International Civil Aviation Organization

WORKING PAPER

ASIA AND PACIFIC (APAC)
Twenty-Seventh Meeting of the Meteorology Sub-Group
(MET SG/27)

Bangkok, Thailand, 04 to 08 September 2023

Agenda Item 5: Planning and monitoring

REVIEW OF THE ASIA/PACIFIC AIR NAVIGATION PLAN

(Presented by the Secretariat)

SUMMARY

This paper presents proposals for the amendment of the Asia/Pacific (APAC) Air Navigation Plan (ANP) and invites the Meeting to review the proposals and provide additional information, as necessary, to ensure the ANP reflects the current to medium-term operational requirements related to the meteorological facilities and services to be implemented by the States.

1. INTRODUCTION

1.1 The ICAO Regional Air Navigation Plans (ANPs) provide a bridge from the global provisions contained in the ICAO Standards and Recommended Practices (SARPs), Procedures for Air Navigation Services (PANS) and Global Air Navigation Plan (GANP) to the Member States' national plans and actual implementation of aerodromes and air navigation facilities and services for international civil aviation.

1.2 This paper invites the Meeting to review the APAC ANP and propose amendments as necessary to reflect the current to medium-term operational requirements related to the meteorological facilities and services to be implemented by the States.

2. DISCUSSION

2.1 The APAC ANP is available at the following ICAO APAC Office website:

https://www.icao.int/APAC/Pages/APAC-eANP.aspx.

2.2 The ANP consists of three Volumes, I, II and III, as approved by the ICAO Council in June 2014 in the ANP template for ICAO Regions. The ANP sets out the assignment of responsibilities and the current to medium-term mandatory regional requirements related to the aerodrome and air navigation facilities and services to be implemented by the States. The elements in the ANP are subject to regional air navigation agreements and may include requirements specific to the region that are not covered in the ICAO SARPs and PANS.

2.3 The ANP Volumes I-III are each divided into Parts. In addition, Volumes I and II both

include Parts II to VII dedicated to the specific air navigation fields (e.g., Part V – Meteorology (MET)) and which comprise an "Introduction", "General Regional Requirements", and "Specific Regional Requirements".

APAC ANP Volume I

2.4 Volume I contains the stable ANP elements whose amendment should not be required frequently but necessitates approval by the ICAO Council. As such, ANP Volume I, Part V – MET, contains regional requirements for the following facilities and services:

- World Area Forecast Centres (WAFCs);
- Volcanic Ash Advisory Centres (VAACs);
- Volcano Observatories (VOs) [TABLE MET I-1]; and
- Tropical Cyclone Advisory Centres (TCACs).

APAC ANP Volume II

2.5 Volume II contains dynamic ANP elements whose amendment does not require approval by the ICAO Council but involves the relevant Planning and Implementation Regional Group (PIRG). As such, ANP Volume II, Part V – MET, contains regional requirements for the following facilities and services:

- Meteorological Watch Offices (MWOs) [TABLE MET II-1];
- Aerodrome Meteorological Offices [TABLE MET II-2]; and
- VOLMET Broadcasts [TABLE MET II-3].

APAC ANP Volume III

2.6 Volume III contains dynamic and flexible ANP elements whose amendment does not require approval by the ICAO Council but is under the responsibility of the relevant PIRG. Volume III guides the planning and implementation of air navigation systems and their modernization considering programmes such as the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the GANP. ANP Volume III should also include appropriate guidance, particularly concerning implementation, to complement Volumes I and II. As such, ANP Volume III contains guidance related to meteorological facilities and services in the following Parts:

- Part I: Implementation indicators for ASBU module B0-AMET [Table GEN III-1];
- Part II: Objectives, priorities and targets for ASBU modules B0-AMET and B1-AMET (in the Main Planning Tables, APAC Seamless ATM plan); and
- Part III: Regional planning, targets, monitoring, challenges and implementation for ASBU module B0-AMET (in the Air Navigation Report Form (ANRF)).

Proposals for the amendment of the APAC ANP

2.7 Under the terms of reference, the MET SG should review the MET parts of the APAC ANP and prepare amendment proposals as necessary to reflect updates and changes in the operational and global requirements.

2.8 Proposals for the amendment of the APAC ANP Volume I and II to reflect the current to medium-term operational requirements related to the meteorological facilities and services to be implemented by the States are presented in **Appendix A** and **Appendix B**.

2.9 Proposals for the amendment of the APAC ANP Volume I in **Appendix A** include

updates to the Table MET I-1 – State Volcano Observatories to reflect APAC States' current requirements for State volcano observatories as identified by the MET/S WG designated ad-hoc group (MET/IE WG/18 and MET/S WG/10, Action item 21, refers).

2.10 Proposals for the amendment of the APAC ANP Volume II in **Appendix B** include updates to Table MET II-1 – Meteorological Watch Offices to reflect updates to the ICAO Location Indicators for the FIR where MET service is required and updates to Table MET II-2 – Aerodrome Meteorological Offices to reflect the current locations where meteorological service is required and the current requirements for meteorological service as identified, reported and requested in the MET SG forum (MET SG/26, Action item 26/08; MET SG/25, Action item 25/06 and 25/07; MET/IE WG/20, Action item 20/10 and 20/02; and MET/S WG/12, Action item 12/04 and 12/03, refer).

2.11 Proposals for the APAC ANP Volume III amendment are not presented in this paper. However, the Meeting is reminded that MET SG/26 previously suggested to consider examples of ANP Volume III adopted by other ICAO Regions when developing a proposal for amendment of MET-specific material in the APAC ANP Volume III (MET SG/26, Action item 26/07 refers).

2.12 For information, a copy of the ICAO European (EUR) ANP Volume III is provided in **Appendix C**.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

a) Note the information contained in this paper;

b) Provide additional information, as necessary, to supplement the proposals for the amendment of the APAC ANP Volume I and II in **Appendix A** and **Appendix B**; and

c) Discuss any relevant matters as appropriate.

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APAC ANP, VOLUME I

PART V – METEOROLOGY (MET)

1. INTRODUCTION

1.1 This part of the APAC ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of aeronautical Meteorology (MET) facilities and services in the Asia and Pacific Regions and complements the provisions of ICAO SARPs and PANS related to MET. It contains stable plan elements related to the assignment of responsibilities to States for the provision of MET facilities and services within the ICAO Asia and Pacific Regions in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the MET facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan element related to the assignment of responsibilities to States for the provision of MET facilities and services and the mandatory requirements based on regional air navigation agreements related to MET are contained in the APAC ANP Volume II, Part V - MET.

1.3 The APAC 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 (ASBUs) 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 MET are contained in:

a) Annex 3 - *Meteorological Service for International Air Navigation*;

b) *Regional Supplementary Procedures (Doc 7030);*

c) Handbook on the IAVW (Doc 9766);

d) Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691); and

e) Manual of Aeronautical Meteorological Practice (Doc 8896).

2. GENERAL REGIONAL REQUIREMENTS

World area forecast system (WAFS) and meteorological offices

2.1 In the Asia and Pacific Regions, WAFC **London and Washington** have been designated as the centres for the operation of the aeronautical fixed service satellite distribution system, the Internet-based Secure SADIS FTP service and the WAFS Internet File Service (SADIS 2G, Secure SADIS FTP and WIFS, respectively). The status of implementation of SADIS and WIFS by States in the Asia and Pacific Regions is detailed in Volume III.

2.2 In the Asia and Pacific Regions, WAFS products in digital form should be disseminated by WAFC **London** using the SADIS 2G satellite broadcast and the Secure SADIS FTP service and by WAFC **Washington** using WIFS.

Volcanic Ash

2.3 Volcanic Ash Advisory Centres (VAACs) **Anchorage, Darwin, Tokyo, Toulouse, Washington** and **Wellington** have been designated to prepare volcanic ash advisory information for the Asia and Pacific Regions. The status of implementation of volcanic ash advisory information is detailed in Volume III.

2.4 Selected State volcano observatories have been designated for notification of significant pre-eruption volcanic activity, a volcanic eruption and/or volcanic ash in the atmosphere for the Asia and Pacific Regions to their corresponding ACC/FIC, MWO and VAAC, as indicated at **Table MET I-1**. The status of implementation of Volcano Observatory Notice for Aviation (VONA) is detailed in Volume III.

Tropical Cyclone

2.5 Tropical Cyclone Advisory Centres (TCACs) **Darwin, Honolulu, Nadi, New Delhi, Reunion** and **Tokyo** have been designated to prepare tropical cyclone advisory information for the Asia and Pacific Regions. The status of implementation of tropical cyclone advisory information is detailed in Volume III.

3. SPECIFIC REGIONAL REQUIREMENTS

3.1 *None*

TABLE MET I-1
STATE VOLCANO OBSERVATORIES

Explanation of the Table

Column

1 Name of the State responsible for the provision of a volcano observatory

2 Name of the volcano observatory

State	Volcano observatory
1	**2**
China	Heilongjiang Wudalianchi Volcano Observatory
China	Jilin Changbai Mountain Tianchi Volcano Observatory
Japan	Fukuoka Regional Volcanic Observation and Warning ~~Information~~ Center, Japan Meteorological Agency
Japan	Kagoshima ~~Local~~ Meteorological Office, Japan Meteorological Agency
Japan	Sapporo Regional Volcanic Observation and Warning ~~Information~~ Center, Japan Meteorological Agency
Japan	Sendai Regional Volcanic Observation and Warning ~~Information~~ Center, Japan Meteorological Agency
Japan	~~Tokyo~~ Volcanic Observation and Warning ~~Information~~ Center, Japan Meteorological Agency
India	TBD
Indonesia	Centre ~~Directorate~~ of Volcanology and Geological Hazard Mitigation (CVGHM ~~DVGHM~~)
New Zealand	GNS Science ~~Wairakei Research Centre Institute of Geological and Nuclear Sciences~~
Papua New Guinea	Rabaul Volcano Observatory

ASIA/PAC ANP, VOLUME II

PART V – METEOROLOGY (MET)

1. INTRODUCTION

1.1 This part of the APAC ANP, Volume II, complements the provisions in the ICAO SARPs and PANS related to aeronautical Meteorology (MET). It contains dynamic plan elements related to the assignment of responsibilities to States for the provision of MET 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 the MET 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 States concerned to implement the requirements specified.

2. GENERAL REGIONAL REQUIREMENTS

Meteorological offices

2.1 In the Asia and Pacific Regions, Meteorological Watch Offices (MWO) have been designated to maintain continuous watch on meteorological conditions affecting flight operations within their area(s) of responsibility, as indicated at **Table MET II-1**.

Meteorological observations and reports

2.2 In the Asia and Pacific Regions, routine observations, issued as a METAR, should be made throughout the 24 hours of each day at intervals of one hour or, for RS and AS designated aerodromes[1] if so determined by regional air navigation agreement, at intervals of one half-hour at aerodromes as indicated in **Table MET II-2**. For aerodromes included on the VHF VOLMET broadcast as indicated in **Table MET II-3**, routine observations, issued as METAR, should be made throughout the 24 hours of each day.

2.3 At aerodromes that are not operational throughout 24 hours, METAR should be issued at least 3 hours prior to the aerodrome resuming operations in the Asia and Pacific Regions.

Forecasts

2.4 In the Asia and Pacific Regions, an aerodrome forecast, issued as a TAF, should be for the aerodromes indicated in **Table MET II-2**.

2.5 In the Asia and Pacific Regions, the period of validity of a routine TAF should be of 12-, 18-, 24- or 30-hours to meet the requirements indicated in **Table MET II-2**.

2.6 In the Asia and Pacific Regions, the forecast maximum and minimum temperatures expected to occur during the period of validity, together with their corresponding day and time of occurrence, should be included in TAF at aerodromes indicated in **Table MET II-2**.

2.7 In the Asia and Pacific Regions, landing forecasts (prepared in the form of a trend forecast) should be provided at aerodromes indicated in **Table MET II-2**.

Requirements for and use of communications

2.8 Operational meteorological information prepared as METAR, SPECI and TAF for aerodromes indicated in **Table MET II-2**, and SIGMET and AIRMET messages prepared for flight information regions or control areas indicated in **Table MET II-1**, should be disseminated to the international OPMET databanks

[1] Refer to Table AOP II-1, Explanation of the table

designated for the Asia and Pacific Regions (namely Bangkok, Brisbane, Nadi, Singapore and Tokyo) and to the centres designated for the operation of the aeronautical fixed service satellite distribution system (SADIS 2G) and the Internet-based service (Secure SADIS FTP) and WIFS in the Asia and Pacific Regions.

2.9 SIGMET messages should be disseminated to other meteorological offices in the Asia and Pacific Regions in accordance with the regional OPMET bulletin exchange scheme.

2.10 Special air-reports that do not warrant the issuance of a SIGMET should be disseminated to other meteorological offices in the Asia and Pacific Regions in accordance with the regional OPMET bulletin exchange scheme.

2.11 In the Asia and Pacific Regions, meteorological information for use by aircraft in flight should be supplied through VOLMET broadcasts.

2.12 In the Asia and Pacific Regions, the aerodromes for which METAR and SPECI are to be included in VOLMET broadcasts, the sequence in which they are to be transmitted and the broadcast time, is indicated in **Table MET II-3**.

3. SPECIFIC REGIONAL REQUIREMENTS

Service for operators and flight crew members.

3.1 In the Asia and Pacific Regions, scheduled VOLMET broadcasts should contain TAF and SIGMET.

3.2 In the Asia and Pacific Regions, METAR, SPECI and TAF should be available for uplink to aircraft in flight via D-VOLMET.

