International Civil Aviation Organization

MIDANPIRG ATM Sub Group

First Meeting (ATM SG/1)
(Cairo, Egypt, 9 - 12 June 2014)

Agenda Item 4: Airspace Management Issues

DEVELOPMENT OF THE MID eANP PARTS RELATED TO ATM

(Presented by the Secretariat)

SUMMARY

The aim of this paper is to initiate the development of the MID eANP Parts related to ATM.

Action by the meeting is at paragraph 3.

REFERENCES

- ATM SG/1 WP/4
- MIDANPIRG/14 Report

1. INTRODUCTION

1.1 MIDANPIRG/14, through Decision 14/24, agreed that the development of the MID eANP based on the Council-approved ANP Template, be included in the work programme of the different MIDANPIRG subsidiary bodies and the relevant Parts of the MID eANP be presented, as soon as available, to MSG/4 and/or MIDANPIRG/15 for endorsement.

2. DISCUSSION

2.1 The meeting may wish to recall that the details related to the developments of the eANP were presented in WP/4.

2.2 In accordance with the action plan for the developments of the eANP and MIDANPIRG/14 Conclusion 14/24 the meeting is invited to review and provide inputs to the MID eANP Parts related to ATM. The following is a non-exhausted list of the topics that should be addressed and agreed upon in order to complete the ATM Parts of the MID eANP:

- Volume I: FIR/UIR description (Table ATM I-1);
- Volume II: ATS Routes table (Table ATM II-1);
- Volume II: Secondary Surveillance Radar (SSR) Codes (Table ATM II-2);

2.3 The meeting is invited to recall that the FIR/UIR descriptions should be approved by the ICAO Council. The approved FIR/UIR descriptions are depicted in the Chart ATS 1 of the MID ANP, Volume I (Basic). Nevertheless, the descriptions were not listed in any table. Accordingly, discrepancies between the Chart ATS 1 developed by ICAO and the charts published in the States' AIPs have been observed.

2.4 Based on the above, the meeting is invited to agree on the source of the descriptions that will be included in the **MID eANP Table ATM I-1**, ICAO database or States AIPs. It is to be highlighted that the final version of the MID eANP will be circulated to States for comments and thereafter it will be submitted to the President of the ICAO Council for approval. The proposed table above is included in the MID eANP Volume I, Part IV – ATM at **Appendix A**.

2.5 The meeting may wish to recall that the agreed Regional ATS Routes are currently listed in the MID ANP, Volume I (Basic), Table ATS 1 –ATS Route Network, and each amendment related to these routes requires the approval of the Council. However, in the new eANP the routes will be listed in Volume II, under Specific Regional Requirements which does not require the ICAO Council approval.

2.6 Based on the above, each ICAO Region might manage its ATS Route Network differently. Accordingly, the following options would be considered for the development of the MID eANP **Table ATM II-1**:

a) listing all the agreed/required regional ATS routes (similar to the current Table ATS 1);
b) listing only those required ATS routes, which are not implemented;
c) listing only the over High Seas routes, or listing them in a separate Table; or
d) any other mechanism which might be suitable (TBD).

2.7 The meeting is invited to review and update the MID eANP Volume II, Part ATM at **Appendix B**, which includes samples of **Table ATM II-1** *ATS Route Network* and **Table ATM II-2** *SSR Codes*.

2.8 In connection with the above, an initial proposed Sample for the Monitoring of implementation Table for the ASBU Block 0 Module FRTO was incorporated in MID eANP Volume III, at **Appendix C** to this working paper, for the meeting review, comments and inputs. The monitoring tables should be further reviewed by the ANP WG/2 meeting in December 2014. Accordingly, States are invited to provide the ICAO MID Regional Office with their inputs/comments related to the initial proposed Monitoring of implementation Table by **30 July 2014**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) review the MID eANP ATM parts and provide comments/inputs; and

b) initiate the process of population of the ATM I-1 Table related to the FIR/UIR description;

c) agree on the mechanism to be used for the documentation/management of the ATS route requirements;

d) initiate work with regard to the MID eANP Volume III related to ATM and provide the ICAO MID Regional Office with their inputs/comments related to the initial proposed Monitoring of implementation Table by **30 July 2014**; and

e) agree on a date for the provision of necessary data to the ICAO MID Regional Office for the population of the different ATM Tables, for review by the ANP WG/2 meeting in December 2014.

APPENDIX A

MID ANP, VOLUME I

PART IV - AIR TRAFFIC MANAGEMENT (ATM)

1. INTRODUCTION

2.

1.1 This part of the MID ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of air traffic management (ATM) facilities and services in the MID region and complements the provisions of ICAO Standards, Recommended Practices and Procedures (SARPs) related to ATM. It contains stable plan elements related to the assignment of responsibilities to States for the ATM system requirements to be applied within the ICAO MID Region. region(s) in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the ATM facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan elements related to the assignment of States' responsibilities for the implementation of the ATM system and the mandatory requirements based on regional air navigation agreements related to ATM are contained in MID ANP Volume II, Part IV - ATM.

1.3 The MID ANP Volume III contains dynamic/flexible plan elements related to the implementation of air navigation systems and their modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) methodology and associated technology roadmaps described in the Global Air Navigation Plan. The Aviation System Block Upgrades (ASBU) modules are aimed at increasing capacity and improving efficiency of the aviation system whilst maintaining or enhancing safety level, and achieving the necessary harmonization and interoperability at regional and global level. This includes the regionally agreed ASBU modules applicable to the specified ICAO region/sub-region and associated elements/enablers necessary for the monitoring of the status of implementation of these ASBU modules.

Standards, Recommended Practices and Procedures

1.4 The Standards, Recommended Practices and Procedures (SARPs) and related guidance material applicable to the provision of ATM are contained in:

a) Annex 2 — *Rules of the Air*;

b) Annex 6 — *Operation of Aircraft*;

c) Annex 11 — *Air Traffic Services*;

d) *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM) (Doc 4444);

e) *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS) (Doc 8168); and

f) *Regional Supplementary Procedures* (Doc 7030).

2. GENERAL REGIONAL REQUIREMENTS

2.1 The description of the current Flight Information Regions (FIR)/Upper Information Regions (UIR), as approved by the ICAO Council, are contained in **Table ATM I-1** and depicted in the **Charts ATM I-1** and **ATM I-2**, respectively.

2.2 States should ensure that the provision of air traffic services (ATS) covers its own territory and those areas over the high seas for which it is responsible for the provision of those services, in accordance with **Charts ATM I-1** and **ATM I- 2**.

Regional ATS Routes and organized track structures

2.3 PIRGs are responsible for the optimization of the traffic flows through the continuous improvement of the regional ATS route network and organized track systems and implementation of random routing areas and free route airspace in the Region(s). Where applicable, details of the ATS routes within the Region(s) are contained in Volume II.

