	Chef Département Météorologie/Direction Générale de l'ASECNA	BP 3144 – Dakar - Sénégal	☎ : + 221 33 8695685 / 33 8207528 Fax : 221 33 8207528 E.mail : zoumarasim@asecna.org E.mail : zoumara@hotmail.com	

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
117.		Mr. Kammadji Topan	Chef Service Navigation aérienne aux Comores	ASECNA/COMORES B.P. 2527 – Moroni	☎ : + 269 363883 Fax : 269 762587 E.mail :
118.		Mr. Abdouaye Azo	Chef Service Exploitation/Représentation de l'ASECNA auprès de la Guinée Bissau		☎ : + 245 6778221 / 245 256248 Fax : 245 502977 E.mail : azoabdoulaye@yah
119.	EAST AFRICAN COMMUNITY	Mr. Mtsesigwa O. Maugo	Executive Director	CASSOA, EAC, ARUSHA P.O. Box 1096 Aruja	☎ : + 255 27250 4253/8 / 754322306 Fax : 255 272506276 E.mail : maugo@eachq.org
120.		Eng. Ladislaus Matindi	Principal, CAO	EAC, ARUSHA P.O. Box 1096 – Arusha - Tanzania	☎ : 255 754326892 Fax : 255 27 2504255 /2504481 E.mail :matindi@eachq.org
121.	FAA	Mrs. Moira D. Keane	FAA Representative in Africa US Embassy Dakar	Avenue Jean XXIII, Dakar - Sénégal	☎ : + 221 776376944 Fax : E.mail : mo.keane@faa.gov E.mail : moiradkeane@ad.com
122.	IATA	Mr. Gaoussou Konaté	Director SO&I/AFI	88 Stella Street Sandown Mews East Block Ground Floor, Sandton, South Africa	☎ : + 27 11 5232732 Fax : 27 11 5232704 E.mail : konateg@iata.org
123.	IFALPA	Mr. Carl Bollweg	RVP AFI South	P.O. Box 2159 Honeydew 2040 South Africa	☎ : + 27 83 260 7521 Fax : 27 11 970 1357 E.mail : carl_di@global.co.za
124.	IFATCA	Mr. James Erastus Seda	Chief ATS Kenya CAA	Wilson Airport P.O. Box 3332 – 00200 Nairobi (Kenya)	☎ : + 254 722 600090 Fax : + 254 20 604692 E.mail: jseda@kcaa.or.ke
125.	SIT	Mr. Sam Munda	SITA	SITA ,Postnet suite n°24,Private Bag x 43, Sunninghill 2157, South Africa	☎ : + 27 836770009 Fax :+ 27 118078752 E.mail sam.munda @sita.aero
126.		Mr. Akhil Sharma	Director SITA	252 Blytn Road, Hayes, Middlesex	☎ : + 44 7801 980846 Fax : E.mail : akhil.sharma@sita.aero
127.		Mr. Getaneh Desta	Regional Vice President – CSBU AFR	18 Englin Rd – Sunninghil, 2157 Johannesburg	☎ : + 27 11 5177082 Fax : 27 11 8078752 E.mail :desta.getaneh@sita.aero

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
128.	ICAO / SECRETARIAT	Mr. V.D. Zubkov	Chief Global Planning and Coordination Office	ICAO Montreal, Canada	☎ : + Fax : 1 514 954 6077 E.mail : pco@icao.int
129.		Mr. H. Pretorius	Technical Officer, Global Planning and Coordination Office	ICAO Montreal, Canada	☎ : + Fax : 1 514 954 6077 E.mail : pco@icao.int
130.		Mr. G.P. Moshabesha	ICAO Regional Director	ICAO Regional Office, Nairobi, Kenya	☎ : + 254 20 7622394 Fax : 254 207621092 E.mail : geoffrey.moshabesha@icao.unon.org
131.		Mr. A. Guitteye	ICAO Regional Director	ICAO Regional Office, Dakar, Senegal	☎ : + 221 33 8399368 Fax : 221 33 8236926 E.mail : aguitteye@icao.sn
132.		Mr. A. Kharuga	Regional Officer, Air Traffic Management (ATM), Nairobi	ICAO Regional Office, Nairobi, Kenya	☎ : + 254 20 7622372 Fax : 254 207621092 E.mail
133.		Mr. B. M. Sekwati	Regional Officer, Meteorology (MET), Nairobi	ICAO Regional Office, Nairobi, Kenya	☎ : + 254 20 7622370 Fax : 254 207621092 E.mail : boitshoko.sekwati@icao.unon.org
134.		Mr. J-C Waffo	Regional Officer, Aerodromes, Air Routes and Ground Aids (AGA), Dakar.	ICAO Regional Office, Dakar, Sénégal	☎ : + 221 33 8399374 Fax : 221 33 8236926 E.mail : jcwaffo@icao.sn
135.		Mr. P. Zo'o Minto'o	Regional Officer, Communications Navigation and Surveillance (CNS), Dakar.	ICAO Regional Office, Dakar, Senegal	☎ : + 221 33 8399379 Fax : 221 33 8236926 E.mail : pzoomintoo@icao.sn
136.		Mr. Gervais Hubert	ATM Specialist	ICAO	☎ : + 243 0815710683 Fax : 254 207621092 E.mail : gervais@un.org
137.		Mr. Vic Van Der Westhuizen	ICAO Project Coordinator	ICAO	☎ : + 243 810853150 Fax : E.mail : vandernesthuizen@un.org
138.		Mr. J. Belinga	Aviation Language Consultant	Montreal/Dakar	☎ : + Dakar : 221 33 8276227 Montreal : 1 514 3818348 E.mail : bebouli2004@yahoo.fr E.mail: jeromebelinga@hotmail.com
139.		Mrs. P.A. Boimond- Basse	Administrative Officer	ICAO Regional Office, Dakar, Sénégal	☎ : + 221 33 8399370 Fax : 221 33 8236926 E.mail : pbasse@icao.sn

N°	STATES / ETATS	NAMES / NOMS	TITLE / TITRE DESIGNATION	ADRESSE / ADRESSE	TEL/FAX
140.		Mrs. R. Muhanji	Personal Assistant/Secretary to Head of Office to ICAO Regional Director	ICAO Regional Office, Nairobi, Kenya	☎ : + 254 20 7622395 Fax : 254 207621092 E.mail : rosemary.muhanji@icao.unon.org
141.		Mrs. B. Gafari	Technical Assistant	ICAO Regional Office, Dakar, Sénégal	☎ : + 221 33 8399386 Fax : 221 33 8236926 E.mail : bgafari@icao.sn
142.		Mr. N. Seck	Administrative Assistant	ICAO Regional Office, Dakar, Sénégal	☎ : + 221 33 8399376 Fax : 221 33 8236926 E.mail : nseck@icao.sn

APPENDIX B

FOLLOW-UP TO APIRG/16 CONCLUSIONS/DECISIONS-ACTION PLAN

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/1 A	TRAINING SEMINARS ON ECCAIRS	That the ICAO Regional Offices for the AFI Region arrange for the conduct of ECCAIRS seminars in English and French.	Hold ECCAIRS Seminar	ESAF Office	Organize ECCAIRS Seminar
Dec. 16/2 A	ESTABLISHMENT OF AN APIRG PERFORMANCE-BASED NAVIGATION TASK FORCE (APIRG/PBN/TF)	That an APIRG PBN Task Force, with terms of reference as outlined in Appendix D to this report, be established to develop a PBN implementation plan for the AFI Region and address related regional PBN implementation issues.	Nomination of Members of the Task Force	ESAF Office	State Letter to nominate Members
Concl.16/3 A	DEVELOPMENT OF STATES PBN IMPLEMENTATION PLANS	That the Regional Offices encourage States to begin development of their State PBN implementation plans in harmony with the development of the AFI Regional PBN implementation plan being coordinated by the AFI PBN Task Force for submission to APIRG.	Encourage States to develop State PBN implementation Plan 2008	ESAF Office	State Letter
Concl. 16/4 A	DESIGNATION OF CONTACT PERSON FOR PBN IMPLEMENTATION	That, by 28 February 2008, States designate a focal contact person responsible for Performance-Based Navigation implementation and provide details of the contact person to ICAO Regional Offices for the AFI Region.	Follow-up with States for POC	ESAF Office WACAF Office	State Letter State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
<p>Concl. 16/5</p> <p>A</p>	<p>IMPLEMENTATION OF THE ICAO PROVISIONS ON LANGUAGE PROFICIENCY</p>	<p>That:</p> <p>a) as a matter of urgency, the States concerned implement the intent of Assembly Resolution A36-11 and the Standards of Annex 1, Annex 6, Annex 10 and Annex 11 in response to the ICAO State Letter AN 12/44.6-07/68 dated 26 October 2007;</p> <p>b) States implement the language provisions with a high level of priority and ensure that flight crews, air traffic controllers and aeronautical station operators involved in international operations maintain language proficiency at least at ICAO Operational Level 4; and</p> <p>c) States provide data concerning their level of implementation of the Language Proficiency Requirements to ICAO.</p>	<p>Notify States</p>	<p>ESAF Office</p> <p>WACAF Office</p>	<p>State Letter</p> <p>State Letter</p>
<p>Concl. 16/6</p> <p>A</p>	<p>HARMONIZATION OF PIRG WORK PROGRAMMES</p>	<p>That the relevant ICAO Regional Offices ensure that common issues such as harmonization of air navigation plans, implementation of global plan initiatives and development of performance objectives, are included in the work programmes of AFI and relevant adjacent SAM PIRGs and their auxiliary bodies.</p>	<p>Coordination between ICAO AFI and SAM Offices</p>	<p>WACAF Office</p>	<p>Organize SAT Group meeting and harmonize AFI and SAM ANPs in respect of SAT FIRs requirements</p>
<p>Conc. 16/7</p> <p>A</p>	<p>COOPERATIVE APPROACH IN CONDUCTING ORNITHOLOGICAL STUDIES</p>	<p>That neighbouring States should where appropriate and possible, consider cooperative arrangements in the conduct of ornithological studies</p>	<p>State letter to remind States of the conclusion seeking action taken</p>	<p>ESAF and WACAF Offices with copy to PARIS and CAIRO</p>	<p>Ornithological studies conducted to support bird hazard reduction programs</p>
<p>Concl. 16/8</p> <p>A</p>	<p>RESCUE AND FIRE FIGHTING EQUIPMENT FOR DIFFICULT TERRAIN</p>	<p>That States which have aerodromes located close to large bodies of water or marshy land or mangrove areas develop and enforce the requirements for minimum rescue and fire fighting facilities and equipment considered necessary taking into account the critical aircraft and corresponding physical topography at the airport concerned.</p>	<p>State letter to States to which the Conclusion refers seeking implementation action plan</p>	<p>ESAF and WACAF Offices with copy to PARIS and CAIRO</p>	<p>Implementation action plan from respective State</p>

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/9 A & D	AERODROME EMERGENCY PLANS	<p>That:</p> <p>a) States consider the organization of local workshops with all departments and organizations concerned in order to facilitate coordination, finalization and approval of their aerodrome emergency plans;</p> <p>b) States, which have not done so, ensure that all international aerodromes in that State develop an approved aerodrome emergency plan; and</p> <p>c) both the ESAF and WACAF Regional Offices shall conduct a survey to ascertain which airports still have not implemented this requirement and convene a meeting with States concerned to discuss this issue further.</p>	<p>Follow up with States</p> <p>Follow up questionnaire and request for implementation action plan</p> <p>Survey to be conducted. Meeting for States which have not implemented the requirement.</p>	ESAF and WACAF Offices with copy to PARIS and CAIRO	<p>State Letter</p> <p>Questionnaire and action plan. Data base for future follow up.</p>
Concl.16/10 A & D	COOPERATIVE APPROACH FOR THE EVALUATION OF RUNWAY STRENGTH AND MEASUREMENT OF RUNWAY FRICTION CHARACTERISTICS	That neighbouring States consider cooperative arrangements for activities related to pavement strength evaluation and surface friction characteristics measurement, including the acquisition of associated equipment, as appropriate.	Follow up with AFI States	ESAF and WACAF with copies to PARIS and CAIRO	Responses to State letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
<p>Concl. 16/11 A & D</p>	<p>AERODROME CERTIFICATION PROCESS – AERODROME CERTIFICATION AND SAFETY SYSTEMS MANAGEMENT REGULATIONS</p>	<p>That:</p> <p>a) States be encouraged to exchange their experiences in implementing the aerodrome certification requirement;</p> <p>b) CAAs, which have not done so, consider putting in place a consultation framework with their airport operator with a view to developing a realistic action plan for the implementation of the aerodrome certification requirement based on a carefully considered gap analysis;</p> <p>c) States, which have not done so, ensure the development, approval and publication of aerodrome certification and SMS regulations as well as formal certification process defining steps to be followed for the certification of aerodromes; and</p> <p>d) ICAO further assist States in organizing training courses for aerodrome inspectors.</p>	<p>Follow up with AFI States</p> <p>Follow up with AFI States</p> <p>Survey to be initiated</p> <p>Plan for training activity</p>	<p>ESAF and WACAF with copies to PARIS and CAIRO</p> <p>ESAF and WACAF with copies to PARIS and CAIRO</p> <p>ESAF and WACAF with copies to PARIS and CAIRO</p> <p>ESAF and WACAF with copies to PARIS and CAIRO</p>	<p>Responses to State letter</p> <p>Responses to State letter</p> <p>Responses to State letter</p> <p>Trained participants</p>
<p>Dec. 16/12 A</p>	<p>SURVEY ON AFS PERFORMANCE</p>	<p>That the ICAO Regional Offices in Dakar and Nairobi coordinate the conduct of regional surveys on AFS performance in order to ascertain that AFTN and ATS/DS continue to meet agreed performance requirements.</p>	<p>Carry out coordination between ESAF and WACAF</p>	<p>WACAF</p>	<p>Performance of AFI AFTN and ATS/DS networks</p>
<p>Concl. 16/13 A & B</p>	<p>AFTN IMPLEMENTATION SPECIFICATIONS</p>	<p>That:</p> <p>a) AFI AFTN specifications prescribed by APIRG/15 be amended to reflect emerging technologies and new communication bit-oriented protocols; and</p> <p>b) The further use of X.25 protocol be discouraged in the AFI Region.</p>	<p>Develop new specifications for AFTN</p> <p>Notify States</p>	<p>WACAF</p> <p>WACAF</p>	<p>Amend AFI AFTN specification</p> <p>State Letter</p>

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/14 A	IMPLEMENTATION OF ATN/IPS (TCP/IP)	That AFI States should implement ATN/IPS (TCP/IP) Standards to the maximum extent possible in order to avoid interoperability difficulties with an ATN/OSI system. <i>Note: Indications are that ICAO SARPs related to ATN/IPS should be available by end of 2008.</i>	Notify AFI States	WACAF	State Letter
Concl. 16/15 A & B	AERONAUTICAL USE OF PUBLIC INTERNET FOR NON-TIME CRITICAL APPLICATIONS	That AFI States consider the use of the public Internet for non-time critical applications in accordance with relevant provisions in ICAO Annexes 3, 10 and 15, and Doc 9855.	Notify AFI States	WACAF	State Letter
Concl. 16/16 A	IMPLEMENTATION/INTERCONNECTION OF SADC/2, NAFISAT AND AFISNET VSAT NETWORKS	That States and international organizations concerned expedite the implementation and interconnection of SADC/2, NAFISAT and AFISNET VSAT networks as soon as possible, in order to increase AFS (AFTN and ATS/DS) connectivity and efficiency, thus improving flight coordination and management in the AFI Region.	Sensitize concerned AFI States	WACAF	State Letter
Dec.. 16/17 A	SURVEYS ON MISSING FLIGHT PLANS	That the ICAO Regional Offices in Dakar and Nairobi carry out the necessary coordination to ensure that due account is taken of AFTN technical and operational aspects in the conduct of surveys relating to missing flight plans in the AFI Region.	Develop a suitable form for such surveys to include AFS data	WACAF and ESAF Offices	Inter-Office Memorandum
Concl. 16/18 A & D	COOPERATION BETWEEN NEIGHBOURING STATES IN IMPLEMENTING VHF RADIO COVERAGE EXTENSION	That AFI States and Air Navigation Service Providers cooperate in addressing all aspects related to the implementation of VHF coverage facilities at FIR/airspace boundaries, including regulatory, environmental and maintenance aspects, in compliance with AFI/7 Recommendation 5/12 and APIRG/12 Conclusion 12/16.	Notify ESAF States	WACAF	State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Dec. 16/19 A & D	SURVEY ON AMS VHF COVERAGE	That the ICAO Regional Offices in Dakar and Nairobi coordinate the conduct of regional surveys on AMS/VHF coverage by States and international organizations in order to ascertain that VHF frequencies are free of harmful interference and to initiate remedial action with States concerned as necessary.	Conduct a survey	WACAF	Organize a regional survey on AMS/VHF
Concl. 16/20 A & D	STATES PARTICIPATION IN IATA VHF COVERAGE SURVEYS	That States cooperate and provide their support to VHF coverage surveys to be carried out by IATA in the AFI Region, initially every 18 months.	Notify AFI States	WACAF	State Letter
Concl. 16/21 A & F	IMPLEMENTATION OF GNSS EN-ROUTE AND NON-PRECISION APPROACH OPERATIONS	That AFI States continue their efforts to implement GNSS applications for en-route and non-precision approach operations as part of Phase 1 of AFI GNSS Strategy. In so doing, particular attention should be accorded to meeting all GNSS implementation requirements, including establishment of GNSS legislation, regulatory framework, and approval and monitoring procedures.	Notify AFI States	WACAF	State Letter
Concl. 16/22 A & E	RECORDING OF GNSS PARAMETERS	That AFI States that approve GNSS-based operations ensure that GNSS data relevant to those operations are recorded as recommended in ICAO Annex 10, Volume I, Chapter 2, para. 2.4.3. Particularly, for GNSS core systems, the following monitored items should be recorded for all satellites in view: a) observed satellite carrier-to-noise density; b) observed satellite raw pseudo-range code and carrier phase measurements; c) broadcast satellite navigation messages, for all satellites in view; and d) relevant recording receiver status information.	Notify AFI States	WACAF	State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/23 A & D	AERONAUTICAL INFORMATION RELATED TO GNSS	That when implementing GNSS-based operations, AFI States ensure that the relevant aeronautical information is provided to the users as appropriate.	Notify AFI States	WACAF	State Letter
Dec.16/24 A & F	AFI GNSS IMPLEMENTATION STRATEGY	That the action taken by the Commission on APIRG/15, Conclusions 15/18, 15/19 and 15/20 be referred to the AFI GNSS Implementation Task Force for updating the AFI GNSS Strategy and progressing its work accordingly.	Hold AFI/GNSS/1/TF Meeting	WACAF	Organize an AFI GNSS/I/TF meeting and update AFI/GNSS Implementation Strategy
Dec. 16/25 A	NAVISAT PROJECT	That: a) the progress report on NAVISAT Project submitted to APIRG/16 be referred to the AFI GNSS Implementation Task Force for consideration in addressing its work programme as required; and b) while monitoring the work being done by MIDANPIRG on the NAVISAT Project, APIRG coordinate with MIDANPIRG the assistance to project studies requiring inputs from the AFI Region, should the need arise.	Notify AFI GNSS/TF	WACAF	Letter to Egypt (through MID Office)
Dec. 16/26 A	STATUS OF IMPLEMENTATION OF AFI AERONAUTICAL SURVEILLANCE PLAN FOR EN-ROUTE ACCs	That the status of implementation of the AFI aeronautical surveillance plan for en-route operations be included in the review of CNS system performance.	Notify States	WACAF	State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
<p>Dec. 16/27</p> <p>A</p>	<p>ESTABLISHMENT OF AN AFI AERONAUTICAL SURVEILLANCE IMPLEMENTATION TASK FORCE</p>	<p>That an AFI Aeronautical Surveillance Implementation Task Force (AS/I/TF) be established with the following terms of reference:</p> <ul style="list-style-type: none"> a) Determine the operational performance requirements for aeronautical surveillance in the AFI Region, including en-route, terminal areas (TMAs) and aerodromes operations; b) Identify and quantify near term and long term benefits of relevant surveillance candidate systems; and c) Develop a consistent draft AFI surveillance implementation plan including recommended target dates of implementation, taking into account availability of SARPs and readiness of airspace users and air navigation service providers for a coordinated implementation of service as required. <p><i>Notes:</i></p> <ul style="list-style-type: none"> 1. <i>The Task Force should be of multidisciplinary nature to cover all aspects related to its assigned work.</i> 2. <i>While undertaking the task, with a view to avoiding any duplication, the Task Force should take into account:</i> <ul style="list-style-type: none"> a) <i>the work being undertaken by ICAO Panels; and</i> b) <i>the relevant RAN recommendations and APIRG Conclusions and Decisions pertaining to aeronautical surveillance;</i> 3. <i>The Task Force should complete its work in coordination with APIRG ATS/AIS/SAR and CNS Sub-Groups, and present the results to the next meeting of APIRG.</i> 4. <i>In assessing the readiness of airspace users, take into account business aviation usage.</i> 	<p>Hold AS/I/TF meetings</p>	<p>ESAF and WACAF</p>	<p>Organize meetings of AS/I/TF</p>

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/28 A	AFI CNS SYSTEMS IMPLEMENTATION STRATEGIES	That the CNS implementation strategies described in the AFI CNS/ATM Implementation Plan (Doc 003) be updated taking due account of the revised ICAO Global Air Navigation Plan (Doc 9750) and AFI ATM operational objectives.	Hold ICG meetings for AFI areas of routing	ESAF	Organize ICG meetings in the Region and amend Doc. 003 as required
Dec. 16/29 A	ACTIVITIES OF AFI CNS/ATM IMPLEMENTATION COORDINATION GROUPS (ICGs)	That the CNS/ATM Implementation Coordination Groups (ICGs) established by APIRG for each area of routing should pursue their assigned work in accordance with Doc 003 provisions.	Hold ICG meetings for AFI areas of routing	ESAF and WACAF as appropriate	Organize ICG meetings in the Region
Dec. 16/30 D	HARMONIZATION OF TARGET DATES OF IMPLEMENTATION OF AFI OPERATIONAL SYSTEMS	That: a) the CNS Sub-Group should harmonize target dates with ATM/AIS/SAR/SG regarding operational system implementation in the AFI programme; and b) reference CNS and ATM implementation documents reflecting disparity in dates should be amended accordingly.	Harmonize target dates for AFI CNS/ATM system implementation	WACAF	Coordination between CNS and ATS/AIS/SAR Sub-group secretaries
Concl. 16/31 A	COLLECTIVE APPROACH FOR THE MANAGEMENT OF CNS/ATM SYSTEM ELEMENTS	That the air navigation service providers (ANSPs) adopt a collective approach and speak in a single voice on issues of common interest related to the implementation of CNS elements of the CNS/ATM systems (such as service level agreements with ATN service providers, system availability, etc.).	Notify AFI ANSPs	WACAF	State Letter
Concl. 16/32 A	ESTABLISHMENT OF AN AFI FREQUENCY SPECTRUM MANAGEMENT GROUP	That an AFI Frequency Spectrum Management Group (AFI/FSMG) be established under the coordination of the ICAO Secretariat in order to address issues of common interest related to aeronautical spectrum management and control.	Notify AFI States	WACAF	State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/33 A	FANS 1/A OPERATIONAL MANUAL FOR APPLICATION IN THE AFI REGION	That : a) The FANS 1/A Operational Manual for application in the AFI Region at Appendix E be applied in the AFI Region; and B) South Africa manages the Fans 1/A Operational Manual for the AFI Region.	Notify States	ESAF Office WACAF Office	State Letter State Letter
Dec. 16/34 A	APPELLATION OF THE CURRENT ATM SUB-GROUP TO BE REVERTED TO THE ATS/AIS/SAR SUB-GROUP	That the appellation of the current ATM Sub-Group be reverted to the ATS/AIS/SAR Sub-Group. Its revised Terms of Reference are at Appendix R .	Notify States	ESAF Office WACAF Office	State Letter State Letter
Dec. 16/35 A	RENAMING THE APIRG/RVSM/RNAV/RNP/TF	That the existing APIRG RVSM/RNAV/RNP Task Force shall be re-named the APIRG RVSM Task Force with the revised Terms of Reference at Appendix F to this report.	Notify States	ESAF Office WACAF Office	State Letter State Letter
Concl. 16/36 D	AFI RVSM IMPLEMENTATION – FUNDING	That IATA member airlines continue to finance within the available funds to support specific projects relating to the RVSM implementation effort in order to improve safety and economy of air traffic in the AFI region and keep the task force informed accordingly.	Coordinate with IATA Regional Office for AFI	ESAF Office	State Letter
Concl. 16/37 A & D	AFI RVSM STRATEGY/ACTION PLAN	That the updated AFI RVSM strategy/action plan at Appendix G be circulated to States for quality assurance.	Notify States	ESAF Office WACAF Office	State Letter State Letter
Concl. 16/38 A & D	IMPLEMENTATION OF THE REQUIRED CNS INFRASTRUCTURE TO SUPPORT THE IMPLEMENTATION OF RVSM IN THE AFI REGION	That in view of the implementation of RVSM and provision of ATC service, States are urged to implement the required supportive CNS infrastructure namely; ATS DS circuits, AMS and appropriate NAVAIDS as soon as possible, but not later 3 July 2008.	Notify States	ESAF Office WACAF Office	State Letter State Letter
Concl. 16/39 A & D	TARGET DATE FOR AFI RVSM IMPLEMENTATION	That the target date for implementation of RVSM in the AFI Region will be 25 September 2008.	Notify States	ESAF Office WACAF Office	State Letter State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/40 A	TRAINING GUIDELINES FOR AIS PERSONNEL	That: a) ICAO expedite the publication of the revised Training Manual (Doc.7192), Part E-3 as recommended by the AIS/MAP Divisional Meeting in 1998 (Doc. 9733), so as to facilitate the introduction of the basic requirements for States to consider the licensing issue of their AIS personnel; and b) ICAO expedite the development of AIS training guidance material relating to the implementation of CNS/ATM system.	Revise the Training Manual Doc. 7192 Part E-3	ICAO Headquarters	Appropriate provisions
Concl. 16/41 A	THE FRAMEWORK AND GUIDANCE MATERIAL FOR THE ESTABLISHMENT OF AFI-CAD	That the framework and guidance material at Appendix H be adopted for the AFI Region for the establishment of the centralized AFI Region AIS Database.	Notify States	ESAF Office	State Letter
Concl. 16/42 D	DEVELOPMENT OF AFI CAD BUSINESS MODEL AND FINANCIAL MODEL	That ICAO provide appropriate experts to assist the AFI CAD Study Group to develop a business model and financial model for the AFI CAD.	Request HQ for Expert	ICAO Headquarters	Provide Expert
Concl. 16/43 D	SEMINARS/WORKSHOPS ON THE PROVISION OF ELECTRONIC TERRAIN AND OBSTACLE DATA	That ICAO organize seminars/workshops on the provision of Digital Electronic Terrain and Obstacle Data in accordance with the new provisions in Annex 15.	Organize Seminar	WACAF Office	Conduct Seminar
Concl. 16/44 A	THE EUROCONTROL EAD URS FOR APPLICATION IN AFI REGION	That the APIRG adopt the EUROCONTROL EAD URS as a basis for the AFI CAD URS taking into account the AFI requirements.	Notify States	ESAF Office	State Letter
Concl. 16/45 A & D	IMPLEMENTATION OF ATC SERVICE	That States which have not yet done so, implement ATC service along all ATS routes contained in Table ATS 1 of the AFI Plan (Doc 7474) as soon as possible, but not later than 3 July 008 in the spirit of AFI/7 Rec. 5/21.	Notify States	ESAF Office WACAF OFFICE	State Letter State Letter
Concl. 16/46 D	IMPLEMENTATION OF THE NON-IMPLEMENTED ROUTES INCLUDING RNAV ROUTES	That States concerned implement the ATS routes at Appendix I as soon as possible, but not later than AIRAC date of 3 July 2008.	Notify States	ESAF Office	State letter and continuous provision of an appropriate assistance required by State

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/47 A & D	PARTICIPATION OF SAR EXPERTS IN THE ATS/AIS/SAR SUB-GROUP AND INCLUSION OF SAR ACTIVITIES IN THE COMPREHENSIVE REGIONAL IMPLEMENTATION PLAN FOR AVIATION SAFETY IN AFRICA (AFI PLAN)	That: a) States, which have not done so, include SAR experts to participate in the work programme of the APIRG ATS/AIS/SAR Sub-Group; b) States, which have not yet done so, establish permanent SAR structures within national civil aviation authorities as a priority; and c) ICAO and AFCAC ensure that the Conclusions of the SAR Conference in La Réunion, be taken into account in the AFI Plan as far as possible.	Notify States Regional Offices coordinate with HQ	ESAF Office WACAF Office Regional Offices	State Letter State Letter Regional Offices coordinate with HQ
Concl. 16/48 D	RESPONSE BY THE STATES TO ICAO AFI REGIONAL OFFICES STATE LETTERS	That States respond promptly to ICAO AFI Regional Offices State letters that solicit information on the status of implementation of the relevant Decisions of the MET/SG and the MET-related Conclusions and Decisions of APIRG as well as on other implementation issues in the MET field.	Invite States to take appropriate action	Regional Offices	State Letter
Concl. 16/49 A & D	TRAINING SEMINAR ON THE USE OF ICING, TURBULENCE AND CONVECTIVE CLOUDS FORECASTS IN GRIB2 CODE FORM	That the WAFC London Provider State be invited, in coordination with ICAO and WMO,, to provide training seminars on the use of icing, turbulence and convective clouds forecasts in GRIB2 code form, to AFI States. <i>Note: It is suggested that seminars be convened in 2010 and conducted in both English and French (Niger offered to host the French seminar).</i>	Invite WAFC London to conduct courses	MET HQ in Coordination with AFI Regional Offices	State Letter
Dec. 16/50 D	INDICATION OF THE TYPE OF VSAT IN THE FASID TABLE MET 7: IMPLEMENTATION OF SADIS IN THE AFI REGION	That information related to the type of the VSAT station be included in the FASID Table MET 7 of the AFI Plan, as presented in Appendix J to this report.	Update the table	Secretary MET/SG	Issue an amended version

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/51 D	SADIS FTP ACCOUNT	That approved SADIS users in the AFI Region who have internet capabilities and do not have an active SADIS FTP account write to the SADIS Provider State to have an access account.	Invite the States to subscribe	ROs MET	State Letter
Concl. 16/52 A & D	AVAILABILITY ON SADIS, OF ASHTAM AND NOTAM RELATED TO VOLCANIC ASH (VA)	That, in order to improve the availability on SADIS, of ASHTAMs and NOTAMs related to VA, the ICAO AFI Regional Offices in the AFI Region remind States of the requirement to transmit all ASHTAMs and NOTAMs related to VA to the AFTN address EGZZVANW.	Invite States to implement	ROs MET	State Letter
Concl. 16/53 D	SADIS STRATEGIC ASSESSMENT TABLES	That the AFI SADIS Strategic Assessment Tables, as presented in Appendix K to this report, be adopted and forwarded to the SADISOPSG for planning the future SADIS bandwidth requirements.	Invite the SADISOPSG to plan bandwidth requirements accordingly.	MET Section HQ	Include in SADISOPSG/13
Concl. 16/54 A & D	AFI OPMET MANAGEMENT TASK FORCE (AFI OPMET/M TF)	That an AFI OPMET Management Task Force be established with the terms of reference and work programme, as presented in Appendix L to this report.	Invite listed States to designate focal points	ROs MET	State Letter
Dec. 16/55 D	INCLUSION OF REGIONAL OPMET DATA BANKS AND SIGMET REQUIREMENTS IN THE AMBEX HANDBOOK	That the operations of the AFI Regional OPMET Data Banks and SIGMET requirements be reflected in the AMBEX Handbook as per the text at Appendix M .	Amend the AMBEX Handbook	RO/MET Nairobi	Issue an amendment

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
<p>Concl. 16/56</p> <p>A & D</p>	<p>ADOPTION OF PROCEDURES FOR CONDUCTING SIGMET TESTS FOR THE AFI REGION</p>	<p>That:</p> <ol style="list-style-type: none"> 1) the ICAO Regional Offices in the AFI Region: <ol style="list-style-type: none"> a) assume the responsibility for the development of addressees related to the volcanic ash advisories (VAA) coming from the Volcanic Ash Advisory Centre (VAAC), Toulouse, and intended for the AFI Region; b) make available to Inter-Regional OPMET Gateway (IROG), Toulouse, WMO Headers that would facilitate the establishment of reception tests for volcanic ash advisories (VAA) within reasonable time limits; c) request those States maintaining meteorological watch offices (MWOs) in the AFI Region to implement WMO headings for volcanic ash SIGMET and transmitted by those MWOs, and to make them available to IROG Toulouse; and 2) the procedures at Appendix N be adopted for use in SIGMETs tests in the AFI Region after action had been completed on items a) to c) above. 	<p>Preparation of address list, WMO Headers and invite States to implement</p>	<p>RO/MET IROG Toulouse</p>	<p>State Letter</p>
<p>Concl. 16/57</p> <p>A & D</p>	<p>SIGMET WORKSHOPS</p>	<p>That WMO, in coordination with ICAO and VAAC Toulouse Provider State, conduct two training workshops on SIGMET during 2008; one in English and another in French for the AFI Region.</p> <p><i>Note: The workshops would address all types of SIGMET, including those related to VA and TC.</i></p>	<p>Coordinate with VAAC Toulouse schedule and invited States to alternate</p>	<p>RO/MET</p>	<p>State Letters</p>

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/58 D	LEGAL FRAMEWORK FOR AERONAUTICAL METEOROLOGICAL SERVICES	That States, in implementing cost recovery for aeronautical meteorological services in accordance with APIRG/14 Conclusions 14/37 and 14/38, put in place a national legal framework for aeronautical meteorological services which include cost-recovery arrangements.	Invite States to take action as appropriate	ROs/MET	State Letter
Concl. 16/59 D	SUPPORT TO STATES TO IMPLEMENT QUALITY MANAGEMENT SYSTEMS (QMS)	That WMO, in coordination with ICAO, continue to assist States in implementing QMS in the form of: a) seminars on QMS for the Chief Executives of Meteorological Authorities (CEOs) as a priority, and request the CEOs to report on status of implementation on QMS in their services on a regular basis; b) support for more detailed training for personnel who would act as a core group in the region (training of trainers); c) attachments of staff from the region to States that have already adopted QMS through VCP or otherwise; and d) financial resources for engaging consultancy services during the initial stages of implementation, as and when available.	Coordinate with WMO to invite CEO-MET for QMS seminar	ROs/MET	State Letter and QMS seminar
Concl. 16/60 A & D	REGIONAL METEOROLOGICAL PROCEDURES	That the regional meteorological procedures presented at Appendix O to the report replace the existing regional procedures of the AFI ANP/FASID (Doc 7474)	Amendment Proposal to be issued	ROs/MET	Amendment Proposal to DOC 744
Dec. 16/61 D	<i>INTRODUCTION OF 30-HOUR TAF IN THE AFI REGION</i>	That international aerodromes in the AFI Region, as applicable in Amendment 74 to Annex 3 in the AFI Region with the capability should issue 30-hour TAF from 5 November 2008, and those with limited capability should advise the Regional Offices accordingly. A further assessment period be extended to June 2009 for those still unable to implement Amendment 74.	Invite selected States to issue 30 hour TAFs	ROs/MET	State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/62 D	REVIEW AND UPDATING OF FASID TABLE MET 1A	That: a) FASID Table MET 1A be replaced by single link (i.e. a URL address) to a global database to be developed by the Secretariat in line with SADISOPSG reflected in APIRG/11, Conclusion 11/9; and b) Columns 6 and 7 in FASID Table MET 1A (the database to be re-named “Forecasts (TAF and TREND) to be issued for international aerodromes”) be deleted.	Completed the establishment of the data base	ROs/MET and HQ MET Section	Global database
Concl. 16/63 D	DELETION OF FASID TABLE MET 2B	That FASID Table MET 2B be deleted from the ICAO AFI FASID since the requirements for SIGMET are covered in the ANP Basic (BORPC) and regional meteorological procedures.	Process Amendment Proposal	ROs/MET	Table deleted
Dec. 16/64 D	COORDINATION BETWEEN WMO REGIONAL ASSOCIATION I (AFRICA) AND APIRG ON AERONAUTICAL METEOROLOGY	That the Chairperson of the Meteorology Sub-Group liaise with the WMO Rapporteur for Aeronautical Meteorology Programme for Regional Association I (Africa) on matters of common interest, when required.	Establish contacts with WMO Rapporteur	Secretary of MET/SG, Nairobi	Letter establishing contacts and signed by the Chairperson
Concl. 16/65 A, B, C, D, E	COMPREHENSIVE REGIONAL IMPLEMENTATION PLAN FOR AVIATION SAFETY IN AFRICA (AFI PLAN)	That: a) States support the implementation of the AFI Plan and closely coordinate their efforts with ICAO in order to ensure optimum benefits to aviation safety in Africa and to reduce duplication of efforts; b) The Programme Leader, as a start, follow up on specific offers to train aviation officers in the region and, as a priority, initiate the process to address known gaps; c) The Regional Offices accredited to States in Africa inform States on a regular basis regarding actions taken under the AFI Plan.	Provide the States with details on the project and request for active participation and support	Programme Leader in coordination with ICAOREPs, Cairo, Dakar, Nairobi	State Letter

Conc/Dec No. Strategic Objectives*	Title of Conclusion/Decision	Text of Conclusion/Decision	Follow-up Action	To be initiated by	Deliverable
Concl. 16/66 A	REVIEW OF THE LIST OF INTERNATIONAL AIRPORTS IN THE AFI ANP	That States make a review of the list of airports included in the AFI ANP and FASID and propose appropriate amendments, including the removal from the Plan of airports not used or planned to be used for international operations, based on current and projected aviation activities.	State letter to States asking for review and report back.	ROs/AGA Dakar/Nairobi	Updated list of international aerodromes
Concl. 16/67 A & D	ELIMINATION OF AIR NAVIGATION DEFICIENCIES	That States be reminded to adopt a step-by-step approach when implementing air navigation system elements, by giving priority to solving the deficiencies affecting all elements of the system.	Notify States	WACAF	State Letter
Concl. 16/68 D	MEMBERSHIP OF APIRG	That the applications from Burundi, Rwanda and Zimbabwe for membership to APIRG be approved.	Include the request in the ANC/Council papers	ESAF	ANC/Council working papers
Dec. 16/69 D	MEMBERSHIP TO APIRG SUBSIDIARY BODIES	That the Group approve membership of Rwanda to the ATS/AIS/SAR and CNS Sub-Groups and Roberts FIR and Senegal to the AIS/MAP Task Force.	Notify Rwanda	ESAF	State Letters

*Note: ICAO has established the following Strategic objectives for the period 2005-2010

A: Safety: Enhance global civil aviation safety;

B: Security: Enhance Global civil aviation security;

C: Environmental Protection: Minimize the adverse effect of global civil aviation on the environment;

D: Efficiency: Enhance the efficiency of aviation operation;

E: Continuity: Maintain the continuity of aviation operations; and

F: Rule of Law: Strengthen law governing international civil aviation

APPENDIX C

**STATUS OF IMPLEMENTATION OF CONCLUSIONS OF APIRG/15
AND THOSE OUTSTANDING FROM PREVIOUS MEETINGS**

CONCLUSIONS / DECISIONS	TITLE	ACTION
AOP		
CONCLUSION 15/1:	BIRD HAZARD CONTROL AND REDUCTION	SUBSTANTIAL PROGRESS NOTED BUT MORE EFFORTS NECESSARY. COOPERATIVE APPROACH FOR NEIGHBORING STATES RECOMMENDED. REPORTING TO IBIS HAS NOT IMPROVED.
CONCLUSION 15/2:	RESCUE AND FIRE FIGHTING SERVICES (RFFS)	IMPROVEMENTS HAVE BEEN NOTED. TRAINING OF RFFS PERSONNEL NOT YET UP TO REQUIRED LEVELS. FACILITATION FOR AERODROMES CLOSE TO LARGE BODIES OF WATER HAS NOT IMPROVED. MORE FOLLOW UP BY REGIONAL OFFICE
CONCLUSION 15/3:	CONDUCT OF FULL-SCALE EMERGENCY EXERCISE	QUESTIONS HAVE BEEN RAISED ON THE EXERCISES ARE BEING CONDUCTED. ADDITIONAL REGIONAL OFFICE INVOLVEMENT RECOMMENDED
CONCLUSION 15/4:	IMPLEMENTATION OF THE AERODROMES CERTIFICATION REQUIREMENT	LOW LEVEL OF IMPLEMENTATION RECORDED. REGIONAL OFFICES TO ORGANIZE ADDITIONAL AWARENESS ACTIVITIES. STATES TO EXCHANGE EXPERIENCES
CONCLUSIONS 15/5:	IMPACT OF NEW LARGER AIRCRAFT (NLA) IN THE AFI REGION	COMPLETED
DECISION 15/6:	NEW LARGER AEROPLANES TASK FORCE (NLA/TF)	TF COMPLETED ITS TASKS AND DISSOLVED.
CONCLUSION 15/7 :	UPDATE OF THE AFI FASID AOP TABLE I	STATES REQUIRED TO REVIEW TABLE AND TO IDENTIFY AERODROMES NOT REGULARLY USED FOR INTERNATIONAL OPERATIONS FOR REMOVAL.
CONCLUSION 15/8	CONTINUITY OF PARTICIPATION AT AOP/SG MEETINGS	STATUS HAS NOT IMPROVED.
ATM		
CONCLUSION 15/27:	AIR TRAFFIC MANAGEMENT AND AIR ROUTE STRUCTURE IMPROVEMENTS	SIP COMPLETED. DOC. FOR FUNDING REQUIRED TO BE DEVELOPED
CONCLUSION 15/28:	FUEL EFFICIENCY MEASURES	ONGOING

CONCLUSIONS / DECISIONS	TITLE	ACTION
CONCLUSION 15/29:	REPORTING AND ANALYSIS OF ATS INCIDENTS	ONGOING. REVIEWED ANNUALLY BY THE AFI ATS INCIDENT ANALYSIS WORKING GROUP.
CONCLUSION 15/30:	ATS OPERATIONAL AUDITING AND PROFICIENCY MAINTENANCE	ONGOING
CONCLUSION 15/31:	APPLICATION OF FLEXIBLE USE OF AIRSPACE (FUA)	ONGOING
CONCLUSION 15/32:	ATS SAFETY MANAGEMENT	ONGOING
CONCLUSION 15/33:	DISSEMINATION OF AIS DATA	ONGOING
CONCLUSION 15/34:	AERODROME AIS UNIT IMPLEMENTATION	ONGOING
CONCLUSION 15/35:	STATUS OF IMPLEMENTATION OF THE ICAO REQUIREMENTS IN THE AIS/MAP FIELD IN THE AFI REGION	ONGOING
CONCLUSION 15/36:	STATUS OF IMPLEMENTATION OF THE INTEGRATED AERONAUTICAL INFORMATION PACKAGE	ONGOING
CONCLUSION 15/37:	ORGANIZATION OF AN AUTOMATED AIS SYSTEM	ONGOING
CONCLUSION 15/38:	PARTICIPATION OF AIS PERSONNEL IN THE PLANNING RELATED TO CNS/ATM IMPLEMENTATION	ONGOING
CONCLUSION 15/39:	IMPLEMENTATION STRATEGY FOR AIS AUTOMATION IN THE AFI REGION	ONGOING
CONCLUSION 15/40:	HARMONIZATION OF AIS, MET AND FILED FLIGHT PLAN (FPL) INFORMATION	ACTION COMPLETED
CONCLUSION 15/41:	QUALITY MANAGEMENT SYSTEM	ONGOING
CONCLUSION 15/42:	CONVERSION OF EN-ROUTE GEOGRAPHICAL COORDINATES TO WORLD GEODETIC SYSTEM-1984 (WGS-84) AND UPDATING OF AERONAUTICAL CHARTS	ONGOING
CONCLUSION 15/43:	CENTRALIZED AFI AIS DATABASE	ONGOING- BEING PURSUED BY AIS/MAP TF
CONCLUSION 15/44:	FAMILIARIZATION VISITS	ACTION COMPLETED
CONCLUSION 15/45:	IMPLEMENTATION OF ATC SERVICE	ONGOING
CONCLUSION 15/46:	AMENDMENT TO AFI ANP TABLE ATS-1	ACTION COMPLETED
CONCLUSION 15/47:	IMPLEMENTATION OF ATS ROUTES, INCLUDING RNAV ROUTES	ONGOING
CONCLUSION 15/48:	SAR COOPERATION AGREEMENTS AMONGST STATES	ONGOING
CONCLUSION 15/49:	IMPLEMENTATION OF SAR LEGISLATION	ONGOING

CONCLUSIONS / DECISIONS	TITLE	ACTION
CONCLUSION 15/50:	AFCAC PROJECT IN THE SAR FIELD	ONGOING
CONCLUSION 15/51:	SAFETY ASSESSMENT DATA, REMEDIAL ACTIONS AND TARGET DATE FOR AFI RVSM IMPLEMENTATION	ONGOING
CONCLUSION 15/52:	CIVIL/MILITARY COORDINATION	ONGOING
DECISION 15/53:	NOMINATION OF A NATIONAL RVSM PROGRAMME MANAGER	ACTION COMPLETED
CONCLUSION 15/54	REPORTING OF DATA FOR MONITORING AND/OR CARRYING OUT SAFETY ASSESSMENT	ONGOING
CONCLUSION 15/55:	IMPLEMENTATION OF RVSM IN THE AFI REGION	ONGOING
CONCLUSION 15/56:	IMPLEMENTATION OF ATS/DS CIRCUITS	ONGOING
CONCLUSION 15/57:	TRAINING OF ALL PERSONNEL INVOLVED WITH THE IMPLEMENTATION OF RVSM IN THE AFI REGION	ONGOING
CONCLUSION 15/58:	GUIDANCE MATERIAL FOR AIRWORTHINESS AND OPERATIONAL APPROVAL	ACTION COMPLETED
CONCLUSION 15/59:	RVSM ENFORCEMENT IN NATIONAL LEGISLATION	ONGOING
CONCLUSION 15/60:	RVSM ENFORCEMENT IN NATIONAL LEGISLATION THAT GOVERNMENTS, REGULATORY BODIES, OPERATORS, SERVICE PROVIDERS AND OTHER STAKEHOLDERS BE GRANTED BUDGETARY ALLOCATIONS FOR ACQUISITIONS AND OTHER ACTIVITIES NECESSARY FOR ENSURING THAT ALL THE REQUIREMENTS ARE MET IN A TIMELY MANNER IN ORDER TO SAFELY IMPLEMENT RVSM IN THE AFI REGION.	ONGOING
CONCLUSION 14/61:	MONITORING OF HEIGHT DEVIATIONS	ONGOING
CONCLUSION 15/62:	AFI RVSM SAFETY POLICY	ACTION COMPLETED
CONCLUSION 15/63:	RVSM NSP	ONGOING
CONCLUSION 15/64:	STATE RVSM READINESS ASSESSMENT	ONGOING
DECISION 15/65	PRE-IMPLEMENTATION SAFETY CASE (PISC)	ONGOING
DECISION 15/66:	CONTINUATION OF AFI RVSM PROGRAMME OFFICE (ARPO)	ACTION COMPLETED
CONCLUSION 15/67:	ADOPTION OF THE FUNCTIONAL HAZARD ASSESSMENT (FHA) FINAL REPORT	ACTION COMPLETED
DECISION 15/68:	AFI RVSM CORE AIRSPACE	ACTION COMPLETED

CONCLUSIONS / DECISIONS	TITLE	ACTION
DECISION 15/69:	AFI RVSM SWITCH-OVER PERIOD	ACTION COMPLETED
DECISION 15/70:	SHARING RVSM READINESS PROGRAMMES AND EXPERIENCE	ONGOING
CONCLUSION 15/71:	REGIONAL AIRWORTHINESS CERTIFICATION AND CERTIFICATION AGENCY FOR RVSM OPERATION	ACTION COMPLETED
DECISION 15/72:	STUDIES ON RVSM CERTIFICATION AGENCIES	ONGOING
CONCLUSION 15/73:	AFI RVSM IMPLEMENTATION – COST RECOVERY	ONGOING
CONCLUSION 15/74:	CAMPAIGN TO ENHANCE RVSM IMPLEMENTATION	ONGOING
CONCLUSION 15/75:	AFI RVSM STRATEGY/ACTION PLAN	ONGOING
DECISION 15/76:	AIRCRAFT/OPERATORS READINESS SURVEY	ONGOING
DECISION 15/77:	AMENDMENT TO ICAO DOC 7030/4	ACTION COMPLETED
DECISION 15/78:	RVSM OPTIMAL SWITCH-OVER TIME	ONGOING
DECISION 15/79:	EXCHANGE OF RVSM DATA BETWEEN ASECNA AND ARMA	ONGOING
DECISION 15/80:	FHA SAFETY REQUIREMENTS NEEDING APPROPRIATE ACTIONS BY THE RVSM PROGRAMME	ACTION COMPLETED
CONCLUSION 15/97	SEARCH AND RESCUE (SAR)	ONGOING
DECISION 15/98	SAR FUNDING	ONGOING
CONCLUSION 15/99	ELIMINATION OF DEFICIENCIES AFFECTING THE CNS FIELD	IMPLEMENTATION IN PROGRESS
DECISION 15/103	MEMBERSHIP TO APIRG CONTRIBUTORY BODIES	LETTERS SENT TO UGANDA, ALGERIA, GHANA AND SUDAN
CNS		
CONCLUSION 15/9 :	IMPLEMENTATION OF THE AFI AFTN ROUTING DIRECTORY	STATES ADVISED OF THE CONCLUSION
CONCLUSION 15/10:	SYNCHRONIZATION OF AFTN AUTOMATED MESSAGE SWITCH CLOCKS	STATES ADVISED OF THE CONCLUSION IMPLEMENTATION IN PROGRESS
CONCLUSION 15/11:	IMPLEMENTATION OF ATS/DS CIRCUITS	STATES ADVISED OF THE CONCLUSION IMPLEMENTATION IN PROGRESS

CONCLUSIONS / DECISIONS	TITLE	ACTION
CONCLUSION 15/12:	SUSTAINABILITY OF AFISNET NETWORK	STATES ADVISED OF THE CONCLUSION. ICAO SPECIAL IMPLEMENTATION PROJECT ON TECHNICAL EVALUATION AFISNET IMPLEMENTED IN 2006
CONCLUSION 15/13:	INTEROPERABILITY OF VSAT NETWORKS	STATES ADVISED OF THE CONCLUSION. IMPLEMENTATION IN PROGRESS THROUGH SADC/2 AND NAFISAT PROJECTS
CONCLUSION 15/14:	DRAFT AFI ATN ROUTING ARCHITECTURE	STATES ADVISED OF THE CONCLUSION
CONCLUSION 15/15:	AIR/GROUND COMMUNICATIONS IN LUANDA FIR	ANGOLA ADVISED OF THE CONCLUSION IMPLEMENTATION IN PROGRESS
CONCLUSION 15/16:	AIR/GROUND COMMUNICATIONS IN TRIPOLI FIR	LIBYA ADVISED OF THE CONCLUSION IMPLEMENTATION IN PROGRESS
CONCLUSION 15/17:	AMENDMENT TO AFI FASID, TABLE CNS-3	AMENDMENT PROCESS IN PROGRESS
CONCLUSION 15/18:	PROPOSED INSTITUTIONAL STRUCTURE FOR THE INTERREGIONAL SBAS OVER THE AFI REGION	SBAS OVER THE AFI REGION TO BE CONSIDERED IN LIGHT OF ANC REVIEW OF APIRG REPORT AND RECOMMENDATIONS THEREFROM.
CONCLUSION 15/19:	MEETING OF INVESTORS IN THE ISA	MEETING OF POTENTIAL INVESTORS IN THE ISA HELD IN CAIRO, 14-15 FEBRUARY 2006. TO BE CONSIDERED IN LIGHT OF ANC REVIEW OF APIRG REPORT AND RECOMMENDATIONS THEREFROM.
CONCLUSION 15/20:	REVISED AFI GNSS IMPLEMENTATION STRATEGY	TO BE CONSIDERED IN LIGHT OF ANC REVIEW OF APIRG REPORT AND RECOMMENDATIONS THEREFROM.
CONCLUSION 15/21:	AMENDMENT TO AFI FASID, TABLES CNS-4A AND CNS-4B	AMENDMENT PROCESS IN PROGRESS
CONCLUSION 15/22:	AMENDMENT TO AFI FASID, TABLES CNS-4A AND CNS-4B	IATA AND AFRAA ADVISED OF THE CONCLUSION
DECISION 15/23:	FUTURE AIR NAVIGATION SYSTEMS (FANS) 1/A OPERATIONAL MANUAL FOR AFI REGION	Coordinated with ATS/AIS/SAR/SG SECRETARIAT
CONCLUSION 15/24:	INITIAL ADS-B DATA LINK IN THE AFI REGION	STATES ADVISED OF THE CONCLUSION
CONCLUSION 15/25:	COOPERATIVE APPROACH TO CNS MAINTENANCE	STATES ADVISED OF THE CONCLUSION
CONCLUSION 15/26:	ICAO POSITION AND PREPARATIONS FOR THE ITU-WRC-2007	STATES ADVISED OF THE CONCLUSION

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
CONCLUSIONS 8/43:	STATE LETTERS ISSUED TO REQUEST STATES TO IMPLEMENT A) SURVEYS UNDERTAKEN BUT RESPONSES POOR.	AMBEX PROCEDURES THAT: A) STATES PARTICIPATING IN THE AMBEX SCHEME STRICTLY FOLLOW AMBEX PROCEDURES AS CONTAINED IN THE AMBEX HANDBOOK. C) THE ICAO REGIONAL OFFICES CONCERNED, WITH A VIEW TO ASSISTING STATES WHERE MAJOR DEFICIENCIES ARE IDENTIFIED, CONDUCT A SECOND SERIES OF SEMINARS ON AMBEX PROCEDURES. C) ICAO REGIONAL OFFICES MONITOR THE OPERATION AND EFFECTIVENESS OF THE AMBEX SCHEME THROUGH PERIODIC TAF AVAILABILITY SURVEYS.	AFI OPMET MANAGEMENT TASK FORCE ESTABLISHED TO ASSIST TO ENHANCE IMPLEMENTATION (DECISION MET/SG 8/8)
CONCLUSION 10/31:	STATE LETTERS ISSUED TO ENCOURAGE STATES TO PROCURE VSATS	RECEPTION OF THE SADIS THAT: A) AFI STATES, AS A MATTER OF URGENCY, MAKE THE REQUIRED ARRANGEMENTS TO ACQUIRE THE NECESSARY EQUIPMENT FOR RECEPTION OF THE WAFS SADIS PRODUCTS AT THEIR MET CENTRE(S). B) THE COST OF PROVISION OF SUCH SERVICE MAY BE RECOVERED THROUGH AIR NAVIGATION CHARGES.	MOST STATES HAVE ACQUIRED THE VSATS. COST RECOVERY STILL A CHALLENGE.
CONCLUSION 10/33:	STATE LETTER ISSUED TO ENCOURAGE THE STATE TO COMPLY	BRAZZAVILLE TCC THAT AUTHORITIES AT BRAZZAVILLE TCC BE URGED TO TAKE THE REQUIRED MEASURES TO IMPROVE TAF RECEPTION AND EXCHANGE AT THEIR TCC, NAMELY THE ESTABLISHMENT OF RELIABLE TELECOMMUNICATIONS LINKS WITH KINSHASA AND LUANDA.	ACTION COMPLETED.

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
CONCLUSION 10/48:	STATE LETTERS ISSUED	<p>CONCLUSION 10/48 - ELIMINATION OF SHORTCOMINGS IN THE AIR NAVIGATION FIELDS.</p> <p>THAT STATES CONCERNED WITH SHORTCOMINGS CONTAINED IN APPENDICES 6.2 TO 6.5 MAKE ALL NECESSARY EFFORTS TO ELIMINATE THESE SHORTCOMINGS AS SOON AS POSSIBLE.</p>	IT IS A CONTINUING TASK AND “SHORTCOMINGS” REDEFINED AS “DEFICIENCIES”.
CONCLUSION 12/34:	STATE LETTER ISSUED FOR FOLLOW-UP	<p>FEEDBACK ON SIGWX CHARTS TO LONDON WAFC</p> <p>THAT STATES RECEIVING SIGWX FROM WAFC LONDON PROVIDE FEEDBACK ON A TIMELY MANNER TO THE WAFC ON THEIR FINDINGS ON THE ACCURACY OF THE SIGWX TEST CHARTS RECEIVED.</p>	COMPLETED.
CONCLUSION 12/38:	STATE LETTER ISSUED	<p>TECHNICAL AND FINANCIAL COMMITMENT TO SADIS</p> <p>THAT, STATES UNDER THE COVERAGE OF THE SADIS FOOTPRINT, BE ENCOURAGED TO CONSIDER IMPLEMENTATION OF THE SADIS COMPONENT OF THE AFS, AND THEIR TECHNICAL AND FINANCIAL COMMITMENT TO SADIS.</p>	COMPLETED.
CONCLUSION 12/40:	STATE LETTER ISSUED	<p>TRAINING IN THE PREPARATION AND ISSUANCE OF VOLCANIC ASH ADVISORIES AND SIGMETs</p> <p>THAT, STATES CONCERNED SHOULD CONDUCT REGULAR EXERCISES IN COOPERATION WITH THEIR VAAC AT THEIR METEOROLOGICAL WATCH OFFICES (MWOs) ON THE PREPARATION AND ISSUANCE OF VOLCANIC ASH ADVISORIES AND SIGMETs IN ORDER TO KEEP THEIR AERONAUTICAL METEOROLOGICAL FORECASTERS CURRENT WITH THE PROCEDURES.</p>	<p>POOR RESPONSE. FURTHER ACTION WITH STATES. TASK TO BE UNDERTAKEN BY ROS.</p> <p>CONCLUSION REFORMULATED AND BEST SPECIFIED IN DRAFT MET/SG/8 CONCLUSIONS 8/9 AND 8/10</p>
CONCLUSION 13/68:	STATE LETTER ISSUED FOR FOLLOW-UP BY STATES	<p>BETTER COMMUNICATIONS FOR VOLCANO OBSERVATORIES</p> <p>THAT STATES CONCERNED MAKE EFFORTS TO ESTABLISH RELIABLE COMMUNICATIONS LINKS BETWEEN THEIR VOLCANO OBSERVATORIES AND METEOROLOGICAL WATCH OFFICES (MWOs) AND AREA CONTROL CENTRES (ACCs).</p>	BOTTLENECKS STILL BEING EXPERIENCED BY SOME STATES. ROS TO FOLLOW-UP WITH SPECIFIC STATES.