TABLE MET II-1 - METEOROLOGICAL WATCH OFFICES

EXPLANATION OF THE TABLE

Column

1 Name of the State where meteorological service is required

2 Name of the Flight Information Region (FIR) or Control Area (CTA) where meteorological service is required
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

3 ICAO location indicator of the FIR or CTA

4 Name of the meteorological watch office (MWO) responsible for the provision of meteorological service for the FIR or CTA
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

5 ICAO location indicator of the responsible MWO

6 Requirement for SIGMET information (excluding for volcanic ash and for tropical cyclones) to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required

7 Requirement for SIGMET information for volcanic ash to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required

8 Requirement for SIGMET information for tropical cyclone to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required

9 Requirement for AIRMET information to be provided by the MWO for the FIR or CTA concerned, where
Y – Yes, required
N – No, not required

State	FIR or CTA Where Meteorological Service is Required		Responsible Meteorological Watch Office		Meteorological Service To Be Provided			
	Name	ICAO Location Indicator	Name	ICAO Location Indicator	SIGMET (WS)	SIGMET (WV)	SIGMET (WC)	AIRMET (WA)
1	2	3	4	5	6	7	8	9
Afghanistan	KABUL FIR / SSR	OAKX	KABUL AD	OAKB	Y	Y	N	N
Australia	MELBOURNE FIR	YMMM	ADELAIDE (REGIONAL FORECASTING CENTRE)	YPRM	Y	N	N	Y

State	FIR or CTA Where Meteorological Service is Required		Responsible Meteorological Watch Office		Meteorological Service To Be Provided			
	Name	ICAO Location Indicator	Name	ICAO Location Indicator	SIGMET (WS)	SIGMET (WV)	SIGMET (WC)	AIRMET (WA)
1	2	3	4	5	6	7	8	9
	BRISBANE FIR	YBBB	BRISBANE (REGIONAL FORECASTING CENTRE)	YBRF	Y	N	Y	Y
	BRISBANE FIR MELBOURNE FIR	YBBB YMMM	DARWIN (REGIONAL FORECASTING CENTRE)	YPDM	Y	Y	Y	Y
	MELBOURNE FIR	YMMM	HOBART (REGIONAL FORECASTING CENTRE)	YMHF	Y	N	N	Y
	BRISBANE FIR MELBOURNE FIR	YBBB YMMM	MELBOURNE (WORLD MET CENTRE, BUREAU OF METEOROLOGY)	YMMC	Y	N	N	N
	BRISBANE FIR MELBOURNE FIR	YBBB YMMM	MELBOURNE (REGIONAL FORECASTING CENTRE)	YMRF	Y	N	N	Y
	BRISBANE FIR MELBOURNE FIR	YBBB YMMM	PERTH (REGIONAL FORECASTING CENTRE)	YPRF	Y	N	Y	Y
	BRISBANE FIR MELBOURNE FIR	YBBB YMMM	SYDNEY (REGIONAL FORECASTING CENTRE)	YSRF	Y	N	N	Y
Bangladesh	DHAKA FIR / SRR	VGFR	HAZRAT SHAHJALAL INTERRNATIONAL AIRPORT	VGHS	Y	Y	Y	N
Cambodia	PHNOM PENH FIR / SRR	VDPF ~~VDPP~~	PHNOM PENH	VDPP	Y	Y	Y	N
China	BEIJING FIR / SRR	ZBPE	BEIJING/CAPITAL	ZBAA	Y	Y	Y	N
	GUANGZHOU FIR / SRR	ZGZU	GUANGZHOU/BAIYUN	ZGGG	Y	Y	Y	N
	KUNMING FIR / SRR	ZPKM	CHENGDU/SHUANGLIU	ZUUU	Y	Y	Y	N
	LANZHOU FIR / SRR	ZLHW	XI'AN/XIANYANG	ZLXY	Y	Y	N	N
	SANYA FIR / SRR	ZJSA	HAIKOU/MEILAN	ZJHK	Y	Y	Y	N
	SHANGHAI FIR / SRR	ZSHA	SHANGHAI/HONGQIAO	ZSSS	Y	Y	Y	N
	SHENYANG FIR / SRR	ZYSH	SHENYANG/TAOXIAN	ZYTX	Y	Y	N	N
	TAIBEI FIR / SRR	RCAA	TAIBEI CITY/TAIBEI INTL AP	RCTP	Y	Y	Y	N
	URUMQI FIR / SRR	ZWUQ	URUMQI/DIWOPU	ZWWW	Y	Y	N	N
	WUHAN FIR / SRR	ZHWH	WUHAN/TIANHE	ZHHH	Y	Y	N	N
	HONG KONG FIR / SRR	VHHK	HONG KONG/INTL	VHHH	Y	Y	Y	N
Democratic People's Republic of Korea	PYONGYANG FIR / SRR	ZKKP	SUNAN	ZKPY	Y	Y	Y	N
Fiji	NADI FIR / SRR	NFFF	NADI/INTL	NFFN	Y	Y	N	N
French Polynesia	TAHITI FIR / SRR	NTTT	TAHITI/FAAA	NTAA	Y	Y	Y	N
India	CHENNAI FIR / SRR	VOMF	CHENNAI	VOMM	Y	Y	Y	N
	DELHI FIR / SRR	VIDF	DELHI/INDIRA GHANDI INTL	VIDP	Y	Y	N	N
	KOLKATA FIR / SRR	VECF	KOLKATA/KOLKATA	VECC	Y	Y	N	N
	MUMBAI FIR / SRR	VABF	MUMBAI/CHHATRAPATI SHIVAJI INTL.	VABB	Y	Y	Y	N

State	FIR or CTA Where Meteorological Service is Required		Responsible Meteorological Watch Office		Meteorological Service To Be Provided			
	Name	ICAO Location Indicator	Name	ICAO Location Indicator	SIGMET (WS)	SIGMET (WV)	SIGMET (WC)	AIRMET (WA)
1	2	3	4	5	6	7	8	9
Indonesia	JAKARTA FIR/UIR / SRR	WIIF ~~WIIZ~~	JAKARTA/SOEKARNO-HATTA (COMM CENTER)	WIII	Y	Y	Y	N
	UJUNG PANDANG FIR/UIR / SRR	WAAF ~~WAAZ~~	UJUNG PANDANG/HASANUDDIN (COMM CENTER)	WAAA	Y	Y	Y	N
Japan	FUKUOKA FIR / TOKYO SRR	RJJJ	TOKYO (CITY)	RJTD	Y	Y	Y	N
Lao People's Democratic Republic	VIENTIANE FIR / SRR	VLVT	VIENTIANE/WATTAY	VLVT	Y	Y	Y	N
Malaysia	KOTA KINABALU FIR / SRR KUALA LUMPUR FIR / SRR	WBFC WMFC	SEPANG/KL INTL AIRPORT	WMKK	Y	Y	Y	N
Maldives	MALE FIR / SRR	VRMF	MALE/INTL	VRMM	Y	Y	Y	N
Mongolia	ULAANBAATAR FIR / SRR	ZMUB	ULAANBAATAR	ZMUB	Y	Y	N	N
Myanmar	YANGON FIR / SRR	VYYY	YANGON INTL	VYYY	Y	Y	Y	N
Nauru	NAURU FIR / SRR	ANAU	NAURU I.	ANYN	Y	Y	Y	N
Nepal	KATHMANDU FIR / SRR	VNSM	KATHMANDU	VNKT	Y	Y	N	N
New Zealand	AUCKLAND OCEANIC FIR / SRR NEW ZEALAND FIR / SRR	NZZO NZZC	WELLINGTON (AVIATION WEATHER CENTRE)	NZKL	Y	Y	Y	N
Pakistan	KARACHI FIR / SRR	OPKR	KARACHI/JINNAH INT'L	OPKC	Y	Y	Y	N
	LAHORE FIR / SRR	OPLR	LAHORE/ALLAMA IQBAL INT'L	OPLA	Y	Y	Y	N
Papua New Guinea	PORT MORESBY FIR / SRR	AYPM ~~AYPY~~	PORT MORESBY INTL	AYPY	Y	Y	Y	N
Philippines	MANILA FIR / SRR	RPHI	MANILA/NINOY AQUINO INTL, PASAY CITY, METRO MANILA	RPLL	Y	Y	Y	N
Republic of Korea	INCHEON FIR / SRR	RKRR	INCHEON	RKSI	Y	Y	Y	N
Singapore	SINGAPORE FIR / SRR	WSJC	SINGAPORE/CHANGI	WSSS	Y	Y	Y	N
Solomon Islands	HONIARA FIR / SRR	AGGG	HONIARA (HENDERSON)	AGGH	Y	Y	Y	N
Sri Lanka	COLOMBO FIR / SRR	VCBI	BANDARANAIKE INTL AIRPORT COLOMBO	VCBI	Y	Y	Y	N
Thailand	BANGKOK FIR / SRR	VTBB	BANGKOK/SUVARNABHUMI INTL AIRPORT	VTBS	Y	Y	Y	N
United States	ANCHORAGE FIR	PAZA	ANCHORAGE	PAWU	Y	Y	N	N
	OAKLAND OCEANIC / HONOLULU SRR	KZAK	HONOLULU	PHFO	Y	Y	Y	N
	OAKLAND OCEANIC FIR	KZAK	KANSAS CITY	KKCI	Y	Y	Y	N
Viet Nam	HANOI FIR / SRR HO-CHI-MINH FIR / SRR	VVNB VVTS	GIA LAM	VVGL	Y	Y	Y	N

TABLE MET II-2 - AERODROME METEOROLOGICAL OFFICES

EXPLANATION OF THE TABLE

Column

1 Name of the State where meteorological service is required

2 Name of the aerodrome (listed in Tables AOP) where meteorological service is required

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

3 ICAO location indicator of the aerodrome (listed in Tables AOP)

4 Designation of the aerodrome (listed in Tables AOP):
RG – international general aviation, regular use
RS – international scheduled air transport, regular use
RNS – international non-scheduled air transport, regular use
AS – international scheduled air transport, alternate use
ANS – international non-scheduled air transport, alternate use

5 Name of the aerodrome meteorological office responsible for the provision of meteorological service

Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.

6 ICAO location indicator of the responsible aerodrome meteorological office

7 Requirement for METAR/SPECI from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

8 Requirement for information on the state of the runway provided by the appropriate airport authority to be included as supplementary information in METAR/SPECI from the aerodrome concerned, where:
Y - Yes, required
N- No, not required

9 Requirement for trend forecast to be appended to METAR/SPECI from the aerodrome concerned, where
Y – Yes, required
N – No, not required

10 Requirement for TAF from the aerodrome concerned, where
T – Requirement for 12/18/24-hour validity aerodrome forecasts in TAF code (12/18/24H)
X – Requirement for 30-hour validity aerodrome forecasts in TAF code (30H)
N – No, not required

11 Requirement for maximum and minimum temperature (expected to occur during the period of validity of the TAF) to be included in TAF from the aerodrome concerned, where:
Y – Yes, required
N – No, not required

12 Availability of METAR/SPECI and TAF from the aerodrome concerned, where:
F – Full availability : OPMET information as listed issued for the aerodrome all through the 24-hour period
P – Partial availability: OPMET information as listed not issued for the aerodrome for the entire 24-hour period

State	Aerodrome (listed in Tables AOP) where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					METAR/SPECI and TAF availability
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	
1	2	3	4	5	6	7	8	9	10	11	12
Afghanistan	KABUL INTERNATIONAL	OAKB	RS	KABUL INTERNATIONAL	OAKB	Y		Y	T		F
	KANDAHAR	OAKN	AS	KABUL INTERNATIONAL	OAKB	Y			T		F
American Samoa (United States)	PAGO PAGO INTERNATIONAL,TUTUILA I.	NSTU	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
Australia	ADELAIDE/ADELAIDE INTL	YPAD	RS	ADELAIDE/ADELAIDE INTL	YPAD	Y	N	Y	X	N	F
	ALICE SPRINGS	YBAS	AS	DARWIN/DARWIN INTL	YPDN	Y	N	N	T	N	F
	BRISBANE/BRISBANE INTL	YBBN	RS	BRISBANE/BRISBANE INTL	YBBN	Y	N	Y	X	N	F
	CAIRNS/CAIRNS INTL	YBCS	RS	CAIRNS/CAIRNS INTL	YBTL	Y	N	Y	T	N	F
	CHRISTMAS ISLAND	YPXM	RS	PERTH/PERTH INTL	YPPH	Y	N	N	T	N	F
	COCOS (KEELING) ISLANS INTL	YPCC	RS	PERTH/PERTH INTL	YPPH	Y	N	N	T	N	F
	DARWIN/DARWIN INTL	YPDN	RS	DARWIN/DARWIN INTL	YPDN	Y	N	Y	X	N	F
	HOBART	YMHB	RS	HOBART	YMHB	Y	N	N	T	N	F
	MELBOURNE/MELBOURNE INTL	YMML	RS	MELBOURNE/MELBOURNE INTL	YMML	Y	N	Y	X	N	F
	NORFOLK ISLAND	YSNF	RS	SYDNEY/SYDNEY (KINGSFORD SMITH) INTL	YSSY	Y	N	N	T	N	F
	PERTH/PERTH INTL	YPPH	RS	PERTH/PERTH INTL	YPPH	Y	N	Y	X	N	F
	PORT HEDLAND	YPPD	RS	PERTH/PERTH INTL	YPPH	Y	N	N	T	N	F
	ROCKHAMPTON	YBRK	AS	BRISBANE/BRISBANE INTL	YBBN	Y	N	N	T	N	F
	SYDNEY/SYDNEY (KINGSFORD SMITH) INTL	YSSY	RS	SYDNEY/SYDNEY (KINGSFORD SMITH) INTL	YSSY	Y	N	Y	X	N	F
	TINDAL	YPTN	AS	DARWIN/DARWIN INTL	YPDN	Y	N	Y	T	N	F
	TOWNSVILLE/TOWNSVILLE INTL	YBTL	RS	TOWNSVILLE/TOWNSVILLE INTL	YBTL	Y	N	Y	T	N	F
	GOLD COAST/Gold Coast	YBCG	RS								
	BUSSELTON/Busselton Margaret River	YBLN	AS								
	BROOME/Broome Intl	YBRM	RS								
	SUNSHINE COAST/Sunshine Coast	YBSU	RS								
	TOOWOOMBA/Brisbane West Wellcamp	YBWW	RS								
	COFFS HARBOUR/Coffs Harbour	YCFS	RS								
	GERALDTON/Geraldton	YGEL	AS								
	HORN I./Horn I.	YHID	RNS								
	LORD HOWE ISLAND/ Lord Howe I.	YLHI	RS								
	AVALON/Avalon	YMAV	RS								
	LAUNCESTON/Launceston	YMLT	AS								
	KALGOORLIE/Kalgoorlie-Boulder	YPKG	AS								