ICARD Global Database

2.4 The five-letter name-codes assigned to significant points should be coordinated through the ICAO Regional Office(s) and obtained from the ICAO International Codes and Routes Designators (ICARD) Global Database.

Aircraft Identification - SSR Code Assignments

2.5 The management of Secondary Surveillance Radar (SSR) codes is a key element of ATM in order to ensure continuous and unambiguous aircraft identification. The requirements related to the SSR code assignment system used in the MID Region is contained in Volume II.

Performance-based Navigation (PBN)

2.6 MIDANPIRG is responsible for the development of the Regional PBN Plan. States' PBN Plans should be consistent with the Regional PBN Plan.

Flexible Use of Airspace

2.7 States should implement civil/military cooperation and coordination mechanisms to enhance the application of the Flexible Use of Airspace concept, which will contribute to more direct routing with a commensurate saving in fuel and associated emissions. States should arrange for close liaison and coordination between civil ATS units and relevant military operational control and/or air defence units in order to ensure integration of civil and military air traffic or its segregation, if required. Such arrangements would also contribute to increasing airspace capacity and to improving the efficiency and flexibility of aircraft operations.

Reduced Vertical Separation Minimum (RVSM)/Regional Monitoring Agencies

2.8 The Middle East Regional Monitoring Agency (MIDRMA) is the designated Regional Monitoring Agency (RMA) responsible for monitoring the height-keeping performance and approval status of aircraft operating at these levels, in order to ensure that the continued application of RVSM meets the agreed regional safety objectives as set out by MIDANPIRG.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 TBD (if necessary)

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Table ATM I-1

FLIGHT INFORMATION REGIONS (FIR)/UPPER INFORMATION REGIONS (UIR) IN THE MID REGION

EXPLANATION OF THE TABLE

Column:

1 Name of the FIR/UIR / Location Indicator according to Doc 7910

2 Description of FIR/UIR lateral limits;

a. Describe separately in the table the limits of the UIRs if they are not similar to the FIRs limits.

3 Remarks — additional information, if necessary.

a. Describe vertical limits if necessary.

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	**2**	**3**
Amman	**FIR/UIR Amman** 292125N 0345743E On the Gulf of Aqaba 291102N 360420E 293002N 0363021E 295203N 0364521E 300003N 0373021E 302003N 0374021E 303003N 0380021E 313003N 0370021E 320002N 0390021E TO 320911N 0391206E At Jordan, Saudi Arabia and Iraqi boundaries. Then the point 321349N 0391804E At the Southern corner of the Jordanian-Iraqi boundaries	
Baghdad		
Bahrain	**FIR/UIR Bahrain** 281500.00N 0485200.00E 284400.00N 0494000.00E 270500.00N 0505500.00E 265500.00N 0511000.00E 260400.00N 0535700.00E 254900.00N 0530600.00E 240300.00N 0514700.00E 235816.00N 0514308.00E 240724.00N 0513526.00E 241458.00N 0513526.00E 244247.00N 0513422.00E 243817.00N 0512608.00E 243747.00N 0512421.00E 243731.00N 0512406.00E 243549.00N 0512449.00E 243116.00N 0512154.00E 242907.00N 0511849.00E 242816.00N 0510555.00E	**FIR** FL145 / SFC Class of airspace: C 4500 FT and above **UIR** UNL / FL 150

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	**2**	**3**
	243000.00N 0510000.00E 243243.00N 0505544.00E 244024.00N 0505134.00E 244440.00N 0504842.00E 244543.00N 0504828.00E 244653.00N 0504828.00E 244927.00N 0504804.00E 245244.00N 0504738.00E 245534.00N 0504543.00E 245631.00N 0504438.00E 245927.00N 0504329.00E 250243.00N 0504239.00E 250516.00N 0504101.00E 250758.00N 0503951.00E 251153.00N 0503940.00E 251355.00N 0503918.00E 251522.00N 0503848.00E 251849.00N 0503855.00E 252144.00N 0503818.00E 252336.00N 0503741.00E 252510.00N 0503716.00E 252828.00N 0503653.00E 253111.00N 0503544.00E 253543.98N 0503147.55E 254057.00N 0502607.75E 254227.58N 0502503.18E 254908.47N 0502200.71E 255301.53N 0501806.62E 255709.25N 0501735.44E 260450.10N 0501610.65E 261018.28N 0501852.34E 261514.69N 0501907.80E 262217.45N 0502026.57E 262423.93N 0502218.51E 263148.00N 0502315.00E 263420.00N 0502759.00E 265234.00N 0500855.00E 275000.00N 0490800.00E	Class of airspace:A
Beirut		
Cairo	**FIR Cairo** ***Northern border** 34 00 00N 024 10 00E – 34 00 00N 027 10 00E – 33 30 00N030 00 00E ***Eastern border** 31 50 00N 033 59 00E – 31 36 00N 034 30 00E then follow the International border to: 29 30 00N 034 55 00E – 29 30 00N 035 00 00E 28 06 00N 034 35 00E to 22 00 00N 038 00 00E ***Southern border** 22 00 00N 038 00 00E – 22 00 00N 025 00 00E ***Western border** 22 00 00N 025 00 00E – 31 40 00N 025 10 00E 34 00 00N 024 10 00E	UNL/GND **Class of airspace:** A –above FL145 D – At or below FL145

FIR/UIR Location Indicator	Lateral limits coordinates	Remarks
1	**2**	**3**
Damascus		
Emirates		
Jeddah		
Khartoum		
Kuwait		
Muscat		
Sanaa'		
Tehran		
Tripoli		

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APPENDIX B

MID ANP, VOLUME II

PART IV - AIR TRAFFIC MANAGEMENT (ATM)

1. INTRODUCTION

1.1 This part of the MID ANP, Volume II, complements the provisions in Standards, Recommended Practices and Procedures (SARPs) related to air traffic management (ATM). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of ATM facilities and services within a specified area in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300); and mandatory requirements related to ATM facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2. GENERAL REGIONAL REQUIREMENTS

Optimization of traffic flows

2.1 The Planning and Implementation Regional Groups (PIRG), through regional air navigation agreement, are responsible for the optimization of the traffic flows through the continuous improvement of the regional ATS route network and organized track systems and implementation of random routing areas and free route airspace in the Region through the set-up of appropriate mechanisms for regional and inter-regional planning and coordination.

2.2 Whenever practicable, States should, in close coordination with operators, establish the most efficient routings.

2.3 The requirements for regional ATS route network, in particular, for ATS routes over the high seas and airspace of undetermined sovereignty, should be agreed upon through regional air navigation agreement.