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
CONCLUSION 14/32:	STATE LETTER ISSUED	<p>NEED FOR LATEST VERSION OF WORKSTATION SOFTWARE</p> <p>THAT STATES IN THE AFI REGION BE ENCOURAGED TO ACQUIRE THE LATEST VERSION OF WORKSTATION SOFTWARE FROM THEIR RESPECTIVE WORKSTATION SUPPLIERS FOR THE USE OF GRIB AND BUFR CODES</p>	MAJORITY OF STATES HAVE COMPLIED.
CONCLUSION 14/33:	STATE LETTER ISSUED	<p>CONCLUSION 14/33: COMPOSITION OF THE SADIS OPERATIONS GROUP (SADISOPSG)</p> <p>THAT:</p> <p style="padding-left: 40px;">A) MEMBERS OF THE SADISOPSG BE APPOINTED ONLY FROM STATES WHICH ARE USERS OF THE SERVICE AND HENCE PARTICIPATE IN THE MANDATORY COST RECOVERY SCHEME; AND</p> <p style="padding-left: 40px;">B) IN ACCORDANCE WITH THIS PRINCIPLE, THE AFI MEMBERS IN THE SADISOPSG BE CÔTE D=IVOIRE, KENYA, SENEGAL, SOUTH AFRICA AND ASECNA.</p>	COMPLETED.
CONCLUSION 14/34:	STATE LETTER ISSUED	<p>APPLICATION OF EUR OPMET UPDATE PROCEDURES IN THE AFI REGION</p> <p>THAT, THE PROCEDURE SIMILAR TO THE EUR OPMET UPDATE PROCEDURE BE DEVELOPED AND INTRODUCED IN THE AFI REGION.</p>	COMPLETED.
DECISION 14/35:	STATE LETTER ISSUED	<p>INTRODUCTION OF METARS IN AMBEX EXCHANGES</p> <p>THAT STATES IN THE AFI REGION BE INVITED TO IMPLEMENT METAR EXCHANGES AS CONTAINED IN THE AMBEX HANDBOOK 6TH EDITION.</p>	COMPLETED.
CONCLUSION 14/36:	STATE LETTER ISSUED	<p>INCLUSION OF PORT-GENTIL IN AMBEX EXCHANGES AND FASID TABLE MET 1A FOR TREND FORECASTS</p> <p>THAT THE AERODROME OF PORT-GENTIL BE INCLUDED IN AMBEX EXCHANGES AND IN AFI FASID TABLE MET 1A.</p>	COMPLETED.

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
CONCLUSION 14/37:	STATE LETTER ISSUED	<p>COST RECOVERY OF AERONAUTICAL METEOROLOGICAL SERVICES</p> <p>THAT, WHEN ESTABLISHING A COST RECOVERY SYSTEM FOR AERONAUTICAL METEOROLOGICAL SERVICES, STATES IN THE AFI REGION USE RELEVANT ICAO AND WMO DOCUMENTS AND COOPERATE WITH AIRPORTS, AIR NAVIGATION SERVICES AND OTHER AERONAUTICAL PARTNERS, INCLUDING USERS.</p>	MANY STATES STILL HAVING CHALLENGES. ROS ASSISTING DURING MISSIONS AND WORKSHOPS.
CONCLUSION 14/38:	STATE LETTERS INVITING STATES TO PARTICIPATE ISSUED	<p>SEMINARS ON COST RECOVERY OF AERONAUTICAL METEOROLOGICAL SERVICES</p> <p>THAT WMO IN CO-ORDINATION WITH ICAO ORGANIZE SEMINARS ON COST RECOVERY OF AERONAUTICAL METEOROLOGICAL SERVICES FOR STATES REQUIRING THEM.</p>	SEMINARS CONDUCTED IN THE AFI REGION 1999 AND 2004.
CONCLUSION 14/39:	STATE LETTER ISSUED	<p>AUTONOMOUS ENTITIES AND METEOROLOGICAL SERVICE FOR AIR NAVIGATION</p> <p>THAT STATES IN THE AFI REGION WHEN CONSIDERING THE ESTABLISHMENT OF AUTONOMOUS ENTITIES TO MANAGE THEIR AIR NAVIGATION SERVICES, TAKE DUE ACCOUNT OF THE PROVISION OF METEOROLOGICAL SERVICE TO AIR NAVIGATION.</p>	PROGRESS SLOW. FOLLOW-UP DURING MISSIONS BY ROS.
CONCLUSION 14/40:	STATE LETTER ISSUED	<p>QUALITY MANAGEMENT</p> <p>THAT STATES IN THE AFI REGION GIVE PRIORITY TO IMPLEMENTATION OF A QUALITY MANAGEMENT SYSTEM (ISO 9000 SERIES OF STANDARDS) IN ORDER TO IMPROVE METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION.</p>	PROGRESS SLOW. FRANCE (LA REUNION) HAS IMPLEMENTED IN 2006. RE-ADDRESSED BY ANOTHER CONCLUSION (MET/SG CON. 8/14)
CONCLUSION 14/41:	STATE LETTER ISSUED	<p>STUDY OF TRAINING AVAILABLE FOR AERONAUTICAL METEOROLOGICAL PERSONNEL IN THE AFI REGION</p> <p>THAT AS A FOLLOW-UP ACTION ON RECOMMENDATION 10/26 OF LIM AFI (COM/MET/RAC) 1988 AND RECOMMENDATION 14/17 OF AFI/7, 1997, REGIONAL OFFICES DAKAR AND NAIROBI CARRY OUT THE STUDY OF TRAINING AVAILABLE FOR AERONAUTICAL METEOROLOGICAL PERSONNEL IN THE AFI REGION.</p>	VERY POOR RESPONSES. ROS TO FOLLOW-UP AGAIN.

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
CONCLUSION 14/42:	STATE LETTERS OF INVITATION ISSUED.	SEMINARS ON ATS/MET/PILOT COORDINATION THAT ICAO, IN CO-ORDINATION WITH WMO, ORGANIZE SEMINARS ON ATS/MET/PILOT CO-ORDINATION FOR THE AFI REGION.	COMPLETED.
CONCLUSION 14/43:	TERMS OF REFERENCE OF THE MET/SG AND ATM/SG HARMONIZED BY APIRG	DECISION 14/43: METEOROLOGY CHAPTER FOR THE AFI CNS/ATM IMPLEMENTATION THAT A TASK FORCE INCLUDING EXPERTS IN ATM, CNS AND MET FIELDS FROM KENYA, NIGERIA, SENEGAL, SOUTH AFRICA, UNITED KINGDOM, ASECNA AND IATA BE ESTABLISHED TO DEVELOP THE METEOROLOGY COMPONENT OF THE AFI CNS/ATM IMPLEMENTATION PLAN ALONG THE LINES GIVEN AT APPENDIX H.	ACTION COMPLETED REFERRED TO ATM/SG.
CONCLUSION 15/81:	COORDINATION WITH THE PROVIDER STATE, UK UNDERTAKEN	TRAINING FOR THE USE OF GRIB AND BUFR CODES THAT THE UNITED KINGDOM, IN COORDINATION WITH ICAO AND WMO, BE INVITED TO CONSIDER PROVIDING TRAINING FOR THE USE OF GRIB AND BUFR CODES TO THOSE AFI STATES WHICH HAVE NOT BENEFITED FROM PREVIOUS TRAINING SEMINARS.	ACTION TO BE RE-ASSESSED DUE TO LIMITED RESOURCES.
CONCLUSION 15/82:	STATE LETTER ISSUED	PROCUREMENT OF THE NECESSARY SADIS 2G HARDWARE THAT SADIS USERS IN THE AFI REGION BE INVITED TO: A) PROCURE THE NECESSARY SADIS 2G HARDWARE WELL AHEAD OF THE TERMINATION OF THE 1G SERVICE ON 31 DECEMBER 2008, AND B) ATTEND THE SADIS SEMINAR SCHEDULED TO TAKE PLACE IN 2006 AIMED AT ASSISTING USERS IN THE PROCUREMENT OF SADIS 2G HARDWARE AND, AS NECESSARY, COMPLIANT VISUALISATION SOFTWARE.	MANY STATES REPORTED MAKING ARRANGEMENTS TO PROCURE EQUIPMENT. FEW AFI STATES PARTICIPATED.
CONCLUSION 15/83:	STATE LETTER ISSUED	PARTICIPATION OF AFI STATES IN THE SURVEY IN MAY 2006 ON UTILIZATION OF BUFR-CODED (SIGWX) FORECASTS THAT AFI STATES BE URGED TO PARTICIPATE IN THE SURVEY IN MAY 2006 AIMED AT VERIFYING THE IMPLEMENTATION OF THE RECEPTION AND EFFECTIVE UTILIZATION OF BUFR-CODED (SIGWX) FORECAST BY STATES.	COMPLETED.

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
CONCLUSION 15/84:	STATE LETTER ISSUED	<p>SADIS INTERNET FTP SERVICE</p> <p>THAT, IN PARALLEL WITH THE SATELLITE BROADCAST, THE SADIS PROVIDER STATE BE INVITED, AS OF 1 JULY 2005, TO MAKE WAFS FORECASTS AND OPERATIONAL METEOROLOGICAL (OPMET) DATA AVAILABLE, AS A PRIMARY COMPONENT OF THE SADIS SERVICE, IN ACCORDANCE WITH THE SADIS USER GUIDE THROUGH THE INTERNET-BASED SADIS FTP SERVICE.</p> <p><i>NOTE 1 – THE DEVELOPMENT AND MANAGEMENT OF THIS SERVICE WILL BE OVERSEEN BY THE SADISOPSG, AND ITS WORK PROGRAMME WILL BE AMENDED ACCORDINGLY.</i></p> <p><i>NOTE 2 – THE SADIS COST RECOVERY ADMINISTRATIVE GROUP (SCRAG) HAS BEEN INFORMED ABOUT THE PLANNED DATE OF IMPLEMENTATION.</i></p>	COMPLETED
CONCLUSION 15/85:	COORDINATION UNDERTAKEN WITHIN THE SECRETARIAT	<p>PNG FORMATTED (SIGWX) CHARTS TO BE ADDED TO THE SADIS SATELLITE SERVICES</p> <p>THAT THE SATELLITE DISTRIBUTION SYSTEM OPERATIONS GROUP (SADISOPSG) INVITED TO CONSIDER ADDING THE PNG FORMATTED WAFS SIGWX CHARTS TO THE SADIS SATELLITE SERVICES.</p>	COMPLETED.
CONCLUSION 15/86:	COORDINATION UNDERTAKEN WITHIN THE SECRETARIAT	<p>SADIS STRATEGIC ASSESSMENT TABLES</p> <p>THAT THE SADIS STRATEGIC ASSESSMENT TABLES, AS GIVEN IN APPENDIX S TO THIS REPORT, BE ADOPTED AND FORWARDED TO THE SADISOPSG TO PLAN THE FUTURE REQUIREMENTS FOR BANDWIDTH ON THE SADIS BROADCAST.</p>	COMPLETED.
CONCLUSION 15/87:	STATE LETTERS ISSUED TO TCCS	<p>OPMET EXCHANGES WITH THE EUROPEAN REGION</p> <p>THAT AFI TAF COLLECTING CENTRES (TCCS) BE INVITED, TO ADD IN THE AMBEX, THE PREDETERMINED ADDRESS TOULOUSE: LFZZMAFI FOR EXCHANGE OF METARS AND TAFS WITH THE EUR REGION.</p>	COMPLETED.
CONCLUSION 15/88:	INCLUDED IN AMENDMENTS	<p>AFI FASID TABLE MET 2A</p> <p>THAT THE SADIS USER GUIDE, ANNEX 1 BE ADOPTED AS THE AFI FASID TABLE MET 2A.</p>	COMPLETED.

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
CONCLUSION 15/89:	STATE LETTERS ISSUED	<p>IMPLEMENTATION OF THE AFI OPMET DATA BANKS</p> <p>THAT SENEGAL AND SOUTH AFRICA BE INVITED TO URGENTLY IMPLEMENT THE DAKAR AND PRETORIA INTERNATIONAL OPMET DATA BANKS</p>	COMPLETED FEBRUARY 2006 (PRETORIA) AND APRIL 2007 (DAKAR).
CONCLUSION 15/90:	STATE LETTER ISSUED	<p>TEST ON THE RECEPTION OF VOLCANIC ASH ADVISORIES IN THE AFI REGION</p> <p>THAT VAAC IN TOULOUSE, IN COORDINATION WITH ICAO, BE INVITED TO ORGANIZE A TEST FOR ON THE RECEPTION OF VOLCANIC ASH ADVISORIES IN THE AFI REGION BEFORE END OF JULY 2006.</p> <p><i>NOTE –THE PROCEDURES TO BE FOLLOWED FOR THE TEST ARE AT APPENDIX U TO THIS REPORT.</i></p>	REPOSSES POOR TO UNDERTAKE TESTS AGAIN 2007/2008.
CONCLUSION. 15/91:	ACTION INITIATED BY ROS	<p>PREPARATION OF THE VOLCANIC ASH HEADER LIST FOR THE AFI REGION</p> <p>THAT WMO, IN CONSULTATION WITH THE ICAO AND THE STATES, BE INVITED TO PREPARE THE VOLCANIC ASH SIGMET HEADER LIST FOR THE AFI REGION ON THE BASIS OF THE CURRENT SIGMET HEADER LIST AND REPLACING “WS” WITH “WV” IN THE HEADERS.</p>	CONCLUSION REFORMULATED AND BEST SPECIFIED IN DRAFT MET/SG/8 CONCLUSIONS 8/9 AND 8/10
CONCLUSION 15/92:	AMENDMENT PROPOSAL ESAF E04/02-MET	<p>METEOROLOGICAL REGIONAL PROCEDURES</p> <p>THAT THE METEOROLOGICAL REGIONAL PROCEDURES, AT APPENDIX V TO THE REPORT, REPLACE THE EXISTING REGIONAL PROCEDURES OF THE AFI ANP/FASID (DOC 7474 — AIR NAVIGATION PLAN — AFRICA-INDIAN OCEAN REGION, VOLUME II — FASID).</p>	COMPLETED.
DECISIONS 15/93	TERMS OF REFERENCE OF MET/SG REVIEWED AND HARMONIZED WITH ATM/SG	<p>DISSOLUTION OF THE TASK FORCE ON METEOROLOGY COMPONENT OF THE AFI CNS/ATM PLAN</p> <p>THAT THE TASK FORCE ON THE METEOROLOGY COMPONENT OF THE AFI CNS/ATM PLAN BE DISSOLVED AS ITS TASK IS TRANSFERRED TO THE AFI ATM SUB-GROUP.</p>	COMPLETED.

MET			
CONCLUSIONS / DECISIONS	ACTION TAKEN BY STATES/ICAO	CONCLUSION OR DECISION TITLE AND ACTION REQUIRED	ACTION
DECISIONS 15/94:	TERMS OF REFERENCE OF MET/SG REVIEWED TO INCLUDE TRAINING	TRAINING AND QUALIFICATIONS OF AERONAUTICAL METEOROLOGY PERSONNEL THAT THE SUBJECT OF TRAINING AND QUALIFICATIONS OF AERONAUTICAL METEOROLOGY PERSONNEL BE INCLUDED IN THE WORK PROGRAMME OF THE AFI MET/SG.	COMPLETED.

APPENDIX D

TERMS OF REFERENCE OF THE APIRG PERFORMANCE-BASED NAVIGATION (PBN) TASK FORCE (APIRG PBN/TF)

1. Develop as part of the goal of moving towards a performance-based Global ATM System, an African Regional PBN implementation plan, based on a gap analysis, in line with the ICAO PBN goals and milestones. This PBN implementation plan must be based on the following objectives and guiding principles.

Objectives:

- a) to ensure that the implementation of the navigation item of the CNS/ATM system is based on clearly established operational requirements;
- b) to avoid undue multiple equipment on the aircraft and/or multiple systems on ground;
- c) to avoid the need for multiple airworthiness and operational approvals for intra- and inter-regional operations; and
- d) to explain in detail the contents of the Regional Air Navigation Plan (ANP) and of the Regional CNS/ATM Plan, describing potential navigation applications.

Guiding principles:

- a) pre- and post-implementation safety assessments will be conducted to ensure the application and maintenance of the established target levels of safety;
 - b) continued application of conventional air navigation procedures during the transition period, to guarantee the operations by users that are not RNAV- and/or RNP-equipped;
 - c) the first regional PBN implementation plan should address the short term (2008-2012) and medium term (2013-2017);
 - d) target date for completion of the first regional PBN implementation plan is December 2008; and
 - e) input will be considered from all stakeholders in the PBN implementation process.
2. Carry out specific studies, develop guidance material and facilitate training to assist States with RNAV/RNP implementation in the en-route, terminal, and approach flight phases, taking into account the performance-based navigation (PBN) concept, according to the ICAO Strategic Objectives and Global Plan Initiatives (GPI) on this matter (GPI 5, 7, 10, 11, 12, 20, 21).
3. Identify other issues/action items arising from the work of the RNP SORSG or for consideration by the RNP SORSG in order to facilitate regional and global harmonization of existing applications as well as future implementation of PBN operations.
4. Review the States' PBN implementation documentation to ensure regional harmonization and for possible inclusion in ICAO-developed model documentation.
5. Address other regional PBN implementation issues, as needed.
6. The task force should report to APIRG, through the ATS/AIS/SAR Sub-Group, and should brief the CNS Sub-Group.
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FANS-1/A Operations Manual



Version 4.0

**Effective¹
28 September 2006**

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Table of Contents

1	INTRODUCTION.....	1-1
1.1	Arrangement of the FOM	1-1
1.2	Document Management.....	1-1
1.3	Copies.....	1-2
1.4	Changes to the FOM.....	1-3
1.5	Editing conventions.....	1-3
1.6	Request For Change Form.....	1-4
1.7	Amendment Record	1-5
2	ACRONYM LIST.....	2-1
3	SYSTEM INTEGRITY AND MONITORING	3-1
3.1	Introduction.....	3-1
3.2	Personnel Licensing and Training.....	3-1
3.3	Reference Documents	3-1
3.4	System Performance Criteria	3-2
3.5	ATC System Validation.....	3-4
3.5.1	System safety assessment.....	3-4
3.5.2	Integration test	3-4
3.5.3	ATS operation manuals.....	3-4
3.5.4	ATS System Integrity.....	3-4
3.6	System Monitoring.....	3-4
3.6.1	The monitoring process.....	3-5
3.6.2	Dispatch of confidential information	3-5
3.6.3	FANS-1/A problem reports.....	3-5
3.6.4	FANS-1/A periodic status report	3-5
3.6.5	Processing of reports.....	3-5
3.7	FANS Interoperability Team	3-6
3.8	Central Reporting Agency	3-6
3.9	Local Data Recording and Analysis	3-6
3.9.1	Data recording.....	3-6
3.9.2	Local data collection	3-7
3.10	FANS-1/A Problem Report	3-8
3.10.1	Description of fields.....	3-9
3.11	FANS-1/A Periodic Status Report Form	3-10

4	CONNECTION MANAGEMENT	4-1
4.1	Pre-Flight Phase	4-1
4.1.1	Identifying data link aircraft equipage	4-1
4.1.2	Registration number	4-1
4.2	The CPDLC Connection Sequence	4-2
4.3	The AFN Logon	4-2
4.3.1	Prerequisite for CPDLC and / or ADS-C connection	4-2
4.3.2	Initiating an AFN logon	4-2
4.3.3	Purpose of an AFN logon	4-2
4.3.4	The initial AFN logon	4-3
4.3.4.1	Parameter time for performing the initial AFN logon	4-3
4.3.4.2	Notification of ATS variations	4-3
4.3.4.3	Constructing the FN_CON message	4-3
4.3.4.4	FMS and ACARS flight identification	4-3
4.4	CPDLC Connection	4-3
4.4.1	Purpose CPDLC connection	4-3
4.4.2	Management Of CPDLC connections	4-4
4.4.3	CPDLC connection sequence	4-4
4.4.4	Active and inactive CPDLC connections	4-4
4.4.4.1	Determination of an active CPDLC connection	4-4
4.5	Next Data Authority Notification	4-5
4.5.1	Purpose of the NDA message	4-5
4.5.2	Procedure for the NDA notification	4-5
4.5.2.1	Sequence of the NDA and FN_CAD messages	4-5
4.5.2.2	Change of the NDA	4-5
4.5.3	Abnormal cases relating to the NDA notification	4-6
4.5.3.1	Unsuccessful NDA delivery	4-6
4.5.3.2	Duplication of the NDA message	4-6
4.6	AFN Logon Triggered By Address Forwarding	4-6
4.6.1	Purpose and procedure	4-6
4.6.2	An aircraft transferring from one data link area to another	4-6
4.6.3	Aircraft transiting data link areas	4-7
4.6.3.1	Options for initiating the AFN logon	4-7
4.6.3.2	Transferring CPDLC for short transits	4-8
4.7	End of Service and CPDLC Connection Transfer	4-8
4.7.1	Purpose and procedure	4-8
4.7.1.1	Uplink messages to be closed before the END SERVICE	4-8
4.7.1.2	Use of Contact/Monitor Uplink Message	4-8
4.7.1.3	Synchronizing the CPDLC and voice transfer	4-9
4.7.1.4	Timing of the transfer of communications	4-9
4.7.1.5	Aircraft entering VHF coverage	4-9
4.7.1.6	Timing of the CPDLC connection	4-9
4.7.2	Abnormal cases at the time of the connection / disconnection	4-10
4.7.2.1	Non-delivery of END SERVICE message	4-10
4.7.2.2	Non-automatic termination of the connection	4-10
5	CPDLC PROCEDURES	5-1
5.1	Means of Communication	5-1
5.1.1	General	5-1
5.1.2	Voice communications	5-1

5.1.2.1	Notification of frequencies to the preceding ATSU.....	5-1
5.1.2.2	Notification of HF frequencies by CPDLC.....	5-1
5.2	CPDLC Capability.....	5-1
5.2.1	Notification of CPDLC capability	5-1
5.2.2	Downlink messages.....	5-1
5.2.3	Uplink messages	5-2
5.3	Use of Pre-Formatted and Free Text Messages.....	5-2
5.3.1	Preferred use of pre-formatted messages	5-2
5.3.2	Standardized free text messages.....	5-2
5.3.3	Storing free text messages.....	5-2
5.4	Exchange of CPDLC messages	5-2
5.4.1	Message assurance	5-2
5.4.2	Ambiguous dialogues.....	5-2
5.4.3	Interruption of a CPDLC dialogue.....	5-2
5.4.4	Approval of request or clearance / instruction	5-3
5.4.4.1	Affirmative response to a clearance/instruction	5-3
5.4.4.2	Affirmative response to a clearance request	5-3
5.4.4.3	Conditions relating to a specific clearance.....	5-3
5.4.4.4	Affirmative response to a negotiation request.....	5-3
5.4.5	Negative response to a downlink request.....	5-3
5.4.5.1	Negative response to a clearance request.....	5-3
5.4.5.2	Explanation of negative response	5-3
5.4.5.3	Offering alternative clearances to downlink requests	5-3
5.4.6	Negative response to an uplink request.....	5-3
5.4.7	Time period between receiving and responding to a message	5-3
5.4.7.1	Delays in responding.....	5-4
5.4.7.2	Delay expected after receiving a “STANDBY” message	5-4
5.4.8	Re-sending Messages.....	5-4
5.4.8.1	Re-sending of a message when no alert received.....	5-4
5.4.8.2	Re-sending of a message when an alert has been received	5-4
5.4.9	Duplicate requests received	5-4
5.4.9.1	Second identical request after an uplink “STANDBY” message.....	5-4
5.4.9.2	Multiple identical requests	5-4
5.4.10	Altitude change clearances.....	5-4
5.4.10.1	Issuing conditional altitude change clearances	5-4
5.4.10.2	Level report requirements for climb or descent clearances.....	5-5
5.4.10.3	Canceling block altitude clearances	5-5
5.4.10.4	Issuing Level Restrictions	5-5
5.4.11	Requesting an aircraft’s speed	5-6
5.4.12	Advising a wake turbulence offset.....	5-6
5.4.13	Direct Tracking and UPR Aircraft.....	5-6
5.4.14	Planned Airborne Re-route Procedure – DARP (Datalink Aircraft).....	5-6
5.5	Multi-Element Requests	5-7
5.5.1	Avoiding multiple element clearance requests.....	5-7
5.5.2	Responding to multiple element clearance requests.....	5-7
5.5.2.1	Multiple clearance requests in one message: All approved	5-7
5.5.2.2	Multiple clearance requests in one message: All not approved	5-7
5.5.2.3	Multiple clearance requests in one message: Some approved / Some not approved	5-8
5.6	Multi-element Uplink Messages.....	5-8
5.6.1	Combining multiple elements into a single message	5-8
5.6.2	Dependent Clearances.....	5-8
5.7	Message Closure.....	5-9
5.7.1	General.....	5-9

5.7.2	Answering an uplink free text	5-9
5.7.3	Dialogue commenced via CPDLC and continued via voice	5-9
5.8	Position Reporting.....	5-9
5.8.1	General	5-9
5.8.2	Downlink of position report	5-10
5.8.3	Flexible track position reports.....	5-10
5.8.4	First position report	5-10
5.8.5	Sending of ATC waypoints only	5-10
5.8.6	Updating a waypoint estimate	5-10
5.8.7	Non-receipt of a scheduled position report	5-10
5.8.8	Sequencing 'ABEAM' waypoints in excess of FMC parameters	5-10
5.8.9	ARINC 424 fix names.....	5-10
5.9	FANS-1/A CPDLC Message Set and Intent.....	5-10
5.9.1	Response Requirements Key:.....	5-10
5.9.2	Uplink - Responses and Acknowledgements	5-11
5.9.3	Uplink - Vertical Clearances	5-11
5.9.4	Uplink - Crossing Constraints	5-14
5.9.5	Uplink - Lateral Offsets.....	5-15
5.9.6	Uplink - Route Modifications.....	5-16
5.9.7	Uplink - Speed Changes.....	5-17
5.9.8	Uplink - Contact/Monitor/Surveillance Requests	5-18
5.9.9	Uplink - Report/Confirmation Requests.....	5-18
5.9.10	Uplink - Negotiation Requests	5-19
5.9.11	Uplink - Air Traffic Advisories.....	5-20
5.9.12	Uplink - System Management Messages.....	5-20
5.9.13	Uplink - Additional Messages.....	5-20
5.9.14	Downlink - Responses.....	5-21
5.9.15	Downlink - Vertical Requests	5-21
5.9.16	Downlink - Lateral Off-Set Requests	5-22
5.9.17	Downlink - Speed Requests	5-22
5.9.18	Downlink - Voice Contact Requests	5-22
5.9.19	Downlink - Route Modification Requests.....	5-22
5.9.20	Downlink - Reports	5-22
5.9.21	Downlink - Negotiation Requests	5-23
5.9.22	Downlink - Emergency Messages.....	5-24
5.9.23	Downlink -System Management Messages.....	5-24
5.9.24	Downlink -Additional Messages	5-24
5.10	FANS-1/A CPDLC Standard Free Text Messages.....	5-26
5.10.1	Uplink - Free Text Report/ Confirmation Requests	5-26
5.10.2	Uplink - Free Text Instructions	5-27
5.10.3	Uplink - Free text Advisories	5-27
5.10.4	Uplink - Free Text Speed Messages.....	5-28
5.10.5	Uplink - Free Text Emergency Acknowledgment.....	5-28
5.10.6	Downlink - Free Text Advisories.....	5-28
6	ADS-C PROCEDURES	6-1
6.1	Introduction.....	6-1
6.2	ADS-C Description.....	6-1
6.2.1	The periodic contract.....	6-1
6.2.2	The event contract	6-1
6.2.3	The demand contract	6-2
6.2.4	Emergency mode.....	6-2

6.3	Factors To Be Considered When Using ADS-C	6-2
6.3.1	Vertical and lateral variations	6-2
6.3.2	Figure of Merit data in ADS-C reports	6-2
6.3.3	Flight crew modification of active route	6-3
6.4	ADS-C Connection Management	6-3
6.4.1	Priority for the ADS-C connection	6-3
6.4.1.1	Allocation of ADS-C connections	6-3
6.4.2	Near boundary ADS-C connections	6-3
6.4.2.1	Monitoring of an aircraft operating close to an airspace boundary	6-3
6.4.2.2	Other ground facilities requesting ADS-C contracts	6-4
6.4.3	ADS-C connections not available	6-4
6.4.4	Ground system termination of ADS-C connections	6-5
6.5	Reporting Rates.....	6-5
6.5.1	General	6-5
6.5.2	Appropriate reporting rates	6-6
6.5.3	Avoid high periodic reporting rates	6-6
6.5.4	Other factors to be considered	6-6
6.5.5	Default periodic reporting rates	6-6
6.6	Separation.....	6-6
6.6.1	Appropriate ADS-C reporting requirements	6-6
6.6.2	Appropriate separation standard	6-6
6.6.3	Vertical separation	6-6
6.6.3.1	Vertical tolerance consistency	6-6
6.6.3.2	Application of vertical tolerances	6-6
6.6.3.3	ADS-C level information does not satisfy vertical tolerance	6-7
6.6.3.4	Use of ADS-C level information	6-7
6.6.3.5	Passing or leaving a level	6-7
6.6.4	Longitudinal separation	6-7
6.6.4.1	Limitations on the use of tools	6-7
6.6.4.2	Establishing longitudinal separation	6-7
6.6.4.3	Using extrapolated or interpolated positions	6-7
6.6.4.4	Validity of displayed information	6-7
6.6.4.5	Time-based separation	6-7
6.6.4.6	Distance-based separation	6-7
6.6.5	Lateral separation	6-8
6.6.5.1	Areas of lateral conflict	6-8
6.7	Air Traffic Clearance Monitoring.....	6-8
6.7.1	Deviations from ATC clearances	6-8
6.8	Coordination.....	6-8
6.8.1	Duty of care responsibility	6-8
6.8.2	Coordinated data inconsistent with ADS displayed data	6-8
6.9	Alerting service.....	6-8
6.9.1	Late or missing ADS-C Reports	6-8
6.10	Aircraft Navigation.....	6-8
6.10.1	Aircraft in heading select mode	6-8
6.10.2	Sequencing subsequent waypoints	6-9
6.11	Position Reporting	6-9
6.11.1	Position reporting requirements in ADS airspace	6-9
6.11.1.1	Publishing reporting requirements	6-9
6.11.1.2	CPDLC report at FIR entry position	6-9
6.11.1.3	Updating waypoint estimates	6-9

6.11.1.4 Non-compulsory waypoints 6-9

6.11.2 Discrepancies between ADS-C and CPDLC estimates 6-9

6.11.2.1 Actions to be followed when there is an estimate discrepancy 6-9

7 EMERGENCY AND NON-ROUTINE PROCEDURES 7-1

7.1 Emergency procedures 7-1

7.1.1 Response to an emergency message 7-1

7.1.2 Confirmation of emergency activation 7-1

7.1.3 Acknowledgement of an emergency message 7-1

7.1.4 CPDLC acknowledgment 7-1

7.1.4.1 Voice contact 7-1

7.1.5 Retaining the active connection 7-1

7.1.5.1 Communications responsibility 7-2

7.1.5.2 Executive control responsibility 7-2

7.1.6 Normal emergency procedures 7-2

7.1.7 Coordination in the case of emergency 7-2

7.2 Data Link Connection Failures 7-2

7.2.1 Detected by the controller 7-2

7.2.2 Detected by the airborne system 7-2

7.2.3 Inability to establish the data link connection 7-2

7.3 Data link System Shutdowns 7-2

7.3.1 Unexpected data link shutdowns 7-2

7.3.2 Planned data link shutdowns 7-3

7.3.3 Resumption of data link operations 7-3

7.3.4 Data link component shutdown 7-3

7.3.4.1 ADS only failure 7-3

7.3.4.2 Loss of ADS-C 7-3

7.3.5 Unexpected communication service provider shutdown 7-4

7.3.6 Unexpected avionics system shutdown 7-4

7.4 Total Communications Failure 7-4

7.5 Using CPDLC to relay messages 7-4

7.6 Weather deviation procedures 7-5

7.6.1 Multiple weather deviations 7-5

7.6.2 Deviations either side of track 7-5

7.6.3 Reporting back on track 7-5

8 FANS-1/A IMPLEMENTATION 8-1

8.1 Introduction 8-1

8.2 ATSU Designators 8-1

8.3 HF Voice Communications Requirements 8-1

8.3.1 Crossing International FIR Boundaries 8-1

8.3.2 CPDLC Services Within The Fukuoka FIR 8-2

8.3.3 Logon Procedures within the Fukuoka FIR 8-2

8.4 Differences of Use of FANS-1/A Messages 8-2

8.5 Position Reporting Requirements: CPDLC and ADS-C Environments 8-3

8.6	Aircraft Data	8-3
8.6.1	Verifying registration number	8-3
8.6.2	CPDLC connection requests	8-4
8.6.3	Flight crew display:- response and acknowledgment	8-4
8.6.4	FMS processing of waypoints	8-5
8.6.5	Multiple request messages	8-5
8.6.6	Waypoint sequencing	8-6
8.6.7	Network acknowledgement timer	8-6
8.6.8	Open uplinks at time of transfer of communications	8-6
8.6.9	Offset using the FMS	8-7
8.6.10	Duplicate uplink messages	8-7
8.7	FANS Interoperability Team Members	8-8
8.8	Central Reporting Agency Members	8-8
8.8.1	North and Central Pacific (IPACG)	8-8
8.8.2	South Pacific (ISPACG)	8-9
8.8.3	Indian Ocean	8-9
8.8.4	Bay of Bengal	8-9
8.8.5	Arab Civil Aviation Commission	8-9
8.8.6	South Atlantic	8-9
9	CONTINENTAL CPDLC IMPLEMENTATION	9-1
9.1	Introduction	9-1
9.2	Concepts	9-1
9.2.1	Supplement to Voice	9-1
9.2.2	Reduced Message Set	9-1
9.2.3	Airspace	9-1
9.3	Communications Media	9-1
9.3.1	Continental	9-1
9.3.2	Use of CPDLC in Continental Airspace	9-1
9.3.3	Strategic CPDLC Application	9-1
9.3.4	Tactical Voice	9-2
9.3.5	Voice Precedence	9-2
9.3.6	Imposing Voice Communications	9-2
9.3.7	Change from Strategic to Tactical Situation	9-2
9.3.8	Message Compliance and Responses	9-2
9.3.9	Climb/Descent Phase	9-2
9.3.10	Crossing CPDLC System Boundaries	9-2
9.3.11	Jurisdiction Over Aircraft	9-2
9.3.12	Dialogues During CPDLC Transfer	9-2
9.4	Message Set	9-2
9.4.1	Recommended Uplink Message Set	9-3
9.4.2	Recommended Downlink Message Set	9-4
10	PROCEDURES FOR STATE AIRCRAFT SPECIAL OPERATIONS	10-5
10.1	Introduction	10-5
10.2	Air-to-Air Refueling	10-5
10.3	CPDLC Messages	10-6
10.3.1	CPDLC Messages associated with air-to-air refueling	10-6

10.3.2 CPDLC Messages Associated With “Military Assumes Responsibility for Separation of Aircraft”
(MARSA)..... 10-8

10.3.3 CPDLC messages associated with “Formation Flights” 10-9

10.4 ADS Reports 10-10

11 ENDNOTES..... 11-1

1 Introduction

The FANS-1/A Operations Manual (FOM) details the FANS-1/A procedures and requirements officially adopted by and applicable in the following FIRs:²

Accral	Algeria	Anchorage Oceanic
Atlantico	Auckland Oceanic	Antananarivo (Madagascar)
Bahrain	Brisbane	Canarias
Casablanca	Colombo	Dakar Oceanic
Egypt	Emirates	Fukuoka
Honiara	India	Indonesia
Iraq	Johannesburg Oceanic	Jordan
Kuwait	Lebanon	Libya
Lisbon	Luanda	Malaysia
Mauritius	Melbourne	Morocco
Myanmar	Nadi	Nauru
Oakland	Oman	Palestinian Gaza
Qatar	Sal	Saudi Arabia
Seychelles	Singapore	Sudan
Syria	Tahiti	Thailand
Tunisia	Yemen	

1.1 Arrangement of the FOM

The FOM consists of the following Parts:

Section 1	Introduction and Document Management
Section 2	Acronyms
Section 3	System Integrity and Monitoring
Section 4	Connection Management
Section 5	Controller Pilot Data Link Procedures
Section 6	Automatic Dependent Surveillance – Contract (ADS-C) Procedures
Section 7	Emergency and Non-Routine Procedures
Section 8	FANS-1/A Implementation
Section 9	Continental CPDLC Implementation
Section 10	Procedures for State Aircraft Special Operation
Section 11	Endnotes

1.2 Document Management

This document is owned and managed by the FANS Interoperability Teams (FITs) of the:³

1. Arab Civil Aviation Commission (ACAC),
2. Bay of Bengal (BOB),
2. Informal Indian Ocean Coordinating Group (IIOCG),
3. Informal Pacific ATC Coordinating Group (IPACG),
4. Informal South Pacific ATC Coordinating Group (ISPACG), and the
5. South Atlantic Air Traffic Services (SAT).

The FOM editor and IPACG principle contact point for USA is:

Reed B. Sladen, IPACG/FIT Co-chair
Automation Manager
Oakland Air Route Traffic Control Centers
Federal Aviation Administration (FAA)
Tel: +1 510 745 3328
Fax: +1 510 745 3826
Email: reed.b.sladen@faa.gov

The IPACG principle contact point for Japan is:

Hiroshi Inoguchi, IPACG/FIT Co-chair
Special Assistant to the Director, Office of Aeronautical Satellite Systems
Japan Civil Aviation Bureau (JCAB)
Ministry of Land, Infrastructure and Transport
Tel: +81 3 5253 8743
Fax: +81 3 5253 1663
Email: inoguchi-h2hh@mlit.go.jp

The ISPACG principle contact point is:

Paul Radford
Manager Oceanic Systems
Airways New Zealand
Tel: +64 9 256 8078
Fax: +64 9 275 3106
Email: paul.radford@airways.co.nz⁴

The IIOCG principle contact point is:

Geoff Whitely
Operation Manager – Melbourne Centre
Airservices Australia
Tel: +61 3 9235 7378
Fax: +61 3 9235 2471
Email: geoff.whitely@airservicesaustralia.com

The BoB principal contact point is:

Brad D. Cornell
Air Traffic Management Services
The Boeing Company
Tel: +1 425 266 8206
Fax:
Email: bradley.d.cornell@boeing.com

The SAT principal contact point is:

Santiago Gubern, SAT/FIT Chair
Coordinator for ADS/CPDLC Trials, Canary Islands
AENA
Tel: +34 928 577 054
Fax: +34 928 577 052
Email: sgubern@aena.es

The ACAC principal contact point is:

Akhil Sharma, ACAC/FIT Chair
Director, Aircom Service Development
SITA
Tel: +44 0208 756 8339
Fax : +44 0208 756 8001
Email : akhil.sharma@sita.aero⁵

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1.5 Editing conventions

When referring to CPDLC messages in the text of the document, the following conventions are used:

Pre-formatted message elements are represented by bold small capitals	CONTACT
Variable fields in pre-formatted message elements are represented by bold lower case characters in square brackets	[icaounitname]
Free text message elements are represented by normal characters:	Select ATC Comm Off

1.6 Request For Change Form

RFC Nr:	
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To be used whenever requesting a change to any part of FOM. This form may be photocopied as required.

1. SUBJECT:			
2. REASON FOR CHANGE:			
3. DESCRIPTION OF PROPOSAL: [attach additional pages if necessary]			
4. REFERENCE(S):			
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ORGANISATION:			
TEL/FAX/EMAIL:			
6. CONSULTATION		RESPONSE DUE BY DATE:	
Organisation	Name	Agree/Disagree	Date
7. ACTION REQUIRED:			
8. FOM EDITOR			DATE REC'D:
9. FEEDBACK PASSED			DATE:

2 Acronym List

AAR	Air-to-Air Refueling
ACAC	Arab Civil Aviation Commission
ACARS	Aircraft Communications Addressing and Reporting System
ACAS	Aircraft Collision Avoidance System (ICAO)
ADS	Automatic Dependent Surveillance (retained for reference with non-updated documents. This term would normally be used to refer to ADS-C)
ADS-B	Automatic Dependent Surveillance – Broadcast
ADS-C	Automatic Dependent Surveillance – Contract (e.g. FANS)
AEEC	Airline Electronic Engineering Committee
AFN	ATS Facilities Notification
AIDC	ATC Inter-Facility Ground/Ground Data Communications
AIP	Aeronautical Information Publication
ALTRV	Altitude Reservation
AOC	Airline Operational Communications
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
AR	Aerial Refueling
ARCP	Air Refueling Control Point
AREX	Air Refueling Exit Point
ARINC	Aeronautical Radio Incorporate
ARIP	Air Refueling Initial Point
ASECNA	Agence Pour la Securite de la Navigation Aerienne en Afrique et a Madagascar
ATC	Air Traffic Control
ATM	Air Traffic Management
ATNS	Air Traffic and Navigation Services (Africa)
ATS	Air Traffic Services
ATSU	ATS unit
AVICOM	AVICOM Japan Co. LTD
CAA	Civil Aviation Authority
CNS	Communications, Navigation, Surveillance
CPDLC	Controller Pilot Data Link Communications
CRA	Central Reporting Agency
CRASA	CRA Support Agency
CRC	Cyclic Redundancy Check
DM	Downlink message
EUROCAE	European Organisation for Civil Aviation Equipment
FAA	Federal Aviation Administration
FANS	Future Air Navigation System
FIR	Flight Information Region
FIT	FANS Interoperability Team
FMC	Flight Management Computer
FMS	Flight Management System
GES	Ground Earth Station (satellite)

GPS	Global Positioning System (USA)
HF	High Frequency (3-30 Mhz)
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFATCA	International Federation of Air Traffic Controllers Associations
IFALPA	International Federation of Air Line Pilots' Associations
IIOACG	Informal Indian Ocean ATS Coordination Group
IOOM	Indian Ocean Operations Manual
IPACG	Informal Pacific ATC Coordinating Group
ISPACG	Informal South Pacific ATS Coordinating Group
JCAB	Civil Aviation Bureau Japan
MCDU	Multipurpose Control Display Unit (ACARS & FMC)
MU	Management Unit (ACARS)
NDA	Next Data Authority
NOTAM	NOtice To AirMen
OCS	Oceanic Control System (Datalink system for the Auckland FIR)
ODP	Oceanic Air Traffic Control Data Processing System (Datalink system for the Fukuoka FIR)
RNP	Required Navigation Performance
RVSM	Reduced Vertical Separation Minima
SATCOM	Satellite Communication
SATVOICE	Satellite Voice Communication
SEAC	Service d'Etat de l'Aviation Civile (French Polynesia)
SITA	Société Internationale de Télécommunications Aéronautiques
SR&O	System Requirements and Objectives (FANS-1 document)
TCAS	Traffic Alert and Collision Avoidance System (USA)
TMU	Traffic Management Unit
UM	Uplink message
VHF	Very High Frequency (30-300 Mhz)
VIVO	Visualisation des Vols Océaniques (Situation display & datalink system for the Tahiti FIR)

3 System Integrity and Monitoring

3.1 Introduction

The FANS-1/A CNS/ATM environment is an integrated system including physical systems (hardware, software, and communication networks), human elements (pilots and controllers), and the procedures for use by pilots and controllers.

Because of the integrated nature of the system and the degree of interaction among its components, end-to-end system monitoring is required. The procedures described in this section aim to ensure end-to-end system integrity by validation and the identification, reporting and tracking of problems revealed by monitoring.

These procedures do not replace the ATS incident reporting procedures and requirements, as specified in *ICAO PANS/ATM*, Appendix 4; *ICAO Air Traffic Services Planning Manual (Doc 9426)*, Chapter 3; or applicable State regulations, affecting the parties directly involved in a potential ATS incident.

3.2 Personnel Licensing and Training

Prior to operating ATC data link communications equipment, pilots and controllers shall receive appropriate training in accordance with Annex 1 and Annex 6 to the Convention on International Civil Aviation.

Notwithstanding the above requirement, special arrangements may be made directly between an operator and an ATSU for the purposes of undertaking trials of ATC data link equipment.

3.3 Reference Documents

Id	Name of the document	Reference	Date	Origin	Domain
1	Air Traffic Services System Requirements and Objectives - Generation 2 (B747-400) (ATS SR&O)	D926U068 Revision-	Apr 97	Boeing	CPDLC ADS AFN
2	Interoperability Requirements for ATS Applications using ARINC 622 Data Communications	DO-258 / ED-100	Sep 00	RTCA and EUROCAE	CPDLC ADS AFN
3	Air Traffic Services System Requirements & Objectives for the MD90 (ATS SR&O)	MDC 99K9005 Revision A	Jan 00	Boeing	CPDLC ADS AFN
4	Air Traffic Services System Requirements and Objectives - Generation 1 (B757/B767) (ATS SR&O)	D926T0240	Nov 98	Boeing	CPDLC ADS AFN
5	Air Traffic Services Systems Requirements and Objectives - Generation 3 (B777) (ATS SR&O)	D243W018- 11, Revision A		Boeing	CPDLC ADS AFN
6	AIM-FANS System Objectives & Requirements (South Pacific Oceanic Operations in an AEEC 622 Environment)	464.0840 / 95 Issue 4	Apr 97	Airbus	CPDLC ADS AFN
7	Air Traffic Services Systems Requirements and Objectives for the MD10 (ATS SR&O)	MDC 99K1108 – Revision -	Jan 00	Boeing	CPDLC ADS AFN
8	Air Traffic Services Systems Requirements and Objectives for the B717 (ATS SR&O)	MDC 00K9010 Revision A	Aug 00	Boeing	CPDLC ADS AFN
9	Air Traffic Services Systems Requirements and Objectives for the MD11 (ATS SR&O)	MDC 00K1022 Revision -	Not yet issued.	Boeing	CPDLC ADS AFN
10	Interoperability Requirements for ATC Applications using ARINC 622 Data Communications	DO-258/ ED-100	Sep 00	RTCA and EUROCAE	CPDLC ADS AFN

11	Air Traffic Services Systems Requirements and Objectives for the C-5B (ATS SR&O)	TBD	TBD	USAF	CPDLC ADS AFN
12	Air Traffic Services Systems Requirements and Objectives for the KC-10A (ATS SR&O)	TBD	TBD	USAF	CPDLC ADS AFN
13	Air Traffic Services Systems Requirements and Objectives for the KC-135 (ATS SR&O)	KC-135 GATM Revision 1.0	Sep 04	USAF	CPDLC ADS AFN
14	Air Traffic Services Systems Requirements and Objectives for the C-17 (ATS SR&O)	TBD	TBD	USAF	CPDLC ADS AFN
15	Air Traffic Services Systems Requirements and Objectives for the E-4B (ATS SR&O) ⁶	D226- 38202-1	Jun 06	USAF	CPDLC ADS AFN

3.4 System Performance Criteria

The table below defines the minimum values to be met and verified. This does not prevent the ATS service providers from negotiating more constraining contractual requirements with their communication service providers if it is thought necessary.

Criteria	Definition	Values
Performances	End-to-end round trip time for uplinks per delivery media (VHF, SATCOM, or HF DL). The timing is measured from sending of the uplink until reception of the MAS.	Round trip time of 2 minutes, 95% of the messages. Round trip time of 6 minutes, 99% of the messages.
	End-to-end one way time for downlinks per delivery media (VHF, SATCOM, or HF DL). The timing is measured by comparing the message sending time stamp and message receipt time stamp.	One way time of 1 minute, 95% of the messages. One way time of 3 minutes, 99% of the messages
	Uplink messages only: Undelivered messages will be determined by: <ul style="list-style-type: none"> Message assurance failure is received. After trying both VHF and SATCOM. Depending on reason code received, the message might, in fact, have made it to the aircraft. No message assurance or flight crew response is received by ATSU after 900 seconds 	Less than 1% of all attempted messages undelivered
Availability	The ability of the network data link service to perform a required function under given conditions at a given time:	99.9%
	The maximum allowed time of continuous unavailability or downtime should be declared (MTTR) *	TBD
Reliability	The ability of a data link application/system to perform a required function under given conditions for a given time interval: it can be expressed in MTBF (Mean Time Between Failure) *	TBD
Integrity	The probability of an undetected failure, event or occurrence within a given time interval.	10 ⁻⁶ /hour

* Availability = $MTBF \times 100 / (MTBF + MTTR)$

Note: RTCA SC189/EUROCAE WG 53 is defining the performance requirements for specific operational environments.

3.5 ATC System Validation

To meet system integrity requirements, States shall consider a validation process that confirms the integrity of their equipment and procedures. The processes shall include:

- a) A system safety assessment which demonstrates that the ATS Provider's system will meet the safety objectives;
- b) Integration test results confirming interoperability for operational use of airborne and ground systems; and
- c) Confirmation that the ATS Operation Manuals are compatible with those of adjacent providers.

3.5.1 System safety assessment

The system safety assessment can be achieved through a functional hazard analysis or a documented system safety case. This should be conducted for initial implementation as well as for future enhancements and should include:

- a) Identifying failure conditions;
- b) Assigning levels of criticality;
- c) Determining probabilities for occurrence; and
- d) Identifying mitigating measures.

Following on from the safety assessment, States should institute measures to offset the identified failure conditions, or reduce the probability of their occurrence to an acceptable level. This could be accomplished through automation or procedures.

3.5.2 Integration test

States should conduct trials with aircraft to ensure that they meet the technical requirements for interoperability previously specified in this document.

3.5.3 ATS operation manuals

States should coordinate with adjacent States to confirm that their ATS Operation Manuals contain standard operating procedures.

3.5.4 ATS System Integrity

With the implementation of automated ATS control systems, data changes, software upgrades, and system failures can impact on adjacent units.

- a) ATSU's shall ensure that suitable procedures are in place to ensure that data is correct and accurate, including any changes thereto, and that security of such data is not compromised.
- b) ATSU's shall also formalise procedures for timely notification to adjacent units of system failures, software upgrades (or downgrades) or other changes, which may impact on surrounding ATS units. Such notification procedures will normally be detailed in Letters of Agreement between adjacent units.

3.6 System Monitoring

Routine collection of data is necessary in order to ensure that the system continues to meet its performance, safety and interoperability requirements, and that operations and procedures are working as planned. The monitoring program is a two-fold process. First, summary statistical data should be produced periodically showing the performance of the system. This is accomplished through FANS-1/A Periodic Status Reports. In addition, as problems or abnormalities arise, they should be identified, tracked, analyzed, corrected and information disseminated as required, utilizing the FANS-1/A Problem Report. This process should remain in effect until the system conforms as planned.

3.6.1 The monitoring process

When problems or abnormalities are discovered, the initial analysis should be performed by the organization(s) identifying the problem. In addition, a copy of the problem report should be sent to the [Central Reporting Agency \(CRA\)](#) which will assign a tracking number. As some problems or abnormalities may involve more than one organization, the originator should be responsible for follow-up action to rectify the problem and forward the information to the CRA. It is essential that all information relating to the problem is documented and recorded and resolved in a timely manner.

The parties who need to be involved in this monitoring process and problem tracking for the review and analysis of the data collected are:

- a) ATS service providers or organizations responsible for ATS system maintenance (where different from the ATS provider);
- b) State regulatory authorities;
- c) Communication service providers;
- d) Aircraft operators; and
- e) Aircraft and avionics manufacturers.

3.6.2 Dispatch of confidential information

It is important that information that may have an operational impact on other parties be distributed to all users as soon as possible. In this way, each party is made aware of problems already encountered by others, and may be able to contribute further information to aid in the solution of these problems. Before dissemination of information, all references that could identify particular parties are removed by the CRA.

3.6.3 FANS-1/A problem reports

Problem reports may originate from many sources, but most will fall within two categories; reports based on observation of one or more specific events, or reports generated from the routine analysis of data. For example, a problem report could arise from an incident where there was confusion about the meaning of a clearance, as the result of inappropriate use of free text. The user would document the problem, resolve it with the appropriate party and forward a copy of the report to the CRA for tracking. This one incident may appear to be an isolated case, but the receipt of numerous similar reports by the CRA that could indicate an area that needs more detailed examination.

To effectively resolve problems and track progress, the forms should be sent to the nominated point of contact at the appropriate organization and the CRA. The resolution of the identified problems may require:

- a) Re-training of system operators, or revision of training procedures to ensure compliance with existing procedures;
- b) Change to operating procedures;
- c) Change to system requirements, including performance and interoperability; or
- d) Change to system design.

3.6.4 FANS-1/A periodic status report

The ATS Providers should complete the FANS-1/A Periodic Status Report at specified intervals agreed by the regional FANS Interoperability Team (FIT) for the dissemination of information and as an indication of system performance. Additionally, the report should identify any trend discovered in system deficiencies, the resultant operational implications, and the resolution, if applicable.

Communications service providers are also expected to submit FANS-1/A Periodic Status Reports on the performance of their networks at specified intervals. These reports may contain planned or current upgrades to the systems and may not be required as often as the reports from ATS providers.

3.6.5 Processing of reports

Each party to the monitoring process should nominate a single point of contact for receipt of problem reports and coordination with the other parties. This list should be distributed to all parties to the monitoring process.

Each State should establish mechanisms within its ATS provider and regulatory authority to:

- a) Assess problem reports and refer them to the appropriate technical or operational expertise for investigation and resolution;
- b) Coordinate with communication service providers and aircraft manufacturers;
- c) Develop interim operational procedures to mitigate the effects of problems until such time as the problem is resolved;
- d) Monitor the progress of problem resolution;
- e) Prepare summaries of problems encountered and their operational implications and forward these to the central reporting agency; and
- f) Prepare the FANS-1/A periodic status report at pre-determined times and forward these to the Central Reporting Agency.

3.7 FANS Interoperability Team

The FANS Interoperability Teams (FITs) shall oversee the monitoring process to ensure the FANS-1/A system continues to meet its performance, safety, and interoperability requirements and that operations and procedures are working as planned. The FITs:

- a) review de-identified problem reports and determine appropriate resolution;
- b) develop interim operational procedures to mitigate the effects of problems until such time as they are resolved;
- c) monitor the progress of problem resolution;
- d) prepare summaries of problems encountered and their operational implications;
- e) assess system performance based on information in CRA periodic reports; and
- f) authorize and coordinate system testing.

FIT members are listed at [Section 8.7](#).

3.8 Central Reporting Agency

The Central Reporting Agencies (CRAs) are organizations tasked with the regular dissemination of de-identified statistical data based on monthly status reports received from FIT members. The CRAs track problem reports and publish de-identified information from those reports for dissemination to FIT members. Problem resolution is the responsibility of the appropriate FIT members.

The CRAs:

- a) prepare consolidated problem summaries, with references to particular States and operators removed, for dissemination to all interested parties;
- b) collect and consolidate FANS-1/A Periodic Status Reports and disseminates these to all interested parties;
- c) examine all data to identify trends; and
- d) prepare an annual report for the FIT.

Following review by the FIT, the report will be presented to APANPIRG by the IPACG/ISPACG Co-chairs. This report contains:

- a summary of the system performance based on the periodic status reports;
- a summary of the numbers and categories of problems reported; and
- a report of progress with rectification of significant problems.

CRA members are listed at [Section 8.8](#).

3.9 Local Data Recording and Analysis

3.9.1 Data recording

ATS providers and communication service providers shall retain the records defined below for at least 15 days to allow for accident/incident investigation purposes. (The providers are strongly encouraged to retain the records for at least 30 days.) These records shall be made available for air safety investigative purposes on demand.

These recordings shall allow replaying of the situation and identification of the messages that were sent or received by the ATS system.