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1	2	3	4	5	6	7	8	9	10	11	12
	LEARMONTH/Learmonth	YPLM	AS								
	CANBERRA/Canberra	YSCB	RS								
	WILLIAMTOWN/Williamtown	YWLM	AS								
Bangladesh	HAZRAT SHAHJALAL INTERNATIONAL AIRPORT, DHAKA	VGHS	RS	HAZRAT SHAHJALAL INTERNATIONAL AIRPORT, DHAKA	VGHS	Y		Y	T		F
	SHAH AMANAT INTL. CHITTAGONG	VGEG	RS	HAZRAT SHAHJALAL INTERNATIONAL AIRPORT, DHAKA	VGHS	Y		Y	T		F
	SYLHET/Osmani Intl	VGSY	RS								
Bhutan	PARO/INTL	VQPR	RS	PARO/INTL	VQPR	Y					P
Brunei Darussalam	BRUNEI/INTL	WBSB	RS	BRUNEI/INTL	WBSB	Y			X		F
Cambodia	PHNOM PENH	VDPP	RS	PHNOM PENH	VDPP	Y		Y	T		P
	SIEM REAP	VDSR	AS	PHNOM PENH	VDPP	Y			T		P
China	BEIJING/CAPITAL	ZBAA	RS	BEIJING/CAPITAL	ZBAA	Y		Y	X		F
	CHANGSHA/HUANGHUA	ZGHA	RS	GUANGZHOU/BAIYUN	ZGGG	Y			T		F
	CHENGDU/SHUANGLIU	ZUUU	RS	CHENGDU/SHUANGLIU	ZUUU	Y			T		F
	CHONGQING/JIANGBEI	ZUCK	RS	CHENGDU/SHUANGLIU	ZUUU	Y		Y	T		F
	DALIAN/ZHOUSHUIZI	ZYTL	RS	SHENYANG/TAOXIAN	ZYTX	Y			T		F
	FUZHOU/CHANGLE	ZSFZ	RS	SHANGHAI/HONGQIAO	ZSSS	Y			T		F
	GAOXIONG	RCKH	RS	TAIBEI CITY/TAIBEI INTL AP	RCTP	Y		Y	X		F
	GUANGZHOU/BAIYUN	ZGGG	RS	GUANGZHOU/BAIYUN	ZGGG	Y		Y	X		F
	GUILIN/LIANGJIANG	ZGKL	RS	GUANGZHOU/BAIYUN	ZGGG	Y			T		F
	HANGZHOU/XIAOSHAN	ZSHC	RS	SHANGHAI/HONGQIAO	ZSSS	Y			T		F
	HARBIN/TAIPING	ZYHB	RS	SHENYANG/TAOXIAN	ZYTX	Y			T		F
	HEFEI/XINQIAO	ZSOF	AS	SHANGHAI/HONGQIAO	ZSSS	Y			T		F
	HUHHOT/BAITA	ZBHH	RS	BEIJING/CAPITAL	ZBAA	Y			T		F
	JINAN/YAOQIANG	ZSJN	RS	SHANGHAI/HONGQIAO	ZSSS	Y			T		F
	KASHI/KASHI	ZWSH	RS	URUMQI/DIWOPU	ZWWW	Y			X		F
	KUNMING/CHANGSHUI	ZPPP	RS	CHENGDU/SHUANGLIU	ZUUU	Y			X		F
	LANZHOU/ZHONGCHUAN	ZLLL	AS	XI'AN/XIANYANG	ZLXY	Y			T		F
	NANJING/LUKOU	ZSNJ	RS	SHANGHAI/HONGQIAO	ZSSS	Y			T		F
	NANNING/WUXU	ZGNN	AS	GUANGZHOU/BAIYUN	ZGGG	Y			T		F
	QINGDAO/LIUTING	ZSQD	RS	SHANGHAI/HONGQIAO	ZSSS	Y			T		F
	SANYA/PHOENIX	ZJSY				Y			T		F
	SHANGHAI/HONGQIAO	ZSSS	RS	SHANGHAI/HONGQIAO	ZSSS	Y		Y	T		F
	SHANGHAI/PUDONG	ZSPD	RS	SHANGHAI/HONGQIAO	ZSSS	Y		Y	X		F
	SHENYANG/TAOXIAN	ZYTX	RS	SHENYANG/TAOXIAN	ZYTX	Y		Y	T		F
	SHENZHEN/BAOAN	ZGSZ	RS	GUANGZHOU/BAIYUN	ZGGG	Y			X		F

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1	2	3	4	5	6	7	8	9	10	11	12
	TAIBEI CITY/TAIBEI INTL AP	RCTP	RS	TAIBEI CITY/TAIBEI INTL AP	RCTP	Y		Y	X		F
	TAIBEI/SONGSHAN	RCSS	AS	TAIBEI CITY/TAIBEI INTL AP	RCTP	Y			T		F
	TAIYUAN/WUSU	ZBYN	AS	BEIJING/CAPITAL	ZBAA	Y			T		F
	TIANJIN/BINHAI	ZBTJ	RS	BEIJING/CAPITAL	ZBAA	Y			X		F
	URUMQI/DIWOPU	ZWWW	RS	URUMQI/DIWOPU	ZWWW	Y			X		F
	WUHAN/TIANHE	ZHHH	RS	GUANGZHOU/BAIYUN	ZGGG	Y		Y	T		F
	XIAMEN/GAOQI	ZSAM	RS	SHANGHAI/HONGQIAO	ZSSS	Y		Y	T		F
	XI'AN/XIANYANG	ZLXY	RS	XI'AN/XIANYANG	ZLXY	Y		Y	T		F
	XICHANG/QUINGSHAN	ZUXC	RNS	CHENGDU/SHUANGLIU	ZUUU	Y					F
	HOHHOT/Baita	ZBHH	RS								
	JINAN/Yaoqiang	ZSJN	RS								
Cook Islands	RAROTONGA INTL.	NCRG	RS	NADI/INTL	NFFN	Y			T		F
	AITUTAKI/Aitutaki	NCAI	ANS								
Democratic People's Republic of Korea	SUNAN	ZKPY	RS	SUNAN	ZKPY	Y		Y	T		F
	KALMA/Kalma	ZKWS	RNS								
Fiji	NADI/INTL	NFFN	RS	NADI/INTL	NFFN	Y		Y	T		F
	NAUSORI/INTL	NFNA	RS	NADI/INTL	NFFN	Y			T		F
French Polynesia (France)	TAHITI FAAA	NTAA	RS	TAHITI FAAA	NTAA	Y		Y	T		F
Hong Kong, China (China)	HONG KONG/INTERNATIONAL	VHHH	RS	HONG KONG/INTERNATIONAL	VHHH	Y		Y	X		F
India	AHMEDABAD	VAAH	RS	AHMEDABAD	VAAH	Y			X		F
	AMRITSAR	VIAR	RS	DELHI (IGI)	VIDP	Y			X		F
	BANGALORE INTL. AIRPORT	VOBL	RS	BANGALORE INTL. AIRPORT	VOBL	Y		Y	X		F
	CALICUT	VOCL	RS	THIRUVANANTHAPURAM	VOTV	Y			X		F
	CHENNAI	VOMM	RS	CHENNAI	VOMM	Y		Y	X		F
	COCHIN INTL.	VOCI	RS	THIRUVANANTHAPURAM	VOTV	Y		Y	X		F
	COIMBATORE	VOCB	RS	CHENNAI	VOMM	Y			T		F
	DELHI (IGI)	VIDP	RS	DELHI (IGI)	VIDP	Y		Y	X		F
	GAYA	VEGY	RS	PATNA	VEPT	Y			T		F
	GUWAHATI	VEGT	RS	GUWAHATI	VEGT	Y		Y	T		F
	HYDERABAD INTL. AIRPORT	VOHS	RS	HYDERABAD INTL. AIRPORT	VOHS	Y		Y	X		F
	JAIPUR	VIJP	RS	JAIPUR	VIJP	Y		Y	T		F
	KOLKATA	VECC	RS	KOLKATA	VECC	Y		Y	X		F

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1	2	3	4	5	6	7	8	9	10	11	12
	LUCKNOW	VILK	RS	LUCKNOW	VILK	Y		Y	T		F
	MANGALORE	VOML	RS	BANGALORE INTL. AIRPORT	VOBL	Y			T		F
	MUMBAI	VABB	RS	MUMBAI	VABB	Y		Y	X		F
	NAGPUR	VANP	RS	NAGPUR	VANP	Y		Y	T		F
	PATNA	VEPT	RS	PATNA	VEPT	Y			X		F
	THIRUVANANTHAPURAM	VOTV	RS	THIRUVANANTHAPURAM	VOTV	Y			X		F
	TIRUCHIRAPPALLI	VOTR	RS	CHENNAI	VOMM	Y			T		F
	VARANASI	VIBN	RS	LUCKNOW	VILK	Y			X		F
Indonesia	AMBON/PATTIMURA	WAPP	RNS	AMBON/PATTIMURA	WAPP	Y			T		F
	BALI INTL/NGURAH RAI	WADD	RS	BALI INTL/NGURAH RAI	WADD	Y			X		F
	BALIKPAPAN/SEPINGGAN	WALL	RS	BALIKPAPAN/SEPINGGAN	WALL	Y			X		F
	BANJARMASIN/SYAMSUDIN NOOR	WAOO	AS	BANJARMASIN/SYAMSUDIN NOOR	WAOO	Y			T		F
	BATAM/HANG NADIM	WIDD	AS	BATAM/HANG NADIM	WIDD	Y			T		F
	BIAK/FRANS KAISIEPO	WABB	RS	BIAK/FRANS KAISIEPO	WABB	Y		Y	X		F
	JAKARTA INTL/SOEKARNO-HATTA	WIII	RS	JAKARTA INTL/SOEKARNO-HATTA	WIII	Y		Y	X		F
	JAKARTA/HALIM PERDANAKUSUMA	WIHH	RS ~~RNS~~	JAKARTA/HALIM PERDANAKUSUMA	WIHH	Y		Y	T		P
	JAYAPURA/SENTANI	WAJJ	RS	JAYAPURA/SENTANI	WAJJ	Y			T		F
	KUPANG/EL-TARI	WATT	RS	KUPANG/EL-TARI	WATT	Y			T		F
	MAKASSAR/SULTAN HASANUDDIN	WAAA	RNS	MAKASSAR/SULTAN HASANUDDIN	WAAA	Y		Y	X		F
	MANADO/SAMRATULANGI	WAMM	RS	MANADO/SAMRATULANGI	WAMM	Y			X		F
	MEDAN/KUALANAMU	WIMM	RS	MEDAN/KUALANAMU	WIMM	Y		Y	T		F
	MERAUKE/MOPAH	WAKK	RNS	JAYAPURA/SENTANI	WAJJ	Y			T		P
	PALEMBANG/SULTAN MAHMUD BADARUDDIN II	WIPP	RNS	PALEMBANG/SULTAN MAHMUD BADARUDDIN II	WIPP	Y			T		F
	PANDANG PARIAMAN/MINANGKABAU INTERNATIONAL	WIEE ~~WIPT~~	RS	PANDANG/MINANGKABAU	WIEE ~~WIPT~~	Y		Y	T		F
	PEKANBARU/SULTAN SYARIF KASIM II	WIBB	RS	PEKANBARU/SULTAN SYARIF KASIM II	WIBB	Y			T		F
	PONTIANAK/SUPADIO	WIOO	RS	PONTIANAK/SUPADIO	WIOO	Y			T		F
	SURABAYA/JUANDA	WARR	RS	SURABAYA/JUANDA	WARR	Y			T		F
	TANJUNG PINANG/RAJA HAJI FISABILILLAH	WIDN	RS	BATAM/HANG NADIM	WIDD	Y			T		P
	TARAKAN/JUWATA	WAQQ ~~WALR~~	RS	BALIKPAPAN/SEPINGGAN	WALL	Y			T		P
	LOMBOK/Lombok	WADL	RS								
	BANYUWANGI/Banyuwangi	WADY	AS								

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1	2	3	4	5	6	7	8	9	10	11	12
	YOGYAKARTA/Yogyakarta	WAHI	RS								
	SOLO/Adi Soemarmo	WAHQ	RS								
	SEMARANG/Ahmad Yani	WAHS	RS								
	TARAKAN/Juwata	WAQQ	RS								
	SABANG/Maimun Saleh	WIAB	AS								
	KERTAJATI/Kertajati	WICA	AS								
	BANDUNG/Husein Sastranegara	WICC	RS								
	TANJUNG PANDAN/H. AS. Hanandjoeddin	WIKT	RS								
	LAMPUNG/Radin Inten II	WILL	AS								
	SIBORONGBORONG/Raja Sisingamangaraja XII	WIMN	RS								
	ACEH/Sultan Iskandar Muda	WITT	RS								
Japan	CHUBU CENTRAIR INTL	RJGG	RS	TOKYO (CITY)	RJTD	Y		Y	X		F
	FUKUOKA	RJFF	RS	TOKYO (CITY)	RJTD	Y			X		F
	HAKODATE	RJCH	AS	TOKYO (CITY)	RJTD	Y			X		F
	HIROSHIMA	RJOA	RS	TOKYO (CITY)	RJTD	Y			X		F
	KAGOSHIMA	RJFK	RS	TOKYO (CITY)	RJTD	Y			X		F
	KANSAI INTL	RJBB	RS	TOKYO (CITY)	RJTD	Y		Y	X		F
	KUMAMOTO	RJFT	RS	TOKYO (CITY)	RJTD	Y			X		F
	NAGASAKI	RJFU	RS	TOKYO (CITY)	RJTD	Y			X		F
	NAHA	ROAH	RS	TOKYO (CITY)	RJTD	Y			X		F
	NARITA INTL	RJAA	RS	TOKYO (CITY)	RJTD	Y		Y	X		F
	NIIGATA	RJSN	RS	TOKYO (CITY)	RJTD	Y			X		F
	OITA	RJFO	RS	TOKYO (CITY)	RJTD	Y			X		F
	OKAYAMA	RJOB	RS	TOKYO (CITY)	RJTD	Y			X		F
	OSAKA INTL	RJOO	AS	TOKYO (CITY)	RJTD	Y			X		F
	SAPPORO/NEW CHITOSE	RJCC	RS	TOKYO (CITY)	RJTD	Y			X		F
	SENDAI	RJSS	RNS	TOKYO (CITY)	RJTD	Y			X		F
	TAKAMATSU	RJOT	RS	TOKYO (CITY)	RJTD	Y			X		F
	TOKYO INTL	RJTT	AS	TOKYO (CITY)	RJTD	Y		Y	X		F
	KUSHIRO/Kushiro	RJCK	RS								
	YAMAGUCHI/Yamaguchi-Ube	RJDC	RS								
	ASAHIKAWA/Asahikawa	RJEC	RS								
	MIYAZAKI/Miyazaki	RJFM	RS								
	KITAKYUSHU/Kitakyushu	RJFR	RS								
	SAGA/Saga	RJFS	RS								
	SHIZUOKA/Shizuoka	RJNS	RS								
	TOYAMA/Toyama	RJNT	RS								