Note: States' AIPs and other States publications should be consulted for information on the implemented ATS routes.

Aircraft Identification-SSR Code Management

2.4 Within the context of air traffic management (ATM) and the provision of air traffic services (ATS), SSR code management is a key element of ATM to ensure continuous, unambiguous aircraft identification. The number of secondary surveillance radar (SSR) codes is limited and poor management of the assignment of SSR codes results in capacity constraints and aircraft delays. States and air navigation service providers (ANSP) should apply the SSR Code Allocation Plan approved by the MIDANPIRG. The SSR Codes Allocation Plan of the MID Region is addressed in the Specific Regional Requirements of Volume II.

3. SPECIFIC REGIONAL REQUIREMENTS

WORKING PRINCIPLES FOR THE CONSTRUCTION OF AIR ROUTES

3.1. The ATS routes agreed through regional air navigation agreement, or The ATS routes text to be specified by the Regions, as appropriate), are listed in **Table ATM II-1** agreed through regional air navigation agreement but not implemented for specific reasons (Exact **XX**/electronic database and reflected in the **Chart ATM II-1**. The routes should be developed based on the ICAO SARPS and PANS-OPS and PANS-ATM criteria and parameters, the following should be taking into consideration for the management of MID Region ATS route Network:

a) Where possible, routes should be established to increase efficiency, reduce complexity and provide additional benefits to users;

b) separation assurance principles should apply;

c) routes should be established with sufficient separation to operate independently;

d) where possible, routes in a radar environment should be procedurally (laterally) separated;

e) segregated tracks should be established on medium/high density routes and be determined by set criteria;

f) where required, routes should be constructed to support terminal area management procedures, e.g. SID s/SRDs/STARs and flow management techniques, as applicable;

g) holding patterns should be laterally separated from other tracks, and tolerances captured within a single sector;

h) a maximum of two routes containing high traffic density should be blended at a single point. Inbound tracks should be blended at <90 degrees. Up to three low traffic density routes may be blended at a single point;

i) multiple crossing points involving major traffic flows should be avoided.

j) en-route crossings should be minimized. Where crossings are inevitable, they should, where possible, be established for cruise configuration. Such crossings should occur, wherever possible, within radar coverage;

k) airspace sectorization should take account of the route structure, and workload considerations. If necessary, airspace should be re-sectorized to accommodate changes to air route configuration;

l) routes should be constructed so as to reflect the optimum navigation capabilities of the principle users (e.g. RNAV or conventional);

m) the prime determinant should not be the number of track miles. A small increase in track miles may optimize traffic flows, avoid unpredicted delays or avoid holding requirements. Consideration should also be given to the provision of a range of routes which will permit operators to choose cost-efficient routes over the range of expected seasonal wind patterns;

n) due allowance should be given to existing and future flight data processing (FDP) and radar data processing (RDP) capability (i.e. notification of messages for auto hand-off etc.);

o) periodic safety audit and review process of routes should be conducted to test demand against capacity criteria, and the principles. This should ideally be done in parallel with the annual sectorization review; and

p) routes that can no longer be justified should be deleted.

Table ATM II -1 MID Region ATS Route Network

EXPLANATION OF THE TABLE

Column

1 — *Designator of ATS route and Type (Conventional, RNAV5 or RNAV1 etc.)*

2 — *Significant points defining the ATS routes. Only prominent locations have been listed. Additional points where facilities are provided to complete navigational guidance along a route, but not otherwise marking significant characteristics of the route (change of heading of centre line, intersection with other routes, etc.) have normally not been included. Locations shown in parentheses indicate significant points outside the Region.*

Note 1. — *Not representing the operator's requirements. Operationally required route and/or navaids are shown in square brackets ([ ]).*

Note 2. — *Subject to further study. Including the radio navigation aid coverage.*

Note 3 — *Subject to military agreement.*

Note 4. — *Not acceptable at present.*

Note 5. — *At present, implementation possible only during specific periods (e.g. weekends, nights, etc., as published).*

Note 6. — *At present, implementation of RNAV route only possible above FL 300, or as published.*

Note 7. — *Unidirectional*

Note 8. — *For ATS route or portion thereof is RNAV 1*

Whenever reference to name State is made in Table ATM II-XX in connection with the above notes, the following abbreviations and those indicated in Location Indicators (Doc 7910), are used:

HE Egypt

HL Libyan Arab Jamahiriya

HS Sudan

OB Bahrain

LOWER AIRSPACE		UPPER AIRSPACE	
Designator Type	Significant Points	Designator Type	Significant Points
1	2	1	2
A1	METRU 340000N 0250900E SOKAL 323601N 0273706E KATEX 320701N 0282436E BOPED 312939N 0292655E ALEXANDRIA (NOZ) 311113N 0295701E MENKU 310531N 0301806E CAIRO (CVO) 300532N 0312318E	UA1	METRU 340000N 0250900E SOKAL 323601N 0273706E KATEX 320701N 0282436E BOPED 312939N 0292655E ALEXANDRIA (NOZ) 311113N 0295701E MENKU 310531N 0301806E CAIRO (CVO) 300532N 0312318E
A16	RASDA 330600N 0305700E MELDO 320201N 03104406E BALTIM (BLT) 313144N 0311035E DEGDI 311429N 0311035E CAIRO (CVO) 300532N 0312318E	UA16	RASDA 330600N 0305700E MELDO 320201N 03104406E BALTIM (BLT) 313144N 0311035E DEGDI 311429N 0311035E CAIRO (CVO) 300532N 0312318E
A408	(ADDIS ABABA) GWZ SALEH 140000N 0420000E ORNIS 1416.2N04236.9E HODEIDAH 1446.4N 04259.2E	UA408	(ADDIS ABABA) GWZ SALEH 140000N 0420000E ORNIS 1416.2N04236.9E HODEIDAH 1446.4N 04259.2E
A411	BNINA (BNA) 3207.28N 0201513E NASER 3151.2N 2355.3E LOSUL 314100N 250800E SIDI BARANI (BRN) 313532N 260020E	UA411	BNINA (BNA) 3207.28N 0201513E NASER 3151.2N 2355.3E LOSUL 314100N 250800E SIDI BARANI (BRN) 313532N 260020E

ALLOCATION AND ASSIGNMENT OF SECONDARY SURVEILLANCE RADAR (SSR) CODES IN THE MID REGION

Objectives of the new code allotment plan (CAP)

3.2. The new code allotment plan (CAP) shall provide States in the MID Region with a means to co-ordinate the use of 4096 secondary surveillance radar (SSR) codes in Mode A/3 in the most efficient and economical manner. *The SSR Codes Allocation Plan of the MID Region is at* **Table ATM II-2.**

3.3. The plan shall foster the early implementation of a method which will ultimately allow an assigned four-digit code to be maintained for the longest possible time during a flight in the MID Region.