3.9.2 Local data collection

Requirements	Who/What	Communication Service Providers	Ats Providers	Airlines
Operational Procedures	Time stamped ATS messages with identification and reference numbers	Y (Every message going through)	Y (End System)	Y
	Message Assurance	Y	Y	N
	Anomaly event report	N	Y	Y
Performance	Availability	Y	Y (End System)	Y (Avionics / Link with GES)
	Transit times	Y	Y	Y
Safety (i.e. operational, performance, interoperability requirements which are used to mitigate the effect of a failure condition)	Time stamped ATS messages with identification and reference numbers/MAS	Y (Every message going through)	Y	Y
	Anomaly event reports	Y	Y	Y
Interoperability	Time stamped ATS messages with identification and reference numbers/MAS	Y (Every message going through)	Y	N

3.10 FANS-1/A Problem Report

Number

Date UTC		Time UTC	
Registration		Flight Number	
Sector			
Originator		Aircraft Type	
Organization			
Active Center		Next Center	
Position			
Description			

3.10.1 Description of fields

Field	Meaning
Number	A unique identification number assigned to this problem report. Organizations writing problem reports are encouraged to maintain their own internal list of these problems for tracking purposes. Once the problems have been reported to the CRA and incorporated in the database, a number will be assigned by the CRA and used for tracking by the FIT.
Date UTC	UTC date when the event occurred.
Time UTC	UTC time (or range of times) at which the event occurred..
Registration	Registration number (tail number) of the airplane involved. This should be in exactly the same format as was used for the logon to the ATC Center, including any dashes used.
Flight Number	Flight identifier (call sign) of the flight involved. This should be in exactly the same format as was used for the logon to the ATC Center, including any leading zeros in the number.
Sector	The departure airport and destination airport for the sector being flown by the airplane involved in the event. These should be the ICAO identifiers of those airports.
Originator	Point of contact at the originating organization for this report (usually the author).
Aircraft Type	The airplane model involved (e.g. B777 or MD11). Where a dash number records a significant change to the equipment fit (e.g. B747-400), the dash number should be provided as well.
Organization	The name of the organization (airline, ATS provider or datalink service provider) that created the report.
Active Center	ICAO identifier of the ATC Center controlling the airplane at the time of the event.
Next Center	If the problem involves a handover between ATC Centers, or occurs close to the time of a handover, then this should contain the ICAO identifier of the Center to which control was being handed over.
Position	Location of the airplane at the time of the event. This could be the latitude and longitude, but could also be specified relative to a waypoint on the route or an FIR boundary.
Description	<p>This should provide as complete a description of the situation leading up to the problem as is possible. Where the organization reporting the problem is not able to provide all the information (e.g. the controller may not know everything that happens on the airplane), it would be helpful if they would coordinate with the other parties to obtain the necessary information.</p> <p>The description should include:</p> <ul style="list-style-type: none"> • A complete description of the problem that is being reported • The route contained in the FMS • Any flight deck indications, including EICAS messages that occurred • Any MCDU scratchpad messages that occurred • Any indications provided to the controller when the problem occurred • Any problems being experienced with other datalink systems (such as AOC), or indications that those other systems were unaffected • Any additional information that the originator of the problem report considers might be helpful but is not included on the list above <p>IF NECESSARY TO CONTAIN ALL THE INFORMATION, ADDITIONAL PAGES MAY BE ADDED, AND IF THE ORIGINATOR CONSIDERS IT MIGHT BE HELPFUL, DIAGRAMS AND OTHER ADDITIONAL INFORMATION (SUCH AS PRINTOUTS OF MESSAGE LOGS) MAY BE APPENDED TO THE REPORT.</p>

3.11 FANS-1/A Periodic Status Report Form			
Originating Organization			
Date of submission		Originator	
Status for [Month/Year]			
Performance Measure	Data		
<u>DELAY</u>	All times will be calculated “less than” < the time band to the right.		
<p><u>Uplinks:</u> Round-trip transit delay time</p> <p>(ATS Provider - delay between the time a message is sent and the time the Message Assurance (MAS) referring to this message is received)</p> <p>(Network provider - delay between the time a message arrives at the router and the time the MAS referring to this message arrives back at the router)</p> <p>Note: If access to individual message delivery media (VHF, SATCOM, HF) is not available to an individual ATSP then a report containing the total uplinks per time bands, total messages sent, and total lost messages for all media combined is acceptable.</p> <p><u>Downlinks:</u></p> <p>(ATS Provider - difference between embedded message time stamp and time message received from Network provider)</p> <p>Lost messages determined by:</p> <ul style="list-style-type: none"> • Message assurance failure is received. After trying both VHF and SATCOM. Depending on reason code received, the message might, in fact, have made it to the aircraft. • No message assurance or flight crew response is received by ATSU after 900 seconds <p>Note: If access to individual message delivery media (VHF, SATCOM, HF) is not available to an individual ATSP then a report containing the total downlinks per time bands, total messages sent, and total lost messages for all media combined is acceptable.</p>	<p>Number of messages with a round trip transit delay time of less than X seconds:</p> <p>VHF Data Link (Individual records for CPDLC and ADS messages if possible) X= 10s 20s 30s 60s 90s 120s 180s ≥180s Total number of VHF uplink messages: Total number of VHF lost uplink messages:</p> <p>SATCOM Data Link: (Individual records for CPDLC and ADS messages if possible) X= 10s 20s 30s 60s 90s 120s 180s ≥180s Total number of SATCOM uplink messages: Total number of SATCOM lost uplink messages:</p> <p>HF Data Link: (Individual records for CPDLC and ADS messages if possible) X= 10s 20s 30s 60s 90s 120s 180s ≥180s Total number of HF uplink messages: Total number of HF lost uplink messages:</p> <p>Number of messages with a downlink transit delay time of less than Y seconds:</p> <p>VHF Data Link: Y= 10s 15s 30s 45s 60s 90s ≥ 90s Total number of VHF downlink messages: Total number of VHF lost downlink messages:</p> <p>SATCOM Data Link: Y= 10s 15s 30s 45s 60s 90s ≥ 90s Total number of SATCOM downlink messages: Total number of SATCOM lost downlink messages:</p> <p>HF Data Link: Y= 10s 15s 30s 45s 60s 90s ≥ 90s Total number of HF downlink messages: Total number of HF lost downlink messages:</p>		

<p><u>UNAVAILABILITY</u></p> <p>(Actual time windows of scheduled outages)</p> <p>(Actual time windows of unscheduled outages)</p> <p>(ATS Providers - Instances of inability to communicate with individual aircraft)</p>	<p>For each window of unavailability, list start and end times and dates. Denote if notification was given to operators in each case.</p> <p>From: To: Notification (Y/N) Partial (Y/N)</p>
<p><u>OPERATIONAL INDICATORS</u></p> <p>Total number of aircraft with connections</p> <p>Total number of successful connections at first attempt</p> <p>Total number of flights unable to connect</p> <p>Significant system changes and impact on performance.</p>	<p>CPDLC ADS-C</p>
<p><u>GENERAL COMMENTS</u></p>	

4 Connection Management

4.1 Pre-Flight Phase

4.1.1 Identifying data link aircraft equipage

ATS systems use Item 10 (Equipment) of the standard ICAO flight plan to identify an aircraft's data link capabilities. The operator is responsible for inserting the following items in the ICAO flight plan:

- Item 10 - The letter "J" to indicate data link capability;
- Item 10 - The letter "D" in the Surveillance field to indicate ADS-C capability;
- Item 18 - The letters DAT/ followed by one or more letters as appropriate to indicate the type of data link equipment carried when "J" is entered in Item 10. (Refer ICAO PANS/ATM)

Example:

ICAO Item 10:J...../...D

ICAO Item 18: REG/.....DAT/SV (for a satellite and VHF data link equipped aircraft)

Letter following DAT/	Type of data link
S	Satellite data link
H	HF data link
V	VHF data link
M	SSR Mode S data link

Table 1: Specifying CPDLC Capability in FPL

4.1.2 Registration number

ATS systems compare the registration number of the aircraft contained in Field 18 (Other Information) of the ICAO flight plan with the registration contained in the AFN logon. The operator is responsible for ensuring that the correct aircraft registration is filed in Field 18 of the ICAO flight plan.

4.2 The CPDLC Connection Sequence

The life sequence of a CPDLC connection according to the flight phases is normally as follows:

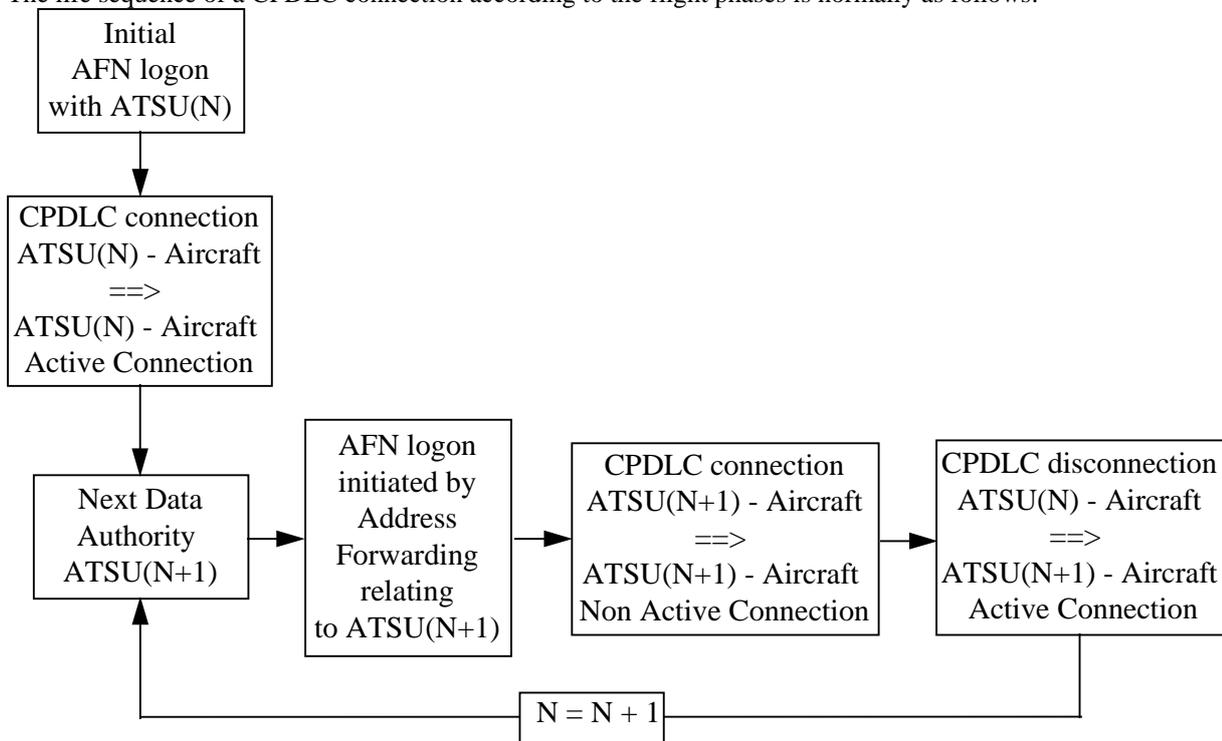


Figure 1: Life Sequence of the CPDLC Connection

4.3 The AFN Logon

4.3.1 Prerequisite for CPDLC and / or ADS-C connection

The AFN logon is a prerequisite to any CPDLC or ADS-C connection.

4.3.2 Initiating an AFN logon

The AFN logon can be initiated:

- manually by the pilot during an "initial logon", or
- by an ATSU using the address forwarding process.

4.3.3 Purpose of an AFN logon

The AFN (ATS Facilities Notification) logon serves the following purposes:

- a) To provide an ATSU with the data link application context of the aircraft, namely:
 - The ATS data link applications supported on board (CPDLC, ADS-C),
 - Their version numbers, and
 - The associated addresses (in the FANS-1/A context, these are the ACARS addresses unique to each aircraft).
- b) To provide an ATSU with information such as the flight identification and the registration number. This information will allow the correlation of the flight attempting to logon with the corresponding flight data held by the ATS system. The aircraft logging on will then be positively identified by the ATS system.
- c) To allow ATSUs to establish both ADS-C and CPDLC connections, where applicable.

4.3.4 The initial AFN logon

The initial AFN logon is performed by the pilot manually sending an **AFN CONTACT** message (FN_CON) containing the 4 character ICAO code of the ATSU.

An initial AFN logon is required when the aircraft does not already have an ADS-C or CPDLC connection, such as:

- when the aircraft is preparing to depart from an airport and the first logon to a ground system is executed, or
- when the aircraft will enter a CPDLC area from an area where CPDLC services have not been provided.

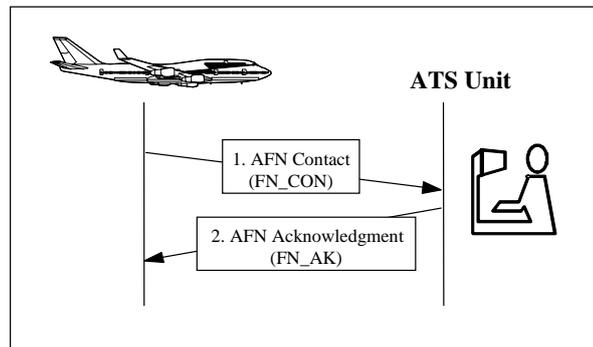


Figure 2: Initial AFN Logon

4.3.4.1 Parameter time for performing the initial AFN logon

For aircraft that will enter an area where CPDLC services will be provided and an initial logon is required, the pilot should send an AFN Contact message (FN_CON) **between 15 and 45 minutes** prior to entering the area. ATSUs should ensure that an FN_CON message sent within this time frame would be accepted by the applicable ground system.

4.3.4.2 Notification of ATS variations

Any ATSU where the ground system is unable to accept an FN_CON message sent between 15 and 45 minutes prior to the ETD or the estimate for entering the FIR shall publish instructions notifying the parameters during which a logon will be accepted.

4.3.4.3 Constructing the FN_CON message

To avoid an automatic rejection of the logon, the pilot shall ensure that the flight identification and registration numbers contained in the FN_CON message are exactly the same as the flight identification and registration numbers filed in the flight plan.

4.3.4.4 FMS and ACARS flight identification

When comparing aircraft identifiers to enable flight plan coupling with the logon, the ATSU shall only use the flight identifier and aircraft registration as contained within the end system (CRC'd) portion of AFN logon message. The flight identifier in the ACARS message header has a different format to that required by the ground system (i.e. a two alpha character airline identifier followed by up to four numeric characters) and should not be used by the pilot to notify aircraft identification.

4.4 CPDLC Connection

4.4.1 Purpose CPDLC connection

The purpose of a CPDLC connection is to allow the exchange of CPDLC messages between an aircraft and an ATSU.

4.4.2 Management Of CPDLC connections

ATSUs shall manage CPDLC connections to ensure that wherever possible the active CPDLC connection is held by the ATSU with responsibility for the flight. Connections should be maintained and terminated to support this requirement, however aircraft may be connected with another ATSU or sector on occasions such as:

- When an aircraft is transiting a CPDLC serviceable FIR subject to coordination between ATSUs;
- During the CPDLC connection transfer process;
- Where the active connection is retained by the transferring ATSU subject to prior coordination;
- When the aircraft is within a non-serviceable or non-CPDLC FIR and logs on to the ATSU responsible for the next FIR; or
- In emergency circumstances.

Care must be taken not to issue clearances or instructions to a flight via CPDLC when it is under the control of another sector/ATSU.

4.4.3 CPDLC connection sequence

A CPDLC connection attempt can only occur after the AFN logon has been completed. The CPDLC connection is initiated by sending the **CONNECTION REQUEST** message by the ATSU and is established when the **CONNECTION CONFIRM** message is received from the aircraft:

- If there is no existing connection, the avionics will accept this connection as the active connection.
- If there is an existing connection, the avionics will check that the initiating ATSU has been established as the next data authority. If so, the avionics will accept this connection as the non-active connection.
- In all other situations, the avionics will reject the connection request.

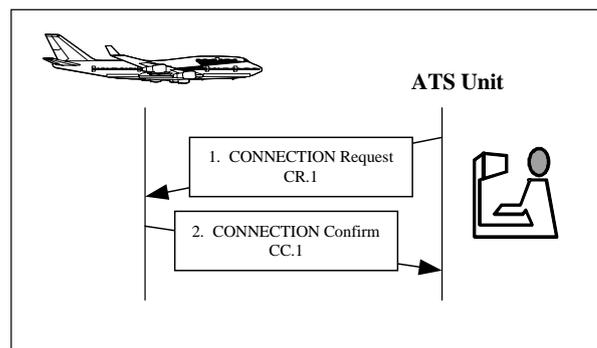


Figure 3: CPDLC Connection Sequence

4.4.4 Active and inactive CPDLC connections

A CPDLC connection established between an aircraft and an ATSU is either active or non-active.

- A connection is active when CPDLC messages can be exchanged.
- A connection is non-active when CPDLC messages cannot be exchanged.

FANS-1/A aircraft can have two CPDLC connections established, each with a different ATSU. Only one of these connections can be active at any given time. A non-active connection becomes active as soon as the active connection is terminated.

4.4.4.1 Determination of an active CPDLC connection

When the aircraft had a CPDLC connection with the previous ATSU, there are two ways for the controller to know if the CPDLC connection is active:

- To send a message with the possibility of receiving a **NOT CURRENT DATA AUTHORITY** error message if the connection is not yet active; or
- To wait until a CPDLC message is received from the pilot.

4.5 Next Data Authority Notification

4.5.1 Purpose of the NDA message

Definition: The ATSU holding the active connection with the aircraft is known as the 'Data Authority'.

The purpose of the Next Data Authority (NDA) message is to advise the avionics of the next ATSU to become the Data Authority. The sending of the NDA message is the first step in the CPDLC transfer sequence between an aircraft and two ATSUs. The avionics will only accept a CPDLC connection request from the ATSU quoted in the NDA message.

4.5.2 Procedure for the NDA notification

The ATSU with the current active connection notifies the avionics of the Next Data Authority by sending a **NEXT DATA AUTHORITY [icaofacilitydesignation]** message.

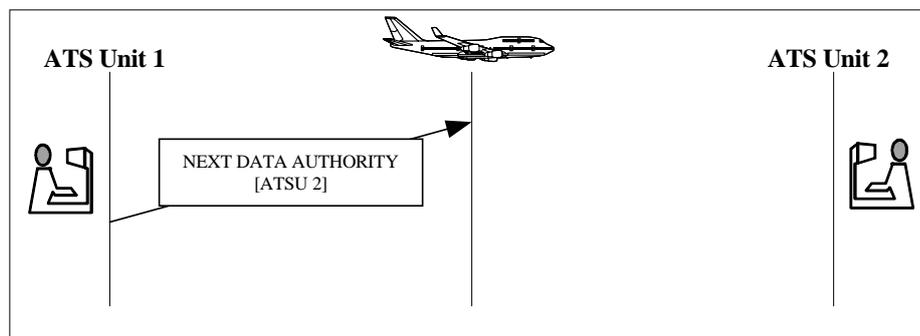


Figure 4: Next Data Authority Notification

4.5.2.1 Sequence of the NDA and FN_CAD messages

The CPDLC connection sequence can be initiated by automated systems immediately following the AFN logon, the NDA message shall be sent prior to the **AFN CONTACT ADVISORY (FN_CAD)** to avoid a rejection of the connection. The avionics must receive the NDA prior to receiving a connection request message; otherwise the connection request will be rejected.

4.5.2.2 Change of the NDA

If the next data authority should change after the NDA message has been sent (e.g. an aircraft re-route due to weather), a new NDA message must be sent. This new NDA will supersede the original NDA message in the avionics and will disconnect any inactive connection already established by the unit that had been previously designated as the Next Data Authority. In the following diagram, an inactive connection that is established with ATSU 2 would be dropped when a new NDA designating ATSU 3 is received.

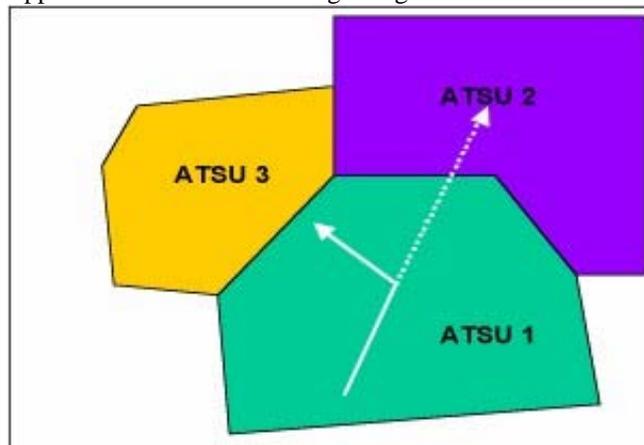


Figure 5: Subsequent Next Data Authority Notification

4.5.3 Abnormal cases relating to the NDA notification

If the NDA message (containing the correct Next Data Authority designation) is not received by the avionics before receiving the **CONNECTION REQUEST** message sent by the subsequent ATSU, the connection request message will be rejected. The pilot has no indication that the **CONNECTION REQUEST** has been rejected.

4.5.3.1 Unsuccessful NDA delivery

When the NDA delivery has not been successful, the controller’s initial action should be to send another NDA message. If this is also unsuccessful, the controller shall instruct the pilot to manually initiate an AFN logon with the subsequent ATSU after termination of the CPDLC connection. An **END SERVICE** message is not required in this case.

The phraseology to be used via CPDLC or voice will be:

Controller	CONTACT [icaounitname] [frequency] Select ATC Com Off then Logon to [ATSU name] <i>(Note: When via CPDLC, this last element will be free text)</i>
Pilot	WILCO

The [ATSU name] is the relevant four character ICAO code.

Note: Instructing the pilot to Select ATC Com off will result in loss of CPDLC connectivity. This procedure should only be applied approaching the FIR boundary with the next ATSU.

4.5.3.2 Duplication of the NDA message

Receipt by the aircraft of a second NDA message may (depending on the aircraft equipment) disconnect the non-active CPDLC connection, even if the NDA message specifies the same (non-active) ATSU that is already connected. Therefore, under normal circumstances, duplicate NDA messages shall not be uplinked.

4.6 AFN Logon Triggered By Address Forwarding

4.6.1 Purpose and procedure

The Address Forwarding process is initiated by the ground system and consists of an ATSU sending an **AFN CONTACT ADVISORY** message (FN_CAD) to the avionics. The FN_CAD instructs the avionics to automatically perform an AFN logon to the ATSU address included in the message. Address Forwarding is used to allow a subsequent ATSU to establish an inactive CPDLC connection and ADS contracts, and to allow adjacent ATSUs to establish ADS contracts for monitoring purposes.

Note: The FN_CAD message should be sent at least 15 minutes prior to the estimated time of arrival at the FIR boundary.

4.6.2 An aircraft transferring from one data link area to another

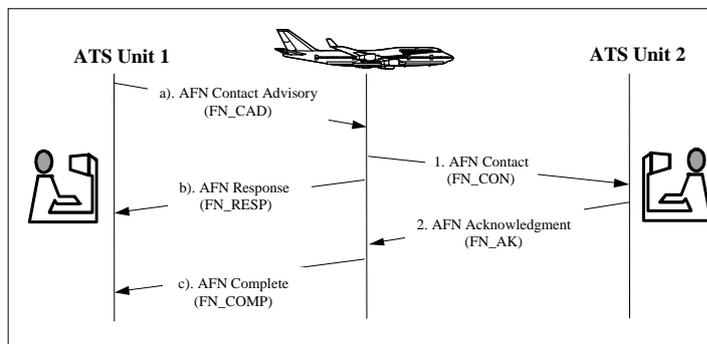


Figure 6: Transfer between areas where data link is provided

The address forwarding process is invisible to the flight crew. As a result, the flight crew does not receive an indication as to whether or not the FN_CON or FN_AK messages have been delivered correctly. However, the

crew does receive an indication of a change to the active ATSU following a successful CPDLC connection transfer.

4.6.3 Aircraft transiting data link areas

Multiple examples have been found of connection transfer failures attributed to controllers or systems not completing all of the messaging requirements for the connection transfer during a short transit time across a portion of the FIR.

When an ATSU will only have jurisdiction over a data link connected aircraft for a relatively short duration (e.g. less than 30 minutes flying time), the requirements for the transfer of communications for the aircraft should be

coordinated between the controlling and affected units, or covered in appropriate Letters of Agreement between all affected ATSUs. If the ATSU concerned requires ADS contracts to monitor the transit of the aircraft across a portion of the FIR, but the transfer of CPDLC is not required, the controlling unit should perform address forwarding in the order of priority described by the following diagram.

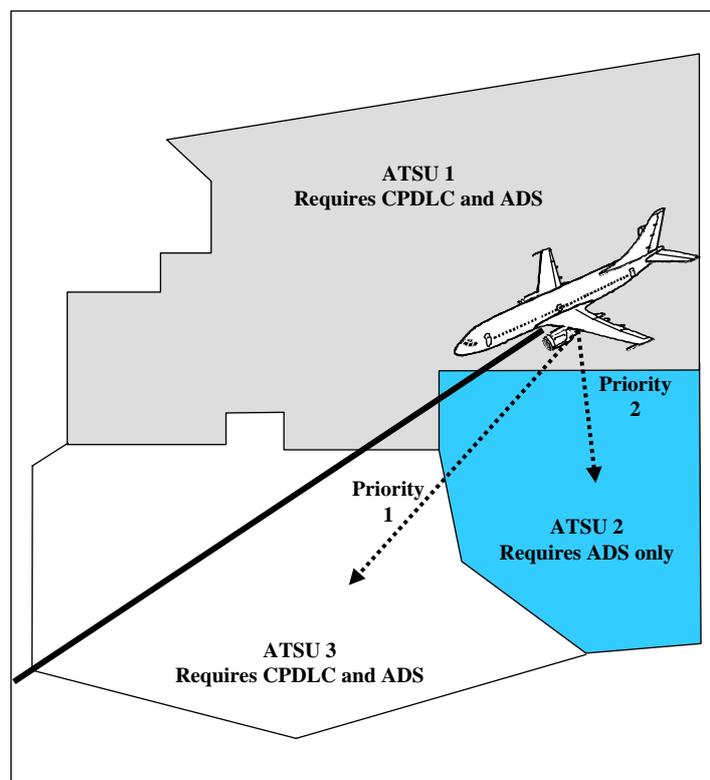


Figure 7: Transiting data link areas

ATSU 1 should address forward to ATSU 3 (Priority 1) to ensure that a CPDLC connection and ADS contracts are established prior to address forwarding to ATSU 2 (Priority 2) so that ADS contracts can be established for monitoring the transit of the aircraft across the relevant portion of the FIR.

4.6.3.1 Options for initiating the AFN logon

The AFN logon may be initiated by one of the following options.

- Option 1 - Initial AFN LOGON:* CPDLC shall cease between the aircraft and ATSU 1. The aircraft will enter ATSU 2 using voice. Pilots should initiate an initial AFN logon to ATSU 3 between 15 and 45 minutes prior to the estimated time at the FIR boundary.
- Option 2 - AFN LOGON triggered by address forwarding:* Address forwarding may be used to "jump" the connections over a FIR not requiring a CPDLC connection when agreed by the appropriate ATSUs. In this circumstance the controller shall inform the pilot of this intention by appending the free text message CONTACT WITH [ATSU name] NOT REQUIRED to the frequency transfer instructions. For example: AT TEKEP MONITOR NADI CENTER 13261. CONTACT WITH AUCKLAND NOT REQUIRED.

4.6.3.2 Transferring CPDLC for short transits

Where an ATS Unit decides to accept the transfer of data link for a short transit across its FIR, the receiving controller needs to be aware of whether any automated transfer process to the subsequent unit will be affected by the relatively short transit period across the FIR.

If so, then the controller must ensure that all messages required to successfully transfer the connections to the next unit (e.g. NDA, Address Forwarding, Monitor/Contact information, and End Service messages) are sent in the proper sequence at the correct time, whether they are sent automatically by the system or manually by the controller.

Note: The receiving unit must also be the Current Data Authority (CDA) before any of these messages can be sent successfully. For example, if the receiving unit tries to send the NDA message prior to becoming the CDA to account for a short transit time, the messages will fail.

4.7 End of Service and CPDLC Connection Transfer

4.7.1 Purpose and procedure

Under normal conditions, the current ATSU initiates the CPDLC connection termination sequence by sending an **END SERVICE** uplink message. In response to an **END SERVICE** message:

- The avionics will downlink a **DISCONNECT** message. The avionics will consider the aircraft to be disconnected as soon as the **DISCONNECT** message is sent.
- The current connection will be terminated, activating the non-active connection. The subsequent ATSU will now be able to exchange CPDLC messages with the aircraft.

The success of the CPDLC transfer is dependent upon the next ATSU establishing its own CPDLC connection prior to the **END SERVICE** message being received by the aircraft. Failure of the next ATSU to establish a CPDLC connection before the **END SERVICE** reaches the aircraft will leave the aircraft without CPDLC connectivity.

There are two cases in which the avionics will terminate established CPDLC connections.

- Depending on the software load, when any uplink messages remain open when the aircraft receives an End Service.
- When the **END SERVICE** element is part of a multi-element message where none of the elements require a **WILCO** response.

In both cases an error message will be generated to both ATS systems.

If any downlink messages remain open when the aircraft receives an **END SERVICE** message, the avionics will close the messages and terminate the CPDLC connection with the current ATSU. This will not affect the CPDLC connection with the next ATSU.

4.7.1.1 Uplink messages to be closed before the **END SERVICE**

The controller shall ensure that no open uplink CPDLC messages exist prior to the uplinking of an **END SERVICE** message. In the event that a CPDLC uplink is unanswered, ATC should uplink the free text: **CHECK AND RESPOND TO OPEN CPDLC MESSAGES**

4.7.1.2 Use of Contact/Monitor Uplink Message

The purpose of the Contact/Monitor uplink messages (UM#117 to UM#122) is to advise the pilot when (and where) a change to the nominated frequency is required. When any of the “Monitor” uplink messages are received the pilot shall change to the nominated frequency at the appropriate time. A check call is not required on the frequency. When any of the “Contact” messages are received the pilot shall change to the nominated frequency at the appropriate time and perform a check call on the frequency.

The sending or receipt of any of the “Contact” uplink messages is not an indication to the pilot that CPDLC use must be terminated or suspended once voice contact is established. If termination or suspension of CPDLC use is intended by the controller when voice contact is established then the requirement must be specifically stated in addition to the **CONTACT** message element.

4.7.1.3 Synchronizing the CPDLC and voice transfer

If the CPDLC **MONITOR (OR CONTACT)** [icaounitname] [frequency] message element and the **END SERVICE** message element are to be sent as separate uplink messages, the **END SERVICE** message should be sent as soon as possible after the receipt of the **WILCO** response. This is to ensure synchronization of the CPDLC and the voice communication transfers.

4.7.1.4 Timing of the transfer of communications

The **MONITOR (OR CONTACT)** [icaounitname] [frequency] and **END SERVICE** message elements should normally be sent after receipt of the last position report before crossing the FIR boundary, but not less than 5 minutes prior to the FIR boundary. This allows the next ATSU's connection to be active when the aircraft crosses the FIR boundary.

4.7.1.5 Aircraft entering VHF coverage

For aircraft entering airspace where radar and air-ground VHF are provided, and the aircraft will not cross an FIR boundary, it is not necessary to send an **END SERVICE** message to disconnect CPDLC. In this case, the CPDLC connection will remain active until termination of flight. If subsequent control sectors within the system do not have CPDLC capability, and local instructions do not exist to the contrary, the controller with jurisdiction for CPDLC must ensure that CPDLC clearances or instructions are not issued to the aircraft while it is under the control of another sector.

4.7.1.6 Timing of the CPDLC connection

Under normal circumstances the CPDLC connection should be established with the next data authority prior to the connection between the aircraft and the current data authority being terminated.

Either of the following options may be utilized to complete the CPDLC connection transfer process:

- a) *Option 1* the **MONITOR (OR CONTACT)** [icaounitname] [frequency] and **END SERVICE** message elements are sent in the same CPDLC uplink message.

Note. Because the CPDLC connection will be terminated when the pilot sends the **WILCO** response, this multi element message should not be sent more than 10 minutes from the frequency transfer point.

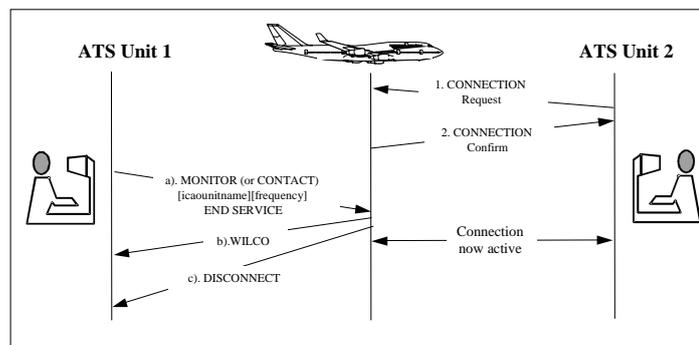


Figure 8: CPDLC connection transfer - Option 1

- b) *Option 2:* the **MONITOR (OR CONTACT)** [icaounitname] [frequency] and the **END SERVICE** message elements are sent as separate CPDLC uplink messages. The **END SERVICE** is sent as soon as possible after the receipt of the **WILCO** response to the **MONITOR (OR CONTACT)** instruction.

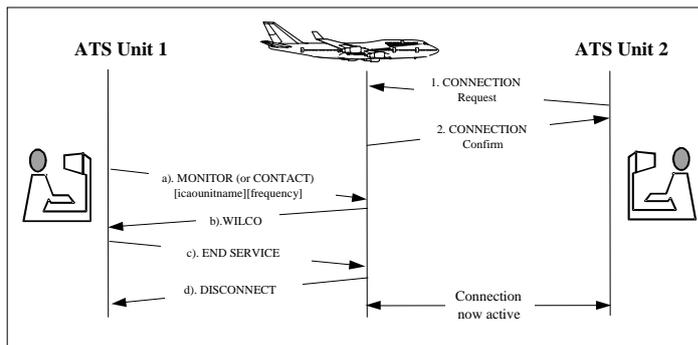
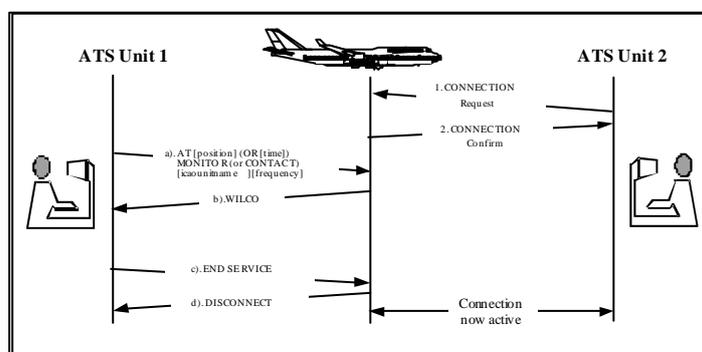


Figure 9: CPDLC connection transfer - Option 2

c) *Option 3*: the AT [position](or AT [time]) MONITOR (OR CONTACT) [icaounitname] [frequency] and the END SERVICE message elements are sent as separate CPDLC uplink messages. The END SERVICE is sent after the receipt of the WILCO response to the MONITOR (OR CONTACT) instruction, and approaching the FIR boundary.



4.7.2 Abnormal cases at the time of the connection / disconnection

4.7.2.1 Non-delivery of END SERVICE message

There may be unusual situations where a CPDLC connection cannot be automatically terminated (e.g. if the END SERVICE message does not trigger the disconnection, or if the END SERVICE message is not delivered to the avionics). If the controller is aware that the END SERVICE message has been unsuccessful, the controller’s initial action should be to send another END SERVICE message. If this is also unsuccessful the pilot will be instructed to terminate the CPDLC connection and logon to the next unit.

The voice phraseology to be used will be:

Controller	Select ATC Com Off then Logon to [ATSU name]
Pilot	Roger

The [ATSU name] is the four character ICAO code.

4.7.2.2 Non-automatic termination of the connection

If the CPDLC connection with the current ATSU does not terminate automatically at the appropriate time (i.e. before the position or time notified in the CONTACT/MONITOR message), then the pilot shall send the CPDLC position report to the current active center. If receipt of the position report does not prompt the current centre to send an End Service message within three minutes of the report being sent, then the pilot should manually disconnect from the current ATSU and logon to the subsequent ATSU.

If the CPDLC transfer is intended to be delayed until after the aircraft has passed the FIR transfer point, the controller shall notify the pilot of the intended delay with the free text message EXPECT CPDLC TRANSFER AT [time].

If the aircraft crosses the FIR boundary prior to the time notified in the free text uplink, the boundary position will be sent to the ATSU with the active connection.

If the CPDLC transfer has not been completed by the time notified in the uplink message, the pilot is entitled to manually disconnect from the active ATSU and logon to the subsequent ATSU.

5 CPDLC Procedures

5.1 Means of Communication

5.1.1 General

Generally, when a CPDLC aircraft is operating within a CPDLC airspace beyond the range of VHF voice communications, and other local rules do not apply, then:

- CPDLC will be the primary means of communication, and
- Voice will be used as the backup communication medium (for example VHF, direct HF, third party HF, SATVOICE).

The response to a CPDLC message should be via CPDLC, and a response to voice should be via voice.

5.1.2 Voice communications

5.1.2.1 Notification of frequencies to the preceding ATSU

ATSUs shall advise frequencies to the preceding ATSU, in accordance with the appropriate letters of agreement.

5.1.2.2 Notification of HF frequencies by CPDLC

The uplink CPDLC frequency transfer message elements can accommodate only one frequency variable. Due to this limitation, the controller will insert the primary HF frequency in these messages. This applies to the following uplinks:

UM#117	CONTACT [icaounitname][frequency]
UM#118	AT [position] CONTACT [icaounitname][frequency]
UM#119	AT [time] CONTACT [icaounitname][frequency]
UM#120	MONITOR [icaounitname][frequency]
UM#121	AT [position] MONITOR [icaounitname][frequency]
UM#122	AT [time] MONITOR [icaounitname][frequency]

In areas of poor HF coverage, the controller may consider appending free text nominating a secondary HF frequency. The format of this message is described in Part 5.9. In the **CONTACT** and **MONITOR** messages RADIO is not an option within the [icaounitname] field. Therefore CENTER will be used to identify a RADIO facility.

5.2 CPDLC Capability

5.2.1 Notification of CPDLC capability

An AIP Supplement, or similar, shall be published to advise the CPDLC capability of an ATS system and its AFN logon address. An aircraft's CPDLC capability shall be notified in the flight plan.

5.2.2 Downlink messages

ATS systems that allow the use of all elements contained in the FANS-1/A message set should be capable of correctly processing all the FANS-1/A downlink message elements. However, where specific CPDLC implementations do not include all message set elements, such as domestic airspace or initial and temporary situations, the ATSUs involved should publish the reduced message set with appropriate explanatory material. Where these reduced implementations occur across a group of adjoining ATSUs, every attempt should be made to ensure that the message set chosen is common to all applicable airspace within the implementation boundaries. ATSUs should exercise caution when specifying reduced message sets, ensuring that the messages handled are adequate for all envisaged scenarios in the airspace to be served by CPDLC.

If the ground system receives a downlink message that is not supported by the implemented message set, then the free text uplink message (UM#169) MESSAGE NOT SUPPORTED BY THIS FACILITY should be sent rather than terminating the connection.

5.2.3 Uplink messages

For various reasons some States may not have implemented specific FANS-1/A uplink message elements contained in the message set in Section 5.8 (e.g. UM#33 CRUISE [altitude]). These individual implementations shall not impact overall operations.

5.3 Use of Pre-Formatted and Free Text Messages

5.3.1 Preferred use of pre-formatted messages

Free text messages shall be used only when an appropriate pre-formatted message element does not exist. In particular, the creation of a clearance request and the issuing of a clearance shall be performed by the use of pre-formatted message elements only. The use of pre-formatted message elements allows on board data processing such as the automatic insertion of the clearance information into the FMC. It also allows the controller to respond more quickly when the ATS system has the capability to automatically link a pre-formatted request to a pre-formatted response. Additionally, this process minimizes the risk of input errors.

When a free text message is required, standard ATC phraseology and format shall be used. Non-essential words and phrases should be avoided. Abbreviations should only be included in free text messages when they form part of standard ICAO phraseology, e.g. ETA.

5.3.2 Standardized free text messages

While pre-formatted message elements are required to be used whenever possible, there are occasions where frequent use of free text allows the meaning and appropriate response to be standardized. The Standard Free text message set is shown in Section 5.10.

5.3.3 Storing free text messages

ATSUs capable of storing free text messages should select those message elements from the standard free text message set (see [FANS-1/A CPDLC Standard Free Text Messages](#)) appropriate to their particular environments. When the storage of free text messages is not possible, controllers shall use the same message formats when typing free text messages.

5.4 Exchange of CPDLC messages

5.4.1 Message assurance

The FANS-1/A system does not provide for end-to-end message assurance. Therefore, there can be no guarantee provided by the ground system or the avionics that the message has been delivered to the controller or pilot. However:

- The ATS system will receive a network acknowledgment (MAS Message Assurance) to an uplink message indicating that the message has been delivered to the aircraft's ACARS MU, and
- The avionics will receive a network acknowledgment to a downlink message indicating that the message has been delivered to the communication service provider's system.

5.4.2 Ambiguous dialogues

In the case of a controller or pilot having any doubt as to the intent of a message, or if any other ambiguity exists, clarification shall be sought through the use of voice communication.

5.4.3 Interruption of a CPDLC dialogue

If a CPDLC dialogue is interrupted by a system shutdown, the entire dialogue shall be re-commenced by voice communication.

5.4.4 Approval of request or clearance / instruction

5.4.4.1 Affirmative response to a clearance/instruction

The **WILCO** downlink message indicates that the pilot will comply fully with the clearance/instruction contained in the associated uplink message. The readback of a clearance or instruction issued by CPDLC is not required.

5.4.4.2 Affirmative response to a clearance request

The **ROGER** or **AFFIRM** uplinks are not appropriate responses to a clearance request and shall not be used for this purpose. The controller shall only approve a clearance request by uplinking a message containing an actual clearance.

5.4.4.3 Conditions relating to a specific clearance

Terms or conditions relating to a specific clearance shall be included in the clearance uplink message. They shall not be sent as a separate message.

5.4.4.4 Affirmative response to a negotiation request

AFFIRM is an appropriate response to an uplinked negotiation request message that is acceptable (e.g. **CAN YOU ACCEPT [altitude] AT [time]**).

5.4.5 Negative response to a downlink request

5.4.5.1 Negative response to a clearance request

When a clearance request is denied, the controller shall use the element **UNABLE** (not **NEGATIVE**) in the uplink response. The aircraft's current clearance shall not be re-stated.

5.4.5.2 Explanation of negative response

Pre-formatted elements such as **DUE TO TRAFFIC** (or a free text element) should be added to the response message if clarification is considered necessary. Additional elements (including free text elements) in the form of an explanation must be included when responding to a multiple clearance request where some, but not all clearance requests can be granted.

5.4.5.3 Offering alternative clearances to downlink requests

If the clearance contained in a downlink request is not available, but an alternative (similar) clearance is available, ATC must not simply respond to the downlink request with the alternative uplink clearance. An **UNABLE** must be uplinked to close the original clearance request. Depending on workload and traffic, ATC may then uplink an alternative clearance.

Example:

Pilot	REQUEST CLIMB TO F370
Controller	UNABLE. DUE TO TRAFFIC
Controller	CLIMB TO AND MAINTAIN F350. REPORT LEVEL F350

The ATC response in the following example is incorrect and should not be used

Pilot	REQUEST CLIMB TO F370
Controller	UNABLE. CLIMB TO AND MAINTAIN F350. REPORT LEVEL F350

5.4.6 Negative response to an uplink request

NEGATIVE is an appropriate response to an uplink negotiation request that is not acceptable (e.g. **CAN YOU ACCEPT [altitude] AT [time]**).

5.4.7 Time period between receiving and responding to a message

The controller and the pilot shall respond to incoming requests as soon as practicable to avoid duplicate messages entering the system.

5.4.7.1 Delays in responding

The controller and the pilot should consider that it takes up to one minute for a message to be received, time for the pilot (or the controller) to take action and respond, and up to one minute for the reply to be received. Nevertheless, they should be aware that extra delays could occur in the transmission of any response to a CPDLC message.

Note. Transmission times for messages may vary depending on the transmission media.

5.4.7.2 Delay expected after receiving a “STANDBY” message

If the **STANDBY** response is received, a further response can be expected within 10 minutes. The message remains open. If the pilot (or the controller) does not respond within this time, the next message should be in the form of an inquiry, not a duplicated request.

5.4.8 Re-sending Messages

5.4.8.1 Re-sending of a message when no alert received

When the pilot (or the controller) elects to re-send a message after a reasonable period of time has passed and no error message has been received indicating the non-delivery of the message, the message shall be sent as a query message. Alternatively, voice communication may be used.

Example:

Pilot	REQUEST CLIMB [level]
--------------	-----------------------

Pilot	WHEN CAN I EXPECT [level]
--------------	---------------------------

5.4.8.2 Re-sending of a message when an alert has been received

When an error message indicating the non-delivery of the message has been received at the flight deck or at the controller work station, the pilot (or the controller) may elect to re-send an identical message. Alternatively, voice may be used.

5.4.9 Duplicate requests received

5.4.9.1 Second identical request after an uplink “STANDBY” message

If a second identical downlink request is sent by the pilot after a reasonable period (more than 10 minutes) has passed since receiving a **STANDBY** response to an earlier request, the controller should respond with **UNABLE REQUEST DEFERRED**. This will close out the second message, inform the pilot that the reply will take longer, and will leave only one open message requiring a response.

5.4.9.2 Multiple identical requests

All messages requiring a response must be answered. If the controller (or the pilot) receives a second identical CPDLC request prior to having answered the first, they shall respond to both of the messages to ensure message closure. On rare occasions, the first uplink message may generate an “invalid reference number” error message, in the avionics.

5.4.10 Altitude change clearances

5.4.10.1 Issuing conditional altitude change clearances

The potential exists for the restriction “**AT**” contained at the beginning of the following conditional clearances to be missed by aircrew and consequently the clearance may be executed prematurely.

- UM#21 **AT** [time] **CLIMB TO AND MAINTAIN** [altitude]
- UM#22 **AT** [position] **CLIMB TO AND MAINTAIN** [altitude]
- UM#24 **AT** [time] **DESCEND TO AND MAINTAIN** [altitude]
- UM#25 **AT** [position] **DESCEND TO AND MAINTAIN** [altitude]

Controllers shall precede UM#21, UM#22, UM#24 and UM#25 with UM#19 **MAINTAIN [altitude]** indicating to aircrew to maintain their present altitude until the condition of the clearance is satisfied.

5.4.10.2 Level report requirements for climb or descent clearances

If a CPDLC level report is required, controllers shall append UM#129 **REPORT LEVEL [altitude]** to any vertical change clearance to a single altitude so that flight crews have access to the pre-formatted downlink report.

If no **REPORT LEVEL [altitude]** is received, the crew has no requirement to report maintaining the cleared flight level.

Example clearance issued to a flight currently cruising at FL310 requesting climb to FL350 when the climb can not be executed until the aircraft is at MICKY

MAINTAIN FL310, AT MICKY CLIMB TO AND MAINTAIN FL350, REPORT LEVEL FL350

Note: Some States do not require this CPDLC level report in airspace in which ADS-C is in use.

5.4.10.3 Canceling block altitude clearances

A block altitude clearance is an authorization for an aircraft to operate between and at the levels specified in the clearance. A pilot report at the floor or ceiling of the block altitude clearance does not cancel the block altitude clearance – the clearance is only cancelled by the pilot acceptance of a subsequent (vertical) clearance issued by ATC. If the current block altitude clearance is no longer required, the pilot should request the level(s) preferred.

To cancel a previously issued block clearance and limit the aircraft to one specific level the controller shall issue an appropriate vertical instruction such as:

- UM#19 **MAINTAIN [altitude]**;
- UM#20 **CLIMB TO AND MAINTAIN [altitude]**; or
- UM#28 **DESCEND TO REACH [altitude] BY [time]**.

The controller should also add UM#129 **REPORT LEVEL [altitude]**.

The **WILCO** response to the vertical clearance uplink cancels any previously issued block clearance.

5.4.10.4 Issuing Level Restrictions

Depending on how they are used, certain CPDLC message elements may be used as either:

1. A “stand-alone” clearance; or
2. A level requirement for an interim level, when appended to another CPDLC vertical clearance

This applies to the following message elements:

- UM#26 **CLIMB TO REACH [altitude] BY [time]**
- UM#27 **CLIMB TO REACH [altitude] BY [position]**
- UM#28 **DESCEND TO REACH [altitude] BY [time]**
- UM#29 **DESCEND TO REACH [altitude] BY [position]**

Example 1:

ATC	CLIMB TO REACH FL390 BY 2200
Meaning	The aircraft is cleared to climb to FL390 and is required to be maintaining FL390 by 2200.

Example 2: The following format may be used to issue a requirement for an interim level. The example shown reflects ICAO phraseology. Some FIRs may choose to reverse the order of the elements shown in the example, so long as both are included.

ATC	CLIMB TO AND MAINTAIN FL390 CLIMB TO REACH FL370 BY 0100
Meaning	The aircraft is cleared to climb to FL390, and is required to reach FL370 (or higher) by 0100.

Note 1. Because of limitations in the FANS-1/A message set, there is no specific message element to issue a requirement for an intermediate level.

Note 2. In the ICAO CPDLC Message set, CLIMB TO [level].REACH [level] BY [time/position] would be used (see Example 2a)

Example 2a:

ATC	CLIMB TO AND MAINTAIN FL390 REACH FL370 BY 0100
Meaning	The aircraft is cleared to climb to FL390, and is required to reach FL370 (or higher) by 0100.

Example 3: Confusion may occur if the vertical clearance and the requirement were sent separately. (*This scenario might occur, for example, if the controller decided to add a requirement after issuing the initial clearance*):

ATC PILOT	CLIMB TO AND MAINTAIN FL390 WILCO followed by
ATC	CLIMB TO REACH FL370 BY 2200

Technically, the second clearance amends the final cleared level of the aircraft (to FL370), which was not the intention of the controller. Because of the confusion inherent in this type of message exchange, this message should not be used in this manner; instead, the entire clearance should be re-stated; *i.e.* CLIMB TO AND MAINTAIN FL390. CLIMB TO REACH FL370 BY 2200

5.4.11 Requesting an aircraft’s speed

When the aircraft’s Mach number or indicated airspeed is requested, the controller shall use the pre-formatted message element **CONFIRM SPEED**.

5.4.12 Advising a wake turbulence offset

In the event of a pilot initiating a wake turbulence offset (up to 2nm either side of track) in RVSM airspace for which the controller is not required to issue a clearance, the pilot shall advise the controller. The following data or voice phraseology shall be used:

Pilot	Wake Dev [direction] <i>Direction L or R (left or right) as appropriate</i>
--------------	--

5.4.13 Direct Tracking and UPR Aircraft

UPRs are calculated by airline flight planning systems as being the optimal route clearance for the specific aircraft taking into account the latest available weather information. As such, controllers should not offer unsolicited direct tracking to aircraft flying a UPR as the direct route may be less optimal than the aircraft’s current route.

5.4.14 Planned Airborne Re-route Procedure – DARP (Datalink Aircraft)

A planned airborne re-route will occur periodically on long haul Pacific routes when a new forecast is issued after departure, indicating that significant time and/or fuel savings can be made. The following procedures apply when aircraft request a planned re-route while en-route. *Note:(At the time of incorporation into the FOM, this Section applies only to routes transiting directly from/to Auckland / Oakland Oceanic Airspace Use of these procedures in other FIR’s/areas is appropriate without further FOM modification, provided some written agreement between the participants is in place.)*

AOC will plan the re-route and uplink the route to the aircraft, commencing from the waypoint on the current route, ahead of the Aircraft and finishing at destination. *Note: Some Flight Management Systems allow AOC uplinks to the Active Route. It is recommended that all AOC route uplinks are directed to the Inactive Route.*

Flight crew will load the re-route into the “Inactive Route” of the FMC then Downlink the unedited route request to the ATSU. *Note: Crew are not permitted to edit the route, other than to delete a waypoint that may have been crossed between the re-route being prepared by the AOC, and the ATC route request being sent.*

ATC (1) receives the downlink re-route request (message #24)

REQUEST [departure airport:xxxx destination airport:xxxx (fix1)(fix2)(fix3) ...]

The ground system will “auto populate” the uplink reply

ATC (1) will do either “a” or “b” below:

- a) uplink route clearance (message #83) with the departure airport deleted:
AT [fix 1] CLEARED [destination airport:xxxx (fix1)(fix2)(fix3) ...]
 and then ATC (1) will then transmit the new route to ATC (2) via AIDC messaging;
- b) reply “UNABLE” due to traffic where conflicting traffic prevents route clearance at the current flight level.

The following operational requirements apply:

- a) The requested route must commence from the waypoint on the current route ahead of the aircraft, and (if the divergence waypoint is not the next fix ahead of the aircraft) must contain all waypoints on the current route ahead of the aircraft up to the divergence waypoint, followed by the revised routing to destination.
- b) The re-route request must be made at least 20min before the divergence waypoint, to allow processing time.
- c) The re-route request must not be made within 60min of the common FIR boundary to allow electronic route data transfer ATC(1) to ATC(2). [AIDC messaging].
- d) The re-route request may be made to the new Data Authority, immediately after crossing the common FIR boundary

5.5 Multi-Element Requests

5.5.1 Avoiding multiple element clearance requests

To avoid potential ambiguity, pilots should, where possible, avoid sending multiple clearance requests in the one downlink message.

5.5.2 Responding to multiple element clearance requests

5.5.2.1 Multiple clearance requests in one message: All approved

Where a multiple clearance request is received and all clearance request elements can be approved, each clearance request element shall be specifically addressed in the response.

Example

Pilot	REQUEST CLIMB TO [level] REQUEST DIRECT TO [position]
Controller	CLIMB TO AND MAINTAIN [level] PROCEED DIRECT TO [position]

5.5.2.2 Multiple clearance requests in one message: All not approved

If the response to a multi-element message is **UNABLE** then the reply applies to all elements of the original message. The aircraft’s current clearance shall not be re-stated.

Example

Pilot	REQUEST CLIMB TO [level] REQUEST DIRECT TO [position]
Controller	UNABLE

5.5.2.3 Multiple clearance requests in one message: Some approved / Some not approved

When a multi-element clearance request is received and part of it can be granted and part of it cannot, the uplink shall not contain the single word **UNABLE** and a clearance. If **UNABLE** is used within a clearance message, it must contain a qualifier to remove any ambiguity.

The following examples illustrate **correct** ATC responses.

First correct example:

Pilot	REQUEST CLIMB TO [level] REQUEST DIRECT TO [position]
Controller Controller	UNABLE Higher altitude PROCEED DIRECT TO [position]

Second correct example:

Pilot	REQUEST CLIMB TO [level] REQUEST DIRECT TO [position]
Controller	UNABLE Higher altitude PROCEED DIRECT TO [position]

The ATC response in the following example is **incorrect and shall never be used**:

Pilot	REQUEST CLIMB TO [level] REQUEST DIRECT TO [position]
Controller	UNABLE PROCEED DIRECT TO [position]

5.6 Multi-element Uplink Messages

5.6.1 Combining multiple elements into a single message

Only uplink elements that are related to the overall message should be combined into a single message. Messages that contain unrelated elements could either cause confusion or result in the crew rejecting the entire message when one of the elements on its own could have been acceptable. The following multi-element uplink is an example of a clearance that can be unambiguously sent as a single message.

WHEN READY
DESCEND TO AND MAINTAIN FL280
REPORT LEVEL FL280

When the elements are not dependent on each other, controllers should send a single element clearance and wait for the response before sending a subsequent instruction.

5.6.2 Dependent Clearances

A dependent clearance is a message consisting of more than one clearance element, where the pilot must comply with each of the elements. A rejection of any of the elements, either singly or in combination, renders the entire clearance invalid. The following multi-element uplink is an example of a dependent clearance:

CLIMB TO AND MAINTAIN FL330
AT FL330 PROCEED DIRECT TO TUNTO
REPORT LEVEL FL330.

In this example the aircraft must complete a change of level in order to be issued with an amended route clearance.

Whenever possible, all elements of a dependent clearance should be sent in a single uplink message. Sending the elements as individual messages may compromise safety or separation if the pilot accepts the first uplink of a dependent clearance, complies with the instruction, and then responds **UNABLE** to the next message when

received. By the time that the controller has received the UNABLE response, the aircraft could have begun executing the first instruction of a clearance that is invalid if the pilot cannot comply with the second element.

The response to a multi-element uplink message will either be a WILCO or UNABLE that refers to the entire message. It is not possible for the pilot to respond to individual elements of a multi-element message.

NOTE: Care must be taken in the construction of dependent clearances to ensure that there is no ambiguity present in the message. In the example above, the second element has been carefully chosen to reinforce the requirement instead of using the word THEN followed by the route clearance PROCEED DIRECT TO TUNTO.

The following message is an example of poor message construction as it does not unambiguously convey to the pilot that the climb clearance must be completed prior to commencing the route clearance component. This format SHOULD NOT be used for dependent clearances:

~~CLIMB TO AND MAINTAIN FL330
THEN
PROCEED DIRECT TO TUNTO~~

5.7 Message Closure

5.7.1 General

Definitions:

- A message requiring a response remains **open** until a referenced response is received.
- A message is **closed** when either a response is not technically required, or after a referenced response other than **STANDBY** or **REQUEST DEFERRED** has been received.

A normal downlink free text message (based on downlink message element DM#67) does not require a response from the controller to close the CPDLC exchange. However, a downlink free text message based on downlink message element DM#68 (Distress attribute) does require a response and the message will remain open until a referenced response is received.

Any uplink message containing only free text requires a **ROGER** response. The message will remain open until a referenced response containing **ROGER** is received.

5.7.2 Answering an uplink free text

When the controller sends a message containing only free text, or a free text element combined with elements that do not require a response, the pilot must respond to the free text with a **ROGER** response before responding to the actual contents of the message.

5.7.3 Dialogue commenced via CPDLC and continued via voice

If a CPDLC message requiring a closure response is subsequently negotiated by voice, a CPDLC closure response message is still necessary to ensure the proper synchronization of ground and aircraft systems.

5.8 Position Reporting

5.8.1 General

To harmonize waypoint position reports by either voice or data, the “Position” and “Next Position” shall only contain compulsory reporting points unless requested otherwise by ATC. The “Ensuing Significant Point” may be either the compulsory or non-compulsory reporting point after the “Next Position” (Refer AIREP form PANS/ATM, Appendix 1).

5.8.2 Downlink of position report

When a CPDLC connection exists in a procedural, non-ADS-C environment, pilots shall ensure that position reporting is conducted via CPDLC. A CPDLC position report shall be sent manually by the pilot whenever an ATC waypoint is passed over, (or passed abeam when offset flight is in progress). ATC expects position reports based on downlink message DM#48 - **POSITION REPORT**.

5.8.3 Flexible track position reports

All waypoints published for an independent flex track or user preferred route (UPR) are compulsory reporting points. However, when the track follows a published ATS route, position reports are not required at any non-compulsory waypoints defined for that ATS route.

5.8.4 First position report

Pilots shall downlink a CPDLC position report (ATC waypoint) to the next ATSU after the completion of:

- An initial CPDLC connection (when inbound from an area not providing CPDLC services), or during a connection transfer;
 - **Either** when the CPDLC connection transfer has been completed; **or** at the associated FIR boundary.
- This position report is required whether or not there is an ADS-C contract in place. It serves as confirmation that the receiving centre is the Current Data Authority.

5.8.5 Sending of ATC waypoints only

Additional non-ATC waypoints may be sequenced by the FMC, however information relating to these waypoints is not of interest to ATC. It is the pilot's responsibility to report only at ATC waypoints.

5.8.6 Updating a waypoint estimate

When it is necessary to update a waypoint ETA a free text message shall be sent in the form of – Revised ETA [position] [time].

5.8.7 Non-receipt of a scheduled position report

If a scheduled position report is not received via CPDLC, the use of voice communication by the controller is not mandatory. The controller may obtain the report by uplinking message UM#147 - **REQUEST POSITION REPORT**.

5.8.8 Sequencing 'ABEAM' waypoints in excess of FMC parameters

When an aircraft passes abeam a waypoint in excess of the defined sequencing parameter for the aircraft type the FMC will not sequence the active waypoint on the Legs and Position Report pages. Operators shall develop appropriate airborne procedures to ensure correct waypoint sequencing.