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1	2	3	4	5	6	7	8	9	10	11	12
	MATSUYAMA/Matsuyama	RJOM	RS								
	AOMORI/Aomori	RJSA	RS								
	FUKUSHIMA/Fukushima	RJSF	RS								
	HANAMAKI/Hanamaki	RJSI	RS								
	AKITA/Akita	RJSK	RS								
	ISHIGAKI/New Ishigaki	ROIG	RS								
	SHIMOJISHIMA/Shimojishima	RORS	RS								
Kiribati	CHRISTMAS ISLAND	PLCH	RS	NADI/INTL	NFFN	Y			T		F
	TARAWA/BONRIKI INTL	NGTA	RS	NADI/INTL	NFFN	Y			T		F
Lao People's Democratic Republic	VIENTIANE(WATTAY)	VLVT	RS	VIENTIANE(WATTAY)	VLVT	Y		Y	T		P
	LUANGPRABANG/Luangprabang Intl	VLLB	RS								
	PAKSE/Pakse Intl	VLPS	RS								
	KAISONPHOMVIHAN/Savannakhet Intl	VLSK	RS								
Macao, China (China)	MACAO/INTL AIRPORT	VMMC	RS	MACAO/INTL AIRPORT	VMMC	Y		Y	X		F
Malaysia	JOHOR BAHRU/SULTAN ISMAIL	WMKJ	RS	SEPANG/KL INTERNATIONAL AIRPORT	WMKK	Y			T		F
	KOTA KINABALU/INTL	WBKK	RS	KOTA KINABALU/INTL	WBKK	Y		Y	T		F
	KUCHING/INTL	WBGG	RS	KOTA KINABALU/INTL	WBKK	Y			T		F
	PENANG/INTL	WMKP	RS	SEPANG/KL INTERNATIONAL AIRPORT	WMKK	Y			T		F
	PULAU LANGKAWI/INTL	WMKL	RS	SEPANG/KL INTERNATIONAL AIRPORT	WMKK	Y			T		F
	SEPANG/KL INTERNATIONAL AIRPORT	WMKK	RS	SEPANG/KL INTERNATIONAL AIRPORT	WMKK	Y		Y	X		F
	MIRI/Miri	WBGR	RNS								
	SIBU/Sibu	WBGS	RNS								
	LABUAN/Labuan	WBKL	RNS								
	SANDAKAN/Sandakan	WBKS	RNS								
	TAWAU/Tawau	WBKW	RNS								
	ALOR SETAR/Sultan Abdul Halim	WMKA	RNS								
	KOTA BHARU/Sultan Ismail Petra	WMKC	RNS								
	KUANTAN/Haji Ahmad Shah	WMKD	RNS								
	IPOH/Sultan Azlan Shah	WMKI	RNS								
	MALACCA/Malacca	WMKM	RNS								

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1	2	3	4	5	6	7	8	9	10	11	12
	KUALA TERENGGANU/Sultan Mahmud	WMKN	RNS								
	SUBANG/Sultan Abdul Aziz Shah	WMSA	RNS								
Maldives	GAN/GAN INTERNATIONAL AIRPORT	VRMG	AS	IBRAHIM NASIR INTERNATIONAL AIRPORT	VRMM	Y			X		F
	HANIMAADHOO	VRMH	RS	IBRAHIM NASIR INTERNATIONAL AIRPORT	VRMM	Y			X		F
	IBRAHIM NASIR INTERNATIONAL AIRPORT	VRMM	RS	IBRAHIM NASIR INTERNATIONAL AIRPORT	VRMM	Y			X		F
	VILLA AIRPORT MAAMIGILI	VRMV	RS	IBRAHIM NASIR INTERNATIONAL AIRPORT	VRMM	Y					
Marshall Islands	MARSHALL ISLANDS/INTL MAJURO ATOLL	PKMJ	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		P
Micronesia (Federated States of)	POHNPEI INTL,POHNPEI ISLAND	PTPN	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		P
	WENO ISLAND ,FM CHUUK INTL.	PTKK	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	YAP INTL,YAP ISLAND	PTYA	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
Mongolia	ULAANBAATAR/CHINGGIS KHAAN	ZMUB	RS	ULAANBAATAR/CHINGGIS KHAAN	ZMUB	Y		Y	X		F
	ULAANBAATAR/Chinggis Khaan Intl	ZMCK	RS								
Myanmar	YANGON INTERNATIONAL	VYYY	RS	YANGON INTERNATIONAL	VYYY	Y		Y	T		F
	MANDALAY/Mandalay Intl	VYMD	RS								
	NAYPYITAW/Naypyitaw Intl	VYNT	RS								
Nauru	NAURU AIRPORT	ANYN	RS	NAURU AIRPORT	ANYN	Y		Y	T		F
Nepal	KATHMANDU	VNKT	RS	KATHMANDU	VNKT	Y		Y	T		F
	BHAIRAHAWA/Gautam Buddha Intl	VNBW	RS								
	POKHARA/Pokhara Intl	VNPR	RS								
New Caledonia (France)	NOUMEA LA TONTOUTA	NWWW	RS	NOUMEA LA TONTOUTA	NWWW	Y		Y	T		F
New Zealand	AUCKLAND INTL	NZAA	RS	KELBURN (MET OFFICE)	NZKL	Y	N	N	X	N	F
	CHRISTCHURCH INTL	NZCH	RS	KELBURN (MET OFFICE)	NZKL	Y	N	N	X	N	F
	WELLINGTON INTL	NZWN	RS	KELBURN (MET OFFICE)	NZKL	Y	N	N	X	N	F
	DUNEDIN/Dunedin	NZDN	RS								
	OHAKEA/Ohakea	NZOH	AS								
	QUEENSTOWN/Queenstown	NZQN	RS								

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1	2	3	4	5	6	7	8	9	10	11	12
Niue (New Zealand)	NIUE INTL	NIUE	RS	NADI/INTL	NFFN	Y			T		F
Northern Mariana Islands (United States)	ANDERSON AFB,GUAM ISLAND	PGUA	AS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	FRANCISCO C. ADA/SAIPAN INTERNATIONAL, OBYAN	PGSN	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	GUAM INTERNATIONAL, GUAM ISLAND	PGUM	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			X		F
	ROTA/INTL,ROTA I.	PGRO	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		P
Pakistan	GWADAR/INTL.	OPGD	RS	KARACHI/JINNAH INT'L	OPKC	Y			T		F
	ISLAMABAD/Islamabad Intl~~BENAZIR BHUTTO INT'L~~	OPIS ~~OPRN~~	RS	ISLAMABAD/Islamabad Intl~~BENAZIR BHUTTO INT'L~~	OPIS ~~OPRN~~	Y		Y	X		F
	KARACHI/JINNAH INT'L	OPKC	RS	KARACHI/JINNAH INT'L	OPKC	Y			X		F
	LAHORE/ALLAMA IQBAL INT'L	OPLA	RS	LAHORE/ALLAMA IQBAL INT'L	OPLA	Y		Y	X		F
	NAWABSHAH	OPNH	AS	KARACHI/JINNAH INT'L	OPKC	Y			T		F
	PESHAWAR/INTL.	OPPS	RS	PESHAWAR/BKIAP INTL	OPPS	Y			X		F
	FAISALABAD/Faisalabad Intl	OPFA	RS								
	MULTAN/Multan Intl	OPMT	RS								
	QUETTA/Quetta Intl	OPQT	RS								
	SKARDU/Skardu Intl	OPSD	RS								
Palau	BABELTHUAP/KOROR, BABELTHUAP ISLAND	PTRO	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
Papua New Guinea	PORT MORESBY INTL	AYPY	RS	PORT MORESBY INTL	AYPY	Y			T		F
	VANIMO	AYVN				Y					F
Philippines	DAVAO/FRANCISCO BANGOY INTL	RPMD	RNS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
	DIOSDADO MACAPAGAL, PAMPANGA	RPLC	RS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	X		F
	LAOAG, LAOAG INTL	RPLI	AS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
	LAPU-LAPU/MACTAN INTL	RPVM	RS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	X		F
	MANILA/NINOY AQUINO INTL	RPLL	RS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	X		F
	SUBIC BAY,SUBIC BAY INTL	RPLB	ANS	MANILA/NINOY AQUINO INTL	RPLL	Y		Y	T		P
	TAMBLER,GEN. SANTOS,SOUTH COTABATO	RPMR	RNS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
	ZAMBOANGA INTL	RPMZ	RNS	MANILA/NINOY AQUINO INTL	RPLL	Y		N	T		P
	PANGLAO /Bohol-Panglao Intl Airport	RPSP	RS								

State	Aerodrome (listed in Tables AOP) where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					METAR/SPECI and TAF availability
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	
1	2	3	4	5	6	7	8	9	10	11	12
	ILOILO/Iloilo Intl	RPVI	RS								
	KALIBO, AKLAN/Kalibo Intl Airport	RPVK	RS								
	PUERTO PRINCESA CITY/Puerto Princesa Intl Airport	RPVP	RS								
Republic of Korea	CHEONGJU	RKTU	RS	INCHEON INTL	RKSI	Y			T		F
	DAEGU INTL	RKTN	RS	INCHEON INTL	RKSI	Y			T		F
	GIMHAE INTL	RKPK	RS	INCHEON INTL	RKSI	Y			T		F
	GIMPO	RKSS	RS	INCHEON INTL	RKSI	Y		Y	X		F
	INCHEON INTL	RKSI	RS	INCHEON INTL	RKSI	Y		Y	X		F
	JEJU INTL	RKPC	RS	INCHEON INTL	RKSI	Y			X		F
	MUAN	RKJB	RS	INCHEON INTL	RKSI	Y			X		F
	YANGYANG	RKNY	RS	INCHEON INTL	RKSI	Y			T		F
Samoa	FALEOLO/INTL	NSFA	RS	FALEOLO/INTL	NSFA	Y		Y	T		F
	FAGALI'I/Fagali'i Intl	NSFI	RS								
Singapore	PAYA LEBAR (RSAF)	WSAP	AS	SINGAPORE/CHANGI	WSSS	Y			X		F
	SELETAR	WSSL	RS	SINGAPORE/CHANGI	WSSS	Y			X		F
	SINGAPORE/CHANGI	WSSS	RS	SINGAPORE/CHANGI	WSSS	Y		Y	X		F
Solomon Islands	HONIARA (HENDERSON)	AGGH	RS	HONIARA (HENDERSON)	AGGH	Y		Y	T		F
Sri Lanka	HINGURAKGODA/MINNERIYA	VCCH				Y					F
	KATUNAYAKE/BANDARANAIKE INTERNATIONAL AIRPORT COLOMBO	VCBI	RS	KATUNAYAKE/BANDARANAIKE INTERNATIONAL AIRPORT COLOMBO	VCBI	Y		Y	X		F
	MATTALA/MATTALA RAJAPAKSA INTERNATIONAL AIRPORT	VCRI	RS	MATTALA/MATTALA RAJAPAKSA INTERNATIONAL AIRPORT	VCRI	Y		Y	X		F
Thailand	BANGKOK/DON MUEANG INTL AIRPORT	VTBD	RS	BANGKOK/SUVARNABHUMI INTL AIRPORT	VTBS	Y		Y	X		F
	BANGKOK/SUVARNABHUMI INTL AIRPORT	VTBS	RS	BANGKOK/SUVARNABHUMI INTL AIRPORT	VTBS	Y		Y	X		F
	CHIANG MAI/CHIANG MAI INTL. AIRPORT	VTCC	RS	CHIANG MAI/CHIANG MAI INTL. AIRPORT	VTCC	Y		Y	X		F
	CHIANG RAI/MAE FAH LUANG-CHIANG RAI INTL AIRPORT	VTCT	RS	CHIANG MAI/CHIANG MAI INTL. AIRPORT	VTCC	Y		Y	X		F
	KHON KAEN	VTUK	RS	UBON RATCHATHANI	VTUU	Y			T		P
	KRABI	VTSG	RS	PHUKET/PHUKET INTL AIRPORT	VTSP	Y			T		F
	PHITSANULOK	VTPP	RS	CHIANG MAI/CHIANG MAI INTL. AIRPORT	VTCC	Y			T		P
	PHUKET/PHUKET INTL AIRPORT	VTSP	RS	PHUKET/PHUKET INTL AIRPORT	VTSP	Y		Y	X		F