General principles to meet the objective

3.4. The detailed principles governing the use of SSR codes in the MID Region are based on the following general principles which are complementary to the world-wide provisions (PANS-RAC, Doc 4444, Part X). These principles provide for a smooth transition from the present use of SSR to that mentioned in paragraph .

3.5. Mode A/3 codes shall be used for A TS purposes only.

3.6. Codes will be allocated to ATS units on the basis of duly justified operational requirements and their number will be established based on the number of aircraft to be handled simultaneously within a specified area and for a determined period of protection during traffic peaks.

3.7. Code requirements will be expressed in terms of complete code series (sixty-four four-digit codes in each series) or specified parts thereof. In special cases such requirements may even cover designated four-digit codes only.

3.8. Codes intended to be used as international transit codes will be allocated to specific ACCs for use within participating areas (PA) consisting of the areas of ATS responsibility of several States.

3.9. Codes intended to be used for domestic purposes will be allotted to States for use by ATS units which require limited geographical protection for such codes only.

Operational and technical factors involved

3.10. The following operating conditions are likely to persist for the lifetime of the new CAP concept:

a) both auto-active and passive SSR decoding equipment will be used for ATS purposes in the MID Region;

b) because of this, comparatively simple code assignment methods like the assignment by reference to ATC sectors will coexist with, and vertically or laterally adjoin, more sophisticated, computer-assisted code assignment methods; and

c) as 4096 code capability in Mode A/3 is a prerequisite for a full application of sophisticated code assignment methods, it appears essential to make this capability a mandatory requirement for aircraft operating international transit flights. For this reason, an environment of sixty-four code capability is not taken into account in this context.

3.11. For guidance material detailing the requirements for the development of automated SSR code assignment systems, refer to the attachment — Considerations Relevant to the Progressive Sophistication of Treatment of S SR-Derived Data for ATS Purposes.

Permanent code distribution and categories

Distribution of codes

3.12. Certain codes are reserved for special purposes on a world-wide scale. The remaining codes series for use in the region are, in this CAP, divided into two distinct categories: transit codes for international use and domestic codes for national use.

3.13. The number of codes used for international transit purposes has to be relatively high, due to the extended geographical protection required in order to reduce to a minimum the chances of confusion between the identities of two different aircraft assigned the same four-digit code. Sufficient protection must be allowed to prevent interference with affected PAs in neighbouring regions.

3.14. The number of codes used for domestic purposes can be kept relatively small, as these may be repeated in different States, or as the case may be, even within the same State.

3.15. Where required, the allocation possibilities can be increased significantly by dividing specific code series into eight blocks of eight four-digit codes.

Special purpose codes

3.16. Specific codes in certain series are reserved for special purposes as follows:

Series 00 – Code 0000:
Available as a general purpose code for domestic use by any State.[Codes 0001 – 0077 are available for domestic purposes (cf. paragraph 4.2.2)]

Series 20 – Code 2000:
To be used by flights required to set a code without specific ATC instructions when entering an area where SSR coverage is available. [Codes 2001 to 2077 are available for international transit purposes.]

Series 75 – Code 7500:
Reserved for use in the event of unlawful interference. [Codes 7501 to 7577 are available for domestic use subject to specific conditions. (cf. paragraph 4.2.3.)]

Series 76 – Code 7600:
Reserved for use in the event of radio-telephony communication failure. [Codes 7601 to 7677 are available for domestic use subject to specific conditions (cf. paragraph 4.2.3]

Series 77 – Code 7700
Reserved for use in the event of emergencies. [Codes 7701 to 7777 are temporarily unavailable.]

3.17. Code blocks in the series 00 (with the exception of code 0000) are allotted to States for domestic purposes so that every State in the region is allotted two octal blocks of four-digit codes in such a manner that a code duplication is avoided at the State borders.

3.18. States may use discrete codes 7501 to 7577 and 7601 to 7677 for domestic purposes provided that they have ascertained that in the area concerned and in affected adjacent areas:

a) no sixty-four code ground equipment is in operation; and

b) 4096-code ground decoding equipment has the capability of permitting the use of such codes without generating the aural or visual alarms associated with the special purpose codes 7500 and 7600 (cf. Annex 10, Volume I, Part I, 2.5.4).

Transit codes

3.19. Transit codes area allocated to specific area control centres (ACCs) or approach control offices (APPs) for assignment to international transit flights. Aircraft will retain the assigned code beyond national boundaries but not normally beyond MID Region PA (paragraph 4.3.4 c) refers).

3.20. Initially the allotment of transit codes in the MID Region is based on one participating area which includes the following flight information centres/area control centres (FICs/ACCs):

AMMAN	JEDDAH
BAGHDAD	KHARTOUM*
BAHRAIN	KUWAIT
BEIRUT	MUSCAT
CAIRO*	SANA'A
DAMASCUS	TEHRAN
EMIRATES	TRIPOLI

**Note.— FICs/ACCs in the AFI Region which must be included in all SSR code allocation plans for the MID Region because of their geographical location.*

3.21. Transit codes shall be assigned in accordance with the following principles governing the originating region code assignment method (ORCAM):

a) when an aircraft enters the MID Region (either on departure or in flight), it will be assigned a specific four-digit code by the first ATS unit concerned in the region. This code will be selected from a given stock of code series allocated in such a manner that duplication of codes assigned by different centres is prevented within the region;

b) each flight will keep the original code assigned on entering the region for the whole flight time within that region. Appropriate code protection criteria have to be applied in order to avoid duplication by too early reassignment of the same code. Efforts should be made to reduce the “protection period” referred to in paragraph 4.3.4 d) while retaining adequate protection; and

c) normally a code change will be required at the time a flight crosses the MID Region boundary. However, in specific cases and by specific arrangements agreed between the ATS units affected during the continuation of the flight, the assigned code may be retained beyond the MID Region boundary.

3.22. In establishing the number of transit code series, account has been taken of the following factors:

a) the lifetime of the air navigation plan of which SSR is but one element. At present this does not exceed a maximum of seven years;

b) the air traffic forecasts for the MID Region in order to determine the likely growth of air traffic classified as international in the region;

c) the requirement for code series for a given ATC unit is derived from the total number of aircraft requiring assignment of a specific code during the busiest period of activity of that ATC unit;

d) in calculating the required code series in accordance with c) above, a "protection period" of approximately three hours is used, i.e. any specific code assigned to an aircraft by an ATC unit is normally available for re-use after a period of three hours following the initial assignment of the code; and

e) the assignment of a specific code to an aircraft is made once the aircraft in question is ready for departure on a flight, or when the aircraft in flight is expected to come under imminent control. Permanent code assignments based on the flight number or any other systematic distinguishing features cannot as a general rule be accepted because of the wasteful effects on the economy in the use of codes required.