Note: Some ATS systems use current GPS position that is included in the ATC position report to update their ground systems.

5.8.9 ARINC 424 fix names

Crews should be aware that ATC ground systems can not process latitudes and longitudes encoded as fix names in the ARINC 424 format. Example 10N40 (indicates lat/long of 10N140W). Downlinks containing such fix names may be rejected by ATC systems.

5.9 FANS-1/A CPDLC Message Set and Intent

This Section contains a complete listing of the message intent for all FANS-1/A CPDLC messages as defined by the OPLINK Panel. Additional comments provided by the ISPACG forum are displayed in *Italics*.

5.9.1 Response Requirements Key:

TYPE	CLOSURE RESPONSES
W/U	WILCO, UNABLE, will close the uplink message.
A/N	AFFIRM, NEGATIVE, will close the uplink message.

R	ROGER, will close the uplink message.
NE	Most messages with an NE attribute require an operational response. Only the correct operational response is presented to the pilot. The uplink message is considered to be closed on sending and does not require a response to close the dialogue. The WILCO, UNABLE, AFFIRM, NEGATIVE, ROGER, and STANDBY responses are not enabled for pilot selection.
Y	Response required.
N	Response not required

Note: Under some circumstances, an ERROR message will also close an uplink message.

Multi element uplink messages require only a single closure response. The response required for a multi element message is the highest priority response out of each of the elements in the message. When determining the highest priority, the following priority order is used:

W/U
A/N
R
NE

For example, the uplink CLIMB TO AND MAINTAIN FL370. REPORT LEVEL FL370 contains two elements. The first element requires a “W/U” response, the second an “R” response. The highest priority response is W/U, therefore this is the response required for closure.

5.9.2 Uplink - Responses and Acknowledgements

U M	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
0	UNABLE	Indicates that ATS cannot comply with the request.	NE
1	STANDBY	Indicates that ATS has received the message and will respond. <i>The pilot is informed that the request is being assessed and there will be a short-term delay (within 10 minutes). The exchange is not closed and the request will be responded to when conditions allow.</i>	NE
2	REQUEST DEFERRE D	Indicates that ATS has received the request but it has been deferred until later. <i>The pilot is informed that the request is being assessed and a long-term delay can be expected. The exchange is not closed and the request will be responded to when conditions allow.</i>	NE
3	ROGER	Indicates that ATS has received and understood the message.	NE
4	AFFIRM	Yes	NE
5	NEGATIVE	No	NE

5.9.3 Uplink - Vertical Clearances

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
6	EXPECT [altitude]	Notification that a level change instruction should be expected.	R
7	EXPECT CLIMB AT [time]	Notification that an instruction should be expected for the aircraft to commence climb at the specified time.	R
8	EXPECT CLIMB AT [position]	Notification that an instruction should be expected for the aircraft to commence climb at the specified position.	R
9	EXPECT DESCENT AT [time]	Notification that an instruction should be expected for the aircraft to commence descent at the specified time.	R
10	EXPECT DESCENT AT [position]	Notification that an instruction should be expected for the aircraft to commence descent	R

		at the specified position.	
11	EXPECT CRUISE CLIMB AT [time]	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time. <i>Due to different interpretations between the various ATS units this element should be avoided.</i>	R
12	EXPECT CRUISE CLIMB AT [position]	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position. <i>Due to different interpretations between the various ATS units this element should be avoided.</i>	R
13	AT [time] EXPECT CLIMB TO [altitude]	Notification that an instruction should be expected for the aircraft to commence climb at the specified time to the specified level.	R
14	AT [position] EXPECT CLIMB TO [altitude]	Notification that an instruction should be expected for the aircraft to commence climb at the specified position to the specified level.	R
15	AT [time] EXPECT DESCENT TO [altitude]	Notification that an instruction should be expected for the aircraft to commence descent at the specified time to the specified level.	R
16	AT [position] EXPECT DESCENT TO [altitude]	Notification that an instruction should be expected for the aircraft to commence descent at the specified position to the specified level.	R
17	AT [time] EXPECT CRUISE CLIMB TO [altitude]	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time to the specified level. <i>Due to different interpretations between the various ATS units, this element should be avoided.</i>	R
18	AT [position] EXPECT CRUISE CLIMB TO [altitude]	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position to the specified level. <i>Due to different interpretations between the various ATS units, this element should be avoided.</i>	R
19	MAINTAIN [altitude]	Instruction to maintain the specified level.	W/U
20	CLIMB TO AND MAINTAIN [altitude]	Instruction that a climb to the specified level is to commence and the level is to be maintained when reached.	W/U
21	AT [time] CLIMB TO AND MAINTAIN [altitude]	Instruction that at the specified time, a climb to the specified level is to commence and once reached the specified level is to be maintained.	W/U
22	AT [position] CLIMB TO AND MAINTAIN [altitude]	Instruction that at the specified position, a climb to the specified level is to commence and once reached the specified level is to be maintained.	W/U
23	DESCEND TO AND MAINTAIN [altitude]	Instruction that a descent to the specified level is to commence and the level is to be maintained when reached.	W/U
24	AT [time] DESCEND TO AND MAINTAIN [altitude]	Instruction that at the specified time a decent to the specified level is to commence and once reached the specified level is to be maintained.	W/U

25	AT [position] DESCEND TO AND MAINTAIN [altitude]	Instruction that at the specified position a descent to the specified level is to commence and when the specified level is reached it is to be maintained.	W/U
26	CLIMB TO REACH [altitude] BY [time]	Instruction that a climb is to commence at a rate such that the specified level is reached at or before the specified time. <i>When this element is not concatenated with another vertical clearance the level specified is the assigned level which is to be maintained.</i>	W/U
27	CLIMB TO REACH [altitude] BY [position]	Instruction that a climb is to commence at a rate such that the specified level is reached at or before the specified position. <i>When this element is not concatenated with another vertical clearance the level specified is the assigned level which is to be maintained.</i>	W/U
28	DESCEND TO REACH [altitude] BY [time]	Instruction that a descent is to commence at a rate such that the specified level is reached at or before the specified time. <i>When this element is not concatenated with another vertical clearance the level specified is the assigned level which is to be maintained.</i>	W/U
29	DESCEND TO REACH [altitude] BY [position]	Instruction that a descent is to commence at a rate such that the specified level is reached at or before the specified position. <i>When this element is not concatenated with another vertical clearance the level specified is the assigned level which is to be maintained.</i>	W/U
30	MAINTAIN BLOCK [altitude] TO [altitude]	A level within the specified vertical range is to be maintained.	W/U
31	CLIMB TO AND MAINTAIN BLOCK [altitude] TO [altitude]	Instruction that a climb to a level within the specified vertical range is to commence.	W/U
32	DESCEND TO AND MAINTAIN BLOCK [altitude] TO [altitude]	Instruction that a descent to a level within the specified vertical range is to commence.	W/U
33	CRUISE [altitude]	Instruction that authorizes a pilot to conduct flight at any altitude from the minimum altitude up to and including the altitude specified in the clearance. further, it is approval for the pilot to proceed to and make an approach at the destination airport. <i>Due to different interpretations between the various ATS units, this element should be avoided.</i>	
34	CRUISE CLIMB TO [altitude]	A cruise climb is to commence and continue until the specified level is reached. <i>Due to different interpretations between the various ATS units, this element should be avoided.</i>	W/U
35	CRUISE CLIMB ABOVE [altitude]	A cruise climb can commence once above the specified level. <i>Due to different interpretations between the various ATS units, this element should be avoided.</i>	W/U
36	EXPEDITE CLIMB TO [altitude]	The climb to the specified level should be	W/U

		made at the aircraft's best rate.	
37	EXPEDITE DESCENT TO [altitude]	The descent to the specified level should be made at the aircraft's best rate.	W/U
38	IMMEDIATELY CLIMB TO [altitude]	Urgent instruction to immediately climb to the specified level.	W/U
39	IMMEDIATELY DESCEND TO [altitude]	Urgent instruction to immediately descend to the specified level.	W/U
40	IMMEDIATELY STOP CLIMB AT [altitude]	Urgent instruction to immediately stop a climb once the specified level is reached.	W/U
41	IMMEDIATELY STOP DESCENT AT [altitude]	Urgent instruction to immediately stop a descent once the specified level is reached.	W/U
171	CLIMB AT [vertical rate] MINIMUM	Instruction to climb at not less than the specified rate.	W/U
172	CLIMB AT [vertical rate] MAXIMUM	Instruction to climb at not above the specified rate.	W/U
173	DESCEND AT [vertical rate] MINIMUM	Instruction to descend at not less than the specified rate.	W/U
174	DESCEND AT [vertical rate] MAXIMUM	Instruction to descend at not above the specified rate.	W/U

5.9.4 Uplink - Crossing Constraints

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
42	EXPECT TO CROSS [position] AT [altitude]	Notification that a level change instruction should be expected which will require the specified position to be crossed at the specified level.	R
43	EXPECT TO CROSS [position] AT OR ABOVE [altitude]	Notification that a level change instruction should be expected which will require the specified position to be crossed at or above the specified level.	R
44	EXPECT TO CROSS [position] AT OR BELOW [altitude]	Notification that a level change instruction should be expected which will require the specified position to be crossed at or below the specified level.	R
45	EXPECT TO CROSS [position] AT AND MAINTAIN [altitude]	Notification that a level change instruction should be expected which will require the specified position to be crossed at the specified level which is to be maintained subsequently.	R
46	CROSS [position] AT [altitude]	The specified position is to be crossed at the specified level. This may require the aircraft to modify its climb or descent profile.	W/U
47	CROSS [position] AT OR ABOVE [altitude]	The specified position is to be crossed at or above the specified level.	W/U
48	CROSS [position] AT OR BELOW [altitude]	The specified position is to be crossed at or below the specified level.	W/U
49	CROSS [position] AT AND MAINTAIN [altitude]	Instruction that the specified position is to be crossed at the specified level and that level is to be maintained when reached.	W/U
50	CROSS [position] BETWEEN [altitude] AND [altitude]	The specified position is to be crossed at a level between the specified levels.	W/U
51	CROSS [position] AT [time]	The specified position is to be crossed at the specified time.	W/U
52	CROSS [position] AT OR BEFORE [time]	The specified position is to be crossed at or before the specified time.	W/U
53	CROSS [position] AT OR AFTER [time]	The specified position is to be crossed at or after the specified time.	W/U

54	CROSS [position] BETWEEN [time] AND [time]	The specified position is to be crossed at a time between the specified times.	W/U
55	CROSS [position] AT [speed]	The specified position is to be crossed at the specified speed and the specified speed is to be maintained until further advised.	W/U
56	CROSS [position] AT OR LESS THAN [speed]	The specified position is to be crossed at a speed equal to or less than the specified speed and the specified speed or less is to be maintained until further advised.	W/U
57	CROSS [position] AT OR GREATER THAN [speed]	The specified position is to be crossed at a speed equal to or greater than the specified speed and the specified speed or greater is to be maintained until further advised.	W/U
58	CROSS [position] AT [time] AT [altitude]	The specified position is to be crossed at the specified time and the specified level.	W/U
59	CROSS [position] AT OR BEFORE [time] AT [altitude]	The specified position is to be crossed at or before the specified time and at the specified level.	W/U
60	CROSS [position] AT OR AFTER [time] AT [altitude]	The specified position is to be crossed at or after the specified time and at the specified level.	W/U
61	CROSS [position] AT AND MAINTAIN [altitude] AT [speed]	Instruction that the specified position is to be crossed at the specified level and speed and the level and speed are to be maintained.	W/U
62	AT [time] CROSS [position] AT AND MAINTAIN [altitude]	Instruction that at the specified time the specified position is to be crossed at the specified level and the level is to be maintained.	W/U
63	AT [time] CROSS [position] AT AND MAINTAIN [altitude] AT [speed]	Instruction that at the specified time the specified position is to be crossed at the specified level and speed and the level and speed are to be maintained.	W/U

5.9.5 Uplink - Lateral Offsets

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
64	OFFSET [distance offset] [direction] OF ROUTE	Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction.	W/U
65	AT [position] OFFSET [distance offset] [direction] OF ROUTE	Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified position.	W/U
66	AT [time] OFFSET [distance offset] [direction] OF ROUTE	Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified time.	W/U
67	PROCEED BACK ON ROUTE	The cleared flight route is to be rejoined.	W/U
68	REJOIN ROUTE BY [position]	The cleared flight route is to be rejoined at or before the specified position.	W/U
69	REJOIN ROUTE BY [time]	The cleared flight route is to be rejoined at or before the specified time.	W/U
70	EXPECT BACK ON ROUTE BY [position]	Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route at or before the specified position.	R
71	EXPECT BACK ON ROUTE BY [time]	Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route at or before the specified time.	R

72	RESUME OWN NAVIGATION	Instruction to resume own navigation following a period of tracking or heading clearances. May be used in conjunction with an instruction on how or where to rejoin the cleared route.	W/U
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5.9.6 Uplink - Route Modifications

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
73	[predepartureclearance]	Notification to the aircraft of the instructions to be followed from departure until the specified clearance limit.	W/U
74	PROCEED DIRECT TO [position]	Instruction to proceed directly from the present position to the specified position.	W/U
75	WHEN ABLE PROCEED DIRECT TO [position]	Instruction to proceed, when able, directly to the specified position.	W/U
76	AT [time] PROCEED DIRECT TO [position]	Instruction to proceed, at the specified time, directly to the specified position.	W/U
77	AT [position] PROCEED DIRECT TO [position]	Instruction to proceed, at the specified position, directly to the next specified position.	W/U
78	AT [altitude] PROCEED DIRECT TO [position]	Instruction to proceed, upon reaching the specified level, directly to the specified position.	W/U
79	CLEARED TO [position] VIA [route clearance]	Instruction to proceed to the specified position via the specified route.	W/U
80	CLEARED [route clearance]	Instruction to proceed via the specified route.	W/U
81	CLEARED [procedure name]	Instruction to proceed in accordance with the specified procedure.	W/U
82	CLEARED TO DEVIATE UP TO [distance offset] [direction] OF ROUTE	Approval to deviate up to the specified distance from the cleared route in the specified direction.	W/U
83	AT [position] CLEARED [route clearance]	Instruction to proceed from the specified position via the specified route.	W/U
84	AT [position] CLEARED [procedure name]	Instruction to proceed from the specified position via the specified procedure.	W/U
85	EXPECT [route clearance]	Notification that a clearance to fly on the specified route may be issued.	R
86	AT [position] EXPECT [route clearance]	Notification that a clearance to fly on the specified route from the specified position may be issued.	R
87	EXPECT DIRECT TO [position]	Notification that a clearance to fly directly to the specified position may be issued.	R
88	AT [position] EXPECT DIRECT TO [position]	Notification that a clearance to fly directly from the first specified position to the next specified position may be issued.	R
89	AT [time] EXPECT DIRECT TO [position]	Notification that a clearance to fly directly to the specified position commencing at the specified time may be issued.	R
90	AT [altitude] EXPECT DIRECT TO [position]	Notification that a clearance to fly directly to the specified position commencing when the specified level is reached may be issued.	R
91	HOLD AT [position] MAINTAIN [altitude] INBOUND TRACK [degrees][direction] TURN LEG TIME [leg type]	Instruction to enter a holding pattern with the specified characteristics at the specified position and level.	W/U
92	HOLD AT [position] AS PUBLISHED	Instruction to enter a holding pattern with the	W/U

	MAINTAIN [altitude]	published characteristics at the specified position and level.	
93	EXPECT FURTHER CLEARANCE AT [time]	Notification that an onwards clearance may be issued at the specified time.	R
94	TURN [direction] HEADING [degrees]	Instruction to turn left or right as specified onto the specified heading.	W/U
95	TURN [direction] GROUND TRACK [degrees]	Instruction to turn left or right as specified onto the specified track.	W/U
96	FLY PRESENT HEADING	Instruction to continue to fly on the current heading.	W/U
97	AT [position] FLY HEADING [degrees]	Instruction to fly on the specified heading from the specified position.	W/U
98	IMMEDIATELY TURN [direction] HEADING [degrees]	Instruction to turn immediately left or right as specified onto the specified heading.	W/U
99	EXPECT [procedure name]	Notification that a clearance may be issued for the aircraft to fly the specified procedure.	R
178	TRACK DETAIL MESSAGE	<i>Message not defined.</i>	

5.9.7 Uplink - Speed Changes

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
100	AT [time] EXPECT [speed]	Notification that a speed instruction may be issued to be effective at the specified time.	R
101	AT [position] EXPECT [speed]	Notification that a speed instruction may be issued to be effective at the specified position.	R
102	AT [altitude] EXPECT [speed]	Notification that a speed instruction may be issued to be effective at the specified level.	R
103	AT [time] EXPECT [speed] TO [speed]	Notification that a speed range instruction may be issued to be effective at the specified time.	R
104	AT [position] EXPECT [speed] TO [speed]	Notification that a speed range instruction may be issued to be effective at the specified position.	R
105	AT [altitude] EXPECT [speed] TO [speed]	Notification that a speed range instruction may be issued to be effective at the specified level.	R
106	MAINTAIN [speed]	The specified speed is to be maintained.	W/U
107	MAINTAIN PRESENT SPEED	The present speed is to be maintained.	W/U
108	MAINTAIN [speed] OR GREATER	The specified speed or a greater speed is to be maintained.	W/U
109	MAINTAIN [speed] OR LESS	The specified speed or a lesser speed is to be maintained.	W/U
110	MAINTAIN [speed] TO [speed]	A speed within the specified range is to be maintained.	W/U
111	INCREASE SPEED TO [speed]	The present speed is to be increased to the specified speed and maintained until further advised.	W/U
112	INCREASE SPEED TO [speed] OR GREATER	The present speed is to be increased to the specified speed or greater, and maintained at or above the specified speed until further advised.	W/U
113	REDUCE SPEED TO [speed]	The present speed is to be reduced to the specified speed and maintained until further advised.	W/U
114	REDUCE SPEED TO [speed] OR LESS	The present speed is to be reduced to the specified speed or less and maintained at or	W/U

		below the specified speed until further advised.	
115	DO NOT EXCEED [speed]	The specified speed is not to be exceeded.	W/U
116	RESUME NORMAL SPEED	Notification that the aircraft need no longer comply with the previously issued speed restriction.	W/U

5.9.8 Uplink - Contact/Monitor/Surveillance Requests

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
117	CONTACT [icaounitname][frequency]	The pilot is required to call the ATS facility on the specified frequency.	W/U
118	AT [position] CONTACT [icaounitname] [frequency]	At the specified position the ATS unit with the specified ATS unit name is to be contacted on the specified frequency.	W/U
119	AT [time] CONTACT [icaounitname] [frequency]	At the specified time the ATS unit with the specified ATS unit name is to be contacted on the specified frequency.	W/U
120	MONITOR [icaounitname][frequency]	The pilot is required to monitor the specified ATS facility on the specified frequency. <i>The Pilot is not required to check in.</i>	W/U
121	AT [position] MONITOR [icaounitname] [frequency]	At the specified position the ATS unit with the specified ATS unit name is to be monitored on the specified frequency.	W/U
122	AT [time] MONITOR [icaounitname] [frequency]	At the specified time the ATS unit with the specified ATS unit name is to be monitored on the specified frequency.	W/U
123	SQUAWK [beacon code]	The specified code (SSR code) is to be selected.	W/U
124	STOP SQUAWK	The SSR transponder responses are to be disabled.	W/U
125	SQUAWK ALTITUDE	The SSR transponder responses should include level information.	W/U
126	STOP ALTITUDE SQUAWK	The SSR transponder responses should no longer include level information.	W/U
179	SQUAWK IDENT	The 'ident' function on the SSR transponder is to be actuated.	W/U

5.9.9 Uplink - Report/Confirmation Requests

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
127	REPORT BACK ON ROUTE	Instruction to report when the aircraft is back on the cleared route.	R
128	REPORT LEAVING [altitude]	Instruction to report when the aircraft has left the specified level. <i>Either a level that has been maintained, or a level passed through on climb or descent.</i>	R
129	REPORT LEVEL [altitude]	Instruction to report when the aircraft is in level flight at the specified level. <i>Some States do not to use this message in order to avoid confusion because it does not comply with existing voice phraseology</i>	R
175	REPORT REACHING [altitude]	Instruction to report when the aircraft has reached the specified level. <i>To be interpreted as "Report reaching an assigned level."</i>	R
180	REPORT REACHING BLOCK [altitude] TO [altitude]	Instruction to report when the aircraft is within the specified vertical range.	R

130	REPORT PASSING [position]	Instruction to report when the aircraft has passed the specified position.	R
181	REPORT DISTANCE [to/from] [position]	Instruction to report the present distance to or from the specified position.	NE
131	REPORT REMAINING FUEL AND SOULS ON BOARD	Instruction to report the amount of fuel remaining and the number of persons on board.	NE
132	CONFIRM POSITION	Instruction to report the present position.	NE
133	CONFIRM ALTITUDE	Instruction to report the present level.	NE
134	CONFIRM SPEED	Instruction to report the present speed.	NE
135	CONFIRM ASSIGNED ALTITUDE	Instruction to confirm and acknowledge the currently assigned level.	NE
136	CONFIRM ASSIGNED SPEED	Instruction to confirm and acknowledge the currently assigned speed.	NE
137	CONFIRM ASSIGNED ROUTE	Instruction to confirm and acknowledge the currently assigned route.	NE
138	CONFIRM TIME OVER REPORTED WAYPOINT	Instruction to confirm the previously reported time over the last reported waypoint.	NE
139	CONFIRM REPORTED WAYPOINT	Instruction to confirm the identity of the previously reported waypoint.	NE
140	CONFIRM NEXT WAYPOINT	Instruction to confirm the identity of the next waypoint.	NE
141	CONFIRM NEXT WAYPOINT ETA	Instruction to confirm the previously reported estimated time at the next waypoint.	NE
142	CONFIRM ENSUING WAYPOINT	Instruction to confirm the identity of the next plus one waypoint.	NE
143	CONFIRM REQUEST	The request was not understood. It should be clarified and resubmitted.	NE
144	CONFIRM SQUAWK	Instruction to report the currently selected transponder code.	NE
145	CONFIRM HEADING	Instruction to report the present heading.	NE
146	CONFIRM GROUND TRACK	Instruction to report the present ground track.	NE
182	CONFIRM ATIS CODE	Instruction to report the identification code of the last ATIS received.	NE
147	REQUEST POSITION REPORT	Instruction to make a position report. <i>To be used if the controller does not receive a scheduled position report.</i>	NE

5.9.10 Uplink - Negotiation Requests

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
148	WHEN CAN YOU ACCEPT [altitude]	Request for the earliest time at which the specified level can be accepted.	NE
149	CAN YOU ACCEPT [altitude] AT [position]	Instruction to report whether or not the specified level can be accepted at the specified position.	A/N
150	CAN YOU ACCEPT [altitude] AT [time]	Instruction to report whether or not the specified level can be accepted at the specified time.	A/N
151	WHEN CAN YOU ACCEPT [speed]	Instruction to report the earliest time when the specified speed can be accepted.	NE
152	WHEN CAN YOU ACCEPT [direction] [distance offset] OFFSET	Instruction to report the earliest time when the specified offset track can be accepted.	NE

5.9.11 Uplink - Air Traffic Advisories

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
153	ALTIMETER [altimeter]	ATS advisory that the altimeter setting should be the specified setting.	R
154	RADAR SERVICES TERMINATED	ATS advisory that the radar service is terminated.	R
155	RADAR CONTACT [position]	ATS advisory that radar contact has been established at the specified position.	R
156	RADAR CONTACT LOST	ATS advisory that radar contact has been lost.	R
157	CHECK STUCK MICROPHONE [frequency]	A continuous transmission is detected on the specified frequency. Check the microphone button.	R
158	ATIS [atis code]	ATS advisory that the ATIS information identified by the specified code is the current ATIS information.	R

5.9.12 Uplink - System Management Messages

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
159	ERROR [error information]	A system generated message that the ground system has detected an error.	NE
160	NEXT DATA AUTHORITY [facility designation]	Notification to the avionics that the next data authority is the specified ATSU.	NE
161	END SERVICE	Notification to the avionics that the data link connection with the current data authority is being terminated.	NE
162	SERVICE UNAVAILABLE	Notification that the ground system does not support this message.	NE
163	[icao facility designation] [tp4Table]	Notification to the pilot of an ATSU identifier.	NE

5.9.13 Uplink - Additional Messages

UM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
164	WHEN READY	The associated instruction may be complied with at any future time.	NE
165	THEN	Used to link two messages, indicating the proper order of execution of clearances/ instructions.	NE
166	DUE TO TRAFFIC	The associated instruction is issued due to traffic considerations.	NE
167	DUE TO AIRSPACE RESTRICTION	The associated instruction is issued due to airspace restrictions.	NE
168	DISREGARD	The indicated communication should be ignored. <i>The previously sent uplink CPDLC message shall be ignored. DISREGARD should not refer to a clearance or instruction. If DISREGARD is used, another element shall be added to clarify which message is to be disregarded.</i>	R
176	MAINTAIN OWN SEPARATION AND VMC	Notification that the pilot is responsible for maintaining separation from other traffic and is also responsible for maintaining Visual Meteorological Conditions.	W/U
177	AT PILOTS DISCRETION	Used in conjunction with a clearance or instruction to indicate that the pilot may	N

		execute when prepared to do so.	
169	[free text]	<i>Normal urgency attribute</i>	R
170	[free text]	<i>Distress urgency attribute</i>	R

5.9.14 Downlink - Responses

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
0	WILCO	The instruction is understood and will be complied with.	N
1	UNABLE	The instruction cannot be complied with.	N
2	STANDBY	Wait for a reply. <i>The controller is informed that the request is being assessed and there will be a <u>short term</u> delay (within 10 minutes). The exchange is not closed and the request will be responded to when conditions allow.</i>	N
3	ROGER	Message received and understood. <i>ROGER is the only correct response to an uplink free text message. Under no circumstances will ROGER be used instead of AFFIRM.</i>	N
4	AFFIRM	Yes <i>AFFIRM is an appropriate response to an uplinked negotiation request message (e.g. CAN YOU ACCEPT [altitude] AT [time]).</i>	N
5	NEGATIVE	No <i>NEGATIVE is an appropriate response to an uplinked negotiation request message (e.g. CAN YOU ACCEPT [altitude] AT [time]).</i>	N

5.9.15 Downlink - Vertical Requests

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
6	REQUEST [altitude]	Request to fly at the specified level.	Y
7	REQUEST BLOCK [altitude] TO [altitude]	Request to fly at a level within the specified vertical range.	Y
8	REQUEST CRUISE CLIMB TO [altitude]	Request to cruise climb to the specified level. <i>Due to different interpretations between the various ATS units, this element should be avoided.</i>	Y
9	REQUEST CLIMB TO [altitude]	Request to climb to the specified level.	Y
10	REQUEST DESCENT TO [altitude]	Request to descend to the specified level.	Y
11	AT [position] REQUEST CLIMB TO [altitude]	Request that at the specified position a climb to the specified level be approved.	Y
12	AT [position] REQUEST DESCENT TO [altitude]	Request that at the specified position a descent to the specified level be approved.	Y
13	AT [time] REQUEST CLIMB TO [altitude]	Request that at the specified time a climb to the specified level be approved.	Y
14	AT [time] REQUEST DESCENT TO [altitude]	Request that at the specified time a descent to the specified level be approved.	Y

5.9.16 Downlink - Lateral Off-Set Requests

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
15	REQUEST OFFSET [distance offset] [direction] OF ROUTE	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved.	Y
16	AT [position] REQUEST OFFSET [distance offset] [direction] OF ROUTE	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified position.	Y
17	AT [time] REQUEST OFFSET [distance offset] [direction] OF ROUTE	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified time.	Y

5.9.17 Downlink - Speed Requests

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
18	REQUEST [speed]	Request to fly at the specified speed.	Y
19	REQUEST [speed] TO [speed]	Request to fly within the specified speed range.	Y

5.9.18 Downlink - Voice Contact Requests

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
20	REQUEST VOICE CONTACT	Request for voice contact.	Y
21	REQUEST VOICE CONTACT [frequency]	Request for voice contact on the specified frequency.	Y

5.9.19 Downlink - Route Modification Requests

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
22	REQUEST DIRECT TO [position]	Request to track from the present position direct to the specified position.	Y
23	REQUEST [procedure name]	Request for the specified procedure clearance.	Y
24	REQUEST [route clearance]	Request for a route clearance.	Y
25	REQUEST CLEARANCE	Request for either a pre-departure or route clearance.	Y
26	REQUEST WEATHER DEVIATION TO [position] VIA [route clearance]	Request for a weather deviation to the specified position via the specified route.	Y
27	REQUEST WEATHER DEVIATION UP TO [distance offset] [direction] OF ROUTE	Request for a weather deviation up to the specified distance off track in the specified direction.	Y
70	REQUEST HEADING [degrees]	Request a clearance to adopt the specified heading.	Y
71	REQUEST GROUND TRACK [degrees]	Request a clearance to adopt the specified ground track.	Y

5.9.20 Downlink - Reports

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
28	LEAVING [altitude]	Notification of leaving the specified level.	N
29	CLIMBING TO [altitude]	Notification of climbing to the specified level.	N
30	DESCENDING TO [altitude]	Notification of descending to the specified	N

		level.	
31	PASSING [position]	Notification of passing the specified position.	N
78	AT [time] [distance] [to/from] [position]	At the specified time, the aircraft's position was as specified.	N
32	PRESENT ALTITUDE [altitude]	Notification of the present level.	N
33	PRESENT POSITION [position]	Notification of the present position.	N
34	PRESENT SPEED [speed]	Notification of the present speed.	N
35	PRESENT HEADING [degrees]	Notification of the present heading in degrees.	N
36	PRESENT GROUND TRACK [degrees]	Notification of the present ground track in degrees.	N
37	LEVEL [altitude]	Notification that the aircraft is maintaining the specified level.	N
72	REACHING [altitude]	Notification that the aircraft has reached the specified level.	N
76	REACHING BLOCK [altitude] TO [altitude]	Notification that the aircraft has reached a level within the specified vertical range.	N
38	ASSIGNED ALTITUDE [altitude]	Read-back of the assigned level.	N
77	ASSIGNED BLOCK [altitude] TO [altitude]	Read-back of the assigned vertical range.	N
39	ASSIGNED SPEED [speed]	Read-back of the assigned speed.	N
40	ASSIGNED ROUTE [route clearance]	Read-back of the assigned route.	N
41	BACK ON ROUTE	The aircraft has regained the cleared route.	N
42	NEXT WAYPOINT [position]	The next waypoint is the specified position.	N
43	NEXT WAYPOINT ETA [time]	The ETA at the next waypoint is as specified.	N
44	ENSUING WAYPOINT [position]	The next plus one waypoint is the specified position.	N
45	REPORTED WAYPOINT [position]	Clarification of previously reported waypoint passage.	N
46	REPORTED WAYPOINT [time]	Clarification of time over previously reported waypoint.	N
47	SQUAWKING [beacon code]	The specified (SSR) code has been selected.	N
48	POSITION REPORT [position report]	Reports the current position of the aircraft when the pilot presses the button to send this message. <i>ATC expects position reports based on this downlink message</i>	N
79	ATIS [atis code]	The code of the latest ATIS received is as specified.	N
80	DEVIATING [direction] [distance offset] OF ROUTE	Notification that the aircraft is deviating from the cleared route by the specified distance in the specified direction.	N

5.9.21 Downlink - Negotiation Requests

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
49	WHEN CAN WE EXPECT [speed]	Request for the earliest time at which a clearance to the specified speed can be	Y

		expected.	
50	WHEN CAN WE EXPECT [speed] TO [speed]	Request for the earliest time at which a clearance to a speed within the specified range can be expected.	Y
51	WHEN CAN WE EXPECT BACK ON ROUTE	Request for the earliest time at which a clearance to regain the planned route can be expected.	Y
52	WHEN CAN WE EXPECT LOWER ALTITUDE	Request for the earliest time at which a clearance to descend can be expected.	Y
53	WHEN CAN WE EXPECT HIGHER ALTITUDE	Request for the earliest time at which a clearance to climb can be expected.	Y
54	WHEN CAN WE EXPECT CRUISE CLIMB TO [altitude]	Request for the earliest time at which a clearance to cruise climb to the specified level can be expected.	Y

5.9.22 Downlink - Emergency Messages

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
55	PAN PAN PAN	Urgency prefix.	N
56	MAYDAY MAYDAY MAYDAY	Distress prefix.	N
57	[remaining fuel] OF FUEL REMAINING AND [souls on board] SOULS ON BOARD	Notification of fuel remaining and number of persons on board.	N
58	CANCEL EMERGENCY	Notification that the pilot wishes to cancel the emergency condition.	N
59	DIVERTING TO [position] or DIVERTING TO [position] VIA [x]	Notification that the aircraft is diverting to the specified position via the specified route.	N
60	OFFSETTING [direction] [distance offset] OF ROUTE	Notification that the aircraft is deviating the specified distance in the specified direction off the cleared route and maintaining a parallel track.	N
61	DESCENDING TO [altitude]	Notification that the aircraft is descending to the specified level.	N

5.9.23 Downlink -System Management Messages

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
62	ERROR [error information]	A system generated message that the avionics has detected an error.	N
63	NOT CURRENT DATA AUTHORITY	A system generated denial to any CPDLC message sent from a ground facility that is not the Current Data Authority.	N
64	[icao facility designation]	Notification to the ground system that the specified ATSU is the current data authority.	N
73	[version number]	A system generated message indicating the software version number.	N

5.9.24 Downlink -Additional Messages

DM	MESSAGE ELEMENT	MESSAGE INTENT	RESPONSE
65	DUE TO WEATHER	Used to explain reasons for aircraft operator's message.	N
66	DUE TO AIRCRAFT PERFORMANCE	Used to explain reasons for aircraft operator's message.	N
74	MAINTAIN OWN SEPARATION AND VMC	States a desire by the pilot to provide his/her own separation and remain in VMC.	N
75	AT PILOTS DISCRETION	Used in conjunction with another message to	N

		indicate that the pilot wishes to execute the request when the pilot is prepared to do so.	
67	[free text]	<i>Normal urgency attribute</i>	N
67b	WE CAN ACCEPT [altitude] AT [time]	We can accept the specified level at the specified time.	N
67c	WE CAN ACCEPT [speed] AT [time]	We can accept the specified speed at the specified time.	N
67d	WE CAN ACCEPT [direction] [distance offset] AT [time]	We can accept a parallel track offset the specified distance in the specified direction at the specified time.	N
67e	WE CANNOT ACCEPT [altitude]	We cannot accept the specified level.	N
67f	WE CANNOT ACCEPT [speed]	We cannot accept the specified speed.	N
67g	WE CANNOT ACCEPT [direction] [distance offset]	We cannot accept a parallel track offset the specified distance in the specified direction.	N
67h	WHEN CAN WE EXPECT CLIMB TO [altitude]	Request for the earliest time at which a clearance to climb to the specified level can be expected.	N
67i	WHEN CAN WE EXPECT DESCENT TO [altitude]	Request for the earliest time at which a clearance to descend to the specified level can be expected.	N
67L	TO DELAY FOR AIR REFUEL AT [position] UNTIL [time]; and	The tanker is requesting a clearance to delay at the ARCP until the rendezvous with the receiver. [position] is the ARCP as filed in the tanker's flight plan. [time] is the time the tanker expects to pass the ARCP and commence refueling along the refueling track. It is also the end of the delay time.	
67n	DL# 67 EXPECT END OF REFUEL AT [xxxxx]	The tanker pilot is providing notification that the end of refueling is imminent. [xxxxx] may be either position or time.	
67o	DL# 67 JOINING ALTRV [xxxxx] AT [xxxxx]	[XXXXXX] can be either a point or a time Example: JOINING ALTRV CW413 AT HEMLO or JOINING ALTRV CW413 AT 1530Z	
67p	ACCEPT MARSA WITH [callsign(s) of other aircraft]	The tanker is accepting MARSA procedures with the receiver <i>Note: [receiver callsign] is the flight planned callsign of the receiver</i>	
68	[free text]	<i>Distress urgency attribute</i>	Y

5.10 FANS-1/A CPDLC Standard Free Text Messages

This Section contains a complete listing of the standard free text messages and intent for FANS-1/A CPDLC.

When a free text uplink message has been received, the pilot shall respond with the QUICK RESPONSE from the table before responding to the message.

5.10.1 Uplink - Free Text Report/ Confirmation Requests

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	REPORT SIGHTING AND PASSING OPPOSITE DIRECTION [traffic description] ETP [time] <i>The traffic description is to be inserted by the controller and shall include the aircraft identification (callsign), flight level and aircraft type. ETP = Estimated Time of Passing. Example of the traffic description: SIA228 B747 FL370</i>	
Pilot Response	[traffic identification] SIGHTED AND PASSED <i>Example - SIA228 SIGHTED AND PASSED</i> or [traffic identification] NOT SIGHTED	ROGER
Message Intent	The controller is requesting that the pilot notify when the specified traffic has been seen by visual contact and passed. The level specified in the traffic description is the level being maintained by the opposite direction aircraft.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	REPORT GROUND SPEED	
Pilot Response	GS [speed] <i>Example - GS 490</i>	ROGER
Message Intent	The controller is requesting the pilot to report the present ground speed.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	STATE PREFERRED LEVEL (Ref: ICAO UM231)	
Pilot Response	FL [altitude] <i>Example - FL 350</i>	ROGER
Message Intent	The controller is requesting that the pilot advise the preferred flight level for the flight.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	REPORT ETA [position] <i>Example – REPORT ETA BILBO</i> (Ref: ICAO UM228)	
Pilot Response	[position] [time] <i>Example - BILBO 0413</i>	ROGER
Message Intent	The controller is requesting an estimate for the specified waypoint.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	WHEN WILL YOU MAINTAIN FL [altitude]	
Pilot Response	FL [altitude] AT [time] <i>Example - FL 350 AT 2317</i>	ROGER
Message Intent	The controller is requesting from the pilot the time at which the aircraft will maintain the specified level.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	AT WHAT DISTANCE [position / waypoint] WILL YOU	

	MAINTAIN FL [altitude]	
Pilot Response	FL [altitude] AT [distance] NM [direction] [position / waypoint] <i>Example - FL 350 AT 26 NM W IPEMA</i>	ROGER
Message Intent	The controller is requesting the distance from the specified position or waypoint at which the aircraft will maintain the specified level. The pilot shall include the direction from the waypoint as a cardinal point, e.g. N, NE, NW, S, SW, SE, E or W.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	REPORT RADIAL AND DISTANCE [to/from] [position]	
Pilot Response	[radial] R [distance] NM [to/from] [position] <i>Example - 320 R 26 NM FROM MCY</i>	ROGER
Message Intent	The controller is requesting that the pilot report the radial on which the aircraft is proceeding and the distance from the specified VOR.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	REQUEST VOICE CONTACT [frequency]	
Pilot Response		ROGER
Message Intent	The controller is requesting that the pilot makes voice contact / radio check call on the specified frequency.	

5.10.2 Uplink - Free Text Instructions

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	CHECK AND RESPOND TO OPEN CPDLC MESSAGES	
Pilot Response		ROGER
Message Intent	The controller has detected that uplink messages exist that the pilot has not yet responded to. The pilot is required to check the ATC log page and to respond to unanswered uplink messages.	

5.10.3 Uplink - Free text Advisories

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	EXPECT SELCAL CHECK HF [frequency]	
Pilot Response		ROGER
Message Intent	The controller is notifying the pilot that a selcal check will be made on the specified HF frequency.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	EXPECT CPDLC TRANSFER AT [time]	
Pilot Response		ROGER
Message Intent	The controller is notifying the pilot that the CPDLC transfer process will not be completed at the FIR boundary and will be delayed until the specified time. If the CPDLC transfer is not completed by the specified time, the pilot shall manually disconnect and logon to the next centre.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	EXPECT NEXT CENTER [ATSU name]. CONTACT WITH [ATSU name] NOT REQUIRED	
Pilot Response		ROGER
Message Intent	The controller is notifying the pilot that CPDLC connection is not required by the next FIR (where the flight's transition time of that FIR is short) and CPDLC connection will be transferred to the subsequent FIR.	

The [ATSU name] is the relevant four character ICAO code.

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	TRAFFIC IS [traffic description]	

Pilot Response	(optional) TRAFFIC SIGHTED	ROGER
Message Intent	The controller is notifying the pilot of traffic significant to the flight. The description will include the aircraft type and any other relevant information to assist the pilot in sighting the traffic. The pilot may respond that the traffic has been sighted.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	SECONDARY HF [frequency]	
Pilot Response		ROGER
Message Intent	The controller is notifying the pilot of the secondary HF frequency for the area.	

5.10.4 Uplink - Free Text Speed Messages

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	EXPECT TO MAINTAIN [speed] UNTIL [time / position]	
Pilot Response		ROGER
Message Intent	The controller is notifying the pilot that a speed instruction may be issued to be effective until the specified time.	

5.10.5 Uplink - Free Text Emergency Acknowledgment

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	ROGER MAYDAY	
Pilot Response		ROGER
Message Intent	The controller has acknowledged receipt of a MAYDAY downlink message. The controller shall attempt to make voice contact with the pilot. The pilot should only respond with ROGER if or when able to do so. If the aircraft is inbound to an airport within the FIR, a ROGER response is not required.	

	FREE TEXT MESSAGE	QUICK RESPONSE
Controller	ROGER PAN	
Pilot Response		ROGER
Message Intent	The controller has acknowledged receipt of a PAN downlink message. The controller shall attempt to make voice contact with the pilot. The pilot should only respond with ROGER if or when able to do so. If the aircraft is inbound to an airport within the FIR, a ROGER response is not required.	

5.10.6 Downlink - Free Text Advisories

	FREE TEXT MESSAGE	RESPONSE
Pilot	WAKE DEV [direction] <i>Direction L or R (left or right) as appropriate</i>	
Controller Response		ROGER
Message Intent	The pilot is offsetting due wake turbulence in accordance with RVSM procedures (offset will not exceed 2nm). The controller is not required to respond or issue a clearance.	

	FREE TEXT MESSAGE	RESPONSE
Pilot	REVISED ETA [position] [time]	
Controller Response		ROGER
Message Intent	The pilot is advising ATC of an update a waypoint ETA.	

6 ADS-C Procedures

6.1 Introduction

In the CNS/ATM environment, surveillance may be provided by Automatic Dependent Surveillance (ADS).

ADS-C allows the establishment of communication contracts between ground systems and an aircraft's avionics system. An ADS-C contract contains the ATC data requirements for ADS reporting as well as frequency of the ADS reports.

The implementation of ADS-C provides surveillance capability in oceanic and en-route continental airspace and is intended to replace CPDLC and verbal position reporting in areas where non-radar separation is currently applied.

In non-radar airspace, the effective use of ADS-C in the provision of air traffic services enhances flight safety, facilitates the reduction of separation minima and better accommodates user-preferred flight profiles.

6.2 ADS-C Description

Three types of ADS-C contracts can be established with an aircraft. Each of these contracts operates independently from the others. These contracts are the:

- Periodic;
- Event; and
- Demand.

The establishment of ADS-C contracts is initiated by the ground system and does not require pilot action providing that the airborne system is armed. The pilot has the ability to cancel all contracts by selecting ADS off.

6.2.1 The periodic contract

The periodic contract allows an ATSU to specify the reporting frequency, to request that optional data groups be added to the basic ADS-C report, and to specify the frequency at which the optional groups are to be included in the reports.

The periodic reporting rate can generally be altered by the controller to allow for situations where a higher or lower reporting rate may be required. Only one periodic contract can be established between a ground system and a particular aircraft at any one time. Whenever a new periodic contract is established, the previous periodic contract is replaced. The periodic contract will remain in effect until it is modified or cancelled.

6.2.2 The event contract

An event contract specifies a request for reports to be transmitted by the aircraft whenever a defined "event" occurs. Only one event contract can be established between a ground system and a particular aircraft at any one time, however the event contract can contain multiple event types.

Note that multiple ATSUs with ADS-C connections can each establish their own event contracts with an aircraft.

Once an event contract has been established, it remains in effect until the specific event requests are fulfilled, or it is cancelled by the ground system.

The **Vertical Rate Change Event** is triggered when the aircraft's vertical rate is either less than or greater than a parameter defined in the contract.

The **Lateral Deviation Change Event** is triggered when the aircraft's actual position exceeds a lateral distance parameter from the aircraft's expected position on the active flight plan.

The **Altitude Range Change Event** is triggered when the aircraft's altitude exceeds the altitude ceiling or floor defined in the contract by the ground system.

Once a vertical rate change, lateral deviation change, or altitude range event trigger has occurred, a recurrence of this event no longer triggers an event report. The ground system must initiate a new event contract every time that one of these specific events occurs.

The **Waypoint Change Event** is triggered by a change to the next or the next-plus-one waypoints. Such a change normally occurs due to routine waypoint sequencing. However, it will also be triggered by occurrences such as a change to a non-ATS waypoint entered by the pilot for operational reasons, or execution of a new route affecting the next or next-plus-one waypoints. Unlike the other event contracts, the waypoint change event trigger remains in effect for all waypoint changes.

6.2.3 The demand contract

The demand contract is a "one-off" request from the ground system for the FMS to provide an ADS report containing specific data as defined in the request. A demand contract can be requested by the ground system at any time. The demand contract request will not affect any existing contracts.

6.2.4 Emergency mode

The emergency mode can only be activated by the pilot and is normally cancelled by the pilot. While it is possible for some ground systems to cancel the emergency mode status, most ground systems do not have this capability although some ground systems can control the "display" of the emergency mode status to the controller. The pilot normally activates the ADS emergency mode automatically by sending a CPDLC MAYDAY message, although the ADS emergency mode can also be set independently. When the ADS emergency mode is set, the aircraft immediately sends an ADS report containing an emergency flag that is interpreted by all ground systems that currently have periodic or event contracts established with that aircraft. The aircraft does not automatically send an ADS report at the time that the emergency mode is set.

When the pilot cancels the emergency mode, the aircraft will send an emergency mode cancellation message to each ground station receiving the emergency mode reports with the next periodic report, whenever it may be due. The cancellation message will remove the emergency flag from the periodic contract, but the data contents will remain the same as per the emergency contract. Any previously existing data groups requested by the ground system will not be restored unless the ground system re-negotiates the periodic contract following receipt of the emergency cancellation message. Existing event contracts are unaffected by the emergency cancellation.

Note: the Boeing B717 and B737 models will send the ADS emergency cancellation message immediately after being selected by the pilot.

6.3 Factors To Be Considered When Using ADS-C

6.3.1 Vertical and lateral variations

Where the Altitude Range Change Event and Lateral Deviation Event contracts are established, the controller will only be alerted to vertical or lateral variations that exceed the associated tolerances.

Note: If a regular periodic report is sent as the aircraft is deviating from cleared level or route (but still within the level or lateral tolerances) the controller will still be alerted to the variation despite no event report having been sent.

6.3.2 Figure of Merit data in ADS-C reports

ADS-C reports contain FMS information relating to the Figure of Merit, ACAS/TCAS and the aircraft's navigational redundancy. Some automated ground systems use the FOM value received in an ADS-C report to determine whether to display the report to controllers, or to display a "high" or "low" quality ADS symbol.

FOM data is **not** required for the use of current separation standards. However, where the separation standard being applied requires specific navigational accuracy, such as RNP, controllers shall rely on pilot advice as to the extent of any navigational degradation and shall adjust separation accordingly.

6.3.3 Flight crew modification of active route

The flight crew will often insert non-ATS waypoints into the active flight plan in the FMS for flight system monitoring, or will modify the active route for planning purposes. Once the change is activated, a Waypoint Change Event report may be triggered. If so, non-ATS waypoints included in the active flight plan will be reflected in the Predicted Route Group, as well as the Intermediate and Fixed Projected Intent Groups, which may result in the next, or the next-plus-one waypoints from the report not being waypoints expected in the ATS flight plan or flight data record.

6.4 ADS-C Connection Management

6.4.1 Priority for the ADS-C connection

FANS-1/A equipped aircraft can have up to five ADS-C connections. One of the five connections is reserved for use by the AOC. The aircraft has the capacity to report to four different ATSU's simultaneously using ADS.

The FANS-1/A system does not assign any technical priority to ADS-C connections; therefore the controlling ATSU may not be aware of other connections established with the aircraft. As a result, a procedural hierarchy controlled by the Address Forwarding process (FN_CAD message) has been established.

6.4.1.1 Allocation of ADS-C connections

Using the Address Forwarding process, the current controlling authority shall allocate ADS-C connection priority to the next ATSU that will have air traffic control responsibility for the aircraft. The priority for the allocation of ADS-C connections shall be in accordance with the following list:

1. The Current Data Authority,
2. The Next Data Authority,
3. An ATSU requiring a connection for monitoring operations close to a boundary,
4. Airline AOC
5. Other miscellaneous connections.

6.4.2 Near boundary ADS-C connections

6.4.2.1 Monitoring of an aircraft operating close to an airspace boundary

When an aircraft will operate within the defined coordination parameter of the boundary with an adjacent ADS-C capable FIR, controllers shall determine during coordination whether that ATSU requires an ADS-C contract to monitor the aircraft's progress near the boundary.

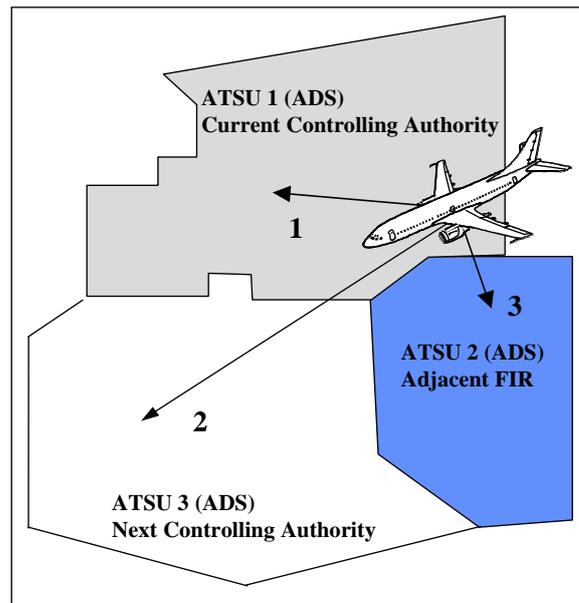


Figure 10: Priorities for ADS-C connections

An ADS-C contract is required by ATSU 2 to monitor the aircraft's progress near the FIR boundary. To ensure that the next unit with direct control responsibility for the aircraft has priority over the ADS-C connections, Address Forwarding to ATSU 3 will be initiated by ATSU 1 prior to Address Forwarding to ATSU 2.

6.4.2.2 Other ground facilities requesting ADS-C contracts

All ground facilities, without having direct control or monitoring requirements for that aircraft, seeking an ADS-C contract with a specific aircraft (e.g. for ADS-C test purposes) must coordinate with the controlling authorities and the operator prior to the departure of the flight.

6.4.3 ADS-C connections not available

When all available ADS-C connections with a particular aircraft have been established (see Figure 2), any other ATSU attempting to connect with the aircraft will receive an ADS DISCONNECT REQUEST message with "reason code 1" (Congestion).

When an ADS DISCONNECT REQUEST is received by an ATSU, which would normally have priority for an ADS-C connection, the current controlling authority should be notified. The controlling authority shall resolve the situation.

The controlling authority has a number of options available, such as coordination with the previous ATSU or other adjacent ATSUs to ensure that existing ADS-C connections are still required, or when considered absolutely necessary, instructing the pilot to turn the ADS application off and turn it on again. The latter option will terminate all current ADS-C contracts; therefore, the controlling authority should consider the operational effect on other ATSUs prior to employing this method.

Once all contracts have been terminated, the controlling authority shall allocate priority for the connections to other ATSUs via the Address Forwarding process. Only ATSUs with direct control or monitoring responsibilities shall re-establish contracts with the aircraft.

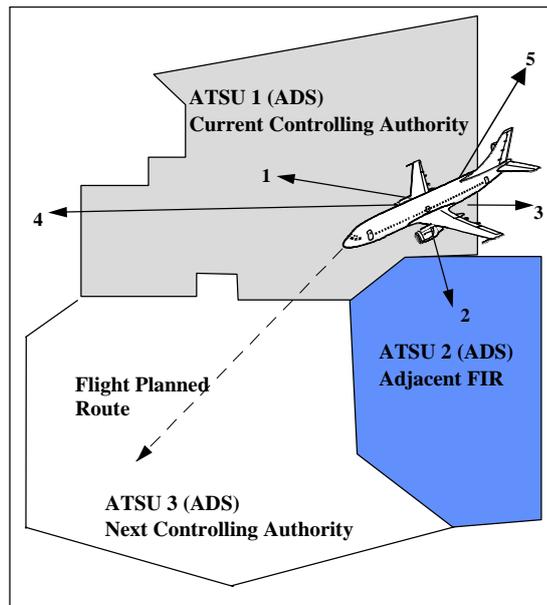


Figure 11: ADS-C connection not available

The aircraft has ADS-C connections with four ground facilities and the airline AOC:

- Connection:
- 1 - with ATSU 1,
 - 2 - with ATSU 2,
 - 3 - with the previous controlling authority,
 - 4 - with the airline AOC,
 - 5 - with a ground facility collecting test data.

ATSU 3, the next controlling authority, is unable to establish an ADS-C connection with the aircraft due to congestion.

6.4.4 Ground system termination of ADS-C connections

The termination of ADS-C contracts with an aircraft, whether performed automatically or manually, should be strictly monitored to avoid situations leading to congestion. ADS-C contracts and connections should be terminated by the ground system when the:

- Aircraft has crossed an FIR boundary and has passed beyond the normal “back coordination” parameter; or
- The ground system’s FDPS flight plan for the aircraft has been cancelled or has finished; or
- Previous ATSU, the controlling authority or an adjacent ATSU has no further surveillance or monitoring requirements for a particular flight.

6.5 Reporting Rates

6.5.1 General

There are a number of situations where a controller may consider the use of a reporting rate other than that used as the default in the periodic reporting contract. Some automated systems have the capability of defining reporting rates that can automatically change from one area to another along the route segment to take into account changes in traffic density along the route.

Where the ground system does not contain the ability to automatically change the reporting rate, the controller should take action, where possible, to manually change the periodic reporting rate when operationally required. Some examples where a change to the rate may be required are:

- When the aircraft is approaching a crossing route on which there is other traffic;
- When the aircraft is approaching areas of known significant weather;
- During periods of turbulence; or
- When an unauthorized deviation from the clearance is detected.

6.5.2 Appropriate reporting rates

ATSUs should ensure that the periodic reporting rate in use is in accordance with the position reporting requirements of the separation standards being used. When not required for the application of separation, or other factors, ATSUs should consider using less frequent periodic reporting rates for individual aircraft to reduce overall costs to the system.

6.5.3 Avoid high periodic reporting rates

Arbitrarily selecting high periodic reporting rates adds undue economic costs and unnecessarily loads the data link system.

6.5.4 Other factors to be considered

Depending on individual circumstances the controlling authority should limit the periodic reporting rate to not more frequently than five (5) minutes. Adjacent ATSUs with ADS-C contracts established with the same aircraft should restrict the periodic reporting rate to not more frequently than 15 minutes unless coordination is performed with the controlling authority and the controlling authority agrees to reduce any relatively high reporting rate currently in effect.

6.5.5 Default periodic reporting rates

When setting a default periodic reporting rate, ATSUs should take into account factors such as conformance with ATC clearance requirements, traffic levels, alerting service requirements, and separation standard requirements.

6.6 Separation

ADS-C may be used for the application of procedural separation within a mixed surveillance environment, such as airspace where position reports are provided by a mixture of ADS-C, CPDLC and voice.

For example, ADS-C may be used to determine separation between two or more aircraft reporting by ADS-C, between ADS-C and non-ADS aircraft, between ADS-C aircraft and an aircraft identified on radar, and to ensure separation between ADS-C aircraft and special use airspace, such as military restricted areas.

6.6.1 Appropriate ADS-C reporting requirements

When position reporting is being provided via ADS-C, to ensure that estimates being used for the application of separation are accurate ATSUs should establish appropriate:

- ADS-C contracts; and
- Periodic reporting frequencies.

6.6.2 Appropriate separation standard

A separation standard to be applied in a mixed surveillance environment must be appropriate to the communications and navigational capability of the relevant aircraft. In the case of separation being applied between ADS-C and non-ADS aircraft, the separation standard must be appropriate to the capabilities of the non-ADS aircraft.

6.6.3 Vertical separation

6.6.3.1 Vertical tolerance consistency

Where practical, the tolerances used to determine whether a specific level is occupied by an ADS-C reporting aircraft within the airspace of a specific ATSU should be consistent with other tolerances used throughout the airspace. For example, the vertical tolerances for ADS-C should be consistent with vertical tolerances used for level adherence monitoring by other forms of surveillance, such as radar.

6.6.3.2 Application of vertical tolerances

Where other vertical tolerances do not exist, the vertical tolerances to be applied for ADS-C shall be (\pm) 300 feet. However, an individual ATSU may specify in local instructions and the AIP that a tolerance of not less than (\pm) 200 feet will be used to provide consistency with other vertical tolerances applied within the FIR.

6.6.3.3 ADS-C level information does not satisfy vertical tolerance

If displayed ADS-C level information does not satisfy the required tolerance for an individual ATSU then the pilot shall be advised accordingly and requested to confirm the aircraft's level. If following confirmation of the level the displayed ADS-C level information is still beyond the required tolerance, another method of separation or another method of determining level information may need to be applied.

6.6.3.4 Use of ADS-C level information

When displayed ADS-C level information is within the specified tolerance of the expected or cleared flight level, the ADS-C level information may be used for the application of vertical separation, and to determine that an aircraft has reached or is maintaining a specified level.

6.6.3.5 Passing or leaving a level

An aircraft can be considered to have left a specified level when the displayed ADS-C level information indicates that the aircraft has passed the level in the required direction by more than the required tolerance.

6.6.4 Longitudinal separation

6.6.4.1 Limitations on the use of tools

ATSUs that use approved or integrated measurement tools for the purpose of determining screen-based separation should publish in local documentation any limitations on the use of such tools for the establishment and monitoring of separation standards.

6.6.4.2 Establishing longitudinal separation

ADS-C reports may be used to establish and monitor longitudinal time and distance separation standards.