State	Aerodrome (listed in Tables AOP) where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					METAR/SPECI and TAF availability
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	
1	2	3	4	5	6	7	8	9	10	11	12
	RAYONG/U-TAPAO PATTAYA INTL AIRPORT	VTBU	RS	RAYONG/U-TAPAO PATTAYA INTL AIRPORT	VTBU	Y			T		F
	SONGKHLA/HAT YAI INTL AIRPORT	VTSS	RS	SONGKHLA/HAT YAI INTL AIRPORT	VTSS	Y		Y	T		F
	SURAT THANI	VTSB	RS	SONGKHLA/HAT YAI INTL AIRPORT	VTSS	Y			T		P
	UBON RATCHATHANI	VTUU	RS	UBON RATCHATHANI	VTUU	Y		Y	T		F
	SURAT THANI/Samui	VTSM	RS								
Timor-Leste	SUAI/Commander-in-Chief of the FALINTIL – Kay Rala Xanana Gusmão Intl	WPDB	RNS								
	DILI/Presidente Nicolau Lobato Intl	WPDL	RS								
Tonga	FUA'AMOTU INTL.	NFTF	RS	NADI/INTL	NFFN	Y			T		F
	VAVA'U	NFTV	RS	NADI/INTL	NFFN	Y			T		F
Tuvalu	FUNAFUTI/INTL	NGFU	RS			Y			T		F
United States	ANCHORAGE/ELMENDORF AFB,AK.	PAED	AS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	COLD BAY,AK.	PACD	AS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	FAIRBANKS INTERNATIONAL, AK.	PAFA	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			X		F
	FAIRBANKS/EIELSON AFB,AK.	PAEI	AS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	HILO INTERNATIONAL, HILO HI.	PHTO	AS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	HONOLULU INTERNATIONAL, OAHU, HI.	PHNL	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			X		F
	KAHULUI, HI.	PHOG	AS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	KING SALMON,AK.	PAKN	AS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			T		F
	TED STEVENS ANCHORAGE INTERNATIONAL, AK.	PANC	RS	WASHINGTON (NWS NATIONAL MET CENTER), DC.	KWBC	Y			X		F
Vanuatu	PORT VILA/BAUERFIELD	NVVV	RS	PORT VILA/BAUERFIELD	NVVV	Y			T		F
	SANTO/PEKOA	NVSS	RS	PORT VILA/BAUERFIELD	NVVV	Y			T		F
Viet Nam	CAM RANH	VVCR	RS	CAM RANH	VVCR	Y		Y	T		F
	CAN THO	VVCT	RS	CAN THO	VVCT	Y		Y	T		F
	DA NANG	VVDN	RS	DA NANG	VVDN	Y		Y	T		F
	HA NOI/NOI BAI	VVNB	RS	HA NOI/NOI BAI	VVNB	Y		Y	T		F
	HO CHI MINH/TAN SON NHAT	VVTS	RS	HO CHI MINH/TAN SON NHAT	VVTS	Y		Y	X		F
	HUE/PHU BAI	VVPB	RS	HUE/PHU BAI	VVPB	Y		Y	T		F
	PHU QUOC	VVPQ	RS	PHU QUOC	VVPQ	Y		Y	T		F

State	Aerodrome (listed in Tables AOP) where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					METAR/SPECI and TAF availability
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	
1	2	3	4	5	6	7	8	9	10	11	12
	HAI PHONG/Cat Bi	VVCI	RS								
	QUANG NINH/Van Don	VVVD	RS								
Wallis and Futuna Islands (France)	WALLIS HIHIFO	NLWW	RS	NADI/INTL	NFFN	Y			T		F

TABLE MET II-3 – VOLMET BROADCASTS

EXPLANATION OF THE TABLE

The transmitting station appears at the top of each block.

Names in lower case letters indicate aerodromes for which reports (routine or selected special) are required.

Names in upper-case letters indicate aerodromes for which forecasts are required.

Tokyo	Hong Kong	Auckland	
10–15 40–45	15–20 45–50	20–25	50–55
Tokyo (Narita) Tokyo (Haneda) Sapporo Chubu Osaka Fukuoka Incheon	Hong Kong Naha Taibei Gaoxiong Manila Mactan Guangzhou	Auckland Christchurch Wellington Nadi Faleolo Nouméa Rarotonga Tahiti	Auckland Christchurch Wellington Nadi Faleolo Nouméa Pago Pago Tahiti
TOKYO (NARITA) TOKYO (HANEDA)	HONG KONG	NADI NOUMÉA	AUCKLAND CHRISTCHURCH

Honolulu		
10–15 40–45	15–20 45–50	20–25 50–55
Honolulu Hilo Kahului Agana	San Francisco Los Angeles Seattle Portland Sacramento Ontario Las Vegas	Anchorage Fairbanks King Salmon Elmendorf Cold Bay Vancouver
SIGMET	SIGMET	SIGMET
HONOLULU HILO AGANA	SAN FRANCISCO SEATTLE LOS ANGELES	ANCHORAGE FAIRBANKS VANCOUVER COLD BAY

Sydney	Kolkata	Bangkok	Karachi	Singapore	Mumbai
00–05 30–35	05–10 35–40	10–15 40–45	15–20 45–50	20–25 50–55	25–30 55–60
Sydney Brisbane Melbourne Townsville Adelaide Alice Springs Darwin Perth	Kolkata Delhi Dhaka Yangon Kathmandu	Bangkok Yangon Ha Noi Ho-Chi-Minh Phnom-Penh Utapao Vientiane	Karachi Islamabad Lahore Delhi Mumbai	Singapore Sebang Jakarta Kuching Brunei Kota Kinabalu Denpasar Penang	Mumbai Ahmadabad Chennai Colombo Karachi Male
00–05 SYDNEY BRISBANE	KOLKATA DELHI	BANGKOK YANGON	KARACHI LAHORE MUMBAI DELHI	20–25 SINGAPORE SEBANG	MUMBAI COLOMBO MALE
30–35 MELBOURNE PERTH	HO-CHI-MINH		SINGAPORE	50–55 SINGAPORE JAKARTA	

Guangzhou			Beijing		
00–05 30–35	05–10 35–40	10–15 40–45	15–20 45–50	20–25 50–55	25–30 55–60
Xiamen	Guangzhou Nanning GUANGZHOU	Changsha Chengdu Kunming Wuhan CHENGDU	Beijing Harbin Dalian Shenyang Hohhot Taiyuan Tianjin BEIJING	Hangzhou Shanghai SHANGHAI	Lanzhou Xían Urumqi XÍAN

EUROPEAN (EUR) AIR NAVIGATION PLAN

VOLUME III

ENDORSED BY EASPG/4

2 December 2022

Key to mark-up:
Green highlight = content to be reviewed and updated by relevant experts

TABLE OF CONTENTS

EUR 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 European Air Navigation Planning Group (EANPG).

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 EANPG. The status of implementation is updated on a regular basis as endorsed by the EANPG.

2. AVIATION SYSTEM BLOCK UPGRADES (ASBUs)

2.1 The Global Air Navigation Plan (GANP) represents a rolling, long term strategic methodology which leverages existing technologies and anticipates future developments based on State/industry agreed operational objectives. The GANP's Aviation System Block Upgrades (ASBU) methodology is a programmatic and flexible global system's engineering approach that allows all Member States to advance their Air Navigation capacities based on their specific operational requirements. The Block Upgrades will enable aviation to realise the global harmonization, increased capacity, and improved environmental efficiency that modern air traffic growth now demands in every region around the world.

2.2 The GANP's Block Upgrades have been initially organised in five-year time increments starting in 2013 and continuing through 2028 and beyond. The GANP ASBU planning approach also addresses airspace user needs, regulatory requirements and the needs of Air Navigation Service Providers and Airports. This ensures a single source for comprehensive planning. This structured approach provides a basis for sound investment strategies and will generate commitment from States, equipment manufacturers, operators and service providers. A first updated version of the GANP, with a new planning horizon from 2016 to 2031 and the introduction of 6-year time increments so that they would be aligned with the ICAO Assembly cycles, was endorsed at the 39th ICAO Assembly in October 2016. The significantly revised sixth edition of the GANP was presented at the 13th Air Navigation Conference in 2018 and had been endorsed at the 40th ICAO Assembly in September 2019. The seventh edition of the GANP, which is only a minor update to the ASBU frameworks and Basic Building Blocks (BBBs) was endorsed at the 41th ICAO Assembly in October 2022.

2.3 This resultant framework is intended primarily to ensure that the aviation system will be maintained and enhanced, that ATM improvement programmes are effectively harmonised, and that barriers to future aviation efficiency and environmental gains can be removed at a reasonable cost. In this sense, the adoption of the ASBU methodology significantly clarifies how the ANSP and airspace users should plan for future equipage.

2.4 Although the GANP has a worldwide perspective, it is not intended that all Block Elements be required to be applied in every State and Region. Many of the Block Upgrade Elements contained in the GANP are specialised packages that should be applied only where the specific operational requirement exists or corresponding benefits can be realistically projected. The inherent flexibility in the ASBU methodology allows States to implement Elements based on their specific operational requirements. Using the GANP, Regional and State planners should identify those Elements which provide any needed operational improvements. Although the Block Upgrades do not dictate when or where a particular Element is to be implemented, this may change in the future should uneven progress hinder the passage of aircraft from one region of airspace to another.

EUR 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. Elements from the Aviation System Block Upgrades (ASBUs) are evaluated to identify which of those elements best provide the needed operational improvements. Depending on the complexity of the element, additional planning steps may need to be undertaken including financing and training needs. Finally, regional plans would be developed for the deployment of elements 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.

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**. However, it must be noted that the ANRF templates are not used in the ICAO EUR Region.

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 program, as well as triennial policy adjustments to the GANP and the Block Upgrade elements.

3.3 **Table GEN III-1** contains a set of Implementation Indicator(s) for the ASBU Block 0 and ASBU Block 1 elements (if identified as a priority for implementation at regional or sub-regional level). These indicators are intended to enable comparison between ICAO Regions with respect to ASBU Block 0 and 1 elements and will apply only to commonly selected ASBU elements. All Regions/PIRGs reserve the

right to select the ASBU elements relevant to their needs and to endorse additional indicators, as deemed necessary. No reporting is required for ASBU elements that have not been selected.

_____

TABLE GEN III-1 – IMPLEMENTATION INDICATOR(S) FOR ASBU BLOCK 0 AND BLOCK 1 ELEMENTS

Explanation of the Table

The following table shows the full list of 87 ASBU elements from the 6th edition of the GANP that will be included in the ICAO ASBU Implementation Monitoring Reports for the ICAO EUR Region. The selection was based on the recommendation of the EUR Region GANP Transition Project Team (EURGANT-PT) and endorsed by EASPG written consultation procedure in April 2021.

It also shows the corresponding ATM Master Plan Level 3 objective (where applicable and based on ATM MP Level 3 Plan 2020), as well as data sources used to produce the present edition of the Report.
Depending on data availability and regular updates of the ATM Master Plan Level 3 Implementation Plan, remaining elements will be covered by subsequent editions of the Report.

The colour coding used in the table has the following meaning:

ASBU Elements for which credible data sources have been identified and that are included in this edition of the Report;

ASBU Elements which will be added in subsequent editions of the Report, depending on data availability and necessary maturity level for deployment.

ASBU Thread	ASBU Element	Title	MPL3 Objective	Data sources Used	Page
ACAS	ACAS-B1/1	ACAS Improvements	ATC16	LSSIP + questionnaire	
ACDM	ACDM-B0/1	Airport CDM Information Sharing (ACIS)	AOP05	LSSIP + questionnaire	
	ACDM-B0/2	Integration with ATM Network function	AOP05	LSSIP + questionnaire	
	ACDM-B1/1[1]	Airport Operations Plan (AOP)	AOP11.2	LSSIP + questionnaire	
	ACDM-B1/2	Airport Operations Centre (APOC)			
AMET	AMET-B0/1	Meteorological observations products	/	METG	
	AMET-B0/2	Meteorological forecast and warning products	/	METG	
	AMET-B0/3	Climatological and historical meteorological products	/	METG	
	AMET-B0/4	Dissemination of meteorological products	/	METG	
	AMET-B1/1	Meteorological observations information	/	METG	
	AMET-B1/2	Meteorological forecast and warning information	/	METG	
	AMET-B1/3	Climatological and historical meteorological information	/	METG	
	AMET-B1/4	Dissemination of meteorological information	/	METG	

[1] In the context of the latest GANP minor update (v6.1, to be approved by the Assembly in 2022), both ACDM B1/1 and B1/2 were moved to Block 2

ASBU Thread	ASBU Element	Title	MPL3 Objective	Data sources Used	Page
APTA	APTA-B0/1	PBN Approaches (with basic capabilities)	NAV10	PBN Map Tool + questionnaire	
	APTA-B0/2	PBN SID and STAR procedures (with basic capabilities)	NAV03.1	PBN Map Tool + questionnaire	
	APTA-B0/3	SBAS/GBAS CAT I precision approach procedures	/	PBN Map Tool + questionnaire	
	APTA-B0/4	CDO (Basic)	ENV01	LSSIP + questionnaire	
	APTA-B0/5	CCO (Basic)	ENV03	LSSIP + questionnaire	
	APTA-B0/6	PBN Helicopter Point in Space (PinS) Operations	NAV12	LSSIP + questionnaire	
	APTA-B0/7	Performance based aerodrome operating minima – Advanced aircraft			
	APTA-B0/8	Performance based aerodrome operating minima – Basic aircraft			
	APTA-B1/1	PBN Approaches (with advanced capabilities)	NAV10	PBN Map Tool + questionnaire	
	APTA-B1/2	PBN SID and STAR procedures (with advanced capabilities)	NAV03.2	PBN Map Tool + questionnaire	
	APTA-B1/3	Performance based aerodrome operating minima – Advanced aircraft with SVGS			
	APTA-B1/4	CDO (Advanced)	ENV01	LSSIP + questionnaire	
	APTA-B1/5	CCO (Advanced)	ENV03	LSSIP + questionnaire	
ASUR	ASUR-B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)	/	LSSIP SUR Annex + questionnaire	
	ASUR-B0/2	Multilateration cooperative surveillance systems (MLAT)	/	LSSIP SUR Annex + questionnaire	
	ASUR-B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	/	LSSIP SUR Annex + questionnaire	
	ASUR-B1/1	Reception of aircraft ADS-B signals from space (SB ADS-B)	/	LSSIP SUR Annex + questionnaire	
COMI	COMI-B0/4	VHF Data Link (VDL) Mode 2 Basic	ITY-AGDL	LSSIP + questionnaire	
	COMI-B0/7	ATS Message Handling System (AMHS)	COM10.1,	LSSIP + questionnaire	
	COMI-B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	COM12	LSSIP + questionnaire	
	COMI-B1/2	VHF Data Link (VDL) Mode 2 Multi-Frequency	ITY-AGDL	LSSIP + questionnaire	