3.23. Common criteria applying to traffic figures will have to be established to assess the number of transit codes required by each ACC or APP in the region. The distribution of transit codes should be done by reference to the portion of peak international flights originating from the ACC or APP and that will be assigned an SSR code. A fix time evaluation of each facility could be used to determine the SSR code requirements.

3.24. All code series allocated to the MID Region must be protected from affected PAs in neighbouring regions.

Domestic codes

3.25. Domestic codes are allocated for use by flights which, throughout their flight, remain within the boundaries for the agreed area of use of such codes (normally within one State). The relevant code series are: 01, 04, 12, 13, 14, 15, 16, 20, 24, 32, 34, 36, 40, 42, 43, 44, 45, 46, 47, 52, 53, 54, 63, 65, 73 and 74. In addition codes 0001 to 0077, 7501 to 7577 and 7601 to 7677 may be available in accordance with the conditions specified in paragraphs 4.2.2 and 4.2.3 respectively.

3.26. Domestic codes should be used so that utmost economy in the number of codes required is achieved. As national requirements vary considerably, no definite rules can at present be established; however, in order to assist States, and in order to facilitate required international co-ordination of use of domestic codes in border areas, the following guidelines are provided.

3.27. As a general rule, codes employed primarily for transit purposes may be used for domestic purposes in those States where a buffer of one FIR exists between the area where the code is used for transit and that where it is used for domestic purposes. Based on appropriate agreements between the ATC units affected, exceptions to this rule may be made, provided that it is ensured that this will not lead to difficulties.

3.28. With regard to domestic codes used primarily for terminal control purposes (terminal control area (TMA)/APP and ground controlled approach system (GCA)), it is assumed that, unless specified otherwise, the area of operational use of the code concerned corresponds to the area of use of the associated air/ground communication channel.

3.29. Domestic codes used for terminal purposes (TMA/APP and GCA) or used within specified portions of the airspace (sectors) will be ensured protection in these functions. Adjacent States may use such codes for their domestic purposes provided a buffer equal to one sector or a distance of 60 NM between the closest edges of the two areas of use exists.

Monitoring of the plan

3.30. Whilst full implementation of the CAP must inevitably be achieved gradually, it is expected that progressive development of improved ground facilities will allow in future an increasing number of States to adhere to the provisions foreseen in the plan.

3.31. Provisions regarding the progressive implementation of the SSR CAP and its monitoring should be agreed by the MID Region. States expecting to introduce SSR facilities are requested to advise the ICAO regional office as to their intended use of codes at least six months in advance, in order to permit timely accomplishment of any necessary co-ordination.

ABBREVIATIONS AND GLOSSARY OF TERMS

PA = Participating area	An area of specified dimensions comprising the areas of ATS responsibility of several States wherein a four-digit code assigned to a specific aircraft engaged in an international flight is normally retained by this aircraft while operating in that area.
CAP = ICAO SSR Code Allotment Plan	
Region = "MID Region" of ICAO	
ORCAM = Originating region code assignment method	(See paragraph 4.3.3)
Basic code	An SSR identity code containing combinations of A and B pulses only (also replies from a 4 096 code transponder where no C or D pulses are present): (Z1,Z2, (0, 0) with Zi = 0, 1, 2, 7).
Discrete code	An SSR identity code containing all those combinations of A, B, C and D pulses which do not constitute a basic code (cannot be generated by a sixty-four code transponder): (Z1, Z2, Z3, Z4) with Zi = 0, 1, 2, 7) and Z3 + Z4 ? 0.
Four-digit code	An SSR identity code containing combinations of A, B, C and D pulses (any reply generated by a 4 096 code transponder): (Z1, Z2, Z3, Z4) with Zi = 0, 1, 2 ..... 7).
Code series	A group of the sixty-four four-digit codes having the same first two digits.
Code block	A continuous sequence of four-digit codes within a code series. Specific "octal" blocks of eight sequential codes having common first three digits may be identified by reference to the third digit of the full four-digit code (e.g. 0-block = codes XX00 to XX07. Codes 0010 to 0017 may be designated as codes 00 (1), codes 0020 to 0027 as codes 00 (2), etc.).
Code assignment	Distribution of SSR codes to aircraft (cf. *Procedures for Air Navigation Services — Rules of the Air and Air Traffic Services* (PANS-RAC, Doc 4444).
Code allocation	Distribution of SSR codes to services (cf. PANS-RAC).
Code allotment	Distribution of SSR codes to areas or countries (cf. PANS-RAC).
Transit code	A code allocated to a specific ATC unit for assignment to an aircraft engaged in an international flight and which will be retained by this aircraft at least while operating within the related PA.
Domestic code	A code allotted to a specific State for use by a designated ATC unit within that State in relation to flights which remain throughout their operation within the agreed area of use of the code concerned.

Table ATM II-2 - SSR Code Allocation Plan

Code	AMMAN	BAGHDAD	BAHRAIN	BEIRUT	CAIRO	DAMASCUS	EMIRATES	JEDDAH	KHARTOUM	KUWAIT	MUSCAT	SANA'A	TEHRAN	TRIPOLI
0000														
0001-0077									-					-
0100-0177									T					-
0200-0277									-		*	*		-
0300-0377								*	-		*	*		-
0400-0477	D		*	*	*	*	D	*			*	*	*	*
0500-0577	–	–	–	–	–	–	T	–	*	–	–	–	–	
0600-0677	–	–	–	–	–	–	–	–	*	T	–	–	–	
0700-0777	T	–	–	–	–	–	–	–	*	–	–	–	–	
1000-1077	–	T	–	–	–	–	–	–		–	–	–	–	
1101-1177	–	–	–	–	–	–	–	–	-	–	–	–	T	-
1200-1277		*	D		*		D	*	D	*	*	*	*	*
1300-1377			*		*		D	*			*		*	D
1400-1477	*	*	*		D		D	*	-	D			*	-
1500-1577	D	*	*	*		*	*	*	-	*	*		D	-
1600-1677	*	*	D		D		*	*	-	*	*	*	*	-
1700-1777							T		-					-
2001-2077		*	*				*			*	*		D	
2100-2177	–	–	T	–	–	–	–	–		–	–	–	–	
2200-2277	–	–	T	–	–	–	–	–		–	–	–	–	
2300-2377	–	–	–	–	T	–	–	–	-	–	–	–	–	-
2400-2477	D		*		*		D	*	-		*		*	-
2500-2577	–	–	–	T	–	–	–	–		–	–	–	–	
2600-2677	–	–	T	–	–	–	–	–	-	–	–	–	–	-
2700-2777	–	–	–	–	T	–	–	–	-	–	–	–	–	-
3000-3077	–	–	–	–	–	T	–	–	*	–	–	–	–	
3100-3177	–	–	–	–	–	–	–	T	*	–	–	–	–	
3200-3277	*	*	*	*	*	*	*	*	-	*	*	D	D	-
3300-3377	*				D		D	*	-		*	*		-
3400-3477	*	D	*		*	*	D	*	-	*	*		*	-
3500-3577	–	–	–	–	–	–	–	T		–	–	–	–	
3600-3677		*	*				*		-	*	*		D	-
3700-3777	–	–	–	–	–	–	T	–	-	–	–	–	–	-