6.6.4.3 Using extrapolated or interpolated positions

Some ground systems display an extrapolated or interpolated ADS symbol between the receipt of ADS-C reports. Providing that the periodic reporting rate in use is in accordance with any reporting rate required by the separation standard, separation may be determined between the extrapolated/interpolated symbols by the use of screen-based measurement tools, or by the use of automated conflict detection tools.

6.6.4.4 Validity of displayed information

When extrapolated or interpolated ADS symbols are being used to provide separation and any doubt exists as to the integrity or validity of the information being presented, the controller shall send a Demand Contract Request to update the relevant information. If doubt still exists, the controller should consider the use of an alternative method of separation.

6.6.4.5 Time-based separation

Ground system flight data records updated by ADS-C reports may be used in the application of appropriate time-based separation standards. Methods of determination may include reference to:

- Estimates at actual waypoints;
- Calculated estimates for positions not contained in the ATS flight plan;
- Screen-based measurement tools; or
- Automated conflict detection tools.

6.6.4.6 .Distance-based separation

ADS-C reports may be used for the application of appropriate longitudinal distance standards. Methods of determination may include:

- The use of automated system tools to measure the displayed positions of two or more aircraft reporting by ADS-C;
- Comparing the displayed position of an ADS-C aircraft with the position of another aircraft determined by an alternative form of surveillance; or
- The use of automated conflict detection tools.

6.6.5 Lateral separation

6.6.5.1 Areas of lateral conflict

ADS-C reports can be used to determine whether an aircraft is within or beyond an area of lateral conflict. Where lateral conflict calculations are not made by automated conflict detection tools, an ADS-C report observed outside an area of lateral conflict displayed or calculated on the screen is confirmation that the aircraft is outside the area of conflict.

6.7 Air Traffic Clearance Monitoring

ADS-C reports can be used to monitor conformance with air traffic clearances.

6.7.1 Deviations from ATC clearances

The pilot of an ADS aircraft observed to deviate significantly from its cleared flight profile shall be advised accordingly. The controller shall also take action as appropriate if such deviation is likely to affect the air traffic service being provided.

6.8 Coordination

6.8.1 Duty of care responsibility

As airlines bear the cost of datalink communications, ATSU's should be aware of Duty of Care responsibility issues when ADS and other technologies allow the surveillance of aircraft and the possible detection of conflicts inside another ATSU's airspace. Local ATS instructions and/or Letters of Agreement between units should detail the coordination response required from one ATSU in the case of a suspected conflict being detected in the adjacent ATSU's airspace. Unless required for safety purposes, ATSU's should ensure that ADS-C is only enabled for aircraft inside their Area of Interest.

6.8.2 Coordinated data inconsistent with ADS displayed data

The transferring controller shall advise during coordination if the aircraft is currently at a level or on a route different from that intended for the boundary crossing. When the coordination information relating to the transfer of control is different from the displayed ADS information and the required advice has not been provided, the receiving controller shall confirm the coordinated information with the transferring controller.

6.9 Alerting service

For ADS-equipped aircraft, the provision of the alerting service should be based on the scheduled position reports provided by the periodic reporting contract.

6.9.1 Late or missing ADS-C Reports

Whenever an ADS-C report (either a periodic or waypoint report) is not received within a parameter of the expected time, the controller should initiate a demand contract request or establish a new periodic contract with the aircraft.

6.10 Aircraft Navigation

6.10.1 Aircraft in heading select mode

When the aircraft is in Heading Select Mode, the intent and predicted route information being transmitted by the aircraft will project towards the next FMS flight plan waypoint regardless of the actual position and heading of the aircraft. Predicted information is based on the FMS intent, which may not necessarily be the intent of the pilot.

If the aircraft is in Heading Select Mode, and the aircraft passes abeam a flight planned waypoint by more than a defined parameter the FMS will not sequence this or subsequent waypoints. The effect on a ground system of a waypoint that has not been sequenced is that the intent information, once the aircraft has passed the waypoint,

will be directed back towards the non-sequenced waypoint. As a result, some ground systems may see an extrapolated symbol move in a different direction to the actual track of the aircraft.

6.10.2 Sequencing subsequent waypoints

If a waypoint is passed abeam by more than the aircraft FMS parameter while flying in Heading Select Mode, the FMS must be re-programmed (e.g. to fly direct to the next relevant waypoint) to enable subsequent waypoints to be sequenced.

(See also CPDLC Sequencing “ABEAM” waypoints in excess of FMS parameters)

6.11 Position Reporting

6.11.1 Position reporting requirements in ADS airspace

ATSUs may promulgate in the AIP that ADS-C reports fulfill all normal position reporting requirements within the nominated FIR.

6.11.1.1 Publishing reporting requirements

ATSUs should publish ADS and CPDLC position reporting requirements in the AIP.

6.11.1.2 CPDLC report at FIR entry position

When an ATSU has nominated the use of ADS-C reporting only within the associated FIR, a CPDLC position report at the FIR entry position is still required to confirm that the ATSU holds the status of Current Data Authority. Following the initial CPDLC report at the boundary, no further CPDLC or voice position reports will be required for operations within the FIR.

6.11.1.3 Updating waypoint estimates

ATSUs should publish in the AIP that pilots are not required to update estimates for waypoints when the aircraft is reporting by ADS-C in airspace where additional CPDLC or voice reports are not required.

Exceptions to this rule are that updates to estimates are required when:

- An estimate previously advised by voice or CPDLC will change by more than 2 minutes; or
- A pilot-initiated action, such as a change in speed, will change the estimate for the next reporting point by more than 2 minutes.

6.11.1.4 Non-compulsory waypoints

When reporting by ADS-C only, the flight crew is **not** required to modify the route to remove non-compulsory waypoints. Waypoint event reports will be sent at all non-compulsory reporting points and will be reflected in the predicted route group.

6.11.2 Discrepancies between ADS-C and CPDLC estimates

Controllers should be aware that CPDLC and ADS-C estimates received from the same aircraft for the same position may differ as a result of the ADS-C application reporting time to the second and the time reported by CPDLC application either being truncated or rounded to the nearest full minute (depending on aircraft type). The pilot also has the ability to modify the estimate for the next position in the CPDLC position report. Any such modification will not be reflected in the ADS-C report.

6.11.2.1 Actions to be followed when there is an estimate discrepancy

When an ATSU is using both ADS-C and CPDLC reporting and a discrepancy of less than 3 minutes between the reports is detected, the ATSU should detail in local documentation methods to be used by the controller for the reconciliation of the time difference. Where the time difference exceeds 3 minutes, the controller shall query the estimate received in the CPDLC position report and request confirmation of the estimate for the waypoint in question.

7 Emergency and Non-routine Procedures

7.1 Emergency procedures

Although an emergency CPDLC message such as MAYDAY or PAN does not require a closure response, the controller must acknowledge receipt of the message and attempt to determine the nature of the emergency and ascertain any assistance required.

7.1.1 Response to an emergency message

When a CPDLC or ADS emergency message is received the controlling authority, in order to better assess the nature of the emergency shall respond as in Section 7.1 above, and may also choose to:

- a) Increase the PERIODIC contract reporting rate to 5 minutes, or
- b) Send an ON DEMAND contract request. (Note. This is not required if the periodic reporting rate has been increased – an ADS report will have already been triggered by the avionics when the new periodic contract is received).

Note. Increasing the ADS-C reporting rate also reduces the period between cancellation of the ADS emergency and receipt of the ADS Cancel Emergency downlink.

7.1.2 Confirmation of emergency activation

When the ADS emergency mode is activated without a CPDLC emergency message or voice confirmation, and the demand contract report appears to indicate that the aircraft is maintaining normal operations (e.g. the aircraft is not in descent or involved in abrupt maneuvers), the aircraft may be subject to unlawful interference. To check for covert or inadvertent activation of the ADS emergency mode the free text uplink “Confirm ADS” shall be appended to a “Confirm Speed” data or voice request:

Controller	Confirm Speed Confirm ADS
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The pilot shall then check the status of the aircraft’s ADS Emergency Mode and if the emergency mode has been activated inadvertently, the pilot shall select ADS Emergency Mode to “OFF” and advise ATC by voice or the following CPDLC free text downlink.

Pilot	ADS reset
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If the aircraft continues with the ADS emergency mode activated ATC shall assume the aircraft is in emergency conditions and follow normal alerting procedures.

7.1.3 Acknowledgement of an emergency message

When an ADS emergency accompanied by a CPDLC emergency message is received, the controller shall immediately acknowledge receipt of the emergency with the pilot by the most appropriate means (voice or CPDLC).

7.1.4 CPDLC acknowledgment

A CPDLC acknowledgment shall be in the form of a free text message using the words ROGER MAYDAY or ROGER PAN. This uplink free text message requires a response from the pilot to close the CPDLC exchange. Depending on the nature of the emergency, the free text message may or may not be acknowledged by the pilot.

7.1.4.1 Voice contact

When an emergency is acknowledged by CPDLC, controllers may also attempt to make voice contact with the aircraft.

7.1.5 Retaining the active connection

If CPDLC is the best (or only) communications medium available between the aircraft and any ATSU, the ATSU with the active connection should maintain that connection until better assistance can be provided by

another means. In this case, transfer of the connection should not occur to another unit, and any automatic transfer capability should be disabled, if possible, in order to improve the chances of the CPDLC connection being retained.

7.1.5.1 Communications responsibility

It is recognized that if a transfer of the CPDLC connection does not occur, then the responsibility for maintaining communications with the aircraft is retained by the current ATSU.

7.1.5.2 Executive control responsibility

In accordance with established procedures, the responsibility for the control of the flight rests with the ATSU within whose airspace the aircraft is operating. If the pilot takes action contrary to a clearance that has already been coordinated with another sector or ATSU and further coordination is not possible in the time available, then this action would be performed under the pilot's emergency authority.

7.1.6 Normal emergency procedures

After receipt of the emergency message is acknowledged, normal emergency response procedures shall be followed.

7.1.7 Coordination in the case of emergency

When the ADS emergency mode is observed by an ATSU that is not in control of the aircraft, that ATSU shall coordinate with the controlling authority to ensure that the emergency report has been received. Adjacent ATSUs shall not increase the reporting rate of the periodic contract.

7.2 Data Link Connection Failures

7.2.1 Detected by the controller

When the controller recognizes a failure of the data link connection, the controller shall instruct the pilot to terminate the connection, by selecting ATC Com Off, and then initiate another AFN logon. Once the AFN logon is established, the ATS system should send a **CONNECTION REQUEST** message to re-establish the connection.

The voice phraseology to be used shall be:

Controller	Data link failed. Select ATC Com Off then Logon to [ATSU name]
Pilot	Roger

The [ATSU name] is the 4 character ICAO code.

7.2.2 Detected by the airborne system

When the avionics/pilot recognizes a failure of the data link connection, the pilot shall terminate the connection by selecting ATC Com Off and then initiate a new AFN logon (FN_CON) to the current controlling authority.

7.2.3 Inability to establish the data link connection

In situations where a data link connection cannot be established successfully, the ATS system should indicate to the controller that no connection has been established.

7.3 Data link System Shutdowns

7.3.1 Unexpected data link shutdowns

In the event of an unexpected data link shutdown, the relevant ATSU shall inform:

- All currently connected FANS-1/A equipped aircraft via voice;

The voice phraseology to be used shall be:

Controller	Data link failed.
-------------------	-------------------

	Select ATC Com Off. Continue on voice
Pilot	Roger

- The adjacent ATSUs by direct coordination; and
- All relevant parties via the publication of a NOTAM, if appropriate.

Pilots shall terminate the data link connection and use voice until informed by the ATSU that the data link system has resumed normal operations.

7.3.2 Planned data link shutdowns

When a planned data link system shutdown of the communications network, or of the ATS system, occurs a NOTAM shall be published to inform all affected parties of the shutdown period. During that time period, voice shall be used.

The following voice or data phraseology shall be used to advise airborne aircraft prior to the commencement of the shutdown.

Controller	Data link will be shutdown. Select ATC Com Off. Continue on voice <i>(The pilot shall select ATC Com Off when the message is received)</i>
Pilot	Roger

7.3.3 Resumption of data link operations

The following voice phraseology shall be used to advise pilots that the data link system has resumed operations.

Controller	Data link operational Logon to [ATSU name]
Pilot	Logon [ATSU name]

The [ATSU name] is the 4 character ICAO code.

7.3.4 Data link component shutdown

Some ATSUs are not equipped with both CPDLC and ADS-C and consequently may experience shutdown of a single component of the data link system (i.e. CPDLC or ADS-C). For those ATSUs that have both CPDLC and ADS-C it is not likely that just one component will shutdown, however it is possible.

ATSUs experiencing a shutdown of either CPDLC or ADS-C shall follow the procedures above for data link shutdowns as appropriate.

7.3.4.1 ADS only failure

When a shutdown of the ground component of the ADS system occurs, the ATSU affected shall inform all other affected parties of the shutdown and likely period. During that time period, position reports (via CPDLC if available, or via voice) will be required.

If a CPDLC service is still available, a CPDLC free text message shall be sent to the pilot notifying reporting requirements. The following phraseology shall be used:

Controller	ADS shutdown revert to ATC data link position reports
Pilot	Roger

7.3.4.2 Loss of ADS-C

If it is not possible to establish ADS-C contracts, or if ADS-C reporting from an aircraft ceases unexpectedly, it is possible that the pilot may have inadvertently selected ADS-C off. If CPDLC is still available, a CPDLC free text message shall be sent to the pilot, using the following phraseology.

7.3.5 Unexpected communication service provider shutdown

In the event of an unexpected communications service provider system, the communications service providers shall inform ATSU and airline dispatch of the situation. ATSU shall consequently inform:

- All currently connected FANS equipped aircraft via voice,

The voice phraseology to be used shall be:

Controller	Data link failed Select ATC Com Off. Continue on voice
Pilot	Roger

- The adjacent ATSU by direct coordination,
- All relevant parties via the publication of a NOTAM, if appropriate.

Pilots shall terminate CPDLC connections with the ATSU and use voice communications until informed by the ATSU that the system is again fully functional.

7.3.6 Unexpected avionics system shutdown

In the event of an unexpected avionics data link shutdown, pilots shall inform the ATSU of the situation using voice.

The voice phraseology to be used shall be:

Pilot	Data link failed. Selecting ATC Com Off. Continuing on voice
Controller	Roger. Continue on voice

Pilots shall continue to use voice until the functionality of the avionics can be re-established.

7.4 Total Communications Failure

The procedures covering complete communications failure (CPDLC and voice) shall be in accordance with current ICAO procedures.

7.5 Using CPDLC to relay messages

When an ATSU and an aircraft cannot communicate, and an intermediary data link aircraft is used for relaying messages, the following shall apply:

- Only a free text message shall be used;
- The first word in the message shall be "RELAY".

Note 1: The use of pre-formatted messages is prohibited because the intermediary aircraft's FMS could be unintentionally armed.

Note: The call sign of the aircraft should be expressed as the radiotelephony call sign, rather than the ICAO three letter or IATA two letter designator.

Example

Controller (all Free text)	Relay. [atsu] clears [call-sign] Climb to and maintain F340
Pilot (all Free text)	Relay from [call-sign] Climbing F340

7.6 Weather deviation procedures

7.6.1 Multiple weather deviations

The distance off track contained in a weather deviation request or clearance is measured reference the nominally cleared track of the aircraft. Subsequent weather deviations or route clearances supercede any previous weather deviation clearance.

Example

Aircraft requests and is cleared to operate 20NM left of track

Pilot	REQUEST WEATHER DEVIATION UP TO LEFT 20NM (free text) AND 20NM RIGHT
Controller	CLEARED TO DEVIATE UP TO 20NM EITHER SIDE OF ROUTE
Pilot	WILCO

If the aircraft then requires a clearance to operate a further 30NM left of track, the clearance request shall be based on the nominal route rather in relation to the current weather deviation clearance.

Pilot	REQUEST WEATHER DEVIATION UP TO 50NM L OF TRACK
Controller	CLEARED TO DEVIATE UP TO 50NM L OF TRACK
Pilot	WILCO

If the aircraft then requires a clearance to operate 30NM **right** of track

Pilot	REQUEST WEATHER DEVIATION UP TO 30NM R OF TRACK
Controller	CLEARED TO DEVIATE UP TO 30NM R OF TRACK
Pilot	WILCO

Whilst the aircraft navigates from one side of track to the other in order to comply with the above clearance, it is the responsibility of ATC to ensure that the appropriate separation standards are being applied. The aircraft should expeditiously navigate so as to establish itself to the right side of track

7.6.2 Deviations either side of track

There are a number of valid formats for the CPDLC [direction] variable. A number of aircraft types, however, can only request directions left or right in weather deviation requests. If one of these aircraft requires a deviation to the left and right of track, the following procedure should be used:

- Construct a preformatted weather deviation downlink request for a deviation on one side of track, and
- Append free text describing the distance to the other side of track

Example

Pilot	REQUEST WEATHER DEVIATION UP TO L 20NM. (free text) AND 20NM R
Controller	CLEARED TO DEVIATE UP TO *****L 20NM OF TRACK
Pilot	WILCO

7.6.3 Reporting back on track

A weather deviation clearance remains in effect until either:

- A “back on route” report is received; or
- The aircraft reaches a subsequent waypoint to which it has been cleared when clear of weather.

8 FANS-1/A Implementation

8.1 Introduction

- This Part provides information of FANS-1/A datalink implementations by all the participating stakeholders including aircraft manufacturers.

8.2 ATSU Designators

The following table contains the various ATSU ACARS addresses, and the ICAO facility designations (also called "4 character ICAO code") of the associated FIR.

<u>ATS Units</u>	<u>ATS System</u>	<u>ICAO facility designation</u>	<u>ATSU Address</u>
Anchorage	OCS	PAZA	ANCXFXA
Antananarivo (Madagascar)		FMMM	
Auckland	OCS	NZZO	AKLCDYA
Brisbane	TAAATS	YBBB	BNECAYA
Columbo		VCCC	
Honiara	TAAATS	YBBB	BNECAYA
Johannesburg	SAAATS	FAJO	
Mauritius		FIMM	
Melbourne	TAAATS	YMMM	MELCAYA
Nadi	Eurocat 2000X	NFFF	NANCDYA
Nauru	TAAATS	YBBB	BNECAYA
Oakland	ODL	KZAK	OAKODYA
Seychelles		FSSS	
Tahiti	VIVO	NTTT	PPTCDYA
Fukuoka	ODP	RJJJ	FUKJYA

8.3 HF Voice Communications Requirements

8.3.1 Crossing International FIR Boundaries

When entering an FIR from an adjacent international FIR and CPDLC is serviceable, the CPDLC CONTACT or MONITOR message shall be sent as detailed below:

<u>FIR</u>	<u>CPDLC Instruction</u>
Anchorage Oceanic	CONTACT PAZA CENTER [frequency]
Antananarivo (Madagascar)	
Auckland Oceanic	MONITOR NZZO CENTER [frequency]
Brisbane	MONITOR YBBB CENTER [frequency]
Columbo	
Honiara ¹	MONITOR YBBB CENTER [frequency]
Johannesburg	
Maldives	
Mauritius	
Melbourne	MONITOR YMMM CENTER [frequency]
Nadi	MONITOR NFFF CENTER [frequency]
Nauru ¹	MONITOR YBBB CENTER [frequency]
Oakland	CONTACT KSFO CENTER [frequency] <i>KSFO (San Francisco Radio) will provide all primary and secondary HF</i>

	<i>frequencies, and HF transfer points along the route of flight.</i>
Tahiti	CONTACT NTTTT CENTER [frequency] <i>A SELCAL check is required.</i>
Fukuoka	CONTACT FUKUOKA CENTER [frequency]

8.3.2 CPDLC Services Within The Fukuoka FIR

Initial notification of emergency status may be accepted by CPDLC. Depending on the nature of the emergency condition experienced, the pilot should notify ATC of the circumstances by the most efficient means (voice or CPDLC).

Clearances/instructions relating to cruise climb are not issued within the Fukuoka FIR. Therefore, downlink request DM#8 “REQUEST CRUISE CLIMB TO [level]” should not be used.

Pre-formatted messages regarding route modifications, including route clearance are not able to be uplinked. These messages include UM#79, UM#80, UM#81, UM#83, UM#84, UM#85 and UM#86 detailed in APPENDIX 5. CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC) MESSAGE SET of the ICAO PANS/ATM. The route clearance should, therefore be requested and issued by HF or VHF voice communication.

Special and other non-routine aircraft observation, i.e. moderate turbulence (transonic and supersonic aircraft only), severe turbulence, and volcanic activity should be reported by HF or VHF voice communication.

Flight information services will be provided by HF or VHF voice communication.

8.3.3 Logon Procedures within the Fukuoka FIR

Datalink-equipped aircraft inbound from non-datalink airspace or radar airspace to Fukuoka Oceanic Controlled airspace are required to log on between 15 and 45 minutes prior to entering datalink airspace within the Fukuoka FIR. On initial contact with Tokyo Radio, the pilot should inform Tokyo Radio that they have the CPDLC connection using the voice phraseology “WE HAVE CPDLC CONNECTION”, and should downlink a CPDLC position report.

Datalink-equipped aircraft inbound from the Anchorage FIR or Oakland FIR to Fukuoka Oceanic Controlled airspace will be automatically transferred to “RJJJ” by Anchorage or Oakland. If the process is not successful and “RJJJ” is not the active center, the pilot shall, within 5 minutes after crossing the Fukuoka and Anchorage/Oakland common FIR boundary, terminate the connection by selecting ATC datalink off, then log on with “RJJJ”. Once a CPDLC connection has been established with “RJJJ (Fukuoka ACC)”, the pilot should inform Tokyo Radio that they have the CPDLC connection using the voice phraseology “WE HAVE CPDLC CONNECTION”, and should downlink a CPDLC position report.

8.4 Differences of Use of FANS-1/A Messages

The States listed in the box on the right do NOT use these two messages.

33	UM	Cruise [altitude]	<i>Australia, Fiji, Japan, Mauritius, New Zealand, South Africa, and Tahiti do not use this message.</i>
129	UM	Report level[altitude]	<i>The United States has not used this message, but will be phasing it in during the 2003-4 time period.</i>

8.5 Position Reporting Requirements: CPDLC and ADS-C Environments

The following table lists the position reporting requirements of individual ATSU.

ATSU	Reporting Requirements
Anchorage	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS-C reporting only.
Antananarivo (Madagascar)	
Auckland	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS reporting only.
Brisbane	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS reporting only.
Columbo	Currently trialing ADS and CPDLC. CPDLC position reports requested at each waypoint. Primary communications via voice. Full HF reporting still required
Maldives	
Mauritius	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS reporting only.
Melbourne	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS reporting only.
Nadi	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS reporting only.
Oakland	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS-C reporting only.
Seychelles	
Johannesburg	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS reporting only.
Tahiti	Requires an initial CPDLC position report at the FIR boundary entry point, then ADS reporting only.
Fukuoka	Accepts CPDLC position reports in lieu of HF voice.

8.6 Aircraft Data

8.6.1 Verifying registration number

A330-A340
On Airbus aircraft, the pilot could not initially change the registration number provided by the avionics. This will be possible in the second version of ATSU, and this change will then be reflected in the FN_CON message.
B747-400 (up to Load 14)
On the B747-400 aircraft, the pilot cannot change the registration number in the FN_CON message. This number is provided by the avionics.
B747-400 (Load 15)/B777 / B757-B767 / B717 / MD90 / MD10 / MD11
These aircraft do not have an <i>essential</i> data source for this datum, which means that the pilot must verify that the registration number is correct.

8.6.2 CPDLC connection requests

A330-A340
B747-400 / B777 / B757-B767 / B717 / MD90 / MD10 / MD11
<ul style="list-style-type: none"> • The only CONNECTION REQUEST message processed normally by FANS-1 is the first CONNECTION REQUEST following an AFN logon (i.e., an AFN logon initiated when no CPDLC connection exists). • If the CPDLC connection in the avionics is not terminated, and a new AFN logon transmitted, before sending the new CONNECTION REQUEST message any subsequent CONNECTION REQUEST messages received from that ATSU are processed, however they have no effect on the “active” connection (i.e. the avionics is not informed of an ATS system shutdown and will therefore consider that the original connection is still active). • The avionics will not accept a connection if the AFN logon is initiated manually by the pilot while another connection was active, even if the active connection is terminated before the connection from the new ATSU is received

8.6.3 Flight crew display:- response and acknowledgment

A330-A340
In response to an uplink message that requires a closure response (WILCO , ROGER , AFFIRM , UNABLE , NEGATIVE), the pilot is presented with prompts corresponding to the closure responses required by DO-219 for the specific uplink message. EG prompts presented upon receipt of an uplink clearance are WILCO , UNABLE , and STANDBY .
B747-400 / B777 / B757-B767 / B717 / MD90 / MD10 / MD11
In response to an uplink message that requires a response element (WILCO , ROGER , AFFIRM , UNABLE or NEGATIVE), the pilot is presented with two prompts (Accept and Reject).
<ul style="list-style-type: none"> • If the correct response to the uplink message is affirmative (WILCO, ROGER, or AFFIRM), then the pilot will select the Accept prompt. • If the correct response to the uplink message is negative (UNABLE or NEGATIVE), then the pilot will select the Reject prompt. <p>When the pilot selects either the Accept or the Reject prompt, the FANS-1 automatically transmits the correct response (WILCO, ROGER, AFFIRM, UNABLE, or NEGATIVE) for the corresponding message.</p> <p>On the FANS-1 equipped aircraft, the pilot cannot add any other element to a positive response.</p>

8.6.4 FMS processing of waypoints

A330-A340
The FMS cannot distinguish between ATC mandatory waypoints and waypoints inserted by the pilot. However, the pilot can over-write any avionics-determined default data contained in reports and confirm messages.
B747-400
The FMC's on Boeing aircraft do not distinguish between ATC mandatory waypoints and FMC sequenced waypoints for position reports. Additionally, the FANS-1 of the B747-400 aircraft does not permit the pilot to overwrite the FMC-determined default "reported waypoint" position in downlink DM#45 - REPORTED WAYPOINT . However, the FANS-1 of the B747-400 aircraft does allow the pilot to overwrite the FMC-determined default time (in particular, in response to uplink UM#138 - CONFIRM TIME OVER REPORTED WAYPOINT).
Non-use of uplink UM#139 for B747-400 aircraft
The uplink message UM#139 - CONFIRM REPORTED WAYPOINT should not be sent to B747-400 aircraft.
B777 / B757-B767 / B717 / MD90 / MD10 / MD11
The FMC's on Boeing aircraft do not distinguish between ATC mandatory waypoints and FMC sequenced waypoints for position reports. However, the FANS-1 of these aircraft will allow the pilot to overwrite the FMC-determined default "reported waypoint" position and time (Downlink element DM#45)

8.6.5 Multiple request messages

A330-A340
There is no network acknowledgment timer on Airbus aircraft for the establishment of a connection. Once CPDLC is established, there is a timer which is currently set at 2 minutes.
B747-400
If the network acknowledgment to a downlink message is not received by the B747-400 aircraft's ACARS MU within a time period set in the Navigation Database or Operational Program Configuration (OPC) file, the FANS-1 closes the message and an alert is triggered to the pilot. This alert may prompt the pilot to re-send the message. The timer value was 2 minutes up to Load 14, but will be set to 5 minutes with the introduction of Load 15. If a second message is identical to the first, but with a different identification number, and both messages have been received and responded to by the controller the avionics will only recognize the reference number of the second message. The first message is considered by the avionics to have been unsuccessful. <ul style="list-style-type: none"> • In reply to the controller's response to the first message, the avionics will send an INVALID REFERENCE NUMBER ERROR. • The controller's response to the second message will be processed normally. <p>In this case, if the controller ignores the first message, the connections to both ATS systems will not be lost when an END SERVICE message is received on board the aircraft.</p>

B757-B767 / B717 / MD90 / MD10 / MD11

When the network acknowledgment timer expires, it just “unlocks” the request pages, so that the pilot will be able to send another one. The time at which the network acknowledgment timer expires can be set in the Operational Program Configuration (OPC) file in the FMS. Currently, the value is set to 5 minutes.

B777

This network acknowledgment timer does not apply to the B777.

8.6.6 Waypoint sequencing**A330-A340**

Waypoint sequencing will only occur when the aircraft is within 7 NM of the flight plan track (as modified by any parallel offset that may have been entered). Therefore ADS-C waypoint change event reports and armed REPORT PASSING messages will not be transmitted automatically when the aircraft is outside these limits.

B747-400 / B757-B767 / B777 / MD90

Waypoint sequencing will only occur when the aircraft is within 21 NM of the flight plan track (as modified by any parallel offset that may have been entered). Therefore ADS-C waypoint change event reports and armed REPORT PASSING messages will not be transmitted automatically when the aircraft is outside these limits.

B717 / MD10 / MD11

Waypoint sequencing will only occur when the aircraft is within 7 NM of the flight plan track (as modified by any parallel offset that may have been entered). Therefore ADS-C waypoint change event reports and armed REPORT PASSING messages will not be transmitted automatically when the aircraft is outside these limits.

8.6.7 Network acknowledgement timer**B747-400**

The B747-400 FMC has a network acknowledgment timer as described in section 6.6.2A.i. of the Reference 1 ATS SR&O. If the network acknowledgment to a downlink message is not received before the timer expires, the flight crew is alerted and may assume that the message has not been sent. Once back “IN COMM” the ACARS MU will transmit any “queued” messages.

8.6.8 Open uplinks at time of transfer of communications**B747-400 (Load 15)**

If there are OPEN uplinks in the Boeing B747-400 FMC's ATC LOG when the Current Data Authority initiates transfer of communication to the Next Data Authority, the FMC will allow transfer to the Next Data Authority (i.e. The FMC will not disconnect the next data authority). This allows a smooth transfer to the next Flight Information Region if there are open uplinks at the time of transfer.

8.6.9 Offset using the FMS

When a pilot is flying an FMS offset, the Airbus and Boeing parameters previously mentioned (7 NM and 21 NM respectively) are not an issue as all flight plan waypoints will be sequenced by the FMS without taking into account the offset distance being flown. However, when an offset is executed using the FMS, Boeing aircraft and Airbus aircraft will transmit intent and predicted route information as follows:

A330-A340
The Intent and Predicted Route Group information is projected along the offset route.
B747-400 / B777 / B757-B767 / B717 / MD90 / MD10 / MD11
The Predicted Route Group when flying an FMS offset is always along the offset route.
The projection of intent information currently depends on the aircraft type, and the version of software is installed as defined below:
B747-400 - Load 14 and before, towards the next FMS waypoint. Load 15 and after, along the offset path.
B757/B767 - Pegasus 99 and before, towards the next FMS waypoint. Pegasus 2000 and after, along the offset path.
B777 - Block Point 98, towards the next FMS waypoint. Block Point 99 and after, along the offset path.
MD90 - 920 FMS, towards the next FMS waypoint. 921 FMS and after, along the offset path.
MD10 / MD11 / B717 - Always along the offset path.

8.6.10 Duplicate uplink messages

B747-400 (Load 15)
If the Boeing B747-400 FMC receives an uplink message that is an exact duplicate of a previously received uplink message, the FMC will discard the duplicate message. This prevents the display of the INVALID ATC UPLINK scratch pad message which would otherwise be displayed when a duplicate uplink is received
<i>Note: Duplicate messages are an unavoidable characteristic of the datalink environment.</i>

8.7 FANS Interoperability Team Members

The FANS Interoperability Teams (FITs) consist of representatives from aircraft and ancillary equipment manufacturers, airlines, data communication service providers, ATS providers, IATA, ICAO, IFALPA and IFATCA. Contact details of the FIT members are available from their respective CRAs (refer below).

8.8 Central Reporting Agency Members

8.8.1 North and Central Pacific (IPACG)

FAA CRA	
Reed Sladen Automation Manager Oakland ARTC Center 5125 Central Avenue Fremont, CA 94536 – USA	Fax: +1-510-745-3826 Tel: +1-510-745-3328 EM: Reed.B.Sladen@faa.gov
FAA CRASA – BOEING	
Gordon Sandell Avionic Engineering The Boeing Company P.O. Box 3707, MC 02-98 SEATTLE, WA 98124-2207 – USA	Fax: +1 425 707 5052 Tel: +1 425 342 4906 EM: gordon.r.sandell@boeing.com
JCAB CRA	
TBD Civil Aviation Bureau, Ministry of Land, Infrastructure and Transport 2-1-3 Kasumigaseki, Chiyoda-ku Tokyo 100-8918 - JAPAN	Fax: Tel: EM:
JCAB CRASA	
Yoshiro Nakatsuji JCAB CRASA K-1 Building, 3rd floor, 1-6-6 Haneda airport, Ota-ku, Tokyo 144-0041 – JAPAN	Fax: +81-3-3747-1231 Tel: +81-3-3747-1231 EM: CRASA@cra-japan.org
Kenji Shibata JCAB CRASA K-1 Building, 3rd floor, 1-6-6 Haneda airport, Ota-ku, Tokyo 144-0041 – JAPAN	Fax: +81-3-3747-1231 Tel: +81-3-3747-1231 EM: CRASA@cra-japan.org

8.8.2 South Pacific (ISPACG)

CRA and CRASA – Boeing	
Brad D. Cornell 787 Flight Crew Operations The Boeing Company P.O. Box 3707, MS 02-JH SEATTLE, WA 98124-2207 - USA	Fax: 425 294-1076 EM: bradley.d.cornell@boeing.com SITA: FMCBOCR Tel: 425-294-6520
Suzie NESS FMS The Boeing Company P.O. Box 3707, MS 02-RP SEATTLE, WA 98124-2207 – USA	Fax: 425 342-6078 EM: suzie.ness@boeing.com SITA: FMCBOCR Tel: 425-342-6803

8.8.3 Indian Ocean

CRA and CRASA – TBD	

8.8.4 Bay of Bengal

CRA and CRASA – TBD	

8.8.5 Arab Civil Aviation Commission

CRA and CRASA – TBD	

8.8.6 South Atlantic

CRA	
Johnny Smit Pool Manager, Area Control, East and Oceanic Air Traffic and Navigation Services (ATNS) Air Traffic Control Centre JHB International Airport Private Bag X1 Bonero Park, 1622 South Africa	FAX: +27 (11) 3951045 TEL: +27 (11) 9286436 EM: johnnys@atns.co.za

9 Continental CPDLC Implementation

9.1 Introduction

This section provides guidance on the implementation of FANS-1/A datalink operations in en route continental (domestic) airspace based on the operational experience of a number of centres that are using CPDLC as a supplement to VHF voice. The purpose of this guidance material is to ensure that the concepts and procedures for continental FANS-1/A data link usage are globally standardized as far as is possible. The recommended procedures contained in this section are drawn from procedures that have been validated over several years of operational use within continental en route airspaces.

9.2 Concepts

9.2.1 Supplement to Voice

Implementation of CPDLC into continental airspace is intended as a supplement to the use of VHF voice and the intent is to build a single communications environment where both voice and CPDLC are considered as being normal Air Traffic Management (ATM) tools.

9.2.2 Reduced Message Set

CPDLC in continental airspace uses a reduced set of message elements as a supplement to VHF voice communications. A recommended message sub-set is included at the end of this section, but it is expected that there may be slight variations from centre to centre depending on specific environments. It is extremely important that Air Traffic Service Providers publish a list of the functions that will be served by CPDLC so that crew expectations can be modified from one environment to the next.

9.2.3 Airspace

The use of CPDLC in continental airspace is intended primarily for aircraft operating within en-route sectors. Depending on the actual operational environment where the implementation is to occur (for example, radar or non-radar airspace), the only change to the single communications environment during the progression of a specific flight would be the mix of voice and CPDLC transmissions. As an example of the changing mix of media in a single communications environment, a non-radar environment might use a roughly equal mix of voice and CPDLC, whereas the use of CPDLC might possibly be restricted to just the passing of Departure Clearances in some busier terminal environments.

9.3 Communications Media

9.3.1 Continental

The ATC communications environment within data link enabled continental airspace is a defined mix of CPDLC and voice media.

9.3.2 Use of CPDLC in Continental Airspace

The following procedures only apply to normal (non-emergency) operations. While the intent of these procedures is to develop a standardised and predictable environment using a combination of voice and CPDLC, the decision on whether voice or CPDLC is the more appropriate medium for use in a given operational situation will be made by the pilots and controllers involved.

9.3.3 Strategic CPDLC Application

As a supplement to VHF voice, CPDLC is intended to be restricted to the passing of strategic information. Strategic information involves routine, non-time-critical communications, and includes examples such as the passing of amended flight levels, amended routes, speed control messages, frequency changes, and SSR codes, when the speed of delivery is not critical to safety.

9.3.4 Tactical Voice

Tactical, time-critical instructions, such as intervention required to maintain separation, are intended to be handled by voice communications.

9.3.5 Voice Precedence

Voice instructions and acknowledgments shall have precedence over CPDLC messages at all times. In the event that any ambiguity exists in a message or message exchange, then the controller/pilot shall revert to voice communications for clarification.

9.3.6 Imposing Voice Communications

If a controller or pilot believes that the presiding operational circumstances are not suitable for the use of CPDLC, then either may suspend the use of CPDLC. Whenever voice is required to be the sole communications medium, notification shall be made by the following phraseologies:

Controller initiated suspension - “[callsign] CPDLC use suspended. Revert to voice.”

Pilot initiated suspension - “[callsign] suspending CPDLC. Reverting to voice.”

Note: Notification of CPDLC being suspended is intended to ensure that CPDLC is not used during the prevailing circumstances – the crew should not initiate a disconnection from CPDLC unless specifically advised by the controller. If a disconnection from CPDLC is required, then either the phrase “[callsign] Select ATC Comm Off” shall be used, or the controller will perform the disconnection via the ground system.

9.3.7 Change from Strategic to Tactical Situation

If the traffic situation should quickly change to the point where the controller no longer believes that there is sufficient time for a datalink exchange to be completed without safety, separation, or situational awareness being affected, then the controller should revert to voice. Any previously issued CPDLC clearance or instruction that is being overridden by the change to voice shall be specifically referred to in the voice communication. Where necessary, any open CPDLC messages resulting from a sudden change from CPDLC to voice should only be dealt with after the tactical situation has been resolved.

9.3.8 Message Compliance and Responses

Flight crew shall either comply with uplink CPDLC instructions or respond with UNABLE, and shall respond to uplink messages using CPDLC whenever possible.

9.3.9 Climb/Descent Phase

Due to cockpit workload and crew head-down time in busier phases of flight, consideration should be given to the types of messages exchanged by CPDLC during the climb and descent phases and whether those messages provide operational benefit over voice transmissions.

9.3.10 Crossing CPDLC System Boundaries

Flight crew shall ensure that the correct centre is displayed as the Active Centre following a transfer of the CPDLC connection from one ATS Unit to another.

9.3.11 Jurisdiction Over Aircraft

Controllers must ensure that CPDLC clearances are sent only to aircraft under their jurisdiction.

9.3.12 Dialogues During CPDLC Transfer

Flight crew and controllers should not initiate a CPDLC dialogue within two minutes of a boundary crossing when the transfer of CPDLC will occur from one ATS Unit to another.

9.4 Message Set

The following message set is the recommended maximum sub-set of the full CPDLC message set for continental CPDLC use. This sub-set has been defined from a mix of proposed and current message elements intended for continental use by a number of States:

MAAS Maastricht Upper Area Control Center (UAC)

Miami 1A FAA Build 1A Program (Miami Centre)

Only messages relating to the listed elements should be used in continental airspace, with all other transactions being conducted by VHF voice.

Note 1: This list is presented as an example of the types and range of operational message elements that should be considered for continental CPDLC operations.

Note 2: For ease of cross-referencing, the table is drawn from a mix of ATN and FANS-1/A message environments, and the element text presented in the table is from the ATN Baseline 1 program message set. If a conflict occurs with the message text between the FANS-1/A and ATN elements, the element number should be used for determining the actual element text relevant to the FANS-1/A environment. Ground system implementations will ensure that the correct element (based on the message number) will be delivered to the receiving system.

Note 3: Although these procedures are written to be applicable across technologies, they will initially be included in FANS-1/A specific documentation (i.e. the Pacific Operations Manual). For this reason, only the FANS-1/A message elements are listed in the following tables. Some of the facilities listed in the table (e.g. Miami and Maastricht) also use ATN-specific message elements not available in FANS-1/A. For the purposes of this document, such elements are represented by the [free text] elements because these non-FANS elements would be converted to free text for FANS operations.

For example, Maastricht uses um190 [degrees], an ATN message instructing the crew to FLY HEADING [degrees]. In the context of this document this message would be sent as um169 [free text], e.g.um169 [FLY HEADING nnn].

9.4.1 Recommended Uplink Message Set

Elmt #	Maas	Miami 1A	Message Element
0	X	X	UNABLE
1	X	X	STANDBY
3	X	X	ROGER
4	X		AFFIRM
5	X		NEGATIVE
19	X	X	MAINTAIN [level]
20	X	X	CLIMB TO [level]
23	X	X	DESCEND TO [level]
26	X		CLIMB TO REACH [level] BY [time]
27	X		CLIMB TO REACH [level] BY [position]
28	X		DESCEND TO REACH [level] BY [time]
29	X		DESCEND TO REACH [level] BY [position]
46	X	X	CROSS [position] AT [level]
47	X	X	CROSS [position] AT OR ABOVE [level]
48	X	X	CROSS [position] AT OR BELOW [level]
51	X		CROSS [position] AT [time]
52	X		CROSS [position] AT OR BEFORE [time]
53	X		CROSS [position] AT OR AFTER [time]
54	X		CROSS [position] BETWEEN [time] AND [time]
55	X	X	CROSS [position] AT [speed]
61	X	X	CROSS [position] AT AND MAINTAIN [level] AT [speed]
64	X		OFFSET [specified distance] [direction] OF ROUTE
72	X		RESUME OWN NAVIGATION
74	X	X	PROCEED DIRECT TO [position]
79		X	CLEARED TO [position] VIA [routeClearance]
80	X		CLEARED [routeClearance]
82	X		CLEARED TO DEVIATE UP TO [specified distance] [direction] OF ROUTE
92	X		HOLD AT [position] AS PUBLISHED MAINTAIN [level]
94	X		TURN [direction] HEADING [degrees]
96	X		CONTINUE PRESENT HEADING
106	X	X	MAINTAIN [speed]
107	X		MAINTAIN PRESENT SPEED
108	X	X	MAINTAIN [speed] OR GREATER
109	X	X	MAINTAIN [speed] OR LESS
116	X		RESUME NORMAL SPEED
117	X	X	CONTACT [unitname] [frequency]
120	X	X	MONITOR [unitname] [frequency]

Elmt #	Maas	Miami 1A	Message Element
123	X		SQUAWK [code]
133	X		REPORT PRESENT LEVEL
135	X	X	CONFIRM ASSIGNED LEVEL
148	X		WHEN CAN YOU ACCEPT [level]
157	X	X	CHECK STUCK MICROPHONE [frequency]
159	X	X	ERROR [error information]
160	X	X	NEXT DATA AUTHORITY [facility]
161	X		END SERVICE
162	X	X	SERVICE UNAVAILABLE
163	X		[facility designation]
165	X	X	THEN (only used when concatenated)
169	X		(free text)
171	X		CLIMB AT [vertical rate] MINIMUM
172	X		CLIMB AT [vertical rate] MAXIMUM
173	X		DESCEND AT [vertical rate] MINIMUM
174	X		DESCEND AT [vertical rate] MAXIMUM
179	X		SQUAWK IDENT

9.4.2 Recommended Downlink Message Set

Elmt #	Maas	Miami 1A	Message Element
0	X	X	WILCO
1	X	X	UNABLE
2	X	X	STANDBY
3	X	X	ROGER
4	X	X	AFFIRM
5	X	X	NEGATIVE
6	X	X	REQUEST [level]
9	X	X	REQUEST CLIMB TO [level]
10	X	X	REQUEST DESCENT TO [level]
18	X		REQUEST [speed]
22	X		REQUEST DIRECT TO [position]
23	X		REQUEST [procedure]
24	X		REQUEST [routeClearance]
26	X		REQUEST [weather deviation]
27	X		REQUEST WEATHER DEVIATION UP TO [distance] [direction] OF ROUTE
37	X		MAINTAINING [level]
38	X	X	ASSIGNED LEVEL [level]
40	X		CONFIRM ROUTE
56	X		MAYDAY MAYDAY MAYDAY
62	X	X	ERROR [error information]
63	X	X	NOT CURRENT DATA AUTHORITY
64	X		[facility designation]
65	X	X	DUE TO WEATHER (only used when concatenated)
66	X	X	DUE TO AIRCRAFT PERFORMANCE (only used when concatenated)
73		X	[versionnumber]
80	X		DEVIATING UP TO [specified distance][direction] OF ROUTE

10 Procedures For State Aircraft Special Operations

Note that this entire Section does not apply in the Fukuoka FIR.

10.1 Introduction

The data link and voice communication requirements for CNS/ATM are being defined by international, regional, and national civil aviation authorities and are based on use of commercial communication systems. In the Oceanic and Remote Regions, data link has seen increased use and will eventually replace voice as the primary means of communication. The military has unique requirements insofar as using CPDLC. These requirements were never considered when the CPDLC message set was being developed.

Many air and maritime air forces have the capability to conduct air-to-air refueling (AAR) operations. Although detailed procedures are dependent on aircraft type, mode of employment and national requirements, there is sufficient commonality for standard procedures to be developed to enhance operational interoperability. Many of these air and maritime air forces are making the transition to aeronautical data links and the use of Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance - Contract (ADS-C).

The procedures outlined below describe the communications to be utilized by military aircraft in the attempt to promote harmonization in CPDLC and ADS-C procedures. These procedures have been developed utilizing a combination of existing CPDLC message elements and free text. Pro-forma free text messages DL67L and DL67M have been created to support these operations in the attempt to avoid the use of free text messages and for overall standardization. To the maximum extent possible, data link capable aircraft should adhere to established message architecture and avoid extraneous free text.

The aim of this chapter is to provide a reference document covering military procedures to be used in an aeronautical data link environment. This chapter will provide guidance for air crews and air navigation service providers (ANSPs) in order to promote harmonized military air-to-air refueling operations in an aeronautical data link environment and lead to a better understanding of air-to-air refueling procedures and terminology.

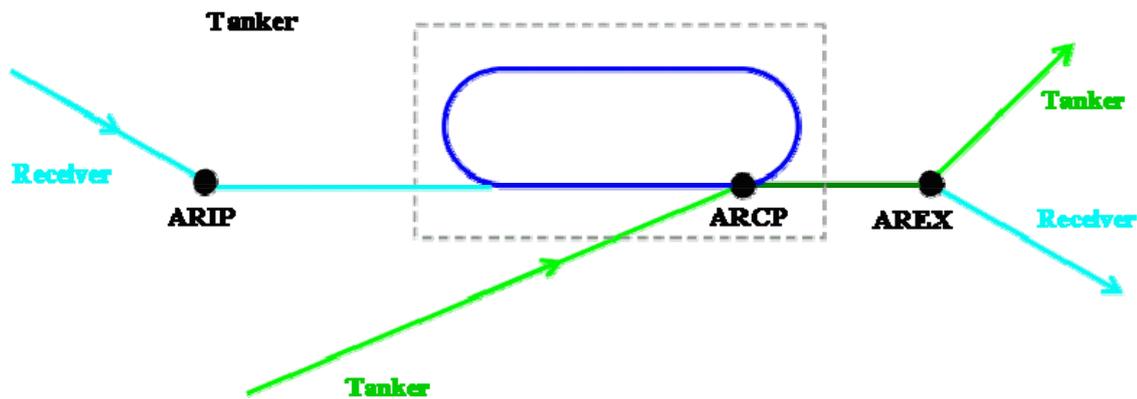
10.2 Air-to-Air Refueling

Air-to-air refueling is normally accomplished between 10,000 and 28,000 feet depending on receiver type, requiring both aircraft to descend for refueling.

Refueling tracks are numbered and depicted on charts in domestic airspace and a few depicted in oceanic airspace. Oceanic refueling may also be conducted on non-designated tracks with an Altitude Reservation (ALTRV). In both cases, the refueling procedure is part of the filed flight plan. The flight plan always includes time, requested altitude block, Air Refueling Control Point (ARCP), Air Refueling Initial Point (ARIP), Air Refueling Exit Point (AREX) and intermediate refueling track points. If the procedure is depicted, its designation (ARxxx) is sufficient to define the track. In the oceanic environment, a refueling pattern may be part of an existing ALTRV.

During the refueling phase all aircraft operate within the altitude block and fly the flight planned route along the refueling track. ADS contracts may be set with any aircraft but it is only necessary with the lead tanker and must correspond with a filed flight plan. Additionally, any other CPDLC report (i.e. REPORT PASSING [position], etc.) may be requested of the tanker in order to track the progress of the flight. The aircraft may or may not remain in a single formation in the altitude block for the remainder of the flight. There are no special CPDLC messages developed during this phase.

A typical air-refueling pattern is illustrated below. The light green track represents the tanker's intended route to the ARCP. The light blue track is the receiver's intended route. Both aircraft file separate flight plans showing the specific aerial refueling locations. The dark blue track is the tanker's orbit and rendezvous flight paths with the dark green track depicting the aerial refueling (AR) track. Three or more points can define the AR track. The ARIP is the point where the receiver enters the AR track. The ARCP is the reference point for the holding pattern where the tanker awaits the receiver. The AR track is between the ARCP and the AREX.



10.3 CPDLC Messages

The procedures and CPDLC messages described below are based on the FANS-1/A message set. Below is a listing of datalink exchanges that would occur between a FANS-1/A capable tanker, receiver and air traffic control.

10.3.1 CPDLC Messages associated with air-to-air refueling

At approximately 10 minutes from the ARCP the pilots will make the following request:

	Message	Response	Message Intent
Pilot (Tanker)	DM#25 REQUEST CLEARANCE; and DM#67L TO DELAY FOR AIR REFUEL AT [position] UNTIL [time]; and DM#7 REQUEST BLOCK [altitude] TO [altitude]		The tanker is requesting a clearance to delay at the ARCP until the rendezvous with the receiver. [position] is the ARCP as filed in the tanker’s flight plan. [time] is the time the tanker expects to pass the ARCP and commence refueling along the refueling track. It is also the end of the delay time. The tanker is requesting the altitude block for air refueling.
Controller	UM#169 CLEARED TO DELAY AS REQUESTED If block is NOT immediately available UM#0 UNABLE. UM#166 DUE TO TRAFFIC; (optional)	ROGER N/A ROGER	The tanker is cleared to delay at the ARCP as requested. Note: This message may need to be appended with a “free text” message in the event the controller needs to specify a specific area of operations or if the area to delay is different than the filed flight plan. If the block clearance is not available, reject the request. An expectation could be issued or an instruction to report over the ARCP.

			track
Controller (to Receiver)	UL#31 CLIMB TO AND MAINTAIN BLOCK [altitude] TO [altitude]; or UL#32 DESCEND TO AND MAINTAIN BLOCK [altitude] TO [altitude]; or UL#30 MAINTAIN BLOCK [altitude] TO [altitude]; and (optional) UL#180 REPORT REACHING BLOCK [altitude] TO [altitude]; and UL#169 CLEARED TO CONDUCT REFUELING	WILCO ROGER ROGER	The receiver is cleared to operate in the block required for refueling. <i>Note: If no MARSAs statement has been received, it must be confirmed prior to issuing a clearance that causes a loss of separation between the two aircraft.</i> An additional instruction to report when established in the block clearance can be appended if required <i>Note: If this is appended to the vertical clearance, there is no ROGER reply.</i> The receiver is cleared to refuel.
Controller (to tanker)	UL#169 CLEARED TO CONDUCT REFUELING	ROGER	The tanker is cleared to refuel.

When the tanker is commencing the rendezvous with the receiver the tanker pilot sends the following:

	Message	Response	Message Intent
Pilot (Tanker and Receiver)	DL#11 AT [position] REQUEST CLIMB TO [altitude]; or DL#12 AT [position] REQUEST DESCENT TO [altitude]		[position] is the EXIT point. [altitude] is the requested level for each aircraft after refueling is complete

Approaching the end of refueling:

	Message	Response	Message Intent
Pilot (Tanker)	DM# 67N EXPECT END OF REFUEL AT [time]		The tanker pilot is providing notification that the end of refueling is imminent.
Controller (to Tanker)	UM#164 WHEN READY; and UM#19 MAINTAIN [altitude1]; and UM#129 REPORT LEVEL [altitude1]	WILCO	<i>Note. Climb or descent clearances may be issued as appropriate Controller.</i>
Controller (to Receiver)	UM#164 WHEN READY; and UM#19 MAINTAIN [altitude2]; and UM#129 REPORT LEVEL [altitude2]	WILCO	<i>Note. Climb or descent clearances may be issued as appropriate.</i>
Pilot (Tanker)	DM#37 LEVEL [altitude1]		The tanker is maintaining the assigned level.
Pilot (Receiver)	DM#37 LEVEL [altitude1]		The receiver is maintaining the assigned level.
Controller (to Tanker)	UM#169 MARSAs TERMINATED WITH [callsign(s) of other aircraft]	ROGER	MARSAs ends between the tanker and receiver when the tanker advises ATC that the tanker and receiver aircraft are vertically positioned within the air-refueling airspace and ATC advises MARSAs is terminated

10.3.2 CPDLC Messages Associated With “Military Assumes Responsibility for Separation of Aircraft” (MARSAs)

Prior to commencing aerial refueling or maneuvers with receiver aircraft, the tanker will notify ATC that the “Military Assumes Responsibility for Separation of Aircraft” (MARSAs). The term “MARSAs” is used in the call to ATC to notify ATC that the aircraft are accepting the responsibility for their actions within the aerial refueling (AR) track and the tanker is the lead of the formation. ATC controls all other traffic to preclude conflicts between civil and military traffic involved in the AR while at the same time still controlling the tanker and receiver. The actual refueling commences at the air refueling control point (ARCP) and continues as the

aircraft proceed down the refueling track. Normally, the refueling is completed prior to the aircraft reaching the air refueling exit point (AREX) point. At AREX, both aircraft must receive ATC clearances to continue on their filed routing.

MARSA:

	Message	Response	Message Intent
Pilot	DM# 67 ACCEPT MARSA WITH [callsign(s) of other aircraft]		Stating acceptance of MARSA with other specific aircraft

MARSA Terminated:

	Message	Response	Message Intent
Pilot	DM#37 LEVEL [altitude1] (optional) DM#37 LEVEL [altitude] DM#67 [callsign of other aircraft] LEVEL [altitude]		MARSA ends between participating aircraft when all are vertically positioned and separated and ATC advises MARSA is terminated Reports level altitude of aircraft if other aircraft is not datalink equipped.
Controller	UM#169 MARSA TERMINATED WITH [callsign(s) of other aircraft]		[xxxxx] callsign of aircraft leaving formation

10.3.3 CPDLC messages associated with “Formation Flights”

Formation flying in a standard formation is usually one in which a proximity of no more than 1 mile laterally or longitudinally and within 100 feet vertically from the flight leader is maintained by each wingman. Non-standard formations are those operating under conditions other than standard formation dimensions that the flight leader has requested and air traffic control (ATC) has approved, or when operating within an authorized altitude reservation (ALTRV).

For each flight plan the lead data linked equipped aircraft will perform AFN logons at the correct time (typically 15-45 minutes prior to entering data link airspace). Once in formation, only the lead aircraft will make CPDLC position reports (the same CPDLC position reports sent out when single ship). Use CPDLC standard messages for altitude requests, routing requests (if different from what was filed), and speed or ETA requests with ATC to effect any en-route changes.

In the event a formation wants to break-up the formation or depart an ALTRV the wingmen desiring to break off of the formation will coordinate their departure a minimum of ten (10) minutes prior to separation with appropriate requests, and the following data link procedures will be used. Air traffic control will need separate flight plans for each flight in the event that the formation splits.

Single aircraft or formation is joining an ALTRV:

	Message	Response	Message Intent
Pilot	DM# 67 JOINING ALTRV [xxxxx] AT [xxxxx]		[XXXXXX] can be either a point or a time Example: JOINING ALTRV CW413 AT HEMLO or JOINING ALTRV CW413 AT 1530Z

Formation Break-up or departure from ALTRV

	Message	Response	Message Intent
Pilot	DM# 67 REQUEST TO DEPART ALTRV [xxxx] AT [xxxxx]		Aircrew is providing notification to break-up from formation or depart from ALTRV. [xxxxx] can be either a point or a time.
Pilot	DM#22 REQUEST DIRECT TO [position]; or		Send DM#22 to request direct to the desired point on the filed flight plan,

	DM#24 REQUEST [route clearance]		otherwise DM#24
Controller	UM#74 PROCEED DIRECT TO [position]; or UM#76 AT [time] PROCEED DIRECT TO [position]; or UM#77 AT [position] PROCEED DIRECT TO [position]; or UM#79 CLEARED TO [position] VIA [route clearance]; or UM#80 CLEARED [route clearance]; or UM#83 AT [position] CLEARED [route clearance]	WILCO	ATC responds with an appropriate UM based on the request.
Pilot/ATC	Send appropriate request for altitude desired. ATC responds with proper uplink.		

10.4 ADS Reports

If suitably equipped, all aircraft will leave ADS-C armed because ADS contracts may be established by ATC. ATC will establish ADS contracts with the lead aircraft as identified in the filed flight plan.

11 Endnotes

- ¹ As agreed, the FOM is to be published not less than twice per year, and each time it is published it is to have an effective date corresponding to the nearest upcoming international charting date.
- ² The greatly expanded FIR list reflects the fact that the FOM has now been formally adopted by all regions of the world, with the exception of the NATFIG. (And even in that region the actual use of FANS messages conforms to FOM standards.)
- ³ The ACAC and SAT FITs have been added.
- ⁴ The principal representatives for IPACG (Japan) and ISPACG have changed.
- ⁵ The principal representatives for ACAC and SAT have been added.
- ⁶ This is a new SR&O supplied by Allan Storm, effective June 2006.