ASBU Thread	ASBU Element	Title	MPL3 Objective	Data sources Used	Page
DAIM	DAIM-B1/1	Provision of quality-assured aeronautical data and information	ITY-ADQ	LSSIP + questionnaire	
	DAIM-B1/2	Provision of digital Aeronautical Information Publication (AIP) data sets			
	DAIM-B1/3	Provision of digital terrain data sets	INF07	LSSIP + questionnaire	
	DAIM-B1/4	Provision of digital obstacle data sets	INF07	LSSIP + questionnaire	
	DAIM-B1/5	Provision of digital aerodrome mapping data sets			
	DAIM-B1/6	Provision of digital instrument flight procedure data sets			
	DAIM-B1/7	NOTAM improvements			
FICE	FICE-B0/1	Automated basic inter facility data exchange (AIDC)	ITY-COTR	LSSIP + questionnaire	
FRTO	FRTO-B0/1	Direct routing (DCT)	AOM21.1	LSSIP + questionnaire	
	FRTO-B0/2	Airspace planning and Flexible Use of Airspace (FUA)	AOM19.5-ASP01 AOM19.5-ASP02	LSSIP + questionnaire	
	FRTO-B0/4	Basic conflict detection and conformance monitoring	ATC12.1	LSSIP + questionnaire	
	FRTO-B1/1	Free Route Airspace (FRA)	AOM21.2	LSSIP + questionnaire	
	FRTO-B1/2	Required Navigation Performance (RNP) routes			
	FRTO-B1/3	Advanced Flexible Use of Airspace (FUA) and management of real time airspace data	AOM19.5-ASP09	LSSIP + questionnaire	
	FRTO-B1/4	Dynamic sectorization	AOM19.4	LSSIP + questionnaire	
	FRTO-B1/5	Enhanced Conflict Detection Tools and Conformance Monitoring	ATC12.1	LSSIP + questionnaire	
	FRTO-B1/6	Multi-Sector Planning	ATC18	LSSIP + questionnaire	
GADS	GADS-B1/1	Aircraft Tracking	/	Aireon ALERT	
	GADS-B1/2	Contact directory service			
NAVS	NAVS-B0/1	Ground Based Augmentation Systems (GBAS)	/	PBN Map Tool + national AIPs	
	NAVS-B0/2	Satellite Based Augmentation Systems (SBAS)			
	NAVS-B1/1	Extended GBAS			
NOPS	NOPS-B0/1	Initial integration of collaborative airspace management with air traffic flow management	AOM19.5-ASP05	LSSIP + questionnaire	
	NOPS-B0/2	Collaborative Network Flight Updates	FCM03	LSSIP + questionnaire	

ASBU Thread	ASBU Element	Title	MPL3 Objective	Data sources Used	Page
	NOPS-B0/3	Network Operation Planning basic features	/	Network Operations Plan + questionnaire	
	NOPS-B0/4	Initial Airport/ATFM slots and A-CDM Network Interface	AOP05, AOP17FCM11.1	LSSIP + questionnaire	
	NOPS-B0/5	Dynamic ATFM slot allocation	/	NM ATFCM Operations manual + questionnaire	
	NOPS-B1/1	Short Term ATFM measures	FCM04.2	LSSIP + questionnaire	
	NOPS-B1/2	Enhanced Network Operations Planning	FCM10	LSSIP + questionnaire	
	NOPS-B1/3	Enhanced integration of Airport operations planning with network operations planning	FCM11.2	LSSIP + questionnaire	
	NOPS-B1/4	Dynamic Traffic Complexity Management	FCM06.1	LSSIP + questionnaire	
	NOPS-B1/5	Full integration of airspace management with air traffic flow management	AOM19.5-ASP04	LSSIP + questionnaire	
	NOPS-B1/6	Initial Dynamic Airspace configurations	AOM19.4	LSSIP + questionnaire	
	NOPS-B1/7	Enhanced ATFM slot swapping	FCM09	LSSIP + questionnaire	
	NOPS-B1/8	Extended Arrival Management supported by the ATM Network function	ATC15.2	LSSIP + questionnaire	
	NOPS-B1/9	Target Times for ATFM purposes	FCM10-ASP03	LSSIP + questionnaire	
RATS	RATS-B1/1	Remotely Operated Aerodrome Air Traffic Services	AOP14	LSSIP + questionnaire	
RSEQ	RSEQ-B0/1	Arrival Management	ATC07.1	LSSIP + questionnaire	
	RSEQ-B0/2	Departure Management	Former AOP05-ASP05, AOP19	LSSIP + questionnaire	
	RSEQ-B0/3	Point merge	/	EUROCONTROL Innovation Hub + questionnaire	
	RSEQ-B1/1	Extended arrival metering	ATC15.2	LSSIP + questionnaire	
SNET	SNET-B0/1	Short Term Conflict Alert (STCA)	ATC02.2	LSSIP + questionnaire	
	SNET-B0/2	Minimum Safe Altitude Warning (MSAW)	ATC02.8-ASP03	LSSIP + questionnaire	
	SNET-B0/3	Area Proximity Warning (APW)	ATC02.8-ASP01	LSSIP + questionnaire	
	SNET-B0/4	Approach Path Monitoring (APM)	ATC02.8-ASP05	LSSIP + questionnaire	

ASBU Thread	ASBU Element	Title	MPL3 Objective	Data sources Used	Page
	SNET-B1/1	Enhanced STCA with aircraft parameters	ATC20	LSSIP + questionnaire	
	SNET-B1/2	Enhanced STCA in complex TMAs	ATC02.9	LSSIP + questionnaire	
SURF	SURF-B0/1	Basic ATCO tools to manage traffic during ground operations			
	SURF-B0/2	Comprehensive situational awareness of surface operations	AOP04.1	LSSIP + questionnaire	
	SURF-B0/3	Initial ATCO alerting service for surface operations	AOP04.2	LSSIP + questionnaire	
	SURF-B1/1	Advanced features using visual aids to support traffic management during ground operations	AOP16	LSSIP + questionnaire	
	SURF-B1/3	Enhanced ATCO alerting service for surface operations	AOP12.1	LSSIP + questionnaire	
	SURF-B1/4	Routing service to support ATCO surface operations management	AOP13	LSSIP + questionnaire	

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)
Note: ANRFs are not used in the ICAO EUR Region

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 (KPAs)

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

4. ASBU B0-05/CDO: Planning Tables 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 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 the Regional Performance Dashboards and the Annual Air Navigation Report. The conclusions from the 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.

Appendix B - Main Planning Table Template

	Objectives					Priorities and targets			Reference
Block	**ASBU modules and elements Enablers**	**Performance Improvement Area**	**Applicable or not in [Region] (Yes/No)**	**Regional planning elements**	**Enablers**	**Priority allocated in [Region]**	**Target(s) in [Region]**	**Indicator(s) / Metric(s)**	**Supporting Planning Document (ANRF, other)**

EUR ANP, VOLUME III

PART II – AIR NAVIGATION SYSTEM/ASBU IMPLEMENTATION

1. INTRODUCTION

1.1 The GANP and the ASBU concept and documents were developed to provide the framework and strategic direction for a global and harmonized aviation system. They provide strategic direction and define measurable operational improvements and include key civil aviation policy principles to assist ICAO Regions and States with the preparation and implementation of their air navigation plans.

1.2 The planning and implementation of required elements of selected ASBU t elements in the ICAO EUR Region should be undertaken within the framework of the EASPG with the participation and support of all stakeholders, including regulatory personnel so as to ensure global interoperability and harmonization of the aviation system.

1.3 The ASBU implementation monitoring report will be presented to the EASPG on an annual basis and can be, after PIRG endorsement, issued as a companion document to Volume III.

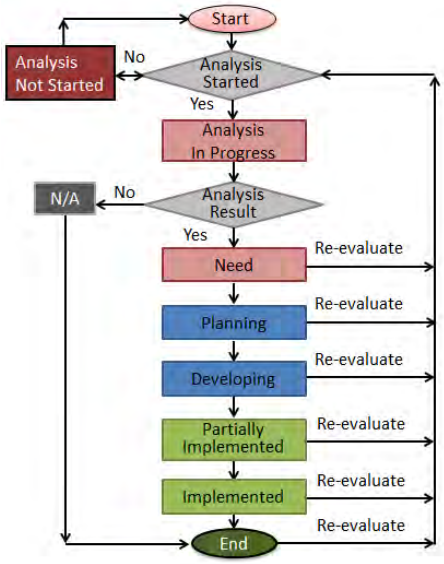
1.4 **Figure GEN III-1** depicts the workflow for analysing and implementing ASBU elements. This same method can be applied with respect to Regional Aviation System Improvements or national aviation system improvements.

1.5 The significance of each step in the workflow as it pertains to regional planning is as follows:

- **Analysis Not Started** – The requirement to implement this ASBU element has not yet been assessed by any State in the Region
- **Analysis In Progress** – A Need Analysis as to whether or not this ASBU element is required is in progress by at least one State in the Region
- **N/A** – The State in the Region has decided not to implement this ASBU element, as it is not applicable or as there had been no need identified
- **Need** - One or more States in the Region have determined the ASBU element is required, but none have begun planning for the implementation
- **Planning** – Implementation of this ASBU element is planned, but not started
- **Developing** – Implementation of this ASBU element is in the development phase, but not yet operational
- **Partially Implemented** – Implementation of this ASBU element is partially completed and/or operational in at least one area of the Region
- **Implemented** - Implementation of this ASBU element has been completed and/or is fully operational in all areas of the Region where the need was identified

1.6 The analysis and implementation status determined in accordance with the above is reflected in the ASBU Implementation Status Tables (Tables ASBU III-EUR-1 and 2).

FIGURE GEN III-1 – ANALYSIS AND IMPLEMENTATION WORKFLOW



2. MONITORING OF ASBU ELEMENTS IMPLEMENTATION

2.1 The monitoring of the regional implementation progress should be done by the EANPG for all planned elements. Due to the level of effort required, development of, and monitoring of, performance metrics/indicators should only be done for highest priority implementations.

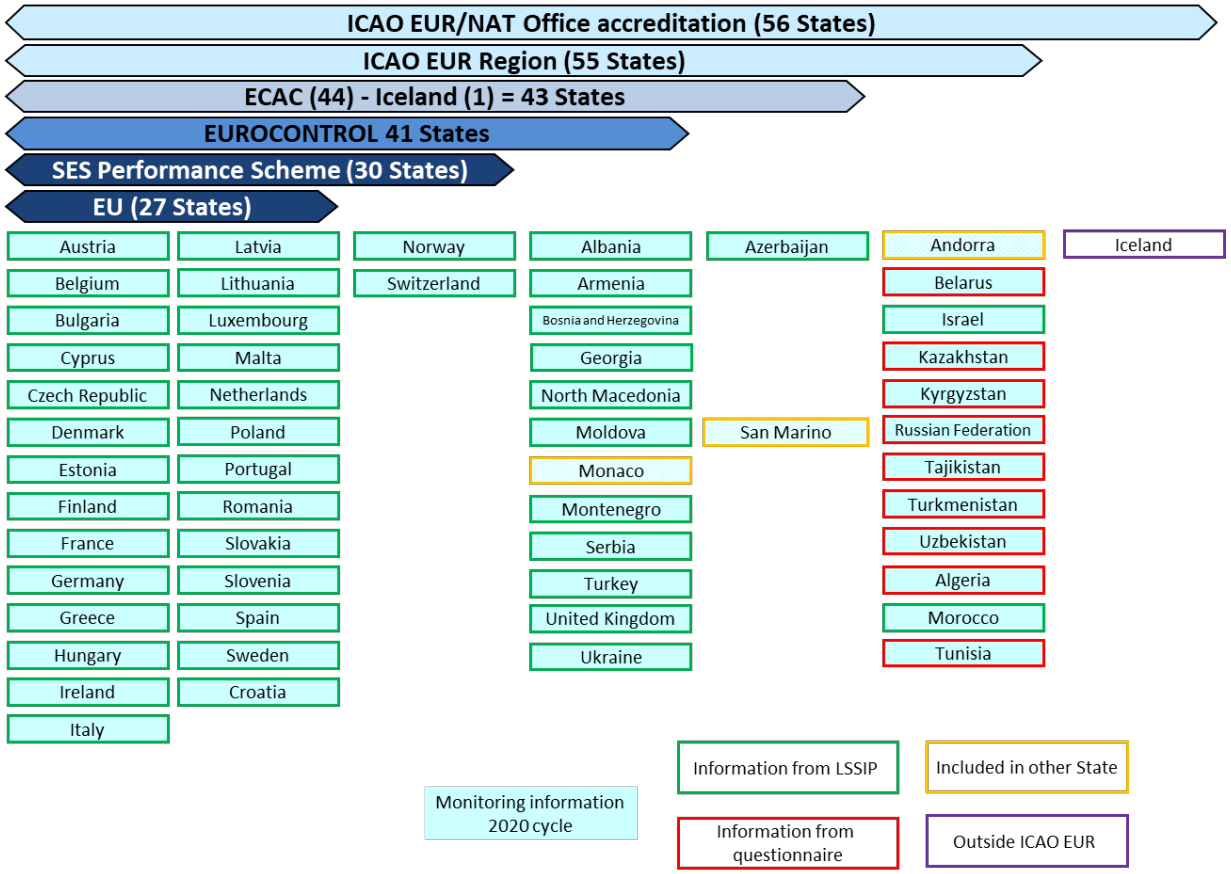
2.2 The EANPG has determined the mechanisms and tools for the monitoring and collection of necessary data at regional levels.

3. ASBU IMPLEMENTATION MONITORING MECHANISM IN THE EUR REGION

3.1 At EANPG/55 (25-28 November 2013), it was agreed that, in order to enable monitoring and reporting of the current priorities, a cooperative mechanism would be put in place between ICAO and EUROCONTROL. This mechanism would encompass the utilization of the EUROCONTROL LSSIP process complemented by a specific ICAO EUR ASBU questionnaire. The EANPG/58 (28 November – 1 December 2016) expanded the number Block 0 modules which need to be monitored and also recommended that the progress/status of implementation of ASBU Block 0 modules be reported, for monitoring purposes, by States regardless of their assigned priority in the EANPG/55 Conclusions. With the transition to the 6th edition of the GANP (which changed the ASBU methodology from modules to threads and elements), the EUR Region GANP Transition Project Team (EURGANT-PT) identified a list of 87 ASBU Block 0 and Block 1 elements from the GANP that will be included in the future ICAO ASBU Implementation Monitoring Reports for the ICAO EUR Region. The selection was endorsed by EASPG written consultation procedure in April 2021. Full details of the EUROCONTROL LSSIP process can be found in the ASBU Implementation Monitoring Report (8th edition, for the reference period 2021).