Code	AMMAN	BAGHDAD	BAHRAIN	BEIRUT	CAIRO	DAMASCUS	EMIRATES	JEDDAH	KHARTOUM	KUWAIT	MUSCAT	SANA'A	TEHRAN	TRIPOLI
4000-4077	–	–	–	–	–	–	–	–	-	–	T	–	–	T
4100-4177	–	–	–	–	–	–	–	–	-	–	–	–	T	-
4200-4277	*	*	*	*	*	*	*	*	-	*	*		D	-
4300-4377	*	*	*	D	*	*	*	D	-	*	*	*		-
4400-4477	*	*	D		D		*	*	-	*	*	*	*	-
4500-4577	*	*	*		*		*	D			*	*		
4600-4677	*	*	*	*	*	D	*	D	-	*	*	*		-
4700-4777	*		*		D		*	*	-		D	*	*	-
5000-5077									-					-
5100-5177	–	–	–	–	–	–	–	–	-	–	–	–	–	-
5200-5277	*	*	*		*		*	D	D		*	*		*
5300-5377		*	D				*	*	D	*	*	*	*	*
5400-5477		*	D				*	*		*	*	*	*	
5500-5577														
5600-5677														
5700-5777	–	–	–	–	–	T	–	–		–	–	–	–	
6000-6077														
6100-6177	–	–	–	–	–	–	–	T	-	–	–	–	–	-
6200-6277							T		-					-
6300-6377		*	*				*	D		*	*		D	
6400-6477	–	–	–	–	–	–	–	–		–	–	–	–	
6500-6577			*				*	*			D	*	*	
6600-6677	–	–	–	–	–	–	–	–		–	T	–	–	
700-6777	–	–	–	–	–	–	–	–		–	–	–	T	
7001-7077	–	–	–	–	–	–	–	–		–	–	T	–	
7100-7177	–	–	–	–	–	–	–	–		–	–	–	–	-
7200-7277											*		*	
7300-7377			*				*	*			D	*	*	
7400-7477	*	D	*			*		*	-	*	*		*	-
7500														
7600 XX														
7700														

APPENDIX C

MID AIR NAVIGATION PLAN

VOLUME III

TABLE OF CONTENTS

MID ANP, VOLUME III

PART 0 – INTRODUCTION

1. INTRODUCTION

1.1 The background to the publication of ANPs in three volumes is explained in the Introduction in Volume I. The procedure for amendment of Volume III is also described in Volume I. Volume III contains dynamic/flexible plan elements related to the implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the Global Air Navigation Plan (GANP).

1.2 The information contained in Volume III is related mainly to:

- Planning: objectives set, priorities and targets planned at regional or sub-regional levels;
- Implementation monitoring and reporting: monitoring of the progress of implementation towards targets planned. This information should be used as the basis for reporting purposes (i.e.: global and regional air navigation reports and performance dashboards); and/or
- Guidance: providing regional guidance material for the implementation of specific system/procedures in a harmonized manner.

1.3 The management of Volume III is the responsibility of the MIDANPIRG.

1.4 Volume III should be used as a tool for monitoring and reporting the status of implementation of the elements planned here above, through the use of tables/databases and/or references to online monitoring tools, as endorsed by MIDANPIRG. The status of implementation is updated on a regular basis as endorsed by MIDANPIRG.

2. AVIATION SYSTEM BLOCK UPGRADES (ASBUS), MODULES AND ROADMAPS

2.1. The ASBU Modules and Roadmaps form a key component to the GANP, noting that they will continue to evolve as more work is done on refining and updating their content and in subsequent development of related provisions, support material and training.

2.2. Although the GANP has a worldwide perspective, it is not intended that all Block Upgrade Modules are required to be applied in every State, sub-region and/or region. Many of the Block Upgrade Modules contained in the GANP are specialized packages that should be applied only where the specific operational requirement exists or corresponding benefits can be realistically projected. Accordingly, the Block Upgrade methodology establishes an important flexibility in the implementation of its various Modules depending on a region, sub-region and/or State's specific operational requirements. Guided by the GANP, ICAO MID regional, sub-regional and State planning should identify Modules which best provide the needed operational improvements.

MID ANP, VOLUME III

PART I - GENERAL PLANNING ASPECTS (GEN)

1. PLANNING METHODOLOGY

1.1 Guided by the GANP, the regional planning process starts by identifying the homogeneous ATM areas, major traffic flows and international aerodromes. An analysis of this data leads to the identification of opportunities for performance improvement. Modules from the Aviation System Block Upgrades (ASBUs) are evaluated to identify which of those modules best provide the needed operational improvements. Depending on the complexity of the module, additional planning steps may need to be undertaken including financing and training needs. Finally, regional plans would be developed for the deployment of modules by drawing on supporting technology requirements. This is an iterative planning process which may require repeating several steps until a final plan with specific regional targets is in place. This planning methodology requires full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by all for implementation.

1.2 Block 0 features Modules characterized by technologies and capabilities which have already been developed and implemented in many parts of the world today. It therefore features a near-term availability milestone, or Initial Operating Capability (IOC), of 2013 for high density based on regional, sub-regional and State operational need. Blocks 1 through 3 are characterized by both existing and projected performance area solutions, with availability milestones beginning in 2018, 2023 and 2028 respectively.

2. REVIEW AND EVALUATION OF AIR NAVIGATION PLANNING

2.1. The progress and effectiveness against the priorities set out in the regional air navigation plans should be annually reported, using a consistent reporting format, to ICAO.

2.2. Performance monitoring requires a measurement strategy. Data collection, processing, storage and reporting activities supporting the identified global/regional performance metrics are fundamental to the success of performance-based approaches.

2.3. The air navigation planning and implementation performance framework prescribes reporting, monitoring, analysis and review activities being conducted on a cyclical, annual basis. An Air Navigation Reporting Form (ANRF) reflecting selected key performance areas as defined in the Manual on Global Performance of the Air Navigation System (ICAO Doc 9883) has been developed for each ASBU Module. The ANRF is a customized tool which is recommended for the application of setting planning targets, monitoring implementation, and identifying challenges, measuring implementation/performance and reporting. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in the ANRF template. A sample of the ANRF is provided in **Appendix A**. A sample Template of a planning table which may be used to show the elements planned in an ICAO region is provided in **Appendix B**.