APPENDIX F

**TERMS OF REFERENCE OF THE APIRG RVSM
IMPLEMENTATION TASK FORCE (APIRG RVSM/TF)**

- a) To develop a comprehensive implementation plan for RVSM in the AFI Region, taking into account the requirements contained in the following documents, as well as other relevant reference documents:
 - *Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive* (Doc 9574)
 - *Manual on Required Navigation Performance (RNP)* (Doc 9613)
 - *Manual on Airspace Planning Methodology for the Determination of Separation Minima* (Doc 9689)
 - *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444)
 - b) To identify any areas within the AFI Region where it may be feasible to introduce RVSM in the initial implementation.
 - c) To determine the extent to which a cost/benefit analysis is required prior to implementation of RVSM.
 - d) To coordinate with the bodies responsible for the implementation of RVSM in adjacent regions in order to harmonize implementation plans.
 - e) To develop guidance material for RVSM implementation in the AFI Region, including taking due account of experience gained and existing material developed by other ICAO Regions.
 - f) To address any other matters, as appropriate, which are relevant to the implementation of RVSM.
-

APPENDIX G

AFI RVSM STRATEGY/ACTION PLAN FOR IMPLEMENTATION OF REDUCED VERTICAL SEPARATION MINIMA IN THE AFRICA-INDIAN OCEAN REGION

November 2007



AFI RVSM IMPLEMENTATION STRATEGY/ACTION PLAN					
ID	Description	Target Date	Status	Resources	Remarks
	Program Management				
1	Agree on structure of TF to enable efficient handling of specialist technical tasks	21/11/03	Completed	Secretariat Support Team: ASECNA, SA, IATA, Kenya, Nigeria, Tunisia	Completed 21 Nov 2003
2	RVSM SIP Report	21/11/03	Completed	RVSM/ITF2	Completed 21 Nov 2003
3	RVSM/RNAV/RNP TF/2 Meeting	21/11/03	Completed	RVSM/ITF2	Completed 21 Nov 2003
4	Identify resources for performing specialist technical tasks	21/11/03	Completed	RVSM/ITF2	Completed 21 Nov 2003
5	Investigate methods of funding any outside assistance required	31/03/04	Ongoing	ICAO/IATA	To address future funding as/when required
6	Finalize the RVSM Implementation Strategy/ Action Plan	31/12/03	Completed	ICAO	Sent 05 Dec 2003
7	Circulate RVSM Implementation Strategy/Action Plan for comments from States	5/01/04	Completed	ICAO	Sent 05 Dec 2003
8	a) Doc 7030 amendment Proposal b) Circulate proposal to States c) ANC Approval	Submitted to ANC in March 2007	Completed Completed Completed	ICAO ICAO ICAO	Approved in June 2007
9	States comments on RVSM implementation Strategy/Action Plan	31/-3/04	Completed		
10	Regional RVSM informational website	31/03/04	Completed		www.icao.int/esaf/RVSM
11	RVSM Seminar/RVSM ITF3	19-22/04/04	Completed		
12	RVSM Seminar /RVSM/ITF/4	26-30/07/04	Completed		
13	Coordination and harmonization of procedures with adjacent Regions	Ongoing	Ongoing	ICAO and AFI RMA	Continuous contact
14	States to send AIC to notify their intention to Implementation of RVSM	October 05	completed	ICAO/States	Continuous
15	Determine target AIRAC implementation date (AIP Supplement to be published)	TBD		ICAO/States	Reviewed every TF meeting

AFI RVSM IMPLEMENTATION STRATEGY/ACTION PLAN					
ID	Description	Target Date	Status	Resources	Remarks
16	Regional RVSM implementation status reports	Ongoing	Ongoing	ICAO	Monthly Report to website
17	State Readiness Assessment	October 2006	Ongoing	ICAO	Reviewed every TF meeting
18	RVSM/ARTF/5	15-16/11/04	Completed		
19	RVSM/ARTF/6	25-27/05/05	Completed		
20	RVSM/ARTF/7 ATS/AIS/SAR/SG/8	08-09/08/05 10-12/08/5	Completed Completed		
21	RVSM/ARTF/8 and RVSM Seminar	10 – 14 October 2005	Completed		
22	RVSM/ARTF/9 meeting	April 06	Completed		
23	RVSM TF/10 meeting and GO/Delay meeting	June 06	Completed		
24	Publish Trigger NOTAM	TBD	Pending	States	States to be advised of date
25	Develop/Publish National SWOP	October 06	Completed Progress	States	SWOP sent to States
26	RVSM Task Force 11 Meeting	30/11-1/12/06	Completed	All	Nairobi
27	RVSM Task Force 12 meeting	23-24 April2007	Completed	All	
28	RVSM Task Force 13	12-14 September 2007	Completed	All	
29	RVSM Task Force 14	April 2008		States /ICAO	
30	RVSM Task Force 15	August 2008		States /ICAO	
	Aircraft Operations and Airworthiness				
31	Regional OPS/Airworthiness RVSM Guidance	21/11/03	Completed		
32	Develop regional Pilot Training RVSM Guidance Material	30/04/04	Completed	IATA	Sent to Operators for action
33	Provide pilot training RVSM guidance material to specific States	30 July 06	Completed		Sent to States
34	Aircraft Operational approval process guidelines	31/05/04	Completed		Sent to States
35	Aircraft RVSM Approval Survey	In progress	Ongoing	ICAO/States	Continuous and updated at every TF meeting

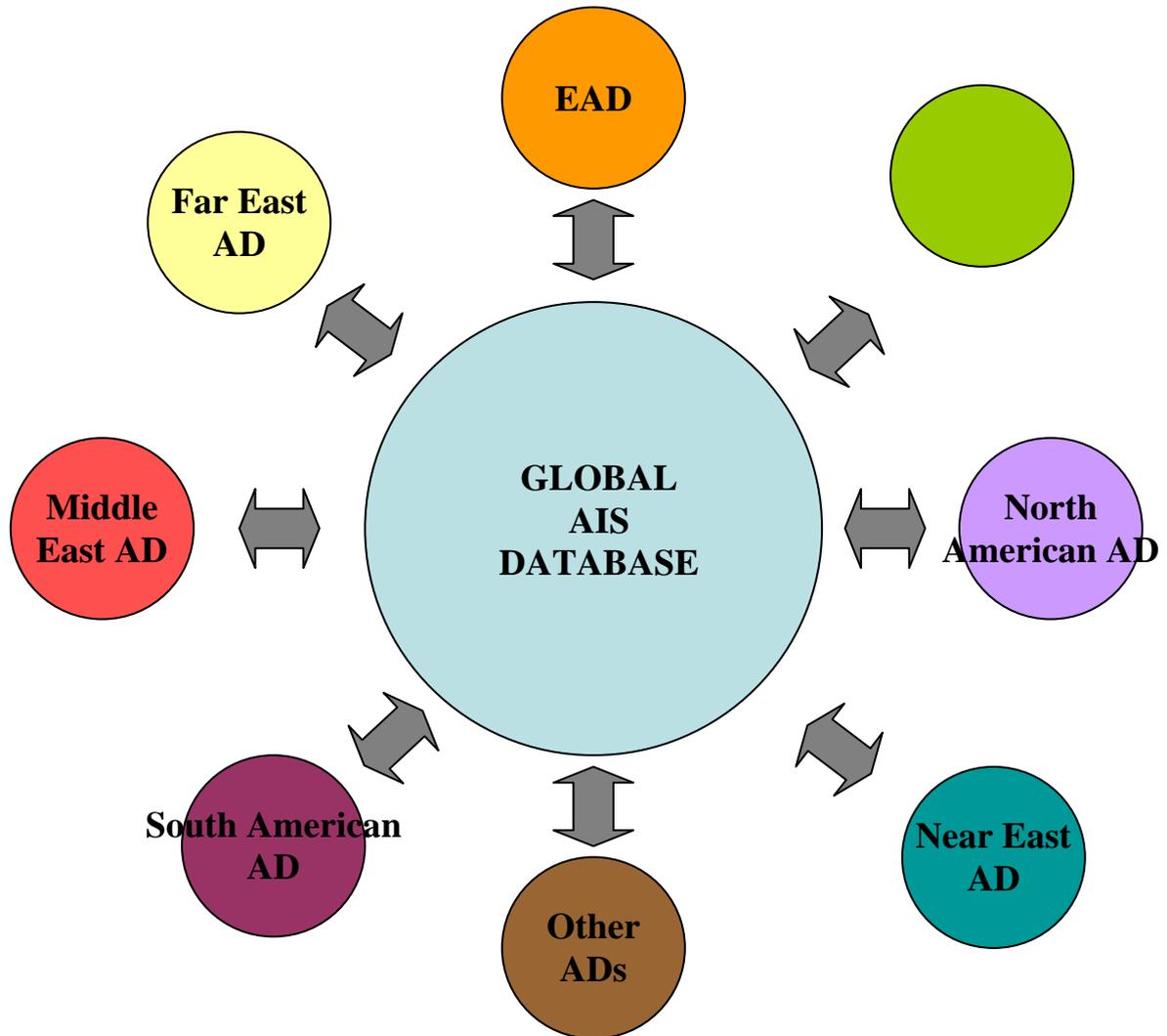
AFI RVSM IMPLEMENTATION STRATEGY/ACTION PLAN					
ID	Description	Target Date	Status	Resources	Remarks
36	Ensure aircraft/operator approval process	In progress	Ongoing	ICAO/ARMA	Updated at every TF meeting
37	Ops/Airworthiness seminar	Nov 06	Completed	ICAO	Seminar to be coordinated with ICAO
Air Traffic Management					
38	National RVSM plan	31/03/04	Ongoing	States, ICAO	3 States had NOT signed by 31 October 2007.
39	National Safety Plan Validation Panel	March 06	Completed	NSPVP	Future validations by ICAO/ARMA
40	APIRG/15 Consideration of TF Reports	25-30-9-05	Completed		
41	Regional ATC OPS Manual	Apr 06	Completed	States	States to incorporate in National documentation
42	Determine the limits of RVSM airspace	30/06/04	Completed	States/ICAO	
43	Regional ATC Training Program & Guidance Material	July 06	Completed	ASECNA/ATNS	Training institutions to incorporate elements highlighted by PISC
44	Letters of Agreement/Procedure (LOA/LOP)	3 months before Time of switch over	Ongoing	States	States to incorporate RVSM procedures.
45	Civil/Military coordination	Continuous	Ongoing	States	In National RVSM Plan
46	National RVSM Regulatory Material	October 06	Ongoing	States	Included in the National Safety Plan and are in the LOAs/LOPs and AIPs
47	Collect weather and turbulence data for analysis	Ongoing	Ongoing progress	ARMA ICAO/States	ARMA to Collate
RVSM Safety Assurance					
48	State review of implementation of CNS infrastructure to support provision of ATC Service in the AFI RVSM airspace	December 2007	Ongoing	All States	Reviewed at every TF meeting
49	Review of the provision of ATC Service in the AFI RVSM Airspace	December 2007	Ongoing	All States/ICAO	Reviewed at every TF meeting
50	Conduct data collection and compile readiness assessment	In progress	Ongoing	ARMA/States	States to continue supplying data as required by ARMA to support Safety Assessments

AFI RVSM IMPLEMENTATION STRATEGY/ACTION PLAN					
ID	Description	Target Date	Status	Resources	Remarks
51	Develop AFI RVSM Safety Policy	30/06/04	Completed	States	States to ensure publication
52	a) Submit final NSP's after validation comments have being taken into account	October 06	Completed	States	4 States NOT finalized their NSP by 31 October 2007.
	b) Conduct NSP workshops facilitated by ATC experts	July 05	Completed		
	c) Once NSP's are implemented, DCA's to confirm State readiness data	Subject to State implementation status	In progress	States	Reviewed at every TF meeting.
	d) Update State readiness document	October 06	Ongoing	ICAO	TF/13 to review progress
53	RVSM Functional Hazard Assessment (FHA)	4-8/04/05	Completed		
54	Validate Functional Hazard Assessment	31/05/05	Completed		
55	RVSM Collision Risk Assessment II	Oct 06	completed	ARMA/ICAO/ Consultants	
56	Validate Collision Risk Assessment	August 2007	completed	Approved by TF/13	Approved for submission to APIRG
57	RVSM Collision Risk Assessment III	January 2008	In progress	ARMA/ICAO/ Consultant	
58	AFI Pre-Implementation Safety Case	September 2007	Completed	ARMA/ICAO/ Consultants	Reviewed by Task 13 and adopted for submission to APIRG/16
59	AFI Pre-Implementation Safety Case: ANC	February/March 2008	Finalization of PISC doc 31 January 2008		PISC to be sent to the ANC for approval in February 2008.
60	RVSM Implementation date	25 September 2008	25 September 2008	States/ICAO	25 September 2008
61	Improved incident reporting and investigation to reduce incident rates to support positive CRA results	With Immediate Effect	Ongoing	States	States to provide record of incidents and remedial action for Safety Assessments

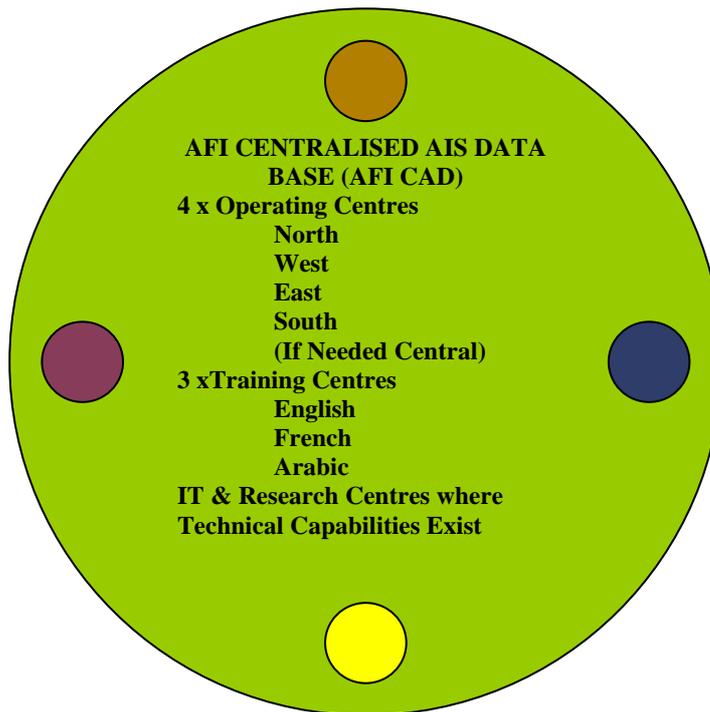
AFI RVSM IMPLEMENTATION STRATEGY/ACTION PLAN					
ID	Description	Target Date	Status	Resources	Remarks
Monitoring Agency					
62	Evaluate options for setting up AFI RMA	21/11/03	Completed		
63	Identify an AFI RMA	21/11/03	Completed		
64	Establish an AFI RMA	31/03/04	Completed		
65	Validate State readiness template	15/11/04	Completed		
Post Implementation Safety Case (POSC)					
66	Data collection to continue for submission to ARMA	Monthly	Ongoing	States	Data Collection to Continue after implementation
67	Evaluate system safety after implementation	6, 12 and 24 months	TBA	ARMA/ICAO	Compliance with AFI policy
68	Monitor system safety in adjacent Regions	Continuous	Ongoing	ARMA/ICAO	

**FRAMEWORK AND GUIDANCE MATERIAL FOR THE ESTABLISHMENT OF
THE CENTRALIZED AFI REGION AIS DATABASE (AFI-CAD)**

1. Current Status of AIS
 - a. Infrastructure
 - b. Products
 - c. Human Resources
 - i. Skills, Competencies & Qualifications
 - d. Present ATM Community Requirements
2. Global Concept (Macro Overview)
 - a. Global AIS Database



b. AFI AIS Database



c. Operating Centres

- i. All Mirror Images of Each Other
- ii. All contain the full AFI Centralised AIS Database (AFI CAD)
- iii. Each Operating Centre can replace each other if needed.
- iv. The Operating Centres are in constant communication with each other updating the databases at each Operating Centre as it is changed by the Operating Centres (possibly using a form of best suitable available communications)
- v. Countries within a region provide their data to and access the AFI CAD via their Regional Operating Centre (local communication networks to be utilised)
- vi. Each Region Responsible for the Maintenance of their regions Data in the AFI CAD.
- vii. Why Four Regional Operating Centres :
 1. Geographical Distances
 2. Communication Networks
 3. Common Infrastructure
 4. Existing Working Agreements
 5. Common Interests
 6. Ability to provide assistance on a regional basis
 7. Redundancy/Service Integrity

Note: A study needs to be performed to decide if the need exists for a Fifth Operating Centre for Central.

3. Management Issues

a. Legal Requirements

- i. Formal State Agreements (Institutional): Legal Counsel needs to be consulted. If not then Formal Agreements between the designated Agency and individual states and possibly consortiums of states will then need to be instituted.
- ii. Service Level Agreements: Service Level Agreements will have to be instituted between states and consortiums of states.
- iii. Interstate Consortium Agreements: These will need to be instituted to ensure attainment of target levels of service provision within consortiums of states.
- iv. Service Provider Contract: The study group assumes the designated agency has legal authority to act as coordinating authority for AFI CAD, and utilizes a Service Provider Contract determining the extent of and target levels of performance needs to be instituted.

b. State Responsibilities

- i. Enforceable: The agreements instituted for the participation in AFI CAD need to be enforceable to ensure target levels of source data integrity and service support are provided.
- ii. States which cannot conform: A mechanism needs to be instituted whereby states that cannot conform to the required standards are encouraged to partake in AFI CAD and are assisted to reach and maintain the required standards. This can either be on a regional basis or via interstate agreements.
- iii. Non-conforming States: Procedures to deal with states which have entered into this agreement to join AFI CAD and then refuse to comply with the standards will need to be established.
- iv. Financial: The financial contributions for the establishment, maintenance and advancement of AFI CAD need to be defined in all agreements to join AFI CAD. This commitment will need to be actively policed to ensure compliance by member states to ensure the future sustainability of AFI CAD.
- v. Human Resource: Target levels of service provision and its associated Human Resource requirements (Skills, Competencies and Qualifications) must be defined and be enforceable under these agreements.
- vi. Infrastructure: Target levels of infrastructure service provision and its associated support by states (eg guarantees of security provision) must be defined and be enforceable under these agreements.

c. Service Provider: The manner in which a Service Provider is utilised in the provision of the AFI CAD service will need to be studied and various business models will need to be assessed to determine the safest, most cost-effective, reliable and sustainable model to be adopted. These models must be assessed and the most appropriate one recommended for adoption. This must include at least the following models:

- i. The Agency establishing a subsidiary to perform this service.
- ii. Establishment of a Consortium owned by AFI States possibly in co-operation with an external stakeholder (eg EAD)
- iii. External Company as Service Provider (eg Group EAD)

d. Data Provider Requirements

- i. Data Standards: Data standards, which are to be utilised in AFI CAD, need to be defined and accepted by all member states. These standards may be defined (as the Eurocontrol Standards for example) and must be enforceable under these agreements between the Agency and member states or between AFI CAD Service Provider and States.

- ii. State Data Requirements: The minimum data requirement for AFI CAD (eg IAIP) will need to be defined in agreements. Any additional state requirements (eg Obstacle, Terrain, etc) will also need to be accommodated possibly in phased implementation.
 - iii. Required Data not available: If the required data is not available or not available in the required standard in a particular State, procedures will need to be established as to who will be responsible for the acquisition and maintenance of this data, how this will be conducted and who will then own this data.
- e. Data Users
- i. Internal (State/Consortium) User Requirements: Access to the data in AFI CAD must be free to contracting States and consortiums of States.
 - ii. External Clients: The requirements of external clients must be addressed to encourage them to utilise and pay for the services provided by AFI CAD. These will include but not be limited to the aviation community:
- f. Technical Functionality
- i. Hardware and Facilities: The manner of provision of hardware and facilities either by states or Service Provider must be defined and contained in AFI CAD membership agreements. This will include but may not be limited to the following:
 - 1. Location
 - 2. Technical Support
 - 3. System/Network Interoperability
 - 4. Growth Plans/Capacity Expansion Plans
 - 5. Back-up facilities and hardware
 - ii. Software: The software utilised by AFI CAD must be agreed upon by AFI CAD members and the Service Provider to ensure compatibility and commonality. This will include but not be limited to the following:
 - 1. Software System to be utilised (eg a UNIX system with Oracle or SQL database software along the lines of the EAD system)
 - 2. Exchange Models to be utilised (eg AIXM)

Note: For custom State Software Interfaces, converters will be required and concerned States will be responsible for their provision and funding.
 - iii. Human Resources: The Human Resources which each AFI CAD member state and the Service Provider will contribute must be defined in membership agreements to ensure attainability of target levels of data standards. This will include but not be limited to the following:
 - 1. Qualifications & Training
 - 2. Standards of Qualification and Training
 - 3. Availability of Skills
 - 4. Demonstrated Competencies
 - 5. Required Skills, Competencies and Qualifications for Posts

iv. Infrastructure: The provision of infrastructure to ensure operational effectiveness of AFI CAD by member states and the Service Provider regarding but not limited to the following:

1. Communications
2. Uninterrupted Power Supply
3. Operational Technical Skills
4. Technical Training Centres
5. Security Guarantees (physical and financial)
6. Technical Support

g. AIS Operational Functionality:

i. Implementation: Detailed planning as to how operationally the AFI CAD will be implemented including time scales, responsibilities and accountabilities must be defined in agreements between AFI CAD members and the Service Provider. These plans must take the following into account.

1. Phased Implementation: Pilot States/Operational Centres will be used initially. Other member States/Operational Centres to be added continuously until all AFI states are members
2. Transition Plans: Plans must be defined on how state data will be incorporated into AFI CAD.
 - i. State Data Standards/ Quality Assurance: The data standards and methodology to ensure Quality Assurance of state provided data must be defined and accepted and implemented by states before incorporation into the AFI CAD member states.
 - ii. Data Harmonization/Conflict Resolution: Procedures on how data harmonization and conflict resolution are to be performed needs to be defined, agreed upon and implemented by states and the Service Provider before states are admitted to AFI CAD.
 - iii. Target Levels of Service Provision: Target levels of service provision by states and the Service Provider must be agreed upon and implemented before admittance to AFI CAD is obtained.
 - iv. Business Contingency Management: Business Contingency Management plans need to be designed and state and service provider responsibilities in these plans agreed to.
 - v. Operational Control, Responsibility & Accountability: Operational Control, Responsibility and Accountability for AFI CAD and the data contained therein must be defined in all agreements between the Agency, States and the Service Provider
 - vi. Safety Management System: A SMS must be implemented by all data providing states and the Service Provider to ensure the continuing integrity of data provided by AFI CAD.

h. AIS Services Provided By State: The AIS services provided by each AFI CAD member State utilizing the data used in AFI CAD must be defined and agreed to by both the state and the Service Provider/Agency. This can include the following services:

- i. IAIP

- ii. Obstacles
- iii. Terrain
- iv. Airport Services
- v. Other

i. State AIS Human Resources: State AIS Human Resource provision to ensure the attainment of target levels of service by AFI CAD member states must be incorporated into AFI CAD membership agreements. This will include but not be limited to the following:

- i. AIS staff establishment and staffing levels
- ii. AIS Staff Skills, Competency & Qualifications
- iii. AIS Staff Training Development Plans
- iv. Target Levels of AIS Service Provision

j. Future Development: Future Development of AFI CAD must be continuously researched and conducted to ensure compatibility with the following stakeholder drivers:

i. Research & Development

- 1. Comply with future ICAO requirements
- 2. Database Development
- 3. Database Interoperability Requirements
- 4. Future Technologies
- 5. Future User Requirements

ii. Implementation

- 1. Future Development Implementation & Transition Plans
- 2. Future Cost Benefits

AFI-CAD GUIDANCE MATERIAL

The Guidance Material for the establishment of AFI-CAD emanated from the Recommendations of the AFI-CAD/ Study Group/1 meeting and subsequently adopted by the AFI AIS/MAP TF/4 Meeting as Draft Conclusions. Consequently, the Guidance Materials are listed herewith in the form of Ten Recommendations attached to the Framework as necessary requirements for the establishment of AFI-CAD.

<p>Recommendation 1 :</p>	<p>Basic Criteria</p> <p>The AFI AIS/MAP TF/4 meeting then concluded that :</p> <p>a) whether the service provision is subcontracted or not:</p> <ul style="list-style-type: none"> i. the service shall at all times be AFI States owned service. The service provider shall ensure the service is at all times perceived and recognized as being an AFI States provided service. ii. the service provision shall be an activity of cost-recovery nature and shall not generate profit on its own behalf (bearing in mind that the AFI CAD facilitates the safety, regularity and efficiency of international air navigation); iii. the service provision shall be subjected to a “ trial phase” of operation at the end of which the service may be reviewed if there has been insufficient take-up by clients and/or if the service levels have not been met; iv. all clients’ service level agreements shall be between the client and the Agency entrusted by the AFI States. v. the Agency shall not be allowed to sell, trade or commercialize the data and/or services of the AFI CAD on its own behalf and/or profit.
<p>Recommendation 2 :</p>	<p>AFI CAD services</p> <p>That AFI CAD should provide the following major services:</p> <ul style="list-style-type: none"> a) the International NOTAM Operation (INO) providing facilities for world-wide NOTAM, SNOWTAM, ASHTAM and AFTN or equivalent message handling and for pre-flight Information Bulletins (PIB) generation. b) the Static Data Operation (SDO) providing facilities for AFI Static Aeronautical Data/information handling and reporting. moreover, a minimum set of data is also maintained to allow the correct functioning of the INO system.
<p>Recommendation 3 :</p>	<p>AFI CAD Clients</p> <p>That the recommended AFI CAD clients are the following:</p> <ul style="list-style-type: none"> a) the Data Providers which are AIS Organizations providing aeronautical information to the Centralized AFI Database; b) the Data Users which are Air Transport Community and beyond.
<p>Recommendation 4 :</p>	<p>Proposed AFI CAD System Design</p> <p>That the proposed AFI CAD System should be designed to provide the following:</p> <ul style="list-style-type: none"> a) a single repository for aeronautical information and IAIP elements of participating States; b) data questioning enhancement through multilevel consistent data checking processes, including cross border data verification; c) a secure channel/vehicle for timely and efficient electronic distribution of aeronautical information and IAIP elements; d) harmonization and interoperability will be ensured by common and standardized:

	<ul style="list-style-type: none"> - System interface and data exchange model (AIXM), - Static data model (AICM).
Recommendation 5 :	<p>AFI CAD System Data Operations Services</p> <p>That the proposed System Data Operations Services will then provide the Centralized AFI Database clients with the following system services:</p> <ul style="list-style-type: none"> a) support to edit and provide (to the system) aeronautical information; b) electronic access to and delivery of aeronautical information; c) browsing and downloading of participating State's aeronautical information; and d) generation of reports.
Recommendation 6 :	<p>Access to AFI CAD</p> <p>That the Data Operations System Services will be accessed by clients via direct electronic interface in one or more of the following three ways:</p> <ul style="list-style-type: none"> i. The Client Interface terminal (CIT). A terminal located at the client site, connected to the AFI CAD, and allowing download, modification (only by data providers) and reporting of aeronautical information as determined by the clients Service Level Agreement (SLA); ii. The Client Interface (CI). A technical toolkit allowing clients' own systems to access and interact with the AFI CAD to upload, download, modify (only Data Providers can modify) and report aeronautical information as determined by the clients' SLA; iii. INTERNET: Access to the Centralized AFI AIS Data Base will also be allowed via the Internet.
Recommendation 7 :	<p>Development of AFI CAD user requirements specifications</p> <p>That States and/or Organizations in a position to do so, provide the required technical expertise to assist the Study Group to develop user requirements specifications (URS) for AFI CAD.</p>
Recommendation 8 :	<p>Scope of Services Provided</p> <p>That :</p> <ul style="list-style-type: none"> a) Regarding the data operations service domains, the services provided shall ensure: <ul style="list-style-type: none"> i. Co-ordination of the resolution of data conflicts detected by the system data checking processes ; ii. for non-participating States (world wide) : <ul style="list-style-type: none"> - NOTAM processing (verification, validation, etc...) - entry of the statistic data required by the system NOTAM function. b) As currently defined, the service does <u>not</u> include the provision of AIS services on behalf of participating States, i.e. the service <u>shall not comprise</u> the following activities : <ul style="list-style-type: none"> i. creation of NOTAMs ii. origination and publication of AIP, AIP supplements, AIP amendments, AIC and charts. c) As part of the provision of the service, the service provider will deliver to the centralized AFI Region AIS Data Base client the following services : <ul style="list-style-type: none"> i. 24 hour operational and technical help desk

	<ul style="list-style-type: none"> ii. Client training iii. Management and monitoring of the delivery of aeronautical information and AIP elements.
<p>Recommendation 9:</p>	<p>Institutional Arrangements</p> <p>That AFI States shall:</p> <ul style="list-style-type: none"> a) Identify or set up an agency to develop, establish and operate the centralized AFI CAD; b) Determine the most effective and appropriate ways of funding, implementing and delivering the service. c) Commit to the timely provision of the required information to the AFI CAD; <i><u>Note: This shall not preclude them from providing the same data to other agents and/or entities.</u></i> d) Continue to be responsible for providing an AIS singularly or jointly with one or more other States or by delegating the authority for the provision of the service to a non-governmental agency in accordance with Annex 15 of the Chicago Convention; e) Maintain the intellectual property rights for the data provided to the AFI CAD; f) Provide advice and other appropriate support to any administration outside the AFI Region to consider the introduction of an aeronautical information database system compatible with the AFI CAD; g) Promote the use of the AFI CAD by taking active steps to provide appropriate information to the public on the services available from the AFI CAD and encourage the use of the service; h) Define a legal and financial framework to be applied to States participating in the AFI CAD, and non members of the AFI Region States, covering contribution to the funding of the data operations service provision; i) Define a charging policy that: <ul style="list-style-type: none"> - complies with the principle of free exchange of aeronautical information amongst States AIS, in accordance with Annex 15 of the Chicago Convention; - Continues to allow recovery by States of the costs incurred for the provision of AIS services; - Avoids double charging of the Data Users.
<p>Recommendation 10 :</p>	<p>Suggestions for Financial Model</p> <ul style="list-style-type: none"> a) <u>Business Plan</u> <ul style="list-style-type: none"> i. <u>Setup Capital:</u> The business plan to be adopted must define the total set-up costs and where this capital will be obtained (eg Loans, Donations/Aid, State Contributions). Each states responsibility in this regard must be defined and be enforceable in any AFI CAD membership agreement ii. <u>Financial Sustainability:</u> The business plan to be adopted must also define how financial sustainability will be ensured (eg by State Contributions, fees to be charged for access by users, en-route charges, etc). This must also show how continuous improvement and safety monitoring systems will be maintained and funded. iii. <u>Service Provider:</u> The resources that the Service Provider will bring to the project must be defined and enforced in the Service Providers contract. It should not be the sole responsibility of the member states or the Agency to fund this project as it should based on the User/ Beneficiary Pays principle. b) <u>Financial Plans:</u> The financial model for AFI CAD as discussed above also needs to address the following operational considerations

	<ul style="list-style-type: none">i. <u>Continuous Operational Cost Recovery</u>: Continuous Operational Cost Recovery must be ensured as a minimum requirement. If this does not occur AFI CAD will not be a viable concern.ii. <u>Cost Benefit Analysis</u>: A Cost Benefit Analysis reflecting the advantages and disadvantages of all business models discussed above needs to be performed before a particular model can be recommended and accepted by AFI CAD member states.iii. <u>Future Cost Benefits</u>: To AFI CAD (eg via provision of services additional to what is presently being provided) will need to be assessed to ensure organization structuring to take advantage of these future benefits.
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ATTACHMENT TO APPENDIX C TO WP/16

ATTACHMENT TO WP/16
SUMMARY

This Attachment paper to the Addendum to WP/16 provides some thoughts about a possible Timeline for Set-Up Phase, Call for Tender Phase, Implementation Phase, and Operation Phase of the Centralized AFI Region AIS Data Base (AFI-CAD).

INTERNATIONAL CIVIL AVIATION ORGANISATION

Introduction

The Timeline and Schedule for setting up and implementing the AFI CAD need careful planning because of its complex legal, organisation, technical, and political nature.

The Timeline and Schedule needs to be divided into phases which contain well defined and clear working packages each with clear:

- pre-requisites (required input),
- term of references (statement of work),
- requested output (result).

This is needed to be able to decide at the end of each phase what the next steps which can be initiated are.

The Timeline and Schedule will be influenced by existing planning and timelines of the major stakeholders. This needs to be reflected during planning.

Stakeholders

The main existing stakeholders and entities which will have or might have an influence on the planning are the following:

Name	Role
African Airlines Association (AFRAA)	User representation
Arab Air Carrier Organisation (AACO)	User representation
International Air Transport Association (IATA)	User representation
The African Union (AU)	Political will and acceptance
African Development Bank (AFDB)	Financing, Procurement etc.
African Civil Aviation Commission (AFCAC)	Promoting, organising, depositing of the AFI CAD agreement between AFI States
ICAO Africa-Indian Ocean Region Regional Air Navigation Meeting (AFI/8 RAN)	Prepare AFI Regional Plan for at least 5 years
ICAO AFI Planning and Implementation Regional Group (APIRG)	Coordination and amendment of AFI Regional Plan, Regional Coordination
APIRG ATS/AIS/SAR Sub-Group	Identify shortcomings and problems and review, the adequacy of requirements
APIRG AIS/MAP Task Force	Specialist Input for AFI CAD
AFI Region Study Group on AFI CAD	Concept development for AFI CAD
Agency for the Safety of Aerial Navigation in Africa and Madagascar (ASECNA)	Major AIS Service Provider
AFI CAD Agency (owned by the AFI States)	Procurements, System operation, Service operation

The activities and already planned meetings of those stakeholders should be explored before finalising the Time and Schedule in order to ensure the common acceptance and decision process for the AFI CAD.

It will be very important to promote and present the AFI CAD and its advantages to those stakeholders and to gather their expertise and assistance.

Phases

The Timeline and Schedule can be separated in ten principle Phases:

1. Preparation Phase,

2. Set-Up Phase,
3. Call for Tender Preparation Phase,
4. Call for Tender Phase,
5. Contract Negotiation Phase,
6. System Implementation Phase,
 7. Each Area/Centre (North, east, South, west) can follow a separate Implementation Plan,
 8. Those Phases can move in parallel,
9. Service Implementation Phase,
 10. Each Area/Centre (North, east, South, west) can follow a separate Implementation Plan in conjunction with the system implementation,
 11. Those Phases can move in parallel,
12. Service Migration Phase,
13. Operation Phase (System and Service),
14. Maintenance and Enhancement Phase.

The phase will need to be executed basically in sequence where the work result of one phase is the prerequisite for beginning the next phase.

The contents of the phases can be initially described as follows:

No	Phase	Contents	Result/Deliverable
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No	Phase	Contents	Result/Deliverable
1	Preparation Phase	<ul style="list-style-type: none"> • Program Plan • Schedule • Gather interest by State • Document Concept 	<ul style="list-style-type: none"> • AFI CAD Study Group presents work result to APIRG/16 • APIRG/16 inaugurates Permanent AFI CAD Working Group (AFI-CADWG)
2	Set-Up Phase	<ul style="list-style-type: none"> • ICAO and AFCAC be involved in AFI CAD meeting • Discussions with AFDB about financing • States deciding about financing • AFI/8 RAN Meeting gets agenda item for AFI CAD • CADWG finalises documentation concept • Legal establishment of AFI CAD Agency (Service Provider Agency - SPA) 	<ul style="list-style-type: none"> • State Groupings (North, East, South, West) are fixed • Legal frame are finalised • Service Provider company (SPC) are founded • CADWG gets part of the Service Provider company • Financing agreed with AFDB
3	Call for Tender Preparation Phase	<ul style="list-style-type: none"> • SPA prepares Call for Tender based on the AFI-CADWG documentation • SPA develops pre-qualification criteria • Call for pre-qualification • Assessment companies/consortia which have interest to be pre-qualified 	<ul style="list-style-type: none"> • Call for Tender finalised • Publication of Call for Pre-Qualification • Decision on list of pre-qualified companies/consortia • International Call for Tender published (either by SPC or AFDB)
4	Call for Tender Phase	<ul style="list-style-type: none"> • Call for Tender • Public clarification meeting with interested bidders • Tender Closing • Development of the list of shortlisted bidders • Individual clarification with shortlisted bidders • Call for provisional final offer from shortlisted bidders • Decision about preferred final bidder • Call for definitive final offer from preferred bidder 	<ul style="list-style-type: none"> • Decision about preferred bidder (company/consortia)
5	Contract Negotiation Phase	<ul style="list-style-type: none"> • Negotiation of system and service contract 	<ul style="list-style-type: none"> • Signed System Contract • Signed Service Contract
6	System Implementation Phase	<ul style="list-style-type: none"> • Area/Centre 1 implementation • Area/Centre 2 implementation • Area/Center 3 implementation • Area/Center 4 implementation • System Training and Training Centres implementation 	<ul style="list-style-type: none"> • Each Area/Centre (North, East, South, West) separate implementation schedule acceptance
7	Service Implementation	<ul style="list-style-type: none"> • Service implementation Area/Centre 1 	<ul style="list-style-type: none"> • Each Area/Centre (North, East, South, West) separate service

No	Phase	Contents	Result/Deliverable
	Phase	<ul style="list-style-type: none"> • Service Area/Centre 2 implementation • Service Area/Centre 3 implementation • Service Area/Centre 4 implementation • Service Training 	acceptance
8	Service Migration	<ul style="list-style-type: none"> • Service migration Area/Centre 1 • Service migration Area/Centre 2 • Service migration Area/Centre 3 • Service migration Area/Centre 4 	• Operational usage (cut over) separate for each Area/Centre
9	Operation Phase (System and Service)	Operation of the System and delivering the service	AIS Services
10	Maintenance and Enhancement Phase	<ul style="list-style-type: none"> • Identification of changes • Decision about changes • Implementation of changes 	Acceptance of System and Service changes

The contents description of the Phases needs continuous reassessment.

Timeline

Roughly, timelines for the development and implementation of AFI-CAD covers about the next four years 2008 to 2012 until the first Centre/Area could move into operational use. Figure 4-1 gives an overview.

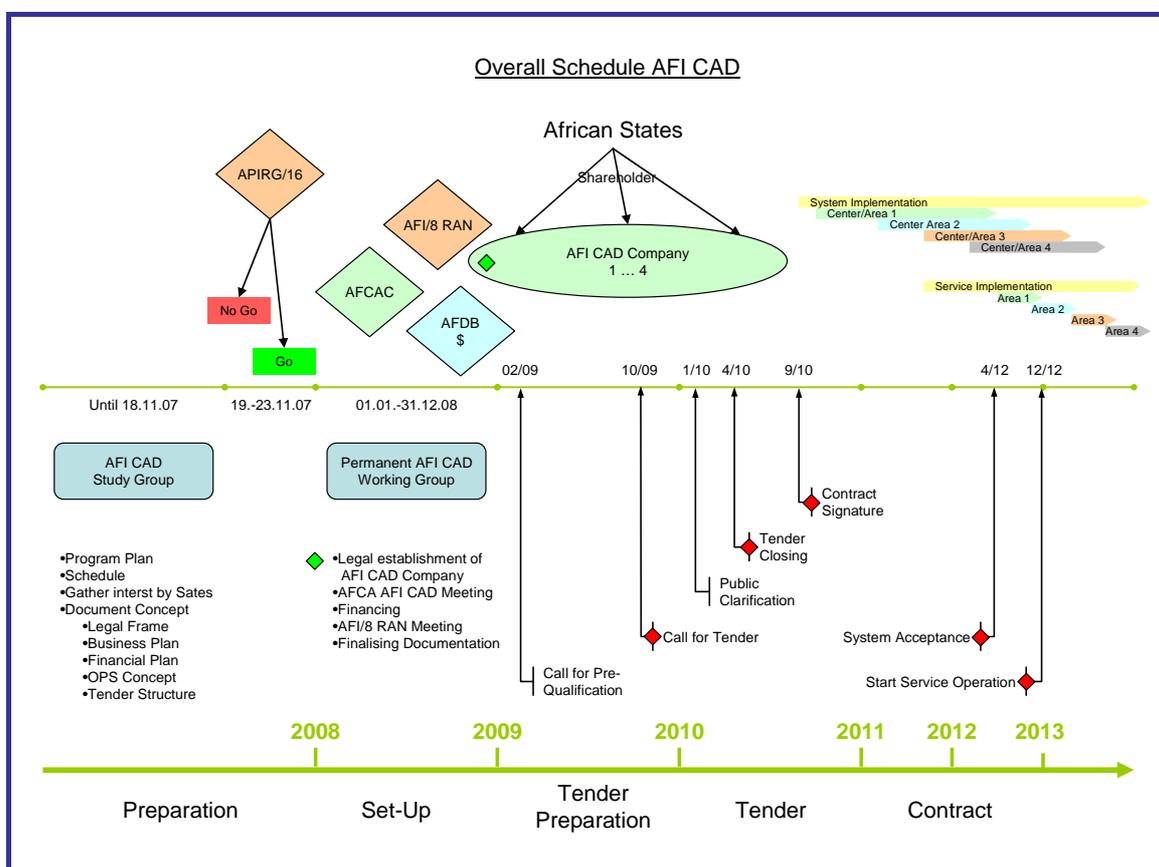


Figure 4-1: Timeline

To meet the Timelines, depends mostly on the agreement about the AFI CAD Agency (Service Provider Agency) and the financing.

Conclusions

This Attachment to the Addendum to WP/16 covers some initial thought about the Timeline, Schedule and the Phases for the AFI-CAD implementation.

The paper tried to reuse experiences that were gathered during the set-up of the European AIS database.

Recommendation

The APIRG/16 meeting is invited to note the information presented in this paper and the Time lines adopted by the Second AFI-CAD meeting (*See Figure 6.1 which gives an overview of elements in the AFI-CAD to be implemented by timelines*) to assist in enabling the APIRG meeting to synchronize the most suitable timelines for the development and implementation of the AFI-CAD as per **Draft Conclusion XX(5) in WP/16.**

– END –

APIRG/16 Report
Appendix H-20

	2008				2009				2010				2011			
	1st Q.	2 nd Q.	3rd Q.	4th Q.	1st Q.	2 nd Q.	3rd Q.	4th Q.	1st Q.	2 nd Q.	3rd Q.	4th Q.	1st Q.	2 nd Q.	3 Q.	4 Q.
BUSINESS PLAN /MODEL			X													
FIN PLAN/MODEL			X													
OBTAIN FINANCES					X							X				
QUALITY CONTROL PROCESS							X									
HARDWARE									X							
SOFTWARE										X						
COMMS												X				
SYSTEM POPULATION + TRNG													X			
AMS MIGRATION														X		

APIRG/16 Report
 Appendix H-21

	2008				2009				2010				2011			
	1st Q.	2 nd Q.	3rd Q.	4th Q.	1st Q.	2 nd Q.	3rd Q.	4th Q.	1st Q.	2 nd Q.	3rd Q.	4th Q.	1st Q.	2 nd Q.	3 Q.	4 Q.
TEST PHASE															X	
FULL IMPLEMENTATION																X

APPENDIX I

IMPLEMENTATION OF NON-IMPLEMENTED ROUTES INCLUDING RNAV ROUTES

Route Designator	Segment(s)	States	Observations/Remarks
UA618	Lumbumbashi Bukavu SAGBU Malatal	DRC Sudan	
UB525	Addis Ababa Luxor	Ethiopia Sudan	
UB527	Malakal Kenana	Sudan	Implemented at variance with AFI Plan via Kenana
UB607	Goma El Obeid New Valley El Dhaba	Sudan	
UG424	Dar-es-Salaam Lubumbashi	Tanzania	
UL612	Goma El Dhaba	DR. Congo Sudan Egypt	Egypt can accept implementation via ATMUL New Valley/KATAB/DBA
UM220	Lodwar Abu Simbel	Sudan	RNAV
UM365	Geneina Port Sudan	Sudan	RNAV
UM665	Addis Ababa Merowe	Sudan	
UR400	Abu Simbel Kassala	Sudan	

APPENDIX J

WAFS REGIONAL PROCEDURES AND FASID TABLES 5, 6, AND 7

**FASID TABLE MET 5
— REQUIREMENTS FOR WAFS PRODUCTS**

EXPLANATION OF THE TABLE

Column

1. WAFS products required by the AFI States, to be provided by WAFC [London, Washington].
2. Area of coverage required for the WAFS forecasts, to be provided by WAFC London.

FORECAST REQUIRED	AREAS REQUIRED
1	2
SWH CHART (FL 250–630)	{A, B, B1, C, D, E, F, G, H, I, J, K, M}
SWM/SWH CHART (FL 100–450)	[NIL <i>or</i> ASIA SOUTH, EUR, MID, NAT]
SWH forecasts (FL 250-630) in the BUFR code form	GLOBAL
SWM forecasts (FL 100-250) in the BUFR code form	[NIL <i>or</i> ASIA SOUTH, EUR, MID, NAT]
Forecasts of upper-air wind, temperature and humidity, and of altitude of flight levels in the GRIB code form	GLOBAL

Note 1.— Combined SWM/SWH ~~charts~~ forecasts are provided for limited geographical areas as determined by regional air navigation agreement. ~~The chart covers the SWH range only up to FL 450~~

Note 2.— .WAFCs will continue to issue forecasts of SIGWX in PNG chart form ~~until 30 November 2006.~~ for back-up purposes for fixed areas of coverage as specified in Annex 3

**FASID TABLE MET 6 —
 RESPONSIBILITIES OF THE WORLD AREA FORECAST CENTRES**

EXPLANATION OF THE TABLE

Column

- 1 Name of the world area forecast centre (WAFC).
- 2 Area of coverage of significant weather (SIGWX) forecasts in the BUFR code form prepared or relayed by the WAFC in Column 1.
- ~~3 Area of coverage of the SIGWX forecasts in chart form prepared or relayed by the WAFC in Column 1.~~
- 3 Area of coverage of upper-air wind, temperature, altitude of flight levels and humidity forecasts in the GRIB code form issued by the WAFC in Column 1.

WAFC	Areas of coverage of		
	SIGWX forecasts		Forecasts of upper-air wind, temperature and humidity, and of altitude of flight levels
	In the BUFR code form	In chart form	In the GRIB code form
1	2	3	3
London	SWH (FL 250 - 630): global SWM (FL 100 - 250): ASIA SOUTH, EUR and MID	SWH (FL 250 - 630): B, C, D, E, G, H and K SWM/SWH (FL 100 - 450): ASIA SOUTH, EUR and MID	Global
Washington	SWH (FL 250 - 630): global SWM (FL 100 - 250): NAT	SWH: (FL 250 - 630) A, B1, F, H, J, I and M SWM/SWH (FL 100 - 450): NAT	global

Note. — WAFCs continue to issue forecasts of SIGWX in PNG chart form until 30 November 2006. for back-up purposes for fixed areas of coverage as specified in Annex 3

Editorial Note.— Delete FASID Charts MET 4, 5 and 6.

**FASID TABLE MET 7
 AUTHORIZED USERS OF THE SADIS SATELLITE BROADCAST AND THE
 INTERNET-BASED WAFS FTP SERVICE IN THE AFI REGION**

EXPLANATION OF THE TABLE

Column

1. Name of the State or territory.
2. User of the satellite broadcast. Abbreviations used:
 CAA — civil aviation authority
 NMS — national meteorological service
 O — other than the civil aviation authority or the national meteorological service.
3. Location of VSAT: town and, where applicable, aerodrome to be indicated.
4. Indication whether the equipment is operational:
 2w — two-way VSAT operational
 1w — one-way VSAT operational
 F — only Internet-based FTP service
 [blank] — no.

[Satellite Distribution System for Information Relating to Air Navigation (SADIS) provided by the United Kingdom, United States			
State/Territory	User of satellite Broadcast	Location of VSAT	Equipment operational
1	2	3	4

Editorial Note.— The content of the FASID Table MET 7 is to be kept up-to-date by the PIRGs and regional offices concerned.

**STATUS OF IMPLEMENTATION OF SADIS VSATs
(as of 30 September 2007)**

Note. — *Non-operational users are indicated in italics.*

X = VSAT (SADIS 1G); or VSAT (SADIS 1G) and FTP service;

XX = VSAT(SADIS 2G); or VSAT (SADIS 2G) and FTP service;

F = FTP service only

<i>ICAO Contracting State</i>		<i>User</i>		<i>Location</i>	<i>Operational</i>
1	Benin	1	National Meteorological Service	Cotonou International Airport	X
2	Botswana	2	National Meteorological Service	Gaborone Airport	X
3	Burkina Faso	3	National Meteorological Service	Ouagadougou Airport	X
	<i>Burundi</i>		<i>National Meteorological Service</i>		
4	Cameroon	4	National Meteorological Service	Douala Airport	X
5	Central African Republic		National Meteorological Service	Bangui MPoko	XX
6	Chad	5	National Meteorological Service	N'Djamena Airport	XX
7	Congo	6	National Meteorological Service	Brazzaville Airport	X
8	Côte d'Ivoire	7	National Meteorological Service	Abidjan Airport	X
9	Democratic Republic of the Congo	8	National Meteorological Service	Kinshasa Airport	X
10	Equatorial Guinea	9	National Meteorological Service	Malabo Airport	X
	<i>Eritrea</i>		<i>National Meteorological Service</i>		
11	Ethiopia	10	National Meteorological Service	Addis Ababa Airport	X
12	Gabon	11	National Meteorological Service	Libreville Airport	X
13	Gambia	12	National Meteorological Service	Banjul Airport	X
14	Ghana	13	National Meteorological Service	Accra Airport	X
15	Guinea	14	National Meteorological Service	Conakry Airport	X
16	Kenya	15	National Meteorological Service	Nairobi Airport	X
	Kenya	16	National Meteorological Service	Mombasa Airport	X
17	Madagascar	17	National Meteorological Service	Antananarivo/Ivato Airport	X
	<i>Malawi</i>		<i>National Meteorological Service</i>		

<i>ICAO Contracting State</i>		<i>User</i>		<i>Location</i>	<i>Operational</i>
18	Mali		National Meteorological Service	Bamako	XX
19	Mauritania		National Meteorological Service	Nouakchott Airport	XX
20	Mozambique	18	National Meteorological Service	Maputo	X
21	Niger	19	National Meteorological Service	Niamey Airport	X
	Niger	20	National Meteorological Service	EAMAC Training School	X
22	Nigeria	21	National Meteorological Service	Lagos Muhammed Airport	X
23	Rwanda	22	National Meteorological Service	Kigali	X
	<i>Sao Tome and Principe</i>		<i>Instituto Nacional de Meteorologia</i>		
24	Senegal	23	National Meteorological Service	Dakar Airport	X
	Senegal	24	ASECNA	Headquarters, Dakar	X
	<i>Sierra Leone</i>		<i>National Meteorological Service</i>		
25	South Africa	25	Weather Bureau	Pretoria	X
	South Africa	26	Netsys	Pretoria	X
26	Swaziland	27	National Meteorological Service	Mbabane	X
27	Togo	28	National Meteorological Service -	ASECNA Lomé	X
28	Uganda	29	National Meteorological Service	Entebbe Airport	X
29	United Republic of Tanzania	30	National Meteorological Service	Dar Es Salaam	X
30	Zambia	31	National Meteorological Service	Lusaka	X
31	Zimbabwe	32	National Meteorological Service	Harare International Airport	X

APPENDIX K

SADIS STRATEGIC ASSESSMENT TABLES FOR THE AFI REGION 2007-2011

SUMMARY

Note. – 1 octet = 1 byte = 1 character

Table 1. OPMET data volumes per day (in K bytes)

<i>Region</i>	<i>Current 2007</i>	<i>Projected 2008</i>	<i>Projected 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>
AFI	685	693	704	715	726

Table 2. BUFR data volumes per day (in K bytes)

<i>Region</i>	<i>Current 2007</i>	<i>Projected 2008</i>	<i>Projected 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>
AFI	0	40	40	40	40

Table 3. AIS data volumes per day (in K bytes)

<i>Region</i>	<i>Current 2007</i>	<i>Projected 2008</i>	<i>Projected 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>
AFI	0	20	20	20	20

**SADIS STRATEGIC ASSESSMENT TABLES CURRENT AND
 PROJECTED DATA VOLUMES 2007-2011**

Note.— 1 octet = 1 byte = 1 character.

Table 1. AFI— OPMET data volumes

<i>OPMET data</i>	<i>Current 2007</i>	<i>Projected 2008</i>	<i>Projected 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>
ALPHANUMERIC DATA					
Number of FC bulletins issued per day	138	145	150	155	160
Number of FT bulletins issued per day	294	300	310	320	330
Number of SA bulletins issued per day	1693	1700	1720	1740	1760
Number of SP bulletins issued per day	6	10	10	10	10
Number of SIGMET bulletins issued per day	10	10	10	10	10
BINARY DATA					
Number of other bulletins issued per day	0	0	0	0	0
TOTALS					
Total number of OPMET bulletins per day	2141	2165	2200	2235	2270
Average size of OPMET bulletin (bytes)	320	320	320	320	320
Total estimated OPMET data volume per day (in K bytes)	685	693	704	715	726

Note.— No provision is being made for the distribution of BUFR-coded OPMET data. Capacity for this data may need to be included depending on the issuance of this data in the region.

Table 2. AFI — BUFR data volumes

<i>Graphical information in the BUFR code form</i>	<i>Current 2007</i>	<i>Projected 2008</i>	<i>Projected 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>
TOTALS					
Total number of BUFR messages per day	0	2	2	2	2
Average size of messages (bytes)	0	20000	20000	20000	20000
Total estimated volume of BUFR messages per day (in K bytes)	0	40	40	40	40

Note.— Provision is made for the distribution of BUFR-encoded VAG starting from the year 2007.

Table 3. AFI — AIS data volumes

<i>AIS data</i>	<i>Current 2007</i>	<i>Projected 2008</i>	<i>Projected 2009</i>	<i>Projected 2010</i>	<i>Projected 2011</i>
ALPHANUMERIC AIS DATA (NOTAM related to volcanic ash, ASHTAM)					
Number of ASHTAM bulletins issued per day	0	2	2	2	2
Number of NOTAM bulletins issued per day	0	2	2	2	2
TOTALS					
Total number of AIS bulletins per day	0	4	4	4	4
Average size of AIS bulletin (byte)	0	5000	5000	5000	5000
Total estimated volume of AIS data per day (in K bytes)	0	20	20	20	20

Note. Provision is made for the distribution of ASHTAM and NOTAM related to volcanic ash.

APPENDIX L

TERMS OF REFERENCE OF THE AFI OPMET MANAGEMENT TASK FORCE

1. Terms of Reference

- Review the OPMET exchange scheme in the AFI Region and develop proposals for their optimization taking into account the requirements by the aviation users and the current trends for global OPMET exchange;
- Develop monitoring and management procedures related to AMBEX exchange and other exchange of OPMET information;
- Regularly update the regional guidance material related to OPMET exchange;
- Liaise with other groups dealing with communication and/or management aspects of the OPMET exchange in AFI and other ICAO Regions (ASIA/PAC OPMET/M TF, BMG EUR Region, CNS/MET SG MID Region, etc.).

2. Work Programme

The work to be addressed by the AFI OPMET Management Task Force includes:

- a) to examine the existing and any new requirements for OPMET exchange in AFI and adjacent regions and assess the feasibility of satisfying these requirements, taking into account the availability of the data;
- b) to keep under review the AMBEX scheme and other OPMET exchange schemes and prepare proposal for updating the optimizing of the schemes;
- c) to review and update the procedures for interregional OPMET exchange and ensure the availability of the required AFI OPMET data for the AFS satellite broadcast (SADIS);
- d) to keep under review and provide timely amendments of the regional guidance materials on the OPMET exchange; to ensure that guidance material covers procedures for the exchange of all required OPMET data types: SA, SP, FC, FT, WS, WC, WV, FK, FV, UA;
- e) to conduct trials and develop procedures for monitoring and management of the OPMET exchange; to foster implementation of quality management of OPMET data by the AMBEX centres and the RODBs; and
- f) to prepare regional plan for the transition to BUFR coded OPMET information in coordination with the relevant APRIG contributing bodies.

3. Composition

The Task Force is composed of experts from:

- a) Algeria, Cameroon, Congo, Ethiopia, Egypt, Kenya, France, Madagascar, Morocco, Niger, Nigeria, Senegal, (Rapporteur) South Africa, UK and ASECNA.
 - b) Representatives of IATA and WMO are invited to participate in the work of the Task Force.
-

APPENDIX M

AFI REGIONAL OPMET DATA BANKS AND SIGMET REQUIREMENTS

The AFI Regional OPMET Data Banks (RODBs) and the AFTN address to be used for direct access to the banks are shown below:

RODB	AFTN Address	AMBEX Centres of Responsibility
Dakar	GOOYYZYX	Alger/DAMM, Brazzaville/FCBB Casablanca/GMMC, Dakar/GOOO Niamey/DRNN
Pretoria	FAPRYMYX	Addis Ababa/HAAB, Antananarivo/FMMI, Cairo/HECA Johannesburg (FAPR)** , Nairobi/HKNA ** TCC located at South African Weather Service HQ.

Responsibilities:

- 1) Collect OPMET bulletins from AMBEX centres in the area of responsibility and store them in the data base.
- 2) Handle all types of OPMET bulletins.
- 3) Provide facilities for “request-reply” service to authorized users.
- 4) Maintain a catalogue of bulletins and introduce changes to the bulletins when necessary according to established procedures.
- 5) Quality control the incoming bulletins and inform AMBEX centres on any deficiencies.
- 6) Monitor the OPMET traffic by carrying on regular test on the availability and timeliness of the bulletins; report to the ICAO Regional Office on the results.

AMBEX HANDBOOK

EXCHANGE OF SIGMET AND ADVISORIES

1.1. SIGMET should be prepared by the meteorological watch offices (MWO) designated by the State's meteorological authority. The MWOs and their areas of responsibility are given in the FASID Table MET 1B of AFI ANP.

1.2. SIGMET should be distributed to the two RODBs, either directly or through the responsible AMBEX centre. The RODBs should make SIGMET messages available on request. In order to facilitate that, the originating MWOs, should use fixed WMO headings for their SIGMET bulletins as given in the attachment to this Appendix.

1.3. SIGMET messages should be distributed to other ICAO regions and made available for uplink through SADIS. This distribution should be carried out through the relevant Inter-regional OPMET Gateways (IROGs).

1.4. Detailed information on the format of the SIGMET messages is provided in the AFI Regional SIGMET Guide, Seventh edition, 2004 (under revision).

1.5. Tropical Cyclone Advisories (TCAs) and volcanic ash advisories (VAAs) should be issued by the designated tropical cyclone and volcanic ash advisory centres (TCAC and VAAC), as indicated in the FASID Table MET 3A and MET 3B.