3.2 The *ICAO/EUROCONTROL ASBU Monitoring Report - Reference Period 2021* presents an overview of progress achieved so far in the implementation of the ICAO ASBU elements (Block 0 and Block 1) within the ICAO EUR Region during the reference year 2021.. The report summarizes the implementation progress of 74 ASBU Block 0 and Block 1 Elements and indicates what has been achieved so far, together with the future perspective of implementation in accordance with planning dates reported by 54 out of 55 States that are accredited to the ICAO EUR Region. It must also be noted that that Monaco, San Marino and Andorra are not addressed separately in this report, neither in related statistics, because for monitoring purposes they are included in other hosting States. Therefore there are 52 Member States considered individually in the statistics of the following chapters.

FIGURE ANS-ASBU III-EUR-1 – ASBU MONITORING REPORTING OF ICAO EUR STATES



3.3 Additional information on implementation for B0-AMET can be found in Table ASBU-EUR-AMET-B0 and for B1-AMET, in Table ASBU-EUR-AMET-B1.

3.4 Additional information on implementation for B1-DAIM can be found in Tables ASBU-EUR-DAIM 3-1, 3-2 and 3-3.

TABLE ASBU-III-EUR-1 – EUR REGION IMPLEMENTATION STATUS OF BLOCK 0 ELEMENTS

Refer to Companion Document
ASBU Implementation Monitoring Report ICAO EUR Region 2021, from 10.11.2022

TABLE ASBU- EUR-AMET-B0: METEOROLOGICAL INFORMATION SUPPORTING ENHANCED OPERATIONAL EFFICIENCY AND SAFETY

Description and purpose

Global, regional and local meteorological information:

a) forecasts provided by world area forecast centres (WAFC), volcanic ash advisory centres (VAAC) and tropical cyclone advisory centres (TCAC);
b) aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome including wind shear; and
c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

This module includes elements which should be viewed as a subset of all available meteorological information that can be used to support enhanced operational efficiency and safety.

Main performance impact:

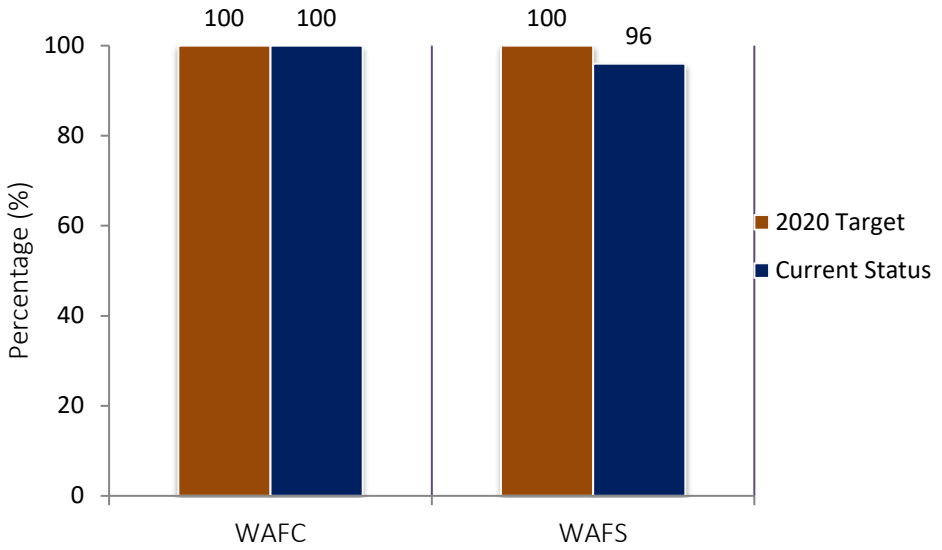
KPA- 01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	Y

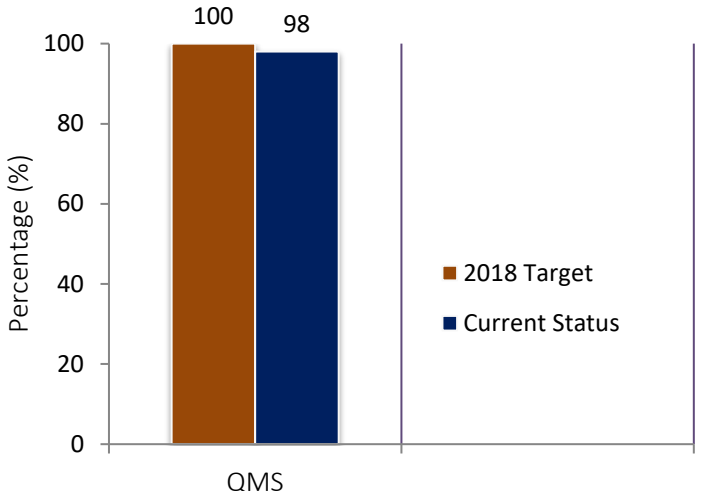
Applicability consideration:
Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.

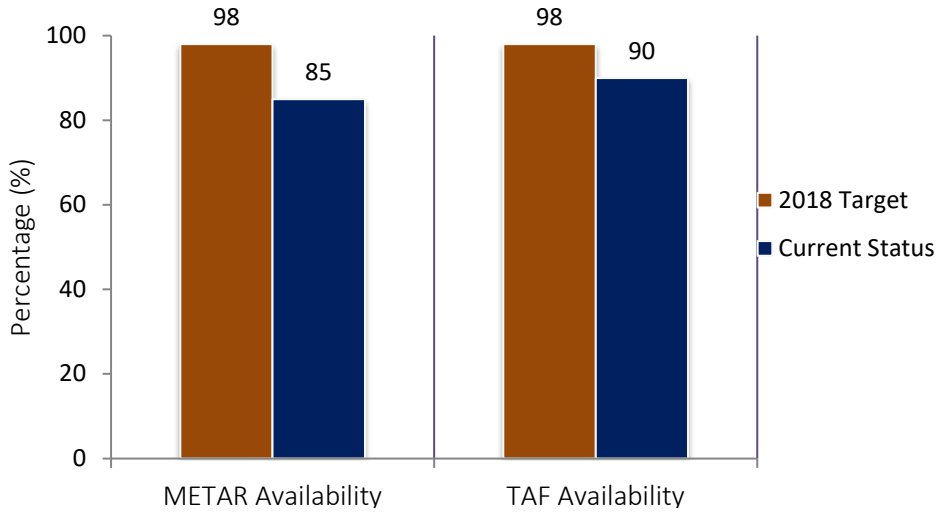
Elements	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
WAFS	***All States***	Indicator: % of States using WAFS data. Supporting metric: number of States having implemented SADIS FTP	100% by Dec 2020
QMS	***All** States*	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	100% by Dec 2020
METAR Availability	***All** States*	Indicator: % of States providing METAR as per requirements in the ANP, Volume II Table MET II-2 Supporting metric: number of States providing METAR as per requirements in the ANP Volume II Table MET II-2	98% by Dec 2020
TAF Availability	***All** States*	Indicator: % of States providing TAF as per requirements in the ANP, Volume II Table MET II-2 Supporting metric: number of States providing TAF as per requirements in the	98% by Dec 2020

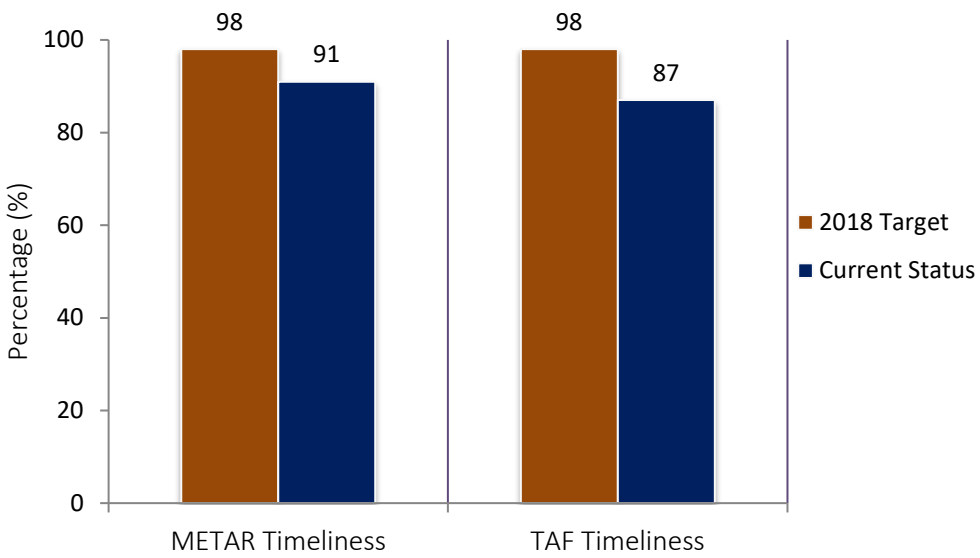
Elements	*Applicability*	*Performance Indicators/Supporting Metrics*	*Targets*
		ANP Volume II Table MET II-2	
METAR Timeliness	***All** States*	Indicator: % of States providing METAR in the time required as defined in Annex 3 Supporting metric: number of States providing METAR in the time required as defined in Annex 3	98% by Dec 2020
TAF Timeliness	***All** States*	Indicator: % of States providing TAF in the time required as defined in Annex 3 Supporting metric: number of States providing TAF in the time required as defined in Annex 3	98% by Dec 2020
SIGMET Availability	***All** with a FIR*	Indicator: % of States providing SIGMET Supporting metric: number of States providing SIGMET	100% by Dec 2020
SIGMET Format	***All** with a FIR*	Indicator: % of States providing SIGMET format in accordance with WMO AHL in the List of EUR SIGMET and AIRMET headers Supporting metric: number of States providing SIGMET format in accordance with WMO AHL in the List of EUR SIGMET and AIRMET headers	100% by Dec 2020
VAAC	***France, United Kingdom***	Indicator: % of VAACs in or serving the EUR Region that provide Annex 3 volcanic ash products (Volcanic Ash Advisories (VAA) and Volcanic Ash Advisories in Graphic Form (VAG)) Supporting metric: number of States hosting a VAAC having implemented VAA/VAG	100% by Dec 2020
VONA	***Italy, Russian Federation, Spain***	Indicator: % of Volcano Observatories in the EUR Region that provide volcano observatory notice for aviation (VONA) as per the Handbook on the International Airways Watch (IAVW) (Doc 9766) Supporting metric: number of States with Volcano Observatory having implemented VONA	100% by Dec 2020
WAFC	***United Kingdom***	Indicator: % of WAFCs in the EUR Region that provide Annex 3 World Area Forecast System (WAFS) data Supporting metric: number of States hosting a WAFC having implemented Annex 3 WAFS data	100% by Dec 2020

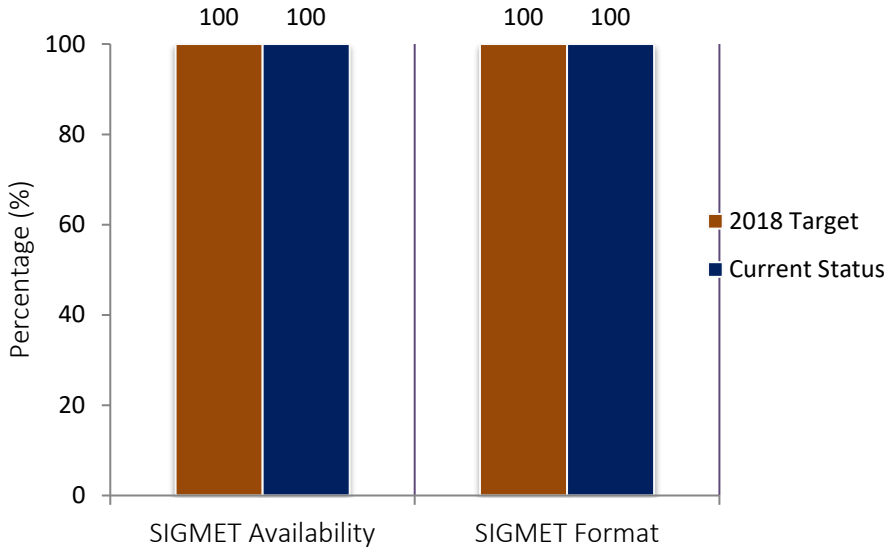
AMET B0 Status of implementation in the EUR Region