3. REPORTING AND MONITORING RESULTS

3.1 Reporting and monitoring results will be analyzed by the PIRGs, States and ICAO Secretariat to steer the air navigation improvements, take corrective actions and review the allocated objectives, priorities and targets if needed. The results will also be used by ICAO and aviation partner stakeholders to develop the annual Global Air Navigation Report. The report results will provide an opportunity for the international civil aviation community to compare progress across different ICAO regions in the establishment of air navigation infrastructure and performance-based procedures.

3.2 The reports will also provide the ICAO Council with detailed annual results on the basis of which tactical adjustments will be made to the performance framework work programme, as well as triennial policy adjustments to the GANP and the Block Upgrade Modules.

3.3 **Table GEN III-1** contains a minimum set of High-Level Implementation Indicator(s) for each of the eighteen ASBU Block 0 Modules necessary for the monitoring of these Modules (if identified as a priority for implementation at regional or sub-regional level). These high-level indicators are intended to enable comparison between ICAO Regions with respect to ASBU Block 0 Modules and will apply only to commonly selected ASBU Modules. All regions/PIRGs reserve the right to select the ASBU Modules relevant to their needs and to endorse additional indicators, as deemed necessary. No reporting is required for ASBU Block 0 Modules that have not been selected.

Note: The priority for implementation as well as the applicability area of each selected ASBU Block 0 Module is to be defined by the MIDANPIRG. This should be reflected in Part II – Air Navigation System Implementation.

TABLE GEN III-1 – HIGH-LEVEL IMPLEMENTATION INDICATOR(S) FOR EACH ASBU BLOCK 0 MODULE

Explanation of the Table

1 Block 0 Module Code
2 Block 0 Module Title
3 High level Implementation Indicator
4 Additional information as deemed necessary.

Module Code	Module Title	High level Implementation Indicator	Remarks
1	2	3	4
B0-APTA	Optimization of Approach Procedures including vertical guidance	% of international aerodromes having at least one runway end provided with APV Baro-VNAV or LPV procedures	
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation	% of applicable international aerodromes having implemented increased runway throughput through optimized wake turbulence separation	1. Not to be considered for the first reporting cycles due to lack of maturity. 2. List of ADs to be established through regional air navigation agreement.
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	% of applicable international aerodromes having implemented AMAN / DMAN	1. Not to be considered for the first reporting cycles due to lack of maturity. 2. List of ADs to be established through regional air navigation agreement.
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	% of applicable international aerodromes having implemented A-SMGCS Level 2	List of ADs to be established through regional air navigation agreement.
B0-ACDM	Improved Airport Operations through Airport-CDM	% of applicable international aerodromes having implemented improved airport operations through airport-CDM	List of ADs to be established through regional air navigation agreement.
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs	
B0-DATM	Service Improvement through Digital Aeronautical Information Management	- % of States having implemented an AIXM based AIS database - % of States having implemented QMS	

Module Code	Module Title	High level Implementation Indicator	Remarks
1	2	3	4
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	- % of States having implemented SADIS / WIFS - % of States having implemented QMS	
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	% of FIRs in which FUA is implemented	
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	% of FIRs within which all ACCs utilize ATFM systems	
B0-ASUR	Initial capability for ground surveillance	% of FIRs where ADS-B OUT and/or MLAT are implemented for the provision of surveillance services in identified areas.	1. Not to be considered for the first reporting cycles due to lack of maturity.
B0-ASEP	Air Traffic Situational Awareness (ATSA)	% of States having implemented air traffic situational awareness	1. Not to be considered for the first reporting cycles due to lack of maturity.
B0-OPFL	Improved access to optimum flight levels through climb/descent procedures using ADS-B	% of FIRs having implemented in-trail procedures	1. Not to be considered for the first reporting cycles due to lack of maturity.
B0-ACAS	ACAS Improvements	% of States requiring carriage of ACAS (with TCAS 7.1 evolution)	
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	% of States having implemented ground-based safety-nets (STCA, APW, MSAW, etc.)	
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	- % of international aerodromes / TMAs with PBN STAR implemented - % of international aerodromes/TMA where CDO is implemented	
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	% of FIRs utilising data link en-route in applicable airspace	
B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	- % of international aerodromes / TMAs with PBN SID implemented - % of international aerodromes/TMA where CCO is implemented	

Appendix A

SAMPLE TEMPLATE

1. AIR NAVIGATION REPORT FORM (ANRF)

(This template demonstrates how ANRF to be used.
The data inserted here refers to ASBU B0-05/CDO as an example only)

Regional and National planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-05/CDO: Improved Flexibility and Efficiency in Descent Profiles

Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations

3. ASBU B0-05/CDO: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y

4. ASBU B0-05/CDO: Planning Targets and Implementation Progress

5. Elements	6. Targets and implementation progress (Ground and Air)
1. CDO	
2. PBN STARs	

7. ASBU B0-05/CDO: Implementation Challenges

Elements	Implementation Area			
	Ground system Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. CDO				
2. PBN STARs				

8. Performance Monitoring and Measurement 8A. ASBU B0-05/CDO: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**
1. CDO	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented
2. PBN STARs	Indicator: Percentage of international aerodromes/TMAs with PBN STARs implemented Supporting metric: Number of international aerodromes/TMAs with PBN STARs implemented

8. Performance Monitoring and Measurement 8 B. ASBU B0-05/CDO: Performance Monitoring	
Key Performance Areas (Out of eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF)	**Where applicable, indicate qualitative Benefits,**
Access & Equity	Not applicable
Capacity	Not applicable
Efficiency	Cost savings through reduced fuel burn. Reduction in the number of required radio transmissions.
Environment	Reduced emissions as a result of reduced fuel burn
Safety	More consistent flight paths and stabilized approach paths. Reduction in the incidence of controlled flight into terrain (CFIT).
9. Identification of performance metrics: It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified on page 5. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 5. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.	

AIR NAVIGATION REPORT FORM
HOW TO USE - EXPLANATORY NOTES

1. **Air Navigation Report Form (ANRF):** This form is nothing but the revised version of Performance Framework Form that was being used by Planning and Implementation Regional Groups (PIRGs)/States until now. The ANRF is a customized tool for Aviation System Block Upgrades (ASBU) Modules which is recommended for application for setting planning targets, monitoring implementation, identifying challenges, measuring implementation/performance and reporting. Also, the PIRGs and States could use this report format for any other air navigation improvement programmes such as Search and Rescue. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in this ANRF template. The results will be analysed by ICAO and aviation partners and utilized in developing the Regional Performance Dashboard and the Annual Global Air Navigation Report. The conclusions from the Global Air Navigation Report will serve as the basis for future policy adjustments, aiding safety practicality, affordability and global harmonization, amongst other concerns.