1.6. The TCACs and VAACs should send the advisories to the RODBs. The RODBs should make TCAs and VAAs messages available as appropriate or on request. In order to facilitate that, the originating TCACs and VAACs should use fixed WMO headings for their TCA and VAA bulletins as given in the attachment to this Appendix.

1.7. VAA and TCA messages should be distributed to other ICAO regions and made available for uplink through SADIS. This distribution should be carried out either directly by the VAACs and TCACs or through the relevant Inter-regional OPMET Gateway (IROG) such Toulouse, France.

ATTACHMENT TO APPENDIX M

**WMO HEADINGS FOR SIGMET BULLETINS USED BY AFI
METEOROLOGICAL WATCH OFFICES (MWOs)**

EXPLANATION OF THE TABLE

Col 1:	State and name of the MWO
Col 2:	ICAO location indicator of the MWO
Col 3:	T ₁ T ₂ A ₁ A ₂ ii group of the WMO heading for the WS SIGMET bulletin
Col 4:	T ₁ T ₂ A ₁ A ₂ ii group of the WMO heading for the WC SIGMET bulletin (tropical cyclone)
Col 5:	T ₁ T ₂ A ₁ A ₂ ii group of the WMO heading for the WV SIGMET bulletin (volcanic ash)
Col 6:	ICAO location indicator of the FIR/CTA served by the MWO
Col 7:	Remarks

WMO Headings for SIGMET Bulletins used by AFI Meteorological Watch Offices

MWO Location	ICAO location indicator	WMO SIGMET Headings			FIR/ACC served	Remarks
		WS	WC	WV	ICAO location indicator	
1	2	3	4	5	6	7
ALGERIA ALGER/Baraki	DAAL	WSAL31		WVAL31	DAAA	
ANGOLA LUANDA/4 de Fevereiro	FNLU	WSAN31		WVAN31	FNAN	
BOTSWANA GABORONE/Sir Seretse Khama	FBSK	WSBC31	WCBC31	WVBC31	FBGR	
BURUNDI BUJUMBURA/Bujumbura	HBBA	WSBI31		WVB131	HBBA	
CANARY ISLANDS (Spain) GRAN CANARIA/Gran Canary, Canary Islands	GCLP	WSCR31		WVCR31	GCCC	
CAPE VERDE SAL I/Amilcar Cabral	GVAC	WSCV31		WVCV31	GVSC	
CHAD N'DJAMENA/N'djamena	FTTJ	WSCD31		WVCD31	FTTT	
CONGO BRAZZAVILLE/Maya-Maya	FCBB	WSCG31	WCGG31	WVCG31	FCCC	
D.R. CONGO KINSHASA/N'Djili	FZAA	WSZR31	WCZR31	WVZR31	FZAA	
EGYPT CAIRO/Cairo International	HECA	WSEG31	WCEG31	WVEG31	HECC	
ETHIOPIA ADDIS ABABA/Bole Intl	HAAB	WSET31		WVET20	HAAA	
ERITREA ASMARA	HHAS	WSEI31		WVEI31	HHAA	
GHANA ACCRA/Kotoka Int'l	DGAA	WSGH31		WVGH31	DGAC	
KENYA KENYA/Jomo Kenyatta Int'l	HKJK	WSKN31	WCKN31	WVKN31	HKNA	
LIBERIA MONROVIA/Roberts Int'l	GLRB	WSLI31		WVSL31	GLRB	
LIBYAN ARAB JAMAHIRIYA TRIPOLI/Tripoli Int'l	HLLT	WSLY31		WVLY31	HLLL	
MADAGASCAR ANTANANARIVO/Ivato	FMMI	WSMG31	WCMG20	WVMG20	FMMM	
MALAWI LILONGWE/Lilongwe Int'l	FWLI	WSMW31	WCMG31	WVLI31	FWLL	
MAURITIUS MAURITIUS/Sir Seewoosagur Ramgoolam Int'l	FIMP	WSMA31	WCMG20	WVMA31	FIMM	
MOROCCO CASABLANCA/Anfa	GMMC	WSMC31		WVMC31	GMMM	

MOZAMBIQUE MAPUTO/Maputo Int'l	FQMA	WSMZ31	WCMZ20	WVMZ31	FQBE	
NAMIBIA WINDHOEK/Hosea Kutako	FYWH	WSNM31		WVNM3 1	FYWH	
NIGER NIAMEY/Diori Hmani Int'l	DRRN	WSNR31		WVNR31	DRRR	
NIGERIA KANO/Mallam Aminu Kano Int'l	DNKN	WSNI31		WVNI31	DNKK	
RWANDA KIGALI/Gregoire Kayibanda	HRYR	WSRW31		WVRW3 1	HRYR	
SENEGAL Leopold Sedar Senghor	GOOY	WSSG31		WVSG31	GOOO	
SEYCHELLES MAYE/Seychelles Int'l	FSIA	WSSC31	WCSC20	WVSC31	FSSS	
SOMALIA MOGADISHU/Mogadishu	HCMM	WSSI31		WVSI31	HCSM	
SOUTH AFRICA JOHANNESBURG/Johannesburg	FAJS	WSZA31	WCZA31	WVZA31	FACA FAJA FAJO	
SUDAN KHARTOUM/Khartoum	HSSS	WSSU31		WVSU31	HSSS	
TUNISIA TUNIS/Carthage	DTTA	WSTS31		WVTS31	DTTC	
UGANDA ENTEBBE/Entebbe Int'l	HUEN	WSUG31		WVUG31	HUEC	
UNITED REPUBLIC OF TANZANIA DAR-ES-SALAAM/Dar-es-Salaam	HTDA	WSTN31	WCTN31	WVTN31	HTDC	
ZAMBIA LUSAKA/Lusaka Int'l	FLLS	WSZB31		WVZB31	FLFI	
ZIMBABWE HARARE/Harare	FVHA	WSZW31	WCZW31	WVZW31	FVHA	

APPENDIX N

SIGMET TEST PROCEDURES

1. INTRODUCTION

1.1 The MET Divisional Meeting (2002) formulated recommendation 1/12, *Implementation of SIGMET requirements*, which call, *inter alia*, for the relevant planning and implementation regional groups (PIRGs) to conduct periodic tests of the issuance and reception of SIGMET messages, especially those for volcanic ash.

1.2 Concerns by the users for the timely reception of SIGMET information has prompted the need to improve awareness on the critical and important nature of SIGMETs. In order to maintain the International Airways Volcano Watch (IAVW) and TC watch systems ready-for-action, regular exercises involving the advisory centres and the MWOs under their areas of responsibility should be performed.

2. PURPOSE AND SCOPE

2.1 The purpose of the tests is to check the awareness of the participating MWOs of the ICAO requirements for the issuance of VA and TC SIGMET, and the adequacy of the existing telecommunication procedures for dissemination of the advisories and SIGMETs. Based on the results of the tests, the States will be provided with advice aimed at improving their practices and procedures.

2.2 The tests will involve issuance of test advisories by the VAACs and TCACs in the region, which will be disseminated to the corresponding MWOs and the Regional OPMET Data Banks (RODBs). The MWOs will have to issue a test SIGMET on receipt of a test advisory from the responsible VAAC or TCAC, and disseminate it according to the distribution list used for normal (non-test) SIGMETs.

2.3 The RODBs will record the reception of the test SIGMETs and the corresponding time and will provide a summary table to the VAAC or TCAC with a copy to the Regional Office.

2.4 A consolidated summary report will be prepared by the ICAO Secretariat and reported to the MET/SG and APIRG. The report will include recommendations for improvement of the SIGMET exchange and availability.

3. SIGMET TEST PROCEDURES

3.1 Participating units:

3.1.1 Tropical Cyclone Advisory Centre (TCAC)

La Réunion

3.1.2 Volcanic Ash Advisory Centre (VAAC)

Toulouse

3.1.3 Regional OPMET Data Bank (RODB)

Dakar

Pretoria

3.1.3 Meteorological Watch Office (MWO)

All MWOs listed in FASID Table MET 3A and MET 3B of the AFI FASID, under the responsibility of Toulouse, VAAC and La Réunion, TCAC.

Note: The participation of MWOs of States, which do not belong to AFI region, should be coordinated through the relevant ICAO Regional Office.

3.2 Test date and time

3.2.1 ICAO Regional Office will set a date and time after consultation with the VAAC, TCAC and RODB. The information about the agreed date and time will be sent to all States concerned.

3.3 Test messages

3.3.1 Each VAAC and TCAC prepares a simple TEST message in the form of VA or TC advisory. The format of the TEST message should follow the standard formats given in Annex 3, however, with clear indication that it does not contain information for a real event.

3.3.2 The MWOs, upon receipt of the TEST VA/TC advisory, should prepare a TEST SIGMET for volcanic ash or tropical cyclone, respectively, and send it to the RODBs, VAAC and TCAC as appropriate. The WMO heading and the first line of the SIGMET should be valid ones, while the body of the message should contain an explanatory text on the tests. The AFTN addresses of the RODBs and the Inter-regional OPMET Gateway (IROG) to which the test SIGMETs should be sent are as follows:

Dakar:	GOOZYX
Pretoria:	FAPRYMYX
Toulouse:	LFZZMAFI

3.3.3 The format of Test messages for VA advisory and VA SIGMET, and for TC advisory and TC SIGMET are at the **Attachment A** hereto.

3.3.4 To avoid over-writing of a valid SIGMET, the test SIGMET on VA should not be sent if there is a valid SIGMET on VA for responsible area of the WMO. In the same manner, the test SIGMET on TC should not be sent if there is a valid SIGMET on TC.

3.4 Processing of the test messages and results

3.4.1 The RODBs will be requested to file all incoming TEST advisories and SIGMETs and perform an analysis of the availability, timeliness of arrival and the correctness of the headers. A Table, as shown in **Attachment B** hereto, should be prepared by each RODB and sent to the VAAC or TCAC with a copy to the Regional Office.

3.4.2 ICAO Secretariat should prepare the final report of the test and present it to the next MET/SG meeting.

Attachments

- A. Format of the Test messages
- B. Sample Table to be used by RODBs

Attachment A to APPENDIX N

FORMAT OF THE TEST MESSAGES

1. FORMAT OF TEST SIGMET FOR VOLCANIC ASH

WVJP31 RJAA 010210
RJTG SIGMET 1 VALID 010210/010310 RJAA – THIS IS A TEST SIGMET, PLEASE DISREGARD,
TEST advisory No. xx received at YYGGggZ=

2. FORMAT OF TEST SIGMET FOR TROPICAL CYCLONE

WCJP31 RJAA 010210
RJTG SIGMET 5 VALID 010210/010310 RJAA- THIS IS A TEST SIGMET, PLEASE DISREGARD,
TEST advisory No. xx received at YYGGggZ=

Note: Actual SIGMET number to be used.

3. AFI VOLCANIC ASH TEST PROCEDURE

3.1 Format of the test VAA

- a) The format for the TEST VAA that will be provided by the Toulouse VAAC can be seen below. DD is the day of the month, HH the hour of issuance.

FVAF01 LFPW **DDHH00**
VOLCANIC ASH ADVISORY
ISSUED: 200506**DD/HH00Z**
VAAC: TOULOUSE
VOLCANO: FICTITIOUS
LOCATION: NIL
AREA : NIL
SUMMIT ELEVATION : NIL
ADVISORY NUMBER : 2005/01
INFORMATION SOURCE: NIL
AVIATION COLOUR CODE: NIL
ERUPTION DETAILS : NIL
OBS ASH DATE/TIME : NIL
OBS ASH CL: NIL
FCST ASH CL+6H:NIL
FCST ASH CL+12H:NIL
FCST ASH CL+18H:NIL
NEXT ADVISORY: NO FURTHER ADVISORIES

REMARKS:

THIS IS A VAA TEST MESSAGE APPLICABLE TO THE WHOLE OF ICAO AFI REGION. EACH METEOROLOGICAL WATCH OFFICE, AREA CONTROL CENTRE AND FLIGHT INFORMATION CENTRE SERVING FLIGHT INFORMATION REGIONS WITHIN THE AFI REGION RECEIVING THIS MESSAGE SHOULD ISSUE AN ADMINISTRATIVE MESSAGE USING THE WMO HEADER NOAF33 LFPW AND SEND IT TO THE AFTN ADDRESS LFZZMAFI TO ACKNOWLEDGE THE RECEPTION OF THIS VAA MESSAGE

- b) Format of the administrative message to acknowledge the reception
 - i) The meteorological watch offices (MWO), area control centres and flight information centres serving flight information regions that will receive the VAA will issue an administrative message to acknowledge the reception of the VAA. The format of this message is provided below. **DD** is the day of the month.
 - ii) The message described below has to be sent by AFTN to the IROG Toulouse Address by using its AFTN address LFZZMAFI.
 - iii) *aftn_address*, in the first line after the WMO heading, should be replaced by the AFTN address of the recipient.
 - iv) *description*, in the first line after the WMO heading, should be replaced by the name of the organization which has received the VAA.
 - v) **HHMMmm** is the reception hour of the VAA bulletin, if the VAA has been received.

NOAF33 LFPW DD1300

From: *aftn_address, description*

To: LFZZMAFI

ACK RECEPTION TEST VAA FROM VAAC TOULOUSE AT **HHMMmm**

Attachment B to APPENDIX N

**SAMPLE TABLE TO BE USED BY
REGIONAL OPMET DATA BANKS (RODBS) FOR ANALYSIS OF RESULTS**

i) AFI SIGMET TEST Summary (Reception time at RODBs)

Name of RODB : Dakar and Pretoria
Date of test : YYGGgg

ii) **VAA Header** **Received time (UTC)**
TTAAii CCCC YYGGgg Dakar Pretoria

iii) **TCA Header** **Received time (UTC)**
TTAAii CCCC YYGGgg Dakar or Pretoria

SIGMET Header **Received time (UTC)**
TTAA ii CCCC YYGGgg Dakar or Pretoria

APPENDIX O

REGIONAL METEOROLOGICAL PROCEDURES

World area forecast system (WAFS) (FASID Tables MET 5, MET 6 and MET 7)

1. FASID Table MET 5 sets out requirements the AFI Region requirements for WAFS forecasts to be provided by WAFC, London. [WAFSOPSG Conclusion 1/2]
2. FASID Table MET 6 sets out the responsibilities of WAFCs London and Washington for the production of WAFS forecasts. For back-up purposes, each WAFC should have the capability to produce WAFS forecasts for all the required areas of coverage. [WAFSOPSG Conclusion 1/2]
3. WAFS products should be disseminated by WAFC, London using the satellite distribution system for information relating to air navigation (SADIS) covering the reception area shown in FASID Chart CNS [4]. [WAFSOPSG Conclusion 2/2]
4. Each State should make the necessary arrangements to receive and make full operational use of WAFS products disseminated by WAFC, London. FASID Table Met 7 lists the authorized users of the SADIS satellite broadcast in the AFI Region and location of the operational VSATs. [WAFSOPSG Conclusion 1/2]. WAFSOPSG/3-WP/3

FASID

World AREA FORECAST SYSTEM (WAFS)
(FASID Tables MET 5, MET 6 and MET 7)

1. FASID Table MET 5 sets out the AFI Region requirements for WAFS forecasts, to be provided by WAFC, London.

2. FASID Table MET 6 sets out the responsibilities of WAFCs London and Washington for the production of WAFS forecasts.

3. FASID Table MET 7 lists the authorized users of the SADIS satellite broadcast in the AFI Region and location of the operational VSATs. The table is included in the FASID for information purposes and kept up-to-date by the Regional Offices concerned.

FASID TABLE MET 5 — REQUIREMENTS FOR WAFS PRODUCTS*EXPLANATION OF THE TABLE**Column*

1. WAFS products required by the AFI States, to be provided by WAFC [London, Washington].
2. Area of coverage required for the WAFS forecasts, to be provided by WAFC London.

FORECAST REQUIRED	AREAS REQUIRED
1	2
SWH CHART (FL 250—630)	{A, B, B1, C, D, E, F, G, H, I, J, K, M}
SWM/SWH CHART (FL 100—450)	[NIL or ASIA SOUTH, EUR, MID, NAT]
SWH forecasts (FL 250-630) in the BUFR code form	GLOBAL
SWM forecasts (FL 100-250) in the BUFR code form	[NIL or ASIA SOUTH, EUR, MID, NAT]
Forecasts of upper-air wind, temperature and humidity, and of altitude of flight levels in the GRIB code form	GLOBAL

Note 1.— Combined SWM/SWH charts forecasts are provided for limited geographical areas as determined by regional air navigation agreement. The chart covers the SWH range only up to FL 450

Note 2.— .WAFCs will continue to issue forecasts of SIGWX in PNG chart form until 30 November 2006. for back-up purposes for fixed areas of coverage as specified in Annex 3

**FASID TABLE MET 6 —
 RESPONSIBILITIES OF THE WORLD AREA FORECAST CENTRES**

EXPLANATION OF THE TABLE

Column

- 1 Name of the world area forecast centre (WAFc).
- 2 Area of coverage of significant weather (SIGWX) forecasts in the BUFR code form prepared or relayed by the WAFc in Column 1.
- ~~3 Area of coverage of the SIGWX forecasts in chart form prepared or relayed by the WAFc in Column 1.~~
- 4 Area of coverage of upper-air wind, temperature, altitude of flight levels and humidity forecasts in the GRIB code form issued by the WAFc in Column 1.

WAFc	Areas of coverage of		
	SIGWX forecasts		Forecasts of upper-air wind, temperature and humidity, and of altitude of flight levels
	In the BUFR code form	In chart form	In the GRIB code form
1	2	3	4
London	SWH (FL 250 - 630): global SWM (FL 100 - 250): ASIA SOUTH, EUR and MID	SWH (FL 250 - 630): B, C, D, E, G, H and K SWM/SWH (FL 100 - 450): ASIA SOUTH, EUR and MID	Global
Washington	SWH (FL 250 - 630): global SWM (FL 100 - 250): NAT	SWH: (FL 250 - 630) A, B1, F, H, J, I and M SWM/SWH (FL 100 - 450): NAT	global

Note. — WAFcs continue to issue forecasts of SIGWX in PNG chart form until 30 November 2006. for back-up purposes for fixed areas of coverage as specified in Annex 3

Editorial Note. — Delete FASID Charts MET 4, 5 and 6.

**FASID TABLE MET 7
 AUTHORIZED USERS OF THE SADIS SATELLITE BROADCAST AND THE
 INTERNET-BASED WAFS FTP SERVICE IN THE AFI REGION**

EXPLANATION OF THE TABLE

Column

1. Name of the State or territory.

2. User of the satellite broadcast. Abbreviations used:
 CAA — civil aviation authority
 NMS — national meteorological service
 O — other than the civil aviation authority or the national meteorological service.

3. Location of VSAT: town and, where applicable, aerodrome to be indicated.

4. Indication whether the equipment is operational:
 2w — two-way VSAT operational
 1w — one-way VSAT operational
 F — only Internet-based FTP service
 [blank] — no.

[Satellite Distribution System for Information Relating to Air Navigation (SADIS) provided by the United Kingdom, United States			
State/Territory	User of satellite Broadcast	Location of VSAT	Equipment operational
1	2	3	4

Editorial Note.— The content of the FASID Table MET 7 is to be kept up-to-date by the PIRGs and regional offices concerned.

STATUS OF IMPLEMENTATION OF AFI FASID TABLE MET 7

(September 2007)

Note. — Non-operational users are indicated in italics.

X = VSAT (SADIS 1G); or VSAT (SADIS 1G) and FTP service;

XX = VSAT(SADIS 2G); or VSAT (SADIS 2G) and FTP service;

F = FTP service only

<i>ICAO Contracting State</i>		<i>User</i>		<i>Location</i>	<i>Operational</i>
1	Benin	1	National Meteorological Service	Cotonou International Airport	X
2	Botswana	2	National Meteorological Service	Gaborone Airport	X
3	Burkina Faso	3	National Meteorological Service	Ouagadougou Airport	X
	<i>Burundi</i>		<i>National Meteorological Service</i>		
4	Cameroon	4	National Meteorological Service	Douala Airport	X
5	Central African Republic		National Meteorological Service	Bangui MPoko	XX
6	Chad	5	National Meteorological Service	N'Djamena Airport	XX
7	Congo	6	National Meteorological Service	Brazzaville Airport	X
8	Côte d'Ivoire	7	National Meteorological Service	Abidjan Airport	X
9	Democratic Republic of the Congo	8	National Meteorological Service	Kinshasa Airport	X
10	Equatorial Guinea	9	National Meteorological Service	Malabo Airport	X
	<i>Eritrea</i>		<i>National Meteorological Service</i>		
11	Ethiopia	10	National Meteorological Service	Addis Ababa Airport	X
12	Gabon	11	National Meteorological Service	Libreville Airport	X
13	Gambia	12	National Meteorological Service	Banjul Airport	X
14	Ghana	13	National Meteorological Service	Accra Airport	X
15	Guinea	14	National Meteorological Service	Conakry Airport	X
16	Kenya	15	National Meteorological Service	Nairobi Airport	X
	Kenya	16	National Meteorological Service	Mombasa Airport	X

<i>ICAO Contracting State</i>		<i>User</i>		<i>Location</i>	<i>Operational</i>
17	Madagascar	17	National Meteorological Service	Antananarivo/Ivato Airport	X
	<i>Malawi</i>		<i>National Meteorological Service</i>		
18	Mali		National Meteorological Service	Bamako	XX
19	Mauritania		National Meteorological Service	Nouakchott Airport	XX
20	Mozambique	18	National Meteorological Service	Maputo	X
21	Niger	19	National Meteorological Service	Niamey Airport	X
	Niger	20	National Meteorological Service	EAMAC Training School	X
22	Nigeria	21	National Meteorological Service	Lagos Muhammed Airport	X
23	Rwanda	22	National Meteorological Service	Kigali	X
	<i>Sao Tome and Principe</i>		<i>Instituto Nacional de Meteorologia</i>		
24	Senegal	23	National Meteorological Service	Dakar Airport	X
	Senegal	24	ASECNA	Headquarters, Dakar	X
	<i>Sierra Leone</i>		<i>National Meteorological Service</i>		
25	South Africa	25	Weather Bureau	Pretoria	X
	South Africa	26	Netsys	Pretoria	X
26	Swaziland	27	National Meteorological Service	Mbabane	X
27	Togo	28	National Meteorological Service -	ASECNA Lomé	X
28	Uganda	29	National Meteorological Service	Entebbe Airport	X
29	United Republic of Tanzania	30	National Meteorological Service	Dar Es Salaam	X
30	Zambia	31	National Meteorological Service	Lusaka	X
31	Zimbabwe	32	National Meteorological Service	Harare International Airport	X

APPENDIX P(a)

LIST OF DEFICIENCIES IN THE AIR NAVIGATION FIELDS — AOP

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Angola</i>	Aerodrome emergency plan (AEP); Annex 14, Vol. I, para. 9.1.1-9.1.15	Luanda	No AEP. No grid map available. Emergency exercises not carried out.	1995	ICAO guidance material cannot be used due to language problems.	AEP to be developed. Full-scale emergency to be conducted	ENANA		U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Luanda, Huambo	Procedures for aerodrome certification not in place	2004	Development of procedures have not started.	Procedures to be developed and requirement implemented	DCA	2004	U
	Safety Management System (SMS) Annex 14, Vol. I	Luanda, Huambo	Aerodrome Operator have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	ENANA	2008	U
<i>Benin</i>	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Cotonou	Lack of bird hazard control programme	2003		Bird hazard committee to be activated and control measures to be implemented and monitored. Bird hazard control programme to be developed, based on studies underway. Bird hazard incident reporting system to be developed and implemented.	ASECNA/ DCA	—	A
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Cotonou	Aerodrome certification requirements not implemented	2004		Need for implementation of certification regulations already published and certification of aerodromes based on aerodrome manual duly approved.	ANAC		U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Cotonou	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or sign mutual assistance agreement with specialized	ANAC/ ASECNA		A
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para. 9.1.1-9.1.15	Cotonou	AEP outdated, needs cleaning and revision	2003		Need for complete revision of AEP. Organize full-scale exercise to test AEP.	ANAC/ ASECNA	2005	A
	Safety Management Systems (SMS) Annex 14, Vol. I.	Cotonou	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	ANAC	2008	U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Botswana</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Sir Seretse Khama Int'l., Kasane, Francistown, Selebi-Pikwe & Maun	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	BCAA	2008	U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Sir Seretse Khama Int'l., Kasane, Francistown, Selebi-Pikwe & Maun	Procedures for aerodrome certification not in place	2003	Development of procedures have not started as of June 2007	procedures to be developed and requirement implemented	BCAA	2008	U
<i>Burkina Faso</i>	Safety Management Systems (SMS) Annex 14, Vol. I.	Ouagadougou	Aerodrome operator has not developed an SMS	2007	Development o SMS as part of certification has not started.	SMS to be developed and implemented	2008		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Ouagadougou	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DCAM		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I; para 9.1.1-9.1.15	Ouagadougou	AEP outdated needs complete revision	2002		Existing AEP to be completely revised and tested through an emergency exercise. Crisis management exercised under preparation.	ASECNA/ DAAN/ DCAM	2007	A
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Ouagadougou	Inadequate bird hazard control mechanism. Lack of bird hazard control programme	1998	AGA mission in Jan. 2002 to assess environmental or ornithological studies conducted	Bird hazard committee to be activated bird reduction programme to be developed and implemented using studies available. Control measures to be implemented and monitored in particular relocation in coordination with local authorities of factors attracting birds (tannery, slaughterhouses, refuse dumps)	ASECNA DAAN/ DCAM		U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Burundi</i>	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Bujumbura	Aerodrome has no AEP	2006	AEP for management of an emergency not available	AEP to be developed and testing to be arranged	RCA	2008	U
	Aerodrome fence Annex 14., Vol. I	Bujumbura	Aerodrome has no fence for most part	2006	Security & Safety risk associated with lack of fencing	Financial resources to be acquired and fence to be implement	RCA		U
	Safety Management System (SMS) Annex 14, Vol. I	Bujumbura	Aerodrome Operations have not developed an	2006	Development of SMS as part of certification has not started	regulatory framework to be developed and i requirement implemented	RCA	2008	U
	Aerodrome certification Annex 14, Vol. I., para 1.4.1-1.4.6	Bujumbura	Aerodrome certification requirements not implemented	2006	State has not implemented requirement for aerodrome certification	regulatory framework to be developed and i requirement implemented	RCA	2008	U
<i>Cameroon</i>	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Cameroon	Aerodrome certification requirements not implemented	2004		Need for implementation of certification regulations already published and certification of aerodromes based on aerodrome manuals duly approved.	CCAA		U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7 Annex 14, Vol. I, para 9.2.2	Douala	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or sign mutual assistance agreement.	ASECNA/ ADC		A
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Yaoundé	Lack of airport AEP	2004		conclusions and recommendations of crisis management exercise organized in May 2007 at Yaounde-Nsimalen Airport to be used in order to finalize and approve AEP.	ADC/ ASECNA/ CCAA		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Douala	Lack of airport AEP.	2004		Airport AEP to be developed. Full-scale emergency exercise to be conducted.	ADC/ ASECNA/ CCAA		U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Douala	Aerodrome fence inadequate.	1993	Access to maneuvering areas by unauthorized persons.	Fence to be completed.	CCAA/ ADC		A
	Safety Management Systems (SMS) Annex 14, Vol. I.		Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	CCAA	2008	U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Central African Republic</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Bangui	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	2008		U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Bangui	Aerodrome fence non existing.	1999	Access control impossible.	Perimeter fence and road for patrols to be built.	DGCAM		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Bangui	Lack of airport AEP.	2003		AEP to be developed. Full-scale emergency exercise to be conducted.	DGCAM / DGCAM ASECNA		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Bangui	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DGCAM		U
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Bangui	Lack of bird hazard control programme	2003		Bird hazard committee created. Bird hazard control programme to be developed and implemented based on ornithological studies to be conducted.	ASECNA/ DGCAM		A
<i>Chad</i>	Aerodrome fencing and security lighting, AFI/7 Conc. 4/2 & 4/9; Annex 14 Vol. 1, para 8.4.1-8.4.3	N'Djamena	Aerodrome fence incomplete.	1998	Access to maneuvering areas by unauthorized persons.	Fence to be completed. Works re-started in 2007 and currently in progress.	ADAC	2007	A
	Bird hazard control and reduction AFI/7 Conc. 4/2& 4/7; Annex 14 Vol. I, para 9.4.1	N'Djamena	Lack of bird hazard control programme	2003		Bird hazard committee to be activated. First task is development and implementation of bird hazard control programme, based on ornithological and environmental studies to be conducted.	ASECNA/ ADAC		U
	Aerodrome emergency plan (AEP) Annex 14 Vol. I, para 9.1.1-9.1.9	N'Djamena	No AEP .	2003	AGA mission in November 2003.	Airport AEP to be developed Full-scale emergency exercise to be organized.	ASECNA/ ADAC		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	N'Djamena	Aerodrome certification requirements not implemented	2004		Need for implementation of regulations already published and certification of N'djamena aerodrome based on aerodrome manuals duly approved.	ADAC	2008	U
	Safety Management Systems (SMS) Annex 14, Vol. I.	N'Djamena	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started.	SMS to be developed and implemented	ADAC	2008	U

P(a)-5

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Comoros</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Anjouan, Dzaoudzi, Moroni	Aerodrome Operations have not developed an	2007	Development of SMS as part of certification has not started.	SMS to be developed and implemented	ADAC	2008	
	Aerodrome certification Annex14, Vol. I, para 1.4.1 - 1.4.6	Anjouan, Dzaoudzi, Moroni	Aerodrome not certified	2005	Procedures for aerodrome certification not in place	SMS to be developed and implemented	ASECNA	2008	U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Congo	Pavement strength AFI/7Conc. 4/4 & 4/7; Annex 14 Vol. I, para 2.5.1	Pointe Noire	Bearing strength and dimensions of apron inadequate.	2001	AGA mission in Nov. 2001. Aircraft parking and handling on runway strips.	Pavement rehabilitation and apron extension required	ANAC		U
	Safety Management Systems (SMS) Annex 14, Vol. I.	Brazzaville	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started.	SMS to be developed and implemented	ANAC	2008	U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Brazzaville	Lack specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or sign mutual assistance agreement.	ANAC		A
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Brazzaville - Pointe Noire	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into the national legislation. Development and implementation of subsequent certification regulations. Certification of the aerodrome based on approved aerodrome manual.	ANAC		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1.-9.1.15	Brazzaville	Lack of airport AEP	2001		Airport AEP to be developed. Full-scale emergency exercise to be conducted.	ANAC		U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14 Vol. I, para 8.4.1	Pointe Noire	Aerodrome fence non-existent	2001	AGA mission on Nov 2001. Non-controlled access to movement areas. Encroachment of maneuvering areas by neighboring populations	New fence at required distance to be built.	ANAC	2003	U
	Pavement strength AFI/7Conc. 4/4 & 4/10 Annex 14, Vol. I, para 2.5.1	Brazzaville	Bearing strength inadequate.	1998		Construction of new runway at airport in progress. Need for urgent repairs and conservative measures to enable use of current runway pending its rehabilitation.	ANAC	2007	U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1.-9.1.15	Pointe Noire	Lack of airport AEP	2001		Airport AEP to be developed. Full-scale emergency exercise to be conducted	ANAC		U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Côte d'Ivoire</i>	Safety Management Systems (SMS) Annex 14, Vol. I		Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started.	SMS to be developed and implemented	ANAC	2008	U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1 - 8.4.3	Bouake	Aerodrome fence non existing.	2001	Access control to airside impossible, enabling acts of vandalism on facilities	New fence meeting requirements on separation distance with movement areas to be built.	SODEXAM/ ANAC		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Bouake	Lack of airport AEP	2001	AGA mission in Oct. 2001	Airport AEP to be developed. Full-scale emergency exercise to be conducted	SODEXAM		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Abidjan - Bouake - Yamassoukro	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual	ANAC		U
	Implementation of visual aids AFI/7 Conc. 4/1; Annex 14, Vol. I, Chapter 5	Bouake	More than 70% of runway and approach lights unserviceable. PAPI 03	2001	Inadequate visual guidance to pilots	Rehabilitation of lighting system. Installation of PAPI on 2 thresholds, as in AFI Plan	SODEXAM		U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Abidjan	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or sign mutual assistance agreement.	ASECNA/ ASECNA		A
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.5.1	Abidjan	Lack of bird control programme	2001	High risk of collision with birds or or mammal on runway	Airport coordination committee to be activated. First task is development and implementation of bird control programme based on ornithological and environmental studies to be conducted	SODEXAM/ AERIA/ ASECNA		A

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Dem. Rep. of Congo</i>	Implementation of visual aids AFI/7 Conc. 4.1; Annex 14, Vol. I, Chapter 5	Kinshasa	Inadequate RWY markings. All markings implemented not meeting ICAO requirements. Approach and runway edge lighting deficient.	1998	Inadequate visual guidance to pilots. Many bulbs.	New markings to be painted in accordance with Annex 14, Vol. I. Airfield lighting to be rehabilitated.	RVA		U
	Safety Management Systems (SMS) Annex 14, Vol. I.		Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started.	SMS to be developed and implemented		2008	U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 2.11.1-2.11.4 & 9.2.1	Lubumbashi	Inadequate number of RFF personnel	2007		Recruitment and training of RFF personnel to operate newly-acquired RFF vehicles.	RCA		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Lubumbashi	Lack of airport AEP	2007		Aairport AEP to be developed and tested through full-scale emergency	RVA		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Mbuji Mayi	Lack of airport AEP	2007		Aairport AEP to be developed and tested through full-scale emergency	RVA		U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Kinshasa	Lack of airport AEP	2003		Airport AEP to be developed and tested through full-scale emergency	RVA		U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1	Mbuji Mayi	Bearing strength problem over portion of runway. Rwy length inadequate. Apron inadequate with high risk of collision.	2007	Portion of runway with high risk of gravel ingestion.	Pavement rehabilitation to be put in place; and Rwy extension required	RVA		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	RDC	Aerodrome certification requirements not implemented	2004		Introduction of requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DCA		U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 2.11.1-2.11.4 & 9.2.1	Mbuji Mayi	Cat 6 requirement not met. Only one vehicle available.	2007		Procurement of new fire vehicles and accessories.	RVA		U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Dem. Rep. of Congo (continued)</i>	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1	Lubumbashi	Rwy surface uneven and bumpy (bearing strength problem over portion of runway). Apron surface degraded.	2007	Unevenness. Risk to aircraft damage. High risk of collision	Completion of pavement rehabilitation	RVA		U
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.5.1	Kinshasa	Inadequate bird hazard control measures. Lack of bird hazard control programme.	1998		Bird hazard committee to be established. Bird control programme to be developed and implemented, based on ornithological studies to be conducted	RVA	2002	A
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Kinshasa	Aerodrome fence incomplete	1999	Access to all airside areas by unauthorized persons.	Extensive repair of fence required	RVA		U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I; para 2.5.1	Kinshasa	Rwy surface uneven and bumpy (bearing strength.problem over portion of runway). Apron surface degraded esp. P12 & P13. Apron inadequate.	1998	Unevenness caused by slippage of concrete slabs and many cracks. Risk to damage of aircraft. High risk for collision.	Pavement rehabilitation to be put in place	RVA	2002	A
<i>Djibouti</i>	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Djibouti	Aerodrome fence inadequate	2002	Control of unauthorized persons n movement areas inadequate.	Presence of army barracks surrounding airport helps	DCA	2008	A
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Djibouti	No aerodrome AEP. Exercises not conducted	2000		Airport AEP to be developed. Full-scale emergency exercise to be conducted.	DCA	2003	U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Djibouti	Procedures for aerodrome certification not in place	2003	Development of procedures have not started as of Dec. 2003	procedures to be developed and requirement implemented	DCA	2008	U
	Safety Management System (SMS) Annex 14, Vol. I	Djibouti	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started.	SMS to be developed and implemented	DCA	2008	U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Egypt</i>	Implementation of visual aids AFI/7 Conc. 4/1 ; Annex 14, Vol. I, Chapter 5	Hurghada	Taxiway and apron lighting inadequate	1999		Actions are being taken.		1999	A
	Implementation of visual aids AFI/7 Conc. 4/1 ; Annex 14, Vol. I, Chapter 5	Sharm el Sheik	Taxiway and apron lighting inadequate	1999		Actions are being taken.		1999	A
<i>Equatorial Guinea</i>	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Malabo	No aerodrome AEP	1993	AGA mission in Oct. 2003	Airport AEP to be developed. Full-scale emergency exercise to be conducted.	ASECNA/ Airport Operator		U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1	Malabo	Bearing strength problems on 1000 first meters from runway 05	2003	AGA mission in Oct. 2003	Pavement rehabilitation required. Works in progress.	DGCA		U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 8.4.1-8.4.3	Malabo	Aerodrome fence non existing.	2003	AGA mission in Oct 2003. Access control impossible.	Perimeter fence and road for patrols to be built.	DGCA		U
	Safety Management System (SMS) Annex 14, Vol. I	Malabo	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started.	SMS to be developed and implemented		2008	U
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Malabo	Lack of bird hazard control programme	2004		bird hazard committee created. Bird hazard control programme to be developed and implemented, based on ornithological studies to be conducted.	DGCA		A
	Implementation of visual aids AFI/7 Conc. 4/1; Annex 14	Malabo	No apron markings or signs	2003	Inadequate visual guidance to pilots	Marking apron map with aircraft guidelines to be developed and indication of aircraft stands to be published. Taxiway required signs to be installed.	ASECNA		A
<i>Eritrea</i>	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Asmara, Assab	Procedures for aerodrome certification not in place	2003	Development of procedures have not started as of Apr.2007	Procedures to be developed and implemented	CAA	2008	U
	Safety Management Systems (SMS) Annex 14, Vol. I	Asmara	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	CAA	2008	U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Ethiopia</i>	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Addis Ababa, Dire Dawa	Procedures for aerodrome certification not in place	2003	Development of procedures have not started as of Dec. 2003	Procedures to be developed and requirement implemented	CAA	2004	U
	Safety Management Systems (SMS) Annex 14, Vol. I	Addis Ababa, Dire Dawa	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	CAA	2008	U
<i>France (La Réunion)</i>	Safety Management Systems (SMS) Annex 14, Vol. I	St. Denis, Gillot	Aerodrome Operations have not developed an	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	DNAC	2008	U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	St. Denis, Gillot	Procedures for aerodrome certification not in place	2003	Development of procedures have not started as of Dec. 2003	Procedures to be developed and requirement implemented	DNAC	2008	U
<i>Gabon</i>	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Libreville	Lack of bird hazard control programme	2004		Bird hazard committee created. First task is development and implementation of bird hazard control programme based on ornithological and environmental studies to conduct.	SGAC/ASECNA/ADL	2003	A
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1	Libreville	Aerodrome fence incomplete.	2001	Access to airside by unauthorized persons.	Completion of fence construction.	SGAC		A
	Safety Management Systems (SMS) Annex 14, Vol. I	Libreville	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented		2008	U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Libreville	Lack of AEP. Draft AEP not finalized despite crisis management exercise conducted in 2003 with ICAO	2003		Draft airport AEP to be finalized. Full-scale exercise to be conducted for its validation.	SGAC/ASECNAAD	2003	U
<i>Gambia</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Banjul	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	GCAA	2008	U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1	Banjul	Bearing strength problems on taxiway and runway.	1999	Reviewed for action.	Temporal rehabilitation completed in 2002. Complete pavement surface rehabilitation planned	GCAA		B

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Guinea</i>	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1-9.4.4	Conakry	Lack of bird hazard control programme	2003		Bird hazard committee to be established. First task is development and implementation of bird hazard control programme.	DNAC/ ANAC- SOGEAC		A
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Conakry	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or mutual assistance agreement .	ENAG/ SOGEAC		A
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Conakry	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DNAC		U
	Safety Management Systems (SMS) Annex 14, Vol. I.	Conakry	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented		2008	U

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<i>Guinea Bissau</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Bissau	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented		2008	U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 2.2	Bissau	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or mutual assistance agreement to be signed with specialized	ENAG		A
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Bissau	No aerodrome AEP	2001		Airport AEP to be developed. Full-scale emergency exercise to be conducted.	DGCA/ENAG		U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 2.11.1-2.11.4 & 9.2.2	Bissau	Fire fighting services inadequate. Rescue services inadequate	1999		General revision and rehabilitation required. Certain rescue equipment to be supplemented in order to meet required level.	ENAG		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Bissau	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DGCA		U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 4.1-8.4.3	Bissau	Aerodrome fence incomplete.	2001	Access to airside by unauthorized persons and stray animals.	Extensive repair of fence required. Works in progress, 4% achieved	DGCA	2007	A
<i>Kenya</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Nairobi, Mombasa, Eldoret	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	DCA	2008	U
<i>Lesotho</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Maseru	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	DCA	2008	U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Maseru	No aerodrome AEP. Exercises not held.	1996		Airport AEP to be developed. Emergency exercise to be conducted.	DCA	2004	U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Maseru	Aerodrome not certified	2004	Development of procedures have not started as of Feb. 2005	Procedures to be developed and requirement implemented.	DCA	2005	U

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<i>Liberia</i>	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 2.11.1-2.11.4 & 9.2.1	Monrovia	RFFS: inadequate	1996		Rehabilitation of facilities and equipment to be acquired in order to provide required RFF category.	Liberia Airport Authority		B
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Monrovia	No aerodrome AEP.	1996		AEP to be developed. Emergency exercises to be conducted.	Liberia Airport Authority		U
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Monrovia	Lack of bird hazard control programme	2004		Bird hazard committee created. Bird hazard control programme to be developed and implemented, based on ornithological studies to be conducted.	Liberia Airport Authority		A
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Monrovia	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or mutual assistance agreement.	Liberia Airport Authority		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Monrovia	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DCA		U
	Safety Management Systems (SMS) Annex 14, Vol. I	Monrovia	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	DCA	2008	U
<i>Libya</i>	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.10	Tripoli	Bird hazard control measures required			Control measures to be implemented and monitored.	NCAA		U
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Benghazi	Bird hazard control measures required			Control measures to be implemented and monitored.	NCAA		U

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<i>Madagascar</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Antsiranana, Mahaianga, Nosy-be, Sainte-Marie, Toamasina Tolaquaro	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	DCA	2008	U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Antananarivo Antsiranana, Mahaianga, Nosy-be, Sainte-Marie, Toamasina Tolaquaro	Aerodromes not yet certified	2004	Development of procedures have not been completed as at Nov. 2006	Development of procedures to be completed and requirement to be implemented	ADM/ ASECNA/ DCA	2007	U
<i>Malawi</i>	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Lilongwe, Blantyre	Aerodromes not yet certified	2003	Development of procedures have not been completed as at May 2007	Procedures to be developed and requirement to be implemented.	DCA	2008	U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1	Lilongwe	Runway damaged	1999		Resurfacing to be programmed.	DCA		B
	Safety Management Systems (SMS) Annex 14, Vol. I	Lilongwe, Blantyre	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	DCA	2008	U
<i>Mal</i>	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Bamako	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DNAC		U
	Safety Management Systems (SMS) Annex 14, Vol. I.	Bamako	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	ANAC	2008	U

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<i>Mauritania</i>	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Nouadhibou	Aerodrome fencenon-existent	1996	Access to airside by unauthorized persons and stray animals.	Perimeter fence to be built using appropriate materials.	SAM		U
	Safety Management Systems (SMS) Annex 14, Vol. I.		Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	ANAC	2008	U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Nouadhibou	No aerodrome AEP.	2005	AGA mission in April 2005	Airport AEP to be developed and full-scale emergency exercise to be organized.	ASECNA/SAM/ANAC		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Mauritania	Aerodrome certification requirements not implemented	2004		Need for implementation of certification regulations already published and certification of aerodromes based on aerodrome manuals duly approved.	ANAC		U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1 -	Nouakchott	Bearing strength on 1000 first metres from runway 23. No rwy and twy shoulders	2005	AGA mission in April 2005	Pavement rehabilitation required on damaged area. RWY and TWY shoulders to be built.	SAM/ANAC		A
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.9	Nouakchott	No aerodrome AEP.	2005	AGA mission in April 2005	airport AEP to be developed and full-scale emergency exercise to be organized.	ASECNA/SAM/ANAC		U
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Nouakchott	Lack of bird hazard control programme	2005		Bird hazard committee created. Bird Hazard control programme to be developed and implemented, based on ornithological studies to be conducted.	ASECNA/SAM/ANAC		A
<i>Mauritius</i>	No deficiencies in this field								

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<i>Mozambique</i>	Aerodrome certification Annex 14, Vol. I, para. 1.4.1-1.4.6	Beira, Maputo	Aerodrome not yet certified.	2003	Development of procedures have not been completed as at Feb. 2004	development of procedures completed and requirement implemented.	IACM	2005	U
	Aerodrome emergency plan (AEP) Annex 14, Vol. I, para 9.1.1-9.1.15	Maputo	No aerodrome AEP. Emergency exercise not held yet	2002	Existing draft quite old, inaccurate and inadequate	Develop airport AEP. Full-scale emergency exercise conducted.	Aéropostos de Mozambique	2002	U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 2.11.1-2.11.4 & 9.2.1	Maputo	RFFS inadequate. Rescue services lacking. Staff inadequate and sufficiently trained.	2002	Major improvements required. Private investment.	Major investment required after thorough evaluation of requirements.	Aéropostos de Moçambique	2003	U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1-2.6.8	Maputo	Runway damaged. Problem with blowing sand on taxiway	1999	Potential damage to engines due to ingestion of sand.	Runway resurfacing required. Sand to be swept off.	Aéropostos de Moçambique		B
	Safety Management Systems (SMS) Annex 14, Vol. I	Maputo	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	IACM	2008	U
<i>Namibia</i>	Aerodrome certification Annex 14, Vol. I, para 1.4.1.-1.4.6		Procedures for aerodrome certification not in place	2004	Development of procedures have not started	Procedures to be developed and requirement implemented.	DCA	2004	U
	Safety Management Systems (SMS) Annex 14, Vol. I		Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	DCA	2008	U

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<i>Niger</i>	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Niamey	Lack of bird hazard control programme	2005		bird hazard committee created. Bird hazard control programme to be developed and implemented, based on ornithological studies available.	ASECNA/DAANN		A
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Niger	Aerodrome certification requirements not implemented	2004		Need for implementation of certification regulations already published and certification of aerodromes based on aerodrome manuals duly approved.	DAC		U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Niamey	Aerodrome fence inadequate	1992	Access to airside by unauthorized persons.	Corrective measures not entirely adequate. Construction of portion (1,2 km) of new fence underway	DAC/ASECNA	2005	U
	Safety Management Systems (SMS) Annex 14. Vol. I.	Niamey	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	ANAC	2008	U

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Nigeria	Safety Management Systems (SMS) Annex 14, Vol. I.		Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	FAAN	2008	U
	Implementation of visual aids AFI/7 Conc. 4/1, Annex 14, Vol. I, Chapter 5	Maiduguri	Runway centerline lighting deficient. 60% of RWY end and threshold lights inoperative for fitting problems.	2003	Mission AGA to Nigeria in Dec.	Rehabilitation of lighting aids required.	FAAN	June 2008	U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1-2.6.8	Port Harcourt	Severe undulations on RWY.	2003	AGA mission in 2003	Complete rehabilitation required. Airport closed due to rehabilitation works in progress.	FAAN	December	U
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1-2.6.8	Maiduguri	Unevenness and cracks on middle part of runway and toward threshold 23	2003	AGA mission in 2003	Complete rehabilitation required. Rehabilitation project at stage of tender.	FAAN	December	U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 2.11.1-2.11.4 & 9.2.1	Maiduguri	RFFS inadequate. Airport RFF category not met.	2003	AGA mission in 2003. 2 available vehicles not fully operational.	Rehabilitation.	FAAN	2007	U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Nigeria	Aerodrome certification requirements not implemented	2004		Need for implementation of certification regulations already published and certification of aerodromes based on aerodrome manuals duly approved.	NCAA		U
	Implementation of visual aids AFI/7 Conc. 4/1, Annex 14, Vol. I, Chapter 5	Abuja	Runway centerline lighting deficient. Runway end and threshold 22 lights inoperative. Intensity of airfield lighting not controllable from TWR.	2003	Mission AGA to Nigeria in Dec.	Rehabilitation of lighting aids required. Remote control system to be completely renovated.	FAAN	June 2008	U
	Power supply AFI Conc. 4/2 & 4/8; Annex 14, Vol. I, para 8.1.1-8.1.5	Port Harcourt	Primary power very unreliable. Secondary power supply inadequate despite high number of generators available.	2003	Frequent mains power failure. Lack of automatic switch over to secondary supply in case of failure of the mains.	Installation of 1000KVA generator. Negotiations to be continued for dedicated primary power supply line more reliable. Coordination to be established between NAMA and FAAN for reliable secondary power supply. Airport closed for major rehabilitation works.	FAAN	2007	A

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<i>Nigeria (cont'd)</i>	Implementation of visual aids AFI/7 Conc. 4/1; Annex 14, Vol. I, Chapter 5	Port Harcourt	Approach lighting 21L unreliable. Rwy edge lights on first quarter of Rwy 21 inoperative. No txwy lighting. PAPI not calibrated. Runway marking unclear.	2003	Inadequate visual guidance to pilots	Rehabilitation of lighting aids required. Markings to be repainted	FAAN	December	A
	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14 Vol. I, para 2.5.1-2.6.8	Lagos	Severe undulations on RWY 01L/19R and several cracks on associated TWY -RWY PCN not published	2003	Complete rehabilitation required	Rehabilitation and overlay in progress	FAAN	December	U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Abuja	Aerodrome fence inadequate.	2000	Access to airside by unauthorized persons and stray animals.	Perimeter fence to be built using appropriate materials. Temporary chain link under construction pending permanent fencing handled within World Bank project.	FAAN	December	U
	Aerodrome fencing and security lighting; AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Port Harcourt	Aerodrome fence inadequate.	2003	AGA mission in 2003. Access to airside by unauthorized persons and stray animals.	Perimeter fence to be built using appropriate materials.	FAAN	2007	U
	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1-8.4.3	Maiduguri	Aerodrome fence inadequate.	2003	AGA mission in 2003. Access to airside by unauthorized persons and stray animals.	Perimeter fence to be built using appropriate materials. Tender in progress.	FAAN		U
<i>Rwanda</i>	Aerodrome emergency plan (AEP) Annex 14, Vol. 1, para 9.1.1-9.1.9	Kigali	Old aerodrome AEP/AEPnot updated. Emergency exercise not held at regular intervals..	2000		New airport AEP to be developed. Full-scale emergency exercise to be conducted.	CAAR	2008	A
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Kigali	Aerodrome not certified	2003	Development of procedures have not been completed as at Feb. 2004.	Development of procedures to be completed and requirement implemented.	CAAR	2008	U
	Safety Management Systems (SMS) Annex 14, Vol. I	Kigali	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	DCA	2008	U

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<i>Sao Tome & Principe</i>	Aerodrome fencing and security lighting AFI/7 Conc. 4/2 & 4/9; Annex 14, Vol. I, para 8.4.1	Sao Tomé	Aerodrome fence inadequate	1993	Access to airspace by unauthorized persons and stray animals.	Fence to be built using proper material	INAC/ ENASA		U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Sao Tomé	Aerodrome certification requirement not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	INAC		U
	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Sao Tomé	Lack of bird hazard control programme	2004		Bird hazard committee created. Bird hazard control programme to be developed and implemented, based on ornithological studies to be conducted.	ENASA		A
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Sao Tomé	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or mutual assistance agreement.	ENASA		U
	Safety Management Systems (SMS) Annex 14, Vol. I.	Sao Tomé	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.		2008	U
	Aerodrome emergency plan (AEP) Annex 14, Vol.1, para 9.1.1-9.1.9	Sao Tomé	No aerodrome AEP	2003	AGA mission in July 2002	New airport AEP to be developed and full-scale emergency exercise to be organized.	ENASA		U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7 Annex 14, Vol. I, para 2.11.1-2.11.4 & 9.2.1	Sao Tomé	Level of protection inadequate. (Only one 7000 l water vehicle available)	2002		2 additional tenders to be acquired in order to meet required level.	ENASA		U
<i>Senegal</i>	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Dakar	Aerodrome certification requirement not implemented	2004		Implementation of certification regulations in place. Certification of aerodromes based on approved aerodrome	ANAC		U
	Safety Management Systems (SMS) Annex 14, Vol. I.	Dakar	Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	ANAC	2008	U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Dakar	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or mutual assistance agreement.	AANS/ ASECNA		A

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<i>Seychelles</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Seychelles	Aerodrome Operations have not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	CAAS	2008	U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Seychelles	Aerodrome not certified as at Feb. 2006.	2003	Development of procedures should be completed	Structures to implement requirements to be developed.	DCA	2008	U
<i>Sierra Leone</i>	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Freetown	Lack of bird hazard control programme	2004		bird hazard committee created. Bird hazard control programme to be developed and implemented, based on ornithological studies to be conducted.	SLAA/ DCA		A
	Safety Management Systems (SMS) Annex 14, Vol. I.		Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	SLAA	2008	U
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Freetown	Aerodrome certification requirements not implemented	2004		Introduction of aerodrome requirement into national legislation. Development and implementation of subsequent certification regulations. Certification of aerodrome based on approved aerodrome manual.	DCA		U
<i>Sudan</i>	Bird hazard control and reduction AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.4.1	Khartoum	Bird hazard control measures required	1993		Control measures to be implemented and monitored.	NCAA		A
<i>Swaziland</i>	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Manzini	Aerodrome not certified as at Feb. 2004	2003	Development of procedures have not started as of Feb. 2004	Procedures to be developed and requirement implemented	DCA	2005	U
	Safety Management Systems (SMS) Annex 14, Vol. I	Manzini	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	DCA	2008	U

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<i>Tanzania</i>	Pavement strength AFI/7 Conc. 4/4 & 4/10; Annex 14, Vol. I, para 2.5.1	Zanzibar	Rwy surface cracked, ravelling and potholed. FOD	2006	Risk of FOD damage.	Rehabilitation project ongoing.	Zanzibar Govt.	2007	U
	Aerodrome certification, Annex 14, Vol. I, para. 1.4.1. - 1.4.6	Zanzibar	Aerodrome not certified as at Feb. 2004	2006	Development of procedures have not started as of Feb. 2006	Procedures to be developed and requirement implemented	TCAA	2007	U
	Aerodrome emergency plan (AEP) Annex 14, Vol.1, para 9.1.1-9.1.9	Zanzibar	No AEP. Testing not done. No up to date grid map.	2006	Capacity for RFF unclear	AEP to be developed and full-scale emergency exercise to be conducted.	Zanzibar Govt.	2007	U
	Safety Management Systems (SMS) Annex 14, Vol. I	Zanzibar	Aerodrome Operations has not developed an SMS	2006	Development of SMS as part of certification has not started	SMS to be developed and implemented	TCAA	2007	U
<i>Togo</i>	Safety Management Systems (SMS) Annex 14. Vol. I		Aerodrome operator has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented.	DAC	2008	U
	Rescue and fire fighting (RFF) AFI/7 Conc. 4/2 & 4/7; Annex 14, Vol. I, para 9.2.2	Lome	Lack of specialized rescue service and equipment for emergencies in sea	2004		Procurement of specialized equipment and/or mutual assistance agreement.	ASECNA/SALT		A
	Aerodrome certification Annex 14, Vol. I, Chapter 1.4	Togo	Aerodrome certification requirements not implemented	2004		Need for implementation of certification regulation already published and certification of aerodromes based on aerodrome manuals duly approved.	DAC		U
<i>Uganda</i>	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Entebbe	Aerodrome not certified as at Feb. 2004	2004	Development of procedures have not started as of March 2004.	Procedures to be developed and requirement implemented.	CAAU	2008	U
	Safety Management Systems (SMS) Annex 14, Vol. I	Entebbe	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	DCA	2008	U
<i>Zambia</i>	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Lusaka, Livingstone, Mfuwe, Ndola	Aerodrome not certified as at Mar. 2007	2004	Development of procedures have not started as of Mar. 2007.	Procedures to be developed and requirement implemented.	DCA	2008	U
	Safety Management Systems (SMS) Annex 14, Vol. I	Lusaka, Livingstone, Mfuwe	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	DCA	2008	U

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
<i>Zimbabwe</i>	Safety Management Systems (SMS) Annex 14, Vol. I	Bulawayo, Harare, Victoria Falls	Aerodrome Operations has not developed an SMS	2007	Development of SMS as part of certification has not started	SMS to be developed and implemented	CAAZ	2008	U
	Aerodrome certification Annex 14, Vol. I, para 1.4.1-1.4.6	Bulawayo, Harare, Victoria Falls	Aerodrome not certified as at Mar. 2007	2004	Development of procedures have not started as of Mar. 2007.	Procedures to be developed and requirement implemented.	CAAZ	2008	U

APPENDIX P(b)

LIST OF DEFICIENCIES IN THE AIR NAVIGATION FIELDS — *ATM (ATS/AIS/SAR) DEFICIENCIES*

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective Action</i>	<i>Executing Body</i>	<i>Target date for Implementation</i>	<i>Priority</i>
ATM									
ALGERIA									
ANGOLA									
BENIN									
BOTSWANA									
BURKINA FASO									
BURUNDI									
CAMEROON									
CAPE VERDE									
CENTRAL AFRICAN REPUBLIC									
CHAD									
COMOROS									
CONGO									
	LIM AFI Rec.10/38	SSR Provision of effective surveillance.	Need for SSR surveillance in extended TMA as expressed in the AFI CNS/ATM Plan.	1998	Traffic density/complexity contributing to frequent ATS incidents	Implement SSR at Brazzaville	Congo	31/12/07	U

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective Action</i>	<i>Executing Body</i>	<i>Target date for Implementation</i>	<i>Priority</i>
ERITREA									
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474	Route UB525	Addis –Ababa ALEBA-Luxor	1996	Aircraft Subjected to fly non-economical routes. Routes is closed due Political Reasons	States concerned to coordinate and AGREE to the opening of the route	Eritrea and Ethiopia	To be determined	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474	Route UG 650	Asmara- Addis Ababa	2001	Aircraft Subjected to fly non-economical routes. Routes is closed due Political Reasons	States concerned to coordinate and AGREE to the opening of the route.	Eritrea and Ethiopia	To be determined.	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474	UR 780	Mogadishu- Asmara	2001	Aircraft Subjected to fly non-economical routes. Routes is closed due Political Reasons	States concerned to coordinate and AGREE to the opening of the route.	Eritrea, Ethiopia and Mogadishu	To be determined	
ETHIOPIA									
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474	Route UB525	Addis –Ababa ALEBA-Luxor	2001	Aircraft Subjected to fly non-economical routes. Routes is closed due Political Reasons	States concerned to coordinate and AGREE to the opening of the route	Eritrea and Ethiopia	To be determined	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474	UG 650	Addis Ababa- Asmara	2001	Aircraft Subjected to fly non-economical routes. Routes is closed due Political Reasons	States concerned to coordinate and AGREE to the opening of the route	Eritrea and Ethiopia	To be determined	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474	UR 780	Mogadishu- Asmara	2001	Aircraft Subjected to fly non-economical routes. Routes is closed due Political Reasons	States concerned to coordinate and AGREE to the opening of the route	Eritrea, Ethiopia and Mogadishu	To be determined	A

APIRG/16 Report

Appendix P(b)

P(b)-4

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective Action</i>	<i>Executing Body</i>	<i>Target date for Implementation</i>	<i>Priority</i>
FRANCE (RÉUNION)									
	This State has no deficiency in this field.								
GABON									
	This State has no deficiency in this field.								
GAMBIA									
	This State has no deficiency in this field.								
GHANA									
	This State has no deficiency in this field.								
GUINEA									
	This State has no deficiency in this field.								
GUINEA BISSAU									
	This State has no deficiency in this field.								
KENYA	AFI/7 Rec.5/1 - Airspace management	P2, R10, D20	Prohibited area, restricted area, danger area.	1990	Non-availability of direct routing.	Withdraw these areas.	Kenya	31/12/07	A
LESOTHO									
	This State has no deficiency in this field.								
LIBERIA									
	This State has no deficiency in this field.								
LIBYA									
	This State has no deficiency in this field.								
MADAGASCAR									
	This State has no deficiency in this field.								
MALAWI									
	This State has no deficiency in this field.								
MALI									
	This State has no deficiency in this field.								

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective Action</i>	<i>Executing Body</i>	<i>Target date for Implementation</i>	<i>Priority</i>
MAURITANIA									
	This State has no deficiency in this field.								
MAURITIUS									
	This State has no deficiency in this field.								
MOROCCO									
	This State has no deficiency in this field.								
MOZAMBIQUE									
	This State has no deficiency in this field.								
NAMIBIA									
	This State has no deficiency in this field.								
NIGER									
	This State has no deficiency in this field.								
NIGERIA									
	This State has no deficiency in this field.								
RWANDA									
	This State has no deficiency in this field.								
SAO TOME & PRINCIPE									
	This State has no deficiency in this field.								
SENEGAL									
	This State has no deficiency in this field.								
SEYCHELLES									
	This State has no deficiency in this field.								
SIERRA LEONE									
	This State has no deficiency in this field.								
SOMALIA	AFI/7 Rec.5/21	Provision of ATC 150 NM concept.	Non-provision of ATC service 150 NM of Mogadishu.	1994	Delayed descent for arrival and steep climb for departure.	No action due to the present situation	Somalia	To be determined	U

APIRG/16 Report
Appendix P(b)

P(b)-6

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective Action</i>	<i>Executing Body</i>	<i>Target date for Implementation</i>	<i>Priority</i>
SOUTH AFRICA	This State has no deficiency in this field.								
SPAIN (CANARY IS.)	This State has no deficiency in this field.								
SUDAN	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	Route UR400	A. Simbel-Kassala	1994	Aircraft subjected to fly non-economical routes.	Not acceptable now within Khartoum FIR.	Sudan	03/07/08	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	RNAV UM665	Addis Ababa-Merowe	1994	Aircraft subjected to fly non-economical routes.	Not acceptable in Khartoum FIR due to military reasons.	Sudan	03/07/08	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	RNAV UM220	Lodwar-A.Simbel	1994	Aircraft subjected to fly non-economic routes	States concerned to coordinate common implementation dates.	Sudan	03/07/08	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	RNAV UL612	Goma-El Dhaba	1994	Aircraft subjected to fly non-economic routes	Overlaps UB607 need to review alignment at appropriate forum.	Sudan	03/07/08	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	Route UB607	Goma-El Obeid-New Valley-El Dabha	1994	Aircraft subjected to fly non-economic routes	States concerned to coordinate common implementation dates.	Sudan	03/07/08	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	Route UB525	Addis Ababa-Luxor	1994	Aircraft subjected to fly non-economic routes	Not acceptable now in Khartoum FIR.	Sudan	03/07/08	A

<i>State Name</i>	<i>Requirements</i>	<i>Facilities or Services</i>	<i>Description of Deficiency</i>	<i>Date first reported</i>	<i>Comments on Deficiency</i>	<i>Description of Corrective Action</i>	<i>Executing Body</i>	<i>Target date for Implementation</i>	<i>Priority</i>
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	UB535	Addis- Ababa - Kisangani (segment within Khartoum FIR)	1998	Route closure by Sudan .Aircraft subjected to fly non-economic routes	Not acceptable now in Khartoum FIR	Sudan	To be determined	A
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	UM365	Geneina-Port Sudan	2004	Aircraft subjected to fly non- economic routes	State expedite implementation of the Route.	Sudan	03/07/08	
	AFI/7 Rec.5/8 and Table ATS 1 AFI ANP Doc.7474.	Provision of ATS	Area control service not provided to most ATS routes in the upper airspace.	1998	Aircraft subjected to fly non- economic routes	State to expedite implementation process.	Sudan	03/07/08	A
SWAZILAND	AFI/7 Rec.5/1	P4 - Airspace Management	Prohibited area	1990	Non-availability of direct routings.	Withdraw this area - P4.	Swaziland	03/07/08	A
TANZANIA	This State has no deficiency in this field.								
TOGO	This State has no deficiency in this field.								
TUNISIA	This State has no deficiency in this field.								
UGANDA	This State has no deficiency in this field.								
ZAMBIA	This State has no deficiency in this field.								
ZIMBABWE	This State has no deficiency in this field.								

APPENDIX P (c)

LIST OF DEFICIENCIES IN THE AIR NAVIGATION FIELDS — CNS DEFICIENCIES

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Algeria	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Algiers ACC-FIC	Circuit Algiers/Tripoli	1998		Implement LTF circuit	Algeria, Libya		U
Angola	AFTN Plan, AFI/7 Rec. 9/7	Luanda AFTN centre	Circuit Luanda/Brazzaville	1998	Not implemented	To implement VSAT	Angola, ASECNA		U
	AMS AFI/7 Rec 9/12	Luanda ACC	Inadequate VHF coverage of busy ATS routes	1998	Implement remote VHF stations	5 VHF stations to be installed	ENANA		U
	AMS AFI/7 Rec. 9/12	Luanda FIC	HF poor quality and unavailable in oceanic area	2004	Improve facilities	Install adequate equipment	ENANA		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Luanda FIC	Circuit Luanda/Accra	1998	Inmarsat phone used from Luanda.	VSAT under consideration	Angola, Ghana		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Luanda FIC	Circuit Luanda/Atlantico	1998	Not implemented	Implement circuit	Angola, Brazil		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Luanda FIC	Circuit Luanda/Brazzaville	1998	PSTN used via Inmarsat	To implement LTF circuit	Angola, ASECNA		A
	Nav aids AFI/7, Rec. 10/4	Cuito Cuanavale	VOR/DME	1998	Not implemented	Implement facility	ENANA		U
	Nav aids AFI/7, Rec. 10/4	Huambo	VOR/DME	1998	Not implemented	Implement facility	ENANA		A
	Nav aids AFI/7, Rec. 10/4	Kuito	VOR/DME	1998	Not implemented	Implement facility	ENANA		A
	Nav aids AFI/7, Rec. 10/4	Luena	VOR/DME	1998	Not implemented	Implement facility	ENANA		U
	Nav aids AFI/7, Rec. 10/4	Saurimo	VOR/DME	1998	Not implemented	Implement facility	ENANA		U
Benin	This State has no deficiency in this field								
Botswana	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Francistown TWR	Circuit Francistown/Bulawayo	2002	Not implemented	Implement facility	Botswana, Zimbabwe		A
Burkina Faso	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bobo Dioulasso	Circuit Bobo Dioulasso/Accra	1998	PSTN in use	VSAT planned by ASECNA	ASECNA, Ghana		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Ouagadougou APP	Circuit Ouagadougou/Niamtougou	2002	Not implemented	VSAT planned by Ghana CAA at Niamtougou	ASECNA, Togo, Ghana		A

APIRG/16 REPORT

Appendix P(c)

P(c)-2

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Burundi	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bujumbura APP	Circuit` Bujumbura/Goma	1998	Not implemented		Burundi, DR Congo		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bujumbura APP	Circuit/ Bujumbura/Kinshasa	1998	Not implemented	VSAT implemented at Bujumbura and Kinshasa	Burundi, DR Cong		A
Cameroon	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Douala APP	Circuit Douala/Bata	1998	Not implemented	VSAT planned at Bata	ASECNA		A
	Nav aids AFI/7, Rec. 10/4	Foumban	VOR	1998	Not implemented	Amend AFI Plan to replace facility with Bafoussam VOR/DME	Cameroon		U
	Nav aids AFI/7, Rec. 10/4	Maroua	VOR	1998	Not implemented	Implement facility	Cameroon		A
Cape Verde	This State has no deficiency in this field								
Central African Republic	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bangui APP	Circuit Bangui/Gbadolite	1998	Not implemented	Could be implemented via Brazzaville if a circuit Kinshasa/Gbadolite is available.	ASECNA, DR Congo		A
Chad	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	N'Djamena APP/FIC	Circuit N'Djamena/Khartoum	1998	Not implemented	VSAT NAFISAT. PSTN proposed by ASECNA.	ASECNA, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	N'Djamena APP/FIC	Circuit N'Djamena/Tripoli	1998	Not implemented	VSAT NAFISAT. PSTN and Satphone proposed by ASECNA	ASECNA, Libya	2007	U
Comoros	This State has no deficiency in this field								
Congo	AFTN Plan, AFI/7 Rec. 9/7	Brazzaville AFTN centre	Circuit Brazzaville/Luanda	1998	Not implemented	To implement VSAT	ASECNA, Angola		A
	AFTN Plan, AFI/7 Rec. 9/7	Brazzaville AFTN centre	Main circuit Brazzaville/Nairobi	1998	Not implemented	VSAT NAFISAT in project	ASECNA, Kenya	2007	U
	AFTN Plan, AFI/7 Rec. 9/7	Brazzaville AFTN centre	Circuit Brazzaville/ Sao Tome	1998	Not implemented	VSAT to be installed at Sao Tome & Principe	ASECNA, Sao Tome & Principe		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Brazzaville APP/FIC	Circuit Brazzaville/Khartoum	1998	Not implemented	VSAT AFISNET proposed by ASECNA	ASECNA, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Brazzaville APP/FIC	Circuit Brazzaville/Luanda	1998	PSTN used via Inmarsat phone	To implement VSAT	Angola, ASECNA		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Brazzaville APP/FIC	Circuit Brazzaville/ Sao Tome	1998	Not implemented	VSAT to be installed at Sao Tome & Principe	ASECNA, Sao Tome & Principe	2005	U
Côte d'Ivoire	This State has no deficiency in this field								

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Dem. Rep. of Congo	AMS AFI/7 Rec. 9/12	Kinshasa FIR	Inadequate VHF coverage of busy ATS routes	1998		Extension of VHF coverage.	DR Congo	2006	U
	AMS AFI/7 Rec. 9/12	Kinshasa FIR	HF poor quality. Selcal not available	1998	FIC Kinshasa operational April 2005	New equipment being installed at Kinshasa, Kisangani.	DR Congo	2006	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bukavu TWR	Circuit Bukavu/Kigali	1996	Not implemented		DR Congo, Rwanda		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Gbadolite TWR	Circuit Gbadolite/Bangui	2002	Not implemented	Could be implemented via Brazzaville if a circuit Kinshasa/Gbadolite is available.	DR Congo, ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Goma APP	Circuit Goma/Bujumbura	1998	Not implemented		DR Congo, Burundi		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Goma APP	Circuit Goma/Kigali	199	Not implemented		DR Congo, Rwanda		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Bujumbur	2002	Not implemented	VSAT implemented both centres	DR Congo, Burundi		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Entebbe	1996	Not implemented	VSAT SADC2 and NAFISAT in project	DR Congo, Uganda	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Khartoum	1996	Inmarsat phone available at Kinshasa	VSAT NAFISAT in project	DR Congo, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kinshasa FIC	Circuit Kinshasa/Kigali	1996	Not implemented	VSAT operational in Kinshasa and in Kigali	DR Congo, Rwanda		A
	Nav aids AFI/7, Rec. 10/4	Kalemie	VOR/DME	1998	Unserviceable	New equipment to be installed	DR Congo	2005	U
	Nav aids AFI/7, Rec. 10/4	Kindu	VOR	1998	Unserviceable	New equipment to be installed	DR Congo	2005	U
	Nav aids AFI/7, Rec. 10/4	Kisangani	VOR/DME	1998	Unserviceable	New equipment being installed	DR Congo	2005	A
Djibouti	AFTN Plan, AFI/7 Rec. 9/7	Djibouti AFTN centre	Circuit Djibouti/Addis Ababa	2005	Not implemented	Implement LTF circuit pending NAFISAT	Djibouti, Ethiopia		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Djibouti APP	Circuit Djibouti/Hargeisa	1996	Not implemented	To implement LTF circuit	Djibouti, Somalia		A
Egypt	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Cairo ACC	Circuit Cairo/Khartoum	1996	Not implemented	LTF circuit via PTTs proposed by Egypt until VSAT NAFISAT implemented.	Egypt, Sudan	2007	U

APIRG/16 REPORT

Appendix P(c)

P(c)-4

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Equatorial Guinea	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bata & Malabo APP	Circuit Bata/Malabo	2002	Not implemented	VSAT planned	ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bata APP	Circuit Bata/Douala	1996	Not implemented	VSAT planned	ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bata APP	Circuit Bata/Libreville	1996	Not implemented	VSAT planned	ASECNA		A
Eritrea	AFTN Plan, AFI/7 Rec. 9/7	Asmara AFTN centre	Circuit Asmara/ Addis Ababa	1998	The circuit has been disconnected	To be restored. NAFISAT	Eritrea., Ethiopia	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Asmara ACC	Circuit Asmara/ Addis Ababa	1998	The circuit has been disconnected	To be restored. NAFISAT	Eritrea, Ethiopia	2007	U
Ethiopia	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/ Asmara	1998	The circuit has been disconnected	To be restored. NAFISAT	Ethiopia, Eritrea	2007	U
	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/ Khartoum	1996	Not implemented	VSAT NAFISAT in project	Ethiopia, Sudan	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/ Niamey operates at low speed	2003	Causes congestion and traffic delays	Upgrade to at least 1200 bps. NAFISAT	Ethiopia, ASECNA	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Addis Ababa AFTN centre	Circuit Addis Ababa/ Djibouti	2005	Not implemented	Implement LTF circuit pending NAFISAT	Ethiopia, Djibouti		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Addis Ababa ACC/FIC	Circuit Addis Ababa/ Asmara	1998	The circuit has been disconnected	To be restored. NAFISAT	Ethiopia, Eritrea	2007	U
France (La Réunion)	This State has no deficiency in this field								
Gabon	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Libreville ACC	Circuit Libreville/Bata	1996	Not implemented	VSAT planned at Bata	ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Libreville ACC	Circuit Libreville/Sao Tome	1996	Not implemented	VSAT to be installed by Sao Tome & Principe	ASECNA, Sao Tome & Principe	2005	A
	Navajds, AFI/7 Rec. 10/4	Port Gentil	ILS RWY 21	2001	Equipment at site	Installation in progress	ASECNA		U
Gambia	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Banjul APP	Circuit Banjul/Bissau	1996	Not implemented	VSAT being considered	Gambia/ Guinea Bissau		A

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Ghana	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Accra APP/FIC	Circuit Accra/Bobo Dioulasso	1998	PSTN in use	VSAT planned Bobo Dioulasso	Ghana, ASECNA		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Accra APP/FIC	Circuit Accra/Luanda	1998	Inmarsat phone used from Luanda. Inmarsat also available in Accra	VSAT under consideration	Ghana, Angola		U
Guinea	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Conakry APP	Circuit Conakry/Bissau	1996	Not implemented	Implement LTF circuit	Guinea, Guinea Bissau		A
	Nav aids, AFI/7 Rec. 10/4	Kankan	VOR	1998	Not implemented	Implement facility	Guinea		A
	Nav aids AFI/7 Rec. 10/4	Labe	VOR	1998	Not implemented	Implement facility	Guinea		A
	Nav aids AFI/7 Rec. 10/4	Nzerekore	VOR	1998	Not implemented	Implement facility	Guinea		A
Guinea Bissau	AFTN Plan, AFI/7 Rec. 9/7	Bissau AFTN centre	Circuit Bissau/Dakar	1998	Not implemented	VSAT planned	ASECNA, Guinea Bissau		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bissau APP	Circuit Bissau/Banjul	1996	Not implemented	VSAT being considered	Gambia, Guinea Bissau		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bissau APP	Circuit Bissau/Conakry	1996	Not implemented	Implement LTF circuit	Guinea, Guinea Bissau		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bissau APP	Circuit Bissau/Dakar	1996	Not implemented	VSAT being considered	ASECNA, Guinea Bissau		U
Kenya	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Main circuit Nairobi/Brazzaville	1998	Not implemented	VSAT NAFISAT in project	Kenya, ASECNA	2007	U
	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Nairobi/Cairo circuit operates at low speed	2002	Causes congestion and traffic delay	Upgrade to at least 1200 bps. NAFISAT	Kenya, Egypt	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Nairobi/Johannesburg circuit operates at low speed	2002	Causes congestion and traffic delay	Upgrade to at least 1200 bps. NAFISAT	Kenya, South Africa	2007	A
	AFTN Plan, AFI/7 Rec. 9/7	Nairobi AFTN centre	Nairobi/Mumbai circuit operates at low speed	2002	Causes congestion and traffic delay	Upgrade to at least 1200 bps.	Kenya, India		A
	Nav aids AFI/7 Rec. 10/4	Mandera	VOR/DME	1998	Not implemented	Implement facility	Kenya		U
Lesotho	Nav aids AFI/7 Rec. 10/4	Maseru	VOR/DME	2002	Not implemented	To implement	Lesotho		U
Liberia	Nav aids AFI/7 Rec. 10/4	Robertsfield	ILS 04	1998	Not implemented	Implement facility	Liberia		U

APIRG/16 REPORT

Appendix P(c)

P(c)-6

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Libya	AMS AFI/7 Rec. 9/12	Tripoli FIR	Inadequate VHF coverage of busy ATS routes	2004	Implement remote VHF stations		Libya		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/Algiers	1998	Not implemented	Implement LTF circuit. Algiers to contact PTT Libya.	Libya, Algeria		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/Khartoum	1998	Not implemented	VSAT NAFISAT in project	Libya, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/Niamey	1998	Not implemented	VSAT NAFISAT in project	Libya, ASECNA	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Tripoli ACC/FIC	Circuit Tripoli/N'Djamena	1998	Not implemented	VSAT NAFISAT in project. PSTN and Satphone proposed by ASECNA	Libya, ASECNA	2007	U
	Nav aids AFI/7 Rec. 10/4	Sarir	VOR/DME	1998	Not implemented	Implement facility	Libya		U
Madagascar	Nav aids AFI/7 Rec. 10/4	Antsiranana	VOR	1998	Not implemented	Implement facility	Madagascar		U
	Nav aids AFI/7 Rec. 10/4	Maintirano	VOR	2002	Not implemented	Implement facility	Madagascar		U
	Nav aids AFI/7 Rec. 10/4	Morondava	VOR	1998	Not implemented	Implement facility	Madagascar		U
	Nav aids AFI/7 Rec. 10/4	Sainte Marie	VOR	1998	Not implemented	Implement facility	Madagascar		A
	Nav aids AFI/7 Rec. 10/4	Toliara	VOR	1998	Not implemented	Implement facility	Madagascar		U
Malawi	AMS AFI/7 Rec. 9/12	FIR Lilongwe	VHF coverage incomplete	2001	Install additional VHF relay station at Muzuzu and Zomba	Extension VHF coverage in progress. Equipment in place.	Malawi		U
Mali	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bamako APP	Circuit Bamako/Gao	2003	Not implemented	Implement by VSAT	ASECNA	2005	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bamako APP	Circuit Bamako/Mopti	1996	Not implemented	Implement LTF circuit	Mali		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Gao APP	Circuit Gao/Mopti	2002	Not implemented	Implement LTF circuit	Mali		A
	Nav aids AFI/7 Rec. 10/4	Tessalit	VOR	1998	Not implemented	Implement facility	Mali, ASECNA		U
Mauritania	This State has no deficiency in this field								
Mauritius	This State has no deficiency in this field								
Morocco	This State has no deficiency in this field								
Mozambique	This State has no deficiency in this field								

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Namibia	This State has no deficiency in this field								
Niger	AFTN Plan, AFI/7 Rec. 9/7	Niamey AFTN centre	Main circuit Niamey/Addis Ababa operates a low speed	2003	Causes congestion and traffic delays	Upgrade to at least 1200 bps. NAFISAT	ASECNA, Ethiopia	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Niamey ACC/FIC	Circuit Niamey/Tripoli	1998	Not implemented	VSAT NAFISAT in project	ASECNA, Libya	2007	U
Nigeria	This State has no deficiency in this field								
Rwanda	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali APP	Circuit Kigali/Bukavu	1996	Not implemented		Rwanda, DR Congo		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali APP	Circuit Kigali/Goma	1996	Not implemented		Rwanda, DR Congo		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali APP	Circuit Kigali/Kinshasa	1996	Not implemented	VSAT operational in Kinshasa and in Kigali	Rwanda, DR Congo		A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Kigali APP	Circuit Kigali/Bukavu	1996	Not implemented		Rwanda, DR Congo		A
Sao Tome & Principe	AFTN Plan, AFI/7 Rec. 9/7	Sao Tome AFTN centre	Circuit Sao Tome/ Brazzaville	1998	Not implemented	VSAT to be installed at Sao Tome & Principe	Sao Tome & Principe, ASECNA		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Sao Tome TWR	Circuit Sao Tome/ Brazzaville	1998	Not implemented	VSAT to be installed at Sao Tome & Principe	Sao Tome & Principe, ASECNA	2005	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Sao Tome TWR	Circuit Sao Tome/ Libreville	1998	Not implemented	VSAT to be installed at Sao Tome & Principe	Sao Tome & Principe, ASECNA	2005	A
	Nav aids AFI/7 Rec. 10/4	Sao Tome	ILS 11	1998	Not implemented	Implement facility	Sao Tome & Principe		A
Senegal	AFTN Plan, AFI/7 Rec. 9/7	Dakar AFTN centre	Circuit Dakar/Bissau	1998	Not implemented	VSAT planned	ASECNA, Guinea Bissau		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Dakar ACC/FIC	Circuit Dakar/Bissau	1998	Not implemented	VSAT being considered	ASECNA, Guinea Bissau		U
Seychelles	This State has no deficiency in this field								
Sierra Leone	Nav aids AFI/7 Rec. 10/4	Freetown/ Lungi	ILS 30	1999	Unserviceable	To repair	Sierra Leone		U
	Nav aids AFI/7 Rec. 10/4	Freetown/ Lungi	VOR/DME	1999	Unserviceable	To repair	Sierra Leone		U

APIRG/16 REPORT

Appendix P(c)

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Somalia	AMS AFI/7 Rec. 9/12	Mogadishu FIC	Lack of VHF coverage of busy ATS routes	1998		Install VHF relays	Somalia		U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Hargeisa APP	Circuit Hargeisa/Djibouti	1998	Not implemented	Implement LTF circuit	Somalia, Djibouti		A
	Nav aids AFI/7 Rec. 10/4	Hargeisa	VOR/DME	1998	Not implemented	Implement facility	Somalia		U
	Nav aids AFI/7 Rec. 10/4	Mogadishu	VOR/DME	1998	Not implemented	Implement facility	Somalia		U
South Africa	This State has no deficiency in this field								
Spain (Canary Is.)	This State has no deficiency in this field								
Sudan	AFTN Plan, AFI/7 Rec. 9/7	Khartoum AFTN centre	Circuit Khartoum/Addis Ababa	1996	Not implemented	VSAT NAFISAT in project	Ethiopia, Sudan	2007	A
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Brazzaville	1996	Not implemented	VSAT AFISNET proposed by ASECNA	Sudan, ASECNA	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Cairo	1996	Not implemented	LTF circuit via PTTs proposed by Egypt	Egypt, Sudan	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Jeddah	1996	Not implemented	VSAT NAFISAT in project	Sudan, Saudi Arabia	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Kinshasa	1996	Not implemented	VSAT NAFISAT in project	Sudan, DR Congo	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/N'djamena	1996	Not implemented	VSAT NAFISAT in project. PSTN proposed by ASECNA	Sudan, ASECNA	2007	U
	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Khartoum FIC	Circuit Khartoum/Tripoli	1996	Not implemented	VSAT NAFISAT in project	Sudan, Libya	2007	U
	Nav aids AFI/7 Rec. 10/4	Geneina	VOR	1998	Not implemented	Implement facility	Sudan		U
	Nav aids AFI/7 Rec. 10/4	Juba	ILS 13	1998	Not implemented	Implement facility	Sudan		A
	Nav aids AFI/7 Rec. 10/4	Karina	VOR/DME	1998	Not implemented	Implement facility	Sudan		U
Swaziland	This State has no deficiency in this field								
Tanzania	Nav aids AFI/7 Rec. 10/4	Dodoma	VOR/DME	1998	Not implemented	Implement facility	Tanzania	31/12/2005	U
	Nav aids AFI/7 Rec. 10/4	Mbeya	VOR/DME	1998	Not implemented	Implement facility	Tanzania	June 2006	U
	Nav aids AFI/7 Rec. 10/4	Mwanza	DME	1998	Not implemented	Implement facility	Tanzania	June 2005	U
	Nav aids AFI/7 Rec. 10/4	Zanzibar	VOR/DME	1998	Not implemented	Implement facility	Tanzania	June 2006	A

State Name	Requirements	Facilities or Services	Description of Deficiency	Date first reported	Comments on Deficiency	Description of Corrective action	Executing Body	Target date for implementation	Priority
Togo	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Niamtougou TWR	Circuit Niamtougou/Ouagadougou	2002	Not implemented	VSAT planned at Niamtougou by Ghana CAA	Togo, ASECNA, Ghana		A
Tunisia	This State has no deficiency in this field								
Uganda	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Entebbe FIC	Circuit Entebbe/Kinshasa	1996	Not implemented	VSAT SADC2 and NAFISAT in project	DR Congo, Uganda	2007	U
Zambia	Nav aids AFI/7 Rec. 10/4	Mongu	VOR	1998	Not implemented	Under installation	Zambia	30/12/2005	U
	Nav aids AFI/7 Rec. 10/4	Solwezi	VOR	1998	Not implemented	Sourcing for funds	Zambia	Dec.w 2006	U
Zimbabwe	ATS Direct Speech Circuits Plan, AFI/7 Rec. 9/9	Bulawayo TWR	Circuit Bulawayo/Francistown	2002	Not implemented	Implement facility	Zimbabwe, Botswana		A

APPENDIX P(d)

LIST OF DEFICIENCIES IN THE AIR NAVIGATION FIELDS — MET DEFICIENCIES

(REF. AIR NAVIGATION PLAN - AFRICA-INDIAN OCEAN REGION (DOC 7474) –PART IV - METEOROLOGY (MET))

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
1	2	3	4	5	6	7	8	9	10
ANGOLA	Requirement to provide aerodrome forecasts (AFI FASID Table MET 1A)	Angola/Luanda 4 de Fevereiro Associated MET Office	TAF of Luanda not regularly available	2003	Advice given by correspondence	Improve reliability of telecomm	INAMET and ENANA	As soon as possible	A
BURUNDI			MET station located very far from the runway and among buildings	2006	Data observed not representative of weather conditions along the runway. Unreliable exchange of data to users	Install an automatic weather observing system with sensors appropriately located. Install a MET message distribution system.	Meteorological Services Department	2007	U
DEMORATIC REPUBLIC OF CONGO	Requirement to provide information on volcanic eruptions to civil aviation units. (Annex 3, Chapter 3, para. 3.6)	Democratic Republic of Congo/State volcano observatory	Information on volcano activities not always reaches civil aviation due to lack of fixed communications with State volcano observatories. This has an impact on the issuance of VA advisories and SIGMETs by the VAACs and MWOs.	14/5/1997	Observed by the State concerned. Reported at the AFI/7 RAN Meeting, May 1997	Volcano observations and warnings to be made available to civil aviation and MET Authorities for dissemination	Civil Aviation and MET Authorities, D.R. of Congo Implementation by Department of Transportation.	As soon as possible	U
EQUATORIAL GUINEA	Requirement to provide aerodrome forecasts (AFI FASID Table MET 1A)	Equatorial Guinea/Malabo Aeronautical MET centre	TAF of Malabo issued by the Douala MET Office not by MET Office of Malabo	2000	Advice given through correspondence and mission	Installation of reliable telecomm. link and provision of sufficient number of forecasters	Civil Aviation Authority, Equatorial Guinea	As soon as possible	A

	Identification		Deficiencies			Corrective action			
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
1	2	3	4	5	6	7	8	9	10
The GAMBIA	Requirement to provide runway visual range (RVR) for runway intended for non-precision or Category I approach and landing operations(Annex 3, Chapter 4, para. 4.6.3.4 a), 4.6.3.5 and Appendix 3, para. 4.3.6.4)	The Gambia/ Banjul - Yundum International Airport	Runway visual range (RVR) is not assessed and reported during periods of reduced visibility	30/07/2007	Reported by the State concerned from a survey questionnaire, advice given during State mission	<u>In the short term:</u> Training of MET personal for manual assessment and reporting of RVR, or <u>In the medium term:</u> Installation of a RVR measurement, assessment and reporting equipment recommended	Civil Aviation Authority and MET, The Gambia	2008	U
	Requirement to report visibility along the runway in local routine and special reports: Annex 3, Appendix 3 para; 4.2.4.2	The Gambia, Banjul International Airport	MET station located very far from the runway and behind a tree	07/2007	Data observed not representative of weather conditions along the runway. Advice given during State Mission	Install an automatic weather observing system with sensors appropriately located.	GCAA (Gambia Civil Aviation Authority)	2008	U
	Requirement to relay air reports: Annex 3 Chapter 5, para; 5.8	The Gambia, Banjul International Airport	Aircraft observations and reports are not collected, processed and disseminated	07/2007	Advice given during State Mission	Necessary arrangements between the MET authority and the appropriate ATS authority be made.	GCAA (Gambia Civil Aviation Authority)	2008	B
GUINEA BISSAU	Requirement to issue trend type landing forecast (Annex 3, chapter 6, para. 6.3.2)	Guinea Bissau/ Bissau Osvaldo V. Intl. Aeronautical station	Trend type landing forecasts not issued	1995	Advice given through correspondence	Forecast unit to issue Trend type landing forecasts	Civil Aviation and MET of Guinea Bissau	-	U
LESOTHO	Implementation of MET facilities and services AFI/7 Rec. 14/10	Lesotho/Maseru/M oshoeshoe	Anemometer on RWY 04 has been unserviceable for many months	2003	Advice given through mission	Install a new sensor with displays at appropriate ATC and MET positions	Lesotho	As soon as possible but not later than 2007	A
LIBERIA	Requirement to provide meteorological reports to the ATS units (Annex 3, Chapter 10, para. 10.1.1	Liberia/Roberts Intl. Associated MET Office	Provision of MET data to ATS units deficient	5/2000	Advice given to authorities through correspondence	Better display system of MET data to ATS	Liberia Civil Aviation Authority and MET	As soon as possible	A

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
1	2	3	4	5	6	7	8	9	10
MALI	Requirement to provide runway visual range (RVR) for runway intended for non-precision or Category I approach and landing operations(Annex 3, Chapter 4, para. 4.6.3.4 a), 4.6.3.5 and Appendix 3, para. 4.3.6.4)	Mali/Gao Airport	Runway visual range (RVR) is not assessed and reported during periods of reduced visibility	26/07/07	Reported by the State concerned from a survey questionnaire	Training of MET personal for manual assessment and reporting of RVR, and Urgent introduction of RVR observing practices.	Civil Aviation Authority and MET, Mali	2008	U
	Requirement to provide runway visual range (RVR) for runway intended for non-precision or Category I approach and landing operations(Annex 3, Chapter 4, para. 4.6.3.4 a), 4.6.3.5 and Appendix 3, para. 4.3.6.4)	Mali/Kayes Airport	Runway visual range (RVR) is not assessed and reported during periods of reduced visibility	26/07/2007	Reported by the State concerned from a survey questionnaire	Training of MET personal for manual assessment and reporting of RVR, and Urgent introduction of RVR observing practices.	Civil Aviation Authority and MET, Mali	2008	U
	Requirement to provide runway visual range (RVR) for runway intended for non-precision or Category I approach and landing operations(Annex 3, Chapter 4, para. 4.6.3.4 a), 4.6.3.5 and Appendix 3, para. 4.3.6.4)	Mali/Mopti Airport	Runway visual range (RVR) is not assessed and reported during periods of reduced visibility	26/07/2007	Reported by the State concerned from a survey questionnaire	Training of MET personal for manual assessment and reporting of RVR, and Urgent introduction of RVR observing practices.	Civil Aviation Authority and MET, Mali	2008	U
	Requirement to provide runway visual range (RVR) for runway intended for non-precision or Category I approach and landing operations(Annex 3, Chapter 4, para. 4.6.3.4 a), 4.6.3.5 and Appendix 3, para. 4.3.6.4)	Mali/Tombouctou Airport	Runway visual range (RVR) is not assessed and reported during periods of reduced visibility	26/07/2007	Reported by the State concerned from a survey questionnaire	Training of MET personal for manual assessment and reporting of RVR, and Urgent introduction of RVR observing practices.	Civil Aviation Authority and MET, Mali	2008	U

STATE	Identification		Deficiencies			Corrective action			
	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
1	2	3	4	5	6	7	8	9	10
NAMIBIA	Requirement for a continuous watch over meteorological conditions (Annex 3, para. 3.4.2(a)) and requirements for SIGMETS information (Annex 3 para. 3.4.2 b, c, d and para. 7.1.1)	Namibia/Windhoek Hosea Kutako Meteorological Watch Office	The MWO operational hours do not cover same period as ATS Non-issuance of trend forecast in METAR reports. Non-issuance of SIGMETS information	2004	Advice given during mission	MWO operational hours to coincide with those of ATS. Forecast office to issue Trend type landing forecasts for METARS and SIGMETS	CAA/MET Division	2007	U
NIGERIA	Implementation of MET facilities and services - AFI/7 Rec. 14/10	Nigeria/Kano MA	Provision of MET data to ATS deficient	2/10/1996	Advice given through correspondence and mission	Better display system of MET data to ATS units	Nigeria	As soon as possible	A
SAO TOMÉ & PRINCIPE	Requirement to provide aerodrome forecasts (AFI FASID Table MET 1A)	Sao Tomé & Príncipe/ Sao Tomé Aerodrome MET Office	TAF of Sao Tome not regularly disseminated outside MET centre	28/10/2002	Advice given through correspondence	Installation of reliable telecom. Equipment.	Civil Aviation Authority and MET, Sao Tome & Principe	As soon as possible	B
SIERRA LEONE	Requirement to measure and report surface wind (Annex 3, Chapter 4, para. 4.6.1.1)	Sierra Leone/ Lungi Airport, Associated MET Office	Wind measurement unreliable	May 1994	Advice given through correspondence	Installation of reliable MET basic equipment	Civil Aviation Authority and MET, Sierra Leone	As soon as possible	U
SOMALIA	Situation unknown	FIR Mogadishu							
SWAZILAND	Requirement to provide MET reports to ATS Units (Annex 3, Chapter 10, para 10.1.1)	Swaziland/Manzini Matsapha Airport Associated MET Office	Provision of MET reports to ATS units deficient. No wind displays in control tower	2004	Advice was given on mission	Install a display system for MET data and information at ATS units	DCA and MET Department	As soon as possible	U
ZAMBIA	1)Implementation of MET facilities and services (Annex 3, para 4.1.6)	Zambia/Lusaka International Airport	Inadequate level of equipment maintenance	2002 and missions of 2004 and 2007	Equipment remain unserviceable for a long time due to lack of spare parts	Provide financial resources including use of air navigation charges which currently is not fully available to the MET Department.	Zambia MET Department and NACL	As soon as possible	U
	2)Requirement to provide MET reports to ATS Units (Annex 3, Chapter 10, para 10.1.1)	Zambia/Lusaka Meteorological Office	Provision of MET reports to ATS Units deficient	2002 and missions of 2004 and 2007	Advice given during mission by correspondence	Install display system of MET data to ATS units	MET Department	As soon as possible	U

Identification		Deficiencies			Corrective action				
STATE	Requirements	Facilities or services	Description of Deficiency	Date first reported	Comments on deficiency	Description of corrective action	Executing body	Target date for implementation	Priority for action
1	2	3	4	5	6	7	8	9	10
	3) Requirement to provide meteorological data and forecasts in form of flight documentation (Annex 3, Chapter 3, para 3.3.2).	Zambia/Lusaka Meteorological Office	Provision of MET reports to ATS Units deficient	2002 and missions of 2004 and 2007	Advice given during mission and by correspondence	Install appropriate telecoms equipment to receive OPMET information and appoint adequate trained personnel	MET Department	As soon as possible	U
	4) Requirements for SIGMET information (Annex 3 para 3.4.2 b, c, d and add para. 7.1.1)	Zambia/Lusaka Meteorological watch office (MWO)	SIGMET not issued	2007	Advice given on mission	Immediately provide training and issue SIGMET	MET Department	As soon as possible	U

EXPLANATORY NOTES FOR APPENDICES ON DEFICIENCIES

1. Name of the State or States involved and/or the name of the facilities such as name of airport, FIR, ACC, TWR, etc.
2. Requirement identified at a given meeting through a recommendation; name of the meeting and the related recommendation number
3. Facilities or services
4. Brief description of the deficiency:
5. Date deficiency was first reported:
6. Comments.
7. Brief description of the corrective actions to be undertaken.
8. Identification of the executing body.
9. Target date for completion of the corrective action.
10. Priority and classification.

U priority = **Urgent** requirements having a **direct** impact on **safety** and requiring **immediate** corrective actions.

Urgent requirements consisting of any physical, configuration, material, performance, personnel or procedures specifications, the application of which is urgently required for air navigation safety.

A priority = **Top priority** requirements **necessary** for air navigation **safety**.

Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.

B priority = **Intermediate** requirements **necessary** for air navigation **regularity**.

Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

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APPENDIX Q

TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE AERODROME OPERATIONAL PLANNING SUB-GROUP (AOP/SG)

1. Terms of reference

1.1 In the field of aerodrome operational planning

1.1.1 To keep under review the adequacy of the requirements contained in the ICAO Regional ANP, taking into account changes to aircraft operations, new operational requirements and/or technological developments, and to propose amendments as required.

1.2 With respect to oversight and surveillance responsibilities of the States:

1.2.1 To keep under review the status of implementation of the aerodrome oversight and surveillance responsibilities of the States in accordance with the relevant ICAO SARPS

1.3 In the field of aerodrome services

1.3.1 To identify, assess and track critical a prioritized list of deficiencies in the provisions of aerodrome installations, equipment and services with particular emphasis to:

- aerodrome power supply;
- visual aids;
- rescue and fire fighting;
- aerodrome fencing;
- bird hazards;
- aerodrome emergency planning and testing; and
- pavement surface condition.

No.	Task description	Strategic Objective(s)	Priority	Status of implementation	Target completion date	Remarks
1	Review, at each AOP/SG Meeting, the content of the Table AOP 1 and, where necessary, after coordination with users and operators; and introduce the respective changes to the AFI ANP and FASID through the established ICAO procedures. (AFI/7 RAN Meeting Conclusion 3/2)	A	A		Ongoing	
2	Develop a database on deficiencies in the AOP field including their safety assessment according to the ICAO approved procedures and at each AOP/SG meeting, review and update the database and provide appropriate input to the Audit Results Review Board (ARRB) gap analysis and the AFI Implementation Safety Plan	A,C,D,E	A		Ongoing	
3	Review the severity of the bird hazard and the status of implementation of appropriate bird hazard reduction measures in the Region .(AFI/7 RAN Meeting Conclusion 4/7)	C	A		Ongoing	
4	Review States efforts to allocate the necessary resources to ensure the establishment of preventive maintenance at their aerodromes in order to provide adequate maintenance of facilities, installations and services. (AFI/7 RAN Meeting Conclusion 4/10)	A, D, E	A		APIRG/16	
5	Review the need and monitor the measurement and reporting by States of the surface condition and unevenness on movement areas at aerodromes in the AFI Region. (AFI/7 RAN Meeting Recommendation 4/4)	A, E	B		APIRG/16	
6	Review the provision of rescue and fire fighting services and emergency planning at international aerodromes in the AFI Region and monitor the switch over to the use of environmentally friendly materials for fire fighting. (AFI/7 RAN Meeting Conclusion 4/6)	A, C	A		APIRG/16	
7	Review and monitor the implementation of new approach and landing systems in order to ensure smooth transition and optimization of the performance of the systems implemented. (Input to CNS/ATM planning process)	A, E	A		APIRG/16	
8	Review and monitor the status of implementation of visual aids in the AFI Region and of provision of resources for ensuring preventive maintenance, human factors and progress in technology development in order to achieve increased safety and capacity. (AFI/7 RAN Meeting Conclusion 4/1, Rec. 14/7)	A	A		APIRG/16	
9	Review and monitor the traffic growth in the AFI Region in order to develop appropriate guidance for the development of planning criteria	E	B		APIRG/16	

No.	Task description	Strategic Objective(s)	Priority	Status of implementation	Target completion date	Remarks
10	Taking into account human factors, study problems and make specific recommendation related to AOP personnel, with a view to ensuring the best services (AFI/7 RAN Meeting, Recommendation 14/7)	D	A		Continuing	
11	Review and monitor the implementation of the requirement for aerodrome certification (Annex 14, Vol. I)	A	A		APIRG/16	
12	Review and monitor the implementation of the requirement for safety management system at aerodromes. (Annex 14, Vol. I)	A, B	A		APIRG/16	

APPENDIX R

**TERMS OF REFERENCE, WORK PROGRAMME
AND COMPOSITION OF THE ATS/AIS/SAR SUB/GROUP**

1. Terms of Reference

- a) To identify State by State, those specific shortcomings and problems that constitute major obstacles to the provision of efficient Air Traffic Management, Aeronautical Information Services and Search and Rescue Services and recommend specific measures to eliminate them.
- b) To keep under review, the adequacy of requirements in the Air Traffic Management, Aeronautical Information Services and Search and Rescue fields, taking into account, *inter alia* changes to aircraft operations and new operational requirements or technological developments.

2. Work Programme

No.	Task Description	Priority	Target Date
1	Analyse the operational implications of the introduction of ICAO CNS/ATM Systems in the fields of ATS, SAR, AIS/MAP and MET matters and propose any required actions with a view to ensuring their smooth integration in the operational environment.	A	Ongoing
	Taking into account Human Factors, study problems and make specific recommendations related to ATS and AIS personnel, with a view to ensure the best services to users. (AFI/7 Rec.14/7)	B	Ongoing
3	Study the requirements for civil/military coordination procedures including the promotion of the implementation of the concepts of joint use of airspace, free flight, flexible tracks, etc. and in addition consider reducing and/or eliminating prohibited, restricted and danger areas. (AFI/7 Rec.5/3)	A	Ongoing
4*	Determine the framework within which air traffic data collection statistical analysis and forecasting should be carried out.	C	Ongoing
5	Review the requirements and monitor the programme of implementation of area control service. (AFI/7 Rec.5/21)	A	Ongoing
6	Review the existing ATS route network (including RNAV routes) on a systematic basis with a view to achieving an optimum flow of air traffic while keeping flight distances of individual flights to a minimum. (AFI/7 Rec.5/8)	A	Ongoing
7	Consider problems and make specific recommendations relating to ATS interface routes with other regions.	A	Ongoing
8	Monitor achievements and progress in the implementation of RVSM, RNAV/RNP taking into account the Performance-Based Navigation (PBN) concept, RSP and RTSP in the AFI Region and provide recommendations in the light of acquired experience.	A	Ongoing

* This task will be a subject of coordination with the Traffic Forecasting Task Force.

No.	Task Description	Priority	Target Date
9	Monitor developments in SSR planning criteria and review the allocation of SSR codes in the region to ensure there is no duplication with adjacent regions. (AFI/7 Rec 5/20)	A	Ongoing
10	Review the ATS requirements for navigation. (AFI/7 Rec 10/4)	A	Ongoing
11	Review of ATS requirements for communication including extension of VHF coverage. (AFI/7 Rec 5/13, Rec 5/12 and LIM AFI Rec 10/36)	A	Ongoing
12	Identify the ATS requirements for Surveillance (RADAR, ADS, Voice, etc.) (AFI/7 Rec 11/1)	A	Ongoing
13	Carry out studies and develop recommendations aimed at facilitating in an effective way the existing Contingency plans ,reduce air traffic incidents, implementation of ACAS, ATIS, pressure-altitude reporting transponders, Digital Flight Information Service (D-FIS), MSAW/CFIT, COSPAS/SARSAT and safety oversight programs in the AFI Region.	A	Ongoing
14	Develop standard auditing and proficiency maintenance procedures to be used by States to assess the capability/competence of any ATS unit as well as monitor the implementation of uniform proficiency assessment for ATS personnel. (AFI/7 Conc 5/27)	B	Ongoing
15	Review the requirements and monitor the implementation of Search and Rescue Services.	B	Ongoing
16	Review the requirements and monitor the implementation of AIS and MAP services	B	Ongoing
17	Analyse, review and monitor shortcomings and deficiencies in the fields of ATS, AIS/MAP and SAR	A	Ongoing

Priority:

- A High priority tasks, on which work should be speeded up;
- B Medium priority tasks, on which work should be undertaken as soon as possible, but without detriment to priority A tasks;
- C Lesser priority tasks, on which work should be undertaken as time and resources permit, but without detriment to priority A and B tasks.

3. **Composition**

Algeria, Angola, Burkina Faso, Cameroon, Congo, Democratic Republic of Congo (DRC), Côte d'Ivoire, Egypt, Ethiopia, France, Gabon, Ghana, Guinea, Kenya, Madagascar, Malawi, Mauritania, Morocco, Niger, Nigeria, Rwanda, Senegal, Spain, South Africa, Sudan, Uganda, Tanzania, Togo, Tunisia, Zambia, Zimbabwe, ASECNA, IATA, IFALPA and IFATCA.

APPENDIX S

TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE COMMUNICATIONS, NAVIGATION AND SURVEILLANCE SUB-GROUP (CNS/SG)

1. TERMS OF REFERENCE

- a) Ensure the continuing and coherent development of the AFI Regional Air Navigation Plan in the fields of aeronautical communications, navigation and surveillance (CNS), including the development of CNS elements of the AFI CNS/ATM Implementation Plan in the light of new developments, in harmony with the ICAO Global Air Navigation Plan (Doc 9750) and the plans for adjacent regions;
- b) Identify, review and monitor deficiencies that impede or affect the provision of efficient aeronautical telecommunications and recommend appropriate corrective action;
- c) Prepare, as necessary, CNS/ATM cost/benefit analyses for the implementation options of C, N and S elements; and
- d) Study, as necessary, institutional arrangements for the implementation of C, N and S systems in the AFI Region.

2. WORK PROGRAMME

Item	Global Plan Initiatives	Task description	Priority	Target date
Communications, Navigation and Surveillance – General matters				
1.	GPI-9 GPI-17 GPI-21 GPI-22	Review, analyze and monitor the implementation and operation of aeronautical communications, navigation and surveillance (CNS) systems, identify CNS deficiencies and propose measures for their elimination, as required.	A	Ongoing
2.	GPI-9 GPI-17 GPI-21 GPI-22	Give further consideration, as necessary, to the concept of multinational ICAO AFI air navigation facility/service in accordance with RAN/AFI/7 Conclusion 10/6c.	C	Ongoing
3.	GPI-9 GPI-17 GPI-21 GPI-22	In co-ordination with the ATS/AIS/SAR Sub-group, continue the evolutionary and harmonized development of the AFI CNS/ATM Systems Implementation Plan (AFI/7 Concl. 13/1).	A	Ongoing
4.	GPI-9 GPI-17 GPI-21 GPI-22	Review and analyze the work carried out by the implementation coordination groups (ICGs) established for AFI areas of routing, and maintain current CNS elements of the AFI CNS/ATM Implementation Plan (Doc 003).		Ongoing
5.	GPI-9 GPI-17 GPI-21 GPI-22	In co-ordination with the ATS/AIS/SAR Sub-group, develop, as necessary, comprehensive business cases for competing CNS/ATM elements implementation options for the routing areas.	B	Ongoing
6.	GPI-9 GPI-17 GPI-21 GPI-22	Review work being done by MIDANPIRG on the Egyptian initiative for a multi-mission satellite based system dedicated to CNS/ATM services and provide advice thereon.	B	APIRG/17
7.	GPI-9 GPI-17 GPI-21 GPI-22	Co-ordinate plans developed by States, international organizations, airlines and industry for the implementation of the regional CNS/ATM systems implementation plan; and monitor CNS/ATM systems research and development, trials and demonstrations within the AFI Region and information from other regions.	B	Ongoing

Item	Global Plan Initiatives	Task description	Priority	Target date
8.	GPI-9 GPI-17 GPI-21 GPI-22	Coordinate the implementation of ICAO Global Plan Initiatives pertaining to CNS and develop associated regional performance objectives.	A	Ongoing s
Communications				
9.	GPI-22	Follow up and monitor the implementation of VHF coverage in the AFI region in accordance with AFI/7 Rec. 5/12.	A	APIRG/17
10.	GPI-22	Update the AFI AFTN routing directory	A	APIRG/17
11.	GPI-22	In coordination with the ATS/AIS/SAR Sub-group, participate in the development of a communication infrastructure to support an AFI Central AIS Database (AFI CAD)	A	APIRG/17
12.	GPI-17 GPI-22	Follow-up the implementation of suitable communication bit-oriented protocols to improve AFTN performance and to facilitate the introduction of ATN applications.	A	APIRG/17
13.	GPI-17	Monitor the development, and coordinate the implementation of guidance material for service level agreements between air navigations service providers and ATN service providers	A	APIRG/17
14.	GPI-17	Review and update, if needed, the ICAO Register of AMHS managing domains and addressing information pertaining to AFI.	A	Ongoing
Navigation				
15.	GPI-21	Analyze and review the Report of the AFI GNSS Implementation Task Force.	A	APIRG/17
16.	GPI-21	Follow up and monitor the implementation of Phase 1 of the AFI GNSS Strategy.	A	APIRG/17
Surveillance				
17.	GPI-9	In coordination with the ATS/AIS/SAR Sub-group, participate in the development of an AFI Aeronautical Surveillance Plan.	A	APIRG/17
18.	GPI-9	Analyze and review CNS aspects of the report of the AFI Aeronautical Surveillance Implementation Task Force.	A	APIRG/17
Aeronautical Spectrum				
19.	GPI-23	Coordinate regional activities aimed at promoting ICAO position for ITU-WRC meetings, and improving aeronautical spectrum management and control in the Region.	A	Ongoing
20.	GPI-23	Review and analyze the Report of the AFI Frequency Management Group.	A	Ongoing

Priority:

- A: High priority tasks on which work should be speeded up;
- B: Medium priority tasks, on which work should be undertaken as soon as possible, but without detriment to priority A tasks; and
- C: Lesser priority tasks, on which work should be undertaken as time and resources permit, but without detriment to priority A and B tasks.

3. **COMPOSITION**

Algeria, Angola, Cameroon, Congo, Côte d'Ivoire, D.R. of Congo, Egypt, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Kenya, Malawi, Mauritius, Morocco, Niger, Nigeria, Senegal, South Africa, Spain, Sudan, Tanzania, Tunisia, Zambia, ACAC, ASECNA, IATA, and IFALPA.

APPENDIX T

**TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION
OF THE METEOROLOGY SUB-GROUP (MET/SG)**

1. Terms of Reference

- a) To keep under review, the adequacy of meteorological facilities and services to meet new technological developments in the air navigation field and make proposals as appropriate for implementation by States to APIRG.
- b) To identify, State by State, those specific deficiencies and shortcomings that constitute major obstacle to the provision of efficient and reliable meteorological facilities and services to meet the requirements of air navigation in the AFI Region and recommend specific measures to eliminate them.

2. Future Work Programme for 2007 – 2012

2.1 Global Plan Initiatives

	Task	Source	Recent progress Next milestone and its deadline	Final result (completion)
1	Maintain detailed lists, State by State of the specific deficiencies of facilities for the provision of atmospheric measurements pertaining to surface wind, pressure, visibility/runway visual range, cloud base, temperature and dew point temperature considered critical for flight safety.	APIRG/13 Con. 13/96	<ul style="list-style-type: none"> • State by state MET deficiencies have been established and included in APIRG/15 Report • Surveys are in progress to update the deficiencies 	Deficiencies on MET parameters measurements established and compiled
2	Monitor the exchange of OPMET information through the AMBEX scheme in the AFI Region and between the AFI and ASIA/PACIFIC and EUR Regions	APIRG/8 Con. 8/43 c)	<ul style="list-style-type: none"> • Ongoing task • Next monitoring April 2008 	Exchange of OPMET information through AMBEX and SADIS, improved
3	Plan for the introduction of efficient inter-regional OPMET exchanges in coordination with the COM Sub-group as required <i>Note: See MET/SG/8 Decision 8/16 establishing AFI Management Task Force to be engaged in this activity.</i>	AFI/7	<ul style="list-style-type: none"> • The AFI OPMET/M Task force has been established to undertake this task 	Efficient inter-regional OPMET exchanges
4	Monitor the degree of implementation of very small aperture terminals (VSATs) for the reception of WAFS products	AFI/7 Rec. 14/12	<ul style="list-style-type: none"> • A large number of AFI States have implemented SADIS 1G VSATs • Implementation of SADIS 2G and SADIS FTP is in progress 	Information on the implementation of SADIS VSAT and FTP established and compiled

	Task	Source	Recent progress Next milestone and its deadline	Final result (completion)
5	Monitor the quality of WAFS high and low level significant weather charts in the AFI Region, provide feed back to WAFIC, London as appropriate	APIRG/12 Con. 12/34	<ul style="list-style-type: none"> Task completed at the end of the migration plan toward the deletion of RAFCs (2002). 	Improvement of the quality of WAFS high and medium level significant weather charts in the AFI Region
6	Monitor the implementation of regional procedures for the issuance of volcanic ash and tropical cyclone advisories and SIGMETs.	AFI/7 Rec. 7/3 and 7/4	<ul style="list-style-type: none"> Ongoing task Survey is in progress 	Improvement of the implementation of regional procedures for the issuance of volcanic ash and tropical cyclone advisories and SIGMET.
7	Review on a continuing basis the contents of Tables MET 1A and 1B and Tables MET 2A and MET 2B to ensure their validity in light of operational requirements and develop proposals to update them if necessary. See MET/SG/8 Conclusions 8/17 and 8/18	AFI/7	<ul style="list-style-type: none"> FASID Table MET 1A has been updated and will be maintained FASID Table MET 2B will be deleted 	Improvement of OPMET exchange
8	Review the meteorological procedures in the introductory text to Part VI B Meteorology of the Basic AFI Regional Plan/FASID, as well as Meteorological related issues in other sections of the Plan and relevant regional supplementary Meteorology procedures (SUPPs) in the Doc 7030, in the light of procedures employed in other regions and develop amendment proposals as appropriate, coordinating where necessary with other APIRG Sub-Groups.	APIRG/12	<ul style="list-style-type: none"> Amendments made since APIRG/15 in the plan <p>Ongoing task</p>	Maintain up-to-date procedures to improve safety and efficiency of air navigation.
9	Monitor developments in the CNS/ATM Systems with regard to meteorological requirements in the AFI Region and in coordination with AFI ATM Sub Group.	APIRG/14 Con. 14/43	<ul style="list-style-type: none"> Disolution of the Task Force on CNS/ATM and transferred to ATM Sub-Group 	Task transferred to ATM Sub-Group need to keep track on developments and provide inputs as required.
10	Develop guidelines for the use of GRIB and BUFR codes in the AFI Region.	APIRG/15 Con. 15/81	Recent task	Guidelines for the use of GRIB and BUFR codes Developed in the AFI Region.
11	Monitor the implementation in the AFI region of quality management system for the MET field.	APIRG/14 Con. 14/40	<ul style="list-style-type: none"> Recent task Two seminars in Dakar (French) and Nairobi (English) 	AFI region quality management system for the MET field is implemented

	Task	Source	Recent progress Next milestone and its deadline	Final result (completion)
12	Monitor training and qualification of aeronautical MET personnel	APIRG/15 Dec. 15/94	<ul style="list-style-type: none"> • Recent task • Survey in progress 	Improvement of the qualifications of aeronautical MET personnel and information on training and qualification of aeronautical MET personnel established and compiled
12	Information related to the type of the VSAT station to be included in the FASID Table MET 7 of the AFI plan and maintained.	MET/SG/8 Dec. 8/3	<ul style="list-style-type: none"> • Inclusion to be completed before July 2008 • Ongoing maintenance 	FASID Table MET 7 completed and maintained
13	Replace the existing regional procedures of the AFI ANP/FASID (Doc 7474) by the new Regional Meteorological Procedures as per MET/SG/8 Conclusion 8/15.	MET/SG/8 Con. 8/15	<ul style="list-style-type: none"> • Replacement to be completed before July 2008 	the AFI ANP/FASID (Doc 7474) improved
14	Implementation of the 30-hours TAF in the AFI Region	MET/SG/8 Dec. 8/16	<ul style="list-style-type: none"> • Recommendation should be available to the Secretariat by 30 September 2007. 	30-hours TAF implemented in the AFI region

3. Composition

Algeria, Burkina Faso, Cameroon, Congo, Côte d'Ivoire, Egypt, Eritrea, Ethiopia, France, Gabon, The Gambia, Ghana, Guinea, Kenya, Madagascar, Malawi, Morocco, Niger, Nigeria, Senegal, South Africa, Spain, Tunisia, United Kingdom, United Republic of Tanzania, Zambia, ASECNA, IATA, IFALPA and WMO.