2. **Regional/National Performance objective:** In the ASBU methodology, the performance objective will be the title of the ASBU module itself. Furthermore, indicate alongside corresponding Performance Improvement area (PIA).

3. **Impact on Main Key Performance Areas:** Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations/benefits to the ATM community. The expectations/benefits are referred to eleven Key Performance Areas (KPAs) and are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. The KPAs applicable to respective ASBU module are to be identified by marking Y (Yes) or N (No). The impact assessment could be extended to more than five KPAs mentioned above if maturity of the national system allows and the process is available within the State to collect the data.

4. **Planning Targets and Implementation Progress:** This section indicates planning targets and status of progress in the implementation of different elements of the ASBU Module for both air and ground segments.

5. **Elements related to ASBU module:** Under this section list elements that are needed to implement the respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU Module (example: In ASBU B0-80/ACDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-30/DAIM, note that WGS-84 and eTOD are not included) but at the same time if they are closely linked to the module, ANRF should specify those elements. As a part of guidance to PIRGs/States, every Regional ANP will have the complete list of all 18 Modules of ASBU Block 0 along with corresponding elements, equipage required on the ground and in the air as well as metrics specific to both implementation and performance (benefits).

6. **Targets and implementation progress (Ground and Air):** Planned implementation date (month/year) and the current status/responsibility for each element are to be reported in this section. Please provide as much details as possible and should cover both avionics and ground systems. This ANRF being high level document, develop necessary detailed action plan separately for each element/equipage.

7. **Implementation challenges**: Any challenges/problems that are foreseen for the implementation of elements of the Module are to be reported in this section. The purpose of the section is to identify in advance any issues that will delay the implementation and if so, corrective action is to be initiated by the concerned person/entity. The four areas, under which implementation issues, if any, for the ASBU Module to be identified, are as follows:

- Ground System Implementation:
- Avionics Implementation:
- Procedures Availability:
- Operational Approvals:

Should be there no challenges to be resolved for the implementation of ASBU Module, indicate as "NIL".

8. **Performance Monitoring and Measurement:** Performance monitoring and measurement is done through the collection of data for the supporting metrics. In other words, metrics are quantitative measure of system performance – how well the system is functioning. The metrics fulfil three functions. They form a basis for assessing and monitoring the provision of ATM services, they define what ATM services user value and they can provide common criteria for cost benefit analysis for air navigation systems development. The Metrics are of two types:

A. **Implementation Monitoring**: Under this section, the indicator supported by the data collected for the metric reflects the status of implementation of elements of the Module. For example- Percentage of international aerodromes with CDO implemented. This indicator requires data for the metric "number of international aerodromes with CDO".

B. **Performance Monitoring**: The metric in this section allows to asses benefits accrued as a result of implementation of the module. The benefits or expectations, also known as Key Performance Areas (KPAs), are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present until experienced gained, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. Where applicable, mention qualitative benefits under this section.

9. **Identification of performance metrics:** It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified on page 6. For the family of ASBU modules selected for air navigation implementation, States/Region to choose the applicable performance (benefit) metrics from the list available on page 6. This approach would facilitate States in collecting data for the chosen performance metrics. States/Region, however, could add new metrics for different KPAs based on maturity of the system and ability to collect relevant data.

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MID ANP, VOLUME III

PART II – AIR NAVIGATION SYSTEM IMPLEMENTATION

1. INTRODUCTION

1.1 The planning and implementation of the ICAO Aviation System Block Upgrades (ASBUs) should be undertaken within the framework of the MIDANPIRG with the participation and support of all stakeholders, including regulatory personnel.

1.2 The ASBU Blocks and Modules adopted by the MID Region should be followed in accordance with the specific ASBU requirements to ensure global interoperability and harmonization of air traffic management. The MIDANPIRG should determine the ASBU Block Upgrade Modules, which best provide the needed operational improvements in the ICAO MID Region.

2. ICAO MID REGION AIR NAVIGATION OBJECTIVES, PRIORITIES AND TARGETS

2.1 In accordance with Recommendation 6/1 of the Twelfth Air Navigation Conference (AN-Conf/12), PIRGs are requested to establish priorities and targets for air navigation, in line with the ASBU methodology.

2.2 The achievement of the intended benefits along each routing or within each area of affinity is entirely dependent on the coordinated implementation of the required elements by all provider and user stakeholders concerned.

2.3 Considering that some of the block upgrade modules contained in the GANP are specialized packages that may be applied where specific operational requirements or corresponding benefits exist, States and PIRGs should clarify how each Block Upgrade module would fit into the national and regional plans.

2.4 As Block 0 modules in many cases provide the foundation for future development, all Block 0 modules should be assessed, as appropriate, for early implementation by States in accordance with their operational needs.

2.5 In establishing and updating the MID Region air navigation plan, the MIDANPIRG and States should give due consideration to the safety priorities set out in the Global Aviation Safety Plan (GASP) and MID Region safety strategy.

2.6 States in the MID Region through the MIDANPIRG should establish their own air navigation objectives, priorities and targets to meet their individual needs and circumstances in line with the global and regional air navigation objectives, priorities and targets.

3. MONITORING OF ASBU MODULES IMPLEMENTATION

3.1 The monitoring of air navigation performance and its enhancement should be carried out through identification of relevant air navigation Metrics and Indicators as well as the adoption and attainment of air navigation system Targets.

3.2 The monitoring of the regional implementation progress and performance metrics/indicators should be done for all elements planned by MIDANPIRG. The monitoring should allow global correlation of status and expectations, appreciation of benefits achieved for the airspace users, as well as corrective actions to be taken by the PIRG on implementation plans.

3.3 The MIDANPIRG should determine appropriate mechanisms and tools for the monitoring and the collection of necessary data at national and regional levels.

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APPENDIX – ASBU BLOCK 0 MODULES APPLICABLE IN THE MID REGION

TO BE DEVELOPED

B0 – FRTO: Improved Operations through Enhanced En-Route Trajectories				
Applicability State	**implementing FUA**	**Total number of ATS Routes**	**number of required Routes that are not implemented due military restrictions (segregated areas)**	**Remarks**
Bahrain	Yes	49	0	
Egypt	No	49	2	
Iran				
Iraq				
Jordan				
Lebanon				
Libya				
Kuwait				
Oman				
Qatar				
Saudi Arabia				
Sudan				
Syria				
Unite Arab Emirates				
Yemen				
Total for the Region				
Percentage				

-END-