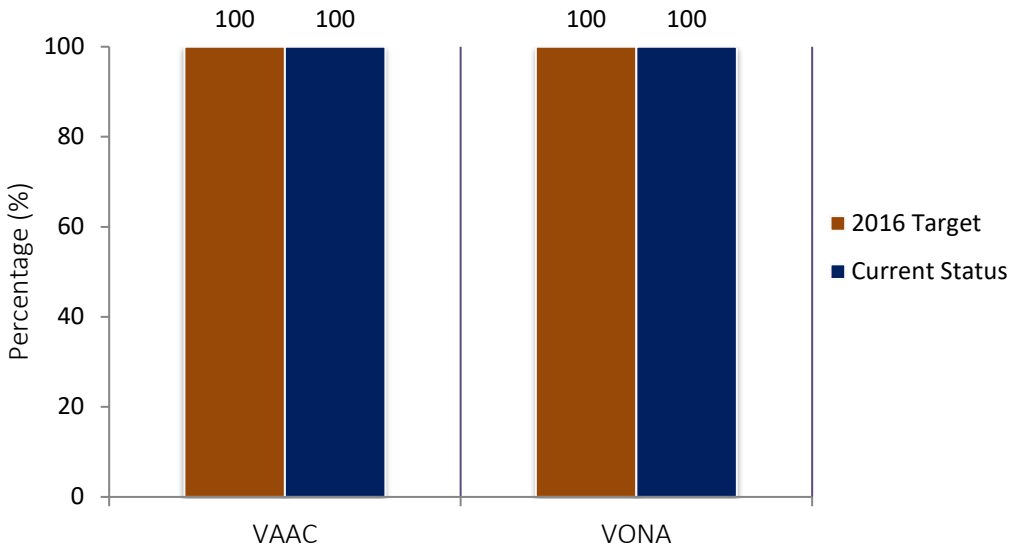




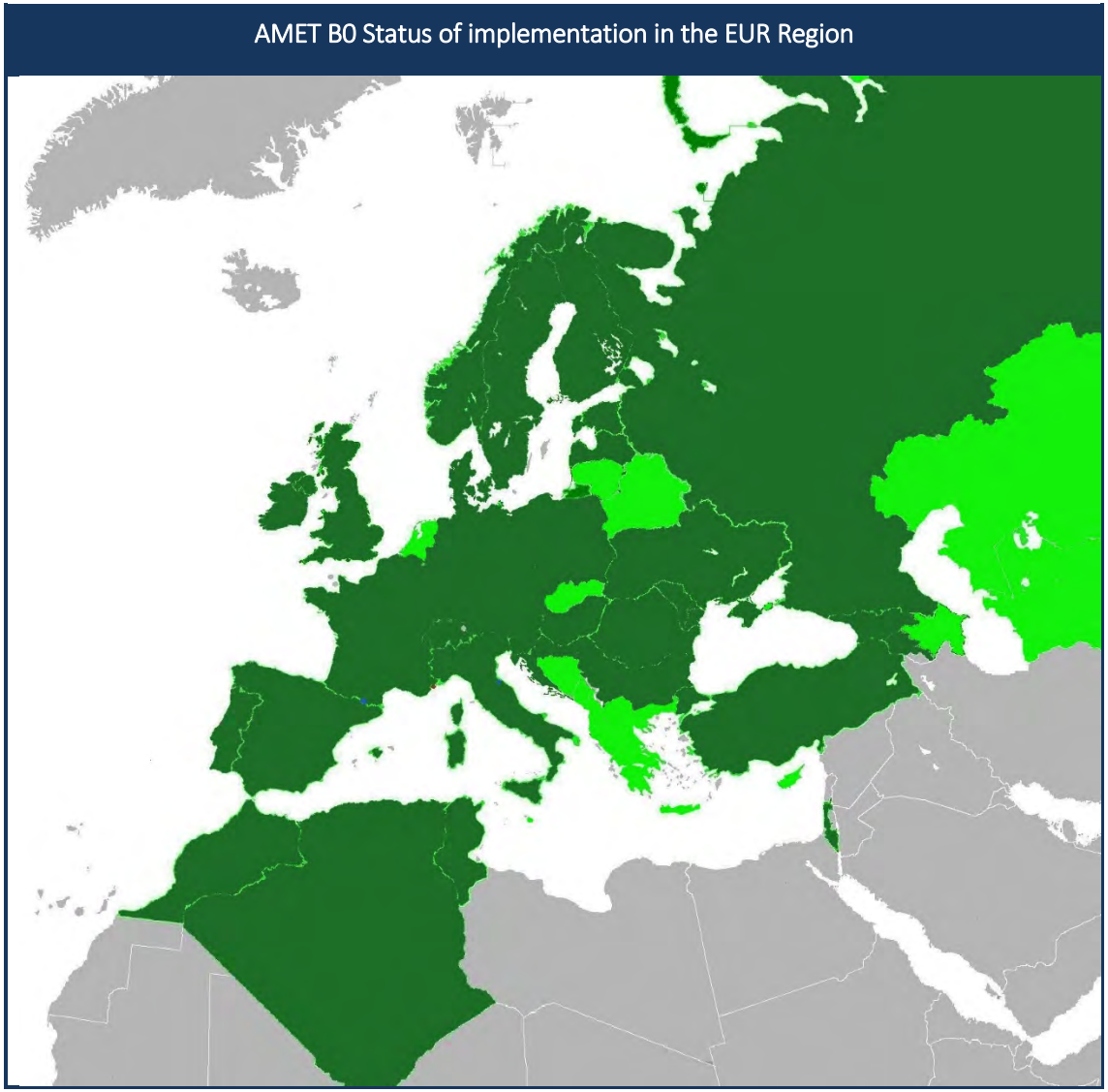



98
91
98
87
100
80
60
40
20
0
Percentage (%)
METAR Timeliness
TAF Timeliness
2018 Target
Current Status


100
100
100
100
100
80
60
40
20
0
Percentage (%)
SIGMET Availability
SIGMET Format
2018 Target
Current Status


100
100
100
100
100
80
60
40
20
0
Percentage (%)
VAAC
VONA
2016 Target
Current Status

AMET B0 Status of implementation in the EUR Region



The progress for AMET B0 is acceptable (with approximately 93% implementation).

Note: These high-level implementation elements are not applicable to Andorra, Monaco and San Marino.

Yellow – identified in Feb monitoring 2021 (existed and status has not changed)
Amber – first identified in Feb monitoring 2022 (new)
Light Green – identified in Feb monitoring 2021 and corrected by Feb 2022
Dark Green – implemented correctly for both Feb 2021 and 2022 monitoring
Red – on the list of air navigation deficiencies
Blue – not applicable

Module	Elements	Albania	Algeria	Armenia	Austria	Azerbaijan	Belarus	Belgium	Bosnia and Herzegovina	Bulgaria	Croatia	Cyprus	Czechia	Denmark	Estonia	Finland
AMET B0	WAFS															
	QMS															
	METAR availability															
	TAF availability															
	METAR timeliness															
	TAF timeliness															
	SIGMET availability															
	SIGMET format															
	VAAC															
	VONA															
	WAFC															

Module	Elements	France	Georgia	Germany	Greece	Hungary	Ireland	Israel	Italy	Kazakhstan	Kyrgyzstan	Latvia	Lithuania	Luxembourg	Malta	Monaco
AMET B0	WAFS															
	QMS															
	METAR availability															
	TAF availability															
	METAR timeliness															
	TAF timeliness															
	SIGMET availability															
	SIGMET format															
	VAAC															
	VONA															

	WAFC

Module	Elements	Montenegro	Morocco	Netherlands	North Macedonia	Norway	Poland	Portugal	Republic of Moldova	Romania	Russian Federation	Serbia	Slovakia	Slovenia	Spain	Sweden
AMET B0	WAFS															
	QMS															
	METAR availability															
	TAF availability															
	METAR timeliness															
	TAF timeliness															
	SIGMET availability															
	SIGMET format															
	VAAC															
	VONA															
	WAFC															

Module	Elements	Switzerland	Tajikistan	Tunisia	Turkey	Turkmenistan	Ukraine	United Kingdom	Uzbekistan
AMET B0	WAFS								
	QMS								
	METAR availability								
	TAF availability								
	METAR timeliness								
	TAF timeliness								
	SIGMET availability								
	SIGMET format								
	VAAC								
	VONA								
	WAFC								

TABLE ASBU-III-EUR-2 – EUR REGION IMPLEMENTATION STATUS OF BLOCK 1 ELEMENTS

Refer to Companion Document
ASBU Implementation Monitoring Report
ICAO EUR Region 2021, from 10.11.2022

TABLE ASBU- EUR-AMET-B1: ENHANCED OPERATIONAL DECISIONS THROUGH INTEGRATED METEOROLOGICAL INFORMATION (PLANNING AND NEAR-TERM SERVICE)

Description and purpose

To enable the reliable identification of solutions when forecast or observed meteorological conditions impact aerodromes, airspace or operations in general. Full ATM-Meteorology integration is needed to ensure that meteorological information is included in the logic of a decision process and the impact of the meteorological conditions on the operations are automatically derived, understood and taken into account. The supported decision time-horizons range from minutes, to several hours or days ahead of the ATM operation. This includes optimum flight profile planning and execution, and support to tactical in-flight avoidance of hazardous meteorological conditions (improved in-flight situational awareness) to typical near-term and planning (>20 minutes) type of decision making. This module promotes the establishment of standards for global exchange of the MET information closely aligned with other data domains and adhering to a single reference (ICAO-AIRM). It also promotes the further enhancement of meteorological information on various quality-of-service aspects including the accuracy and consistency of the data when used in inter-linked operational decision making processes.

Appreciating that the number of flights operating on cross-polar and trans-polar routes continues to steadily grow and recognizing that space weather affecting the earth's surface or atmosphere (such as solar radiation storms) pose a hazard to communications and navigation systems and may also pose a radiation risk to flight crew members and passengers, this module acknowledges the need for space weather information services in support of safe and efficient international air navigation.

This module builds, in particular, upon Module AMET B0, which detailed a sub-set of all available meteorological information that can be used to support enhanced operational efficiency and safety.

Main performance impact:

KPA-01 – Access and Equity	KPA-02 – Capacity	KPA-04 – Efficiency	KPA-05 – Environment	KPA-10 – Safety
N	Y	Y	Y	Y

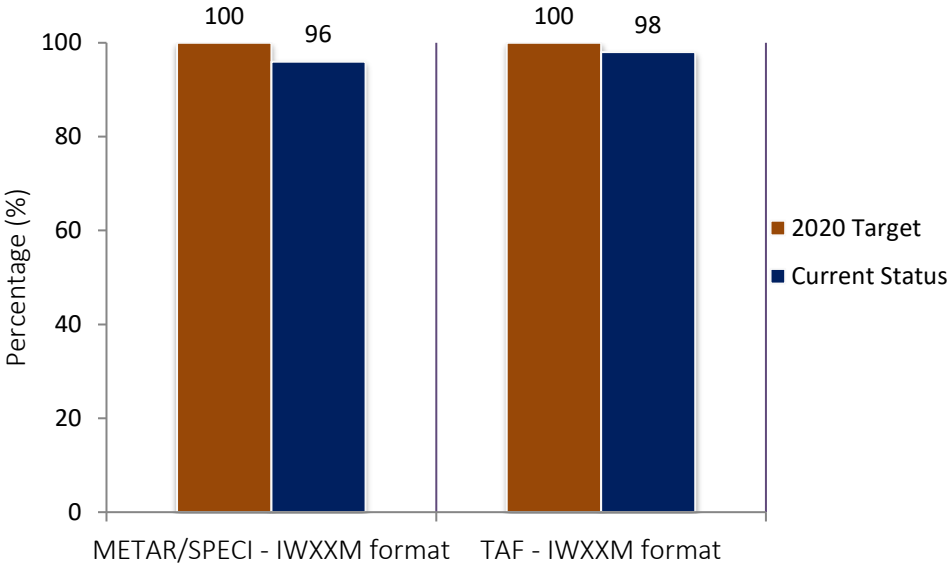
Applicability consideration:

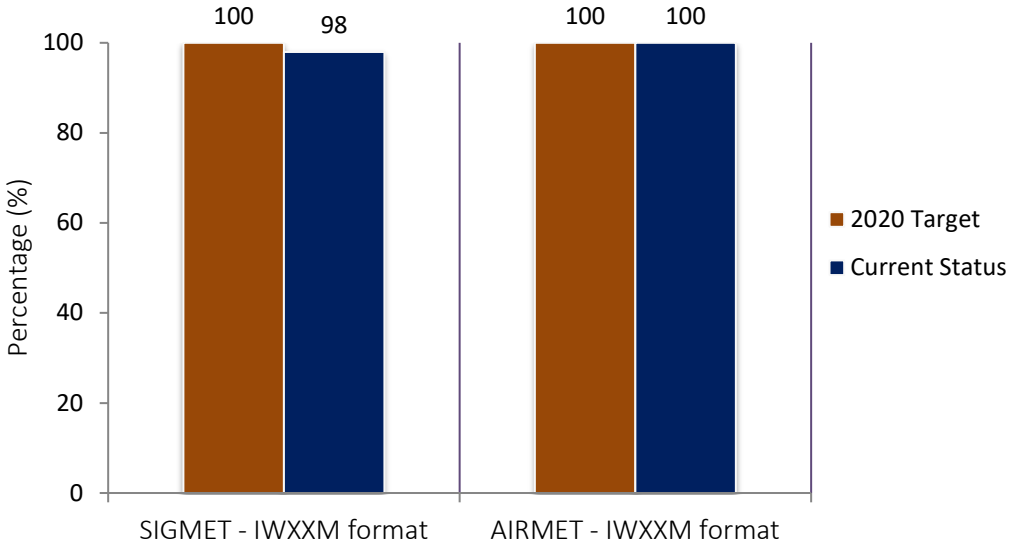
Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.

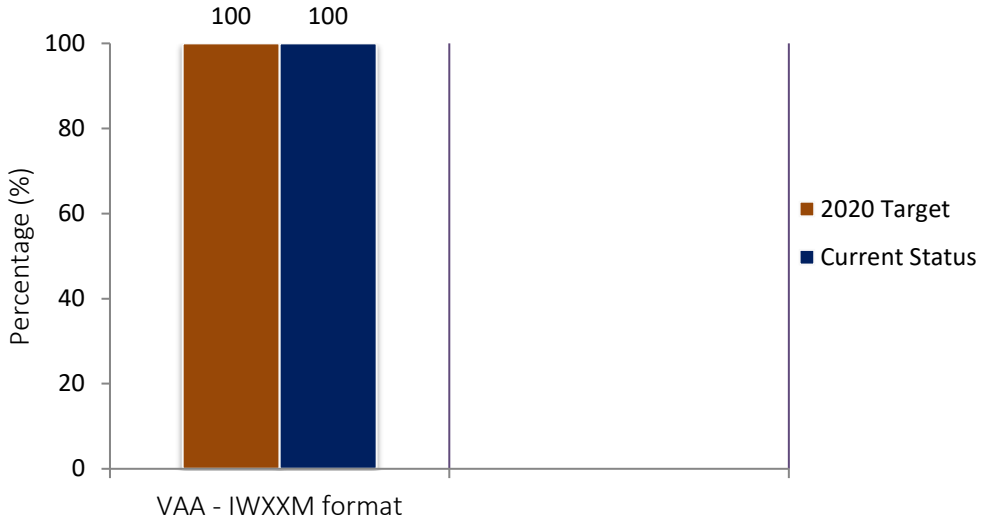
Though not explicit in ICAO Doc 9750, the implementation of providing a suite of MET products (METAR/SPECI, TAF, SIGMET, AIRMET, TCA, VAA and SWXA) in IWXXM format is a prerequisite to the System Wide Information Management (SWIM) and a requirement during the ASBU-B1 time frame (requirement 5 November 2020). Therefore, these elements in IWXXM format will be measured in EUR ANP Volume III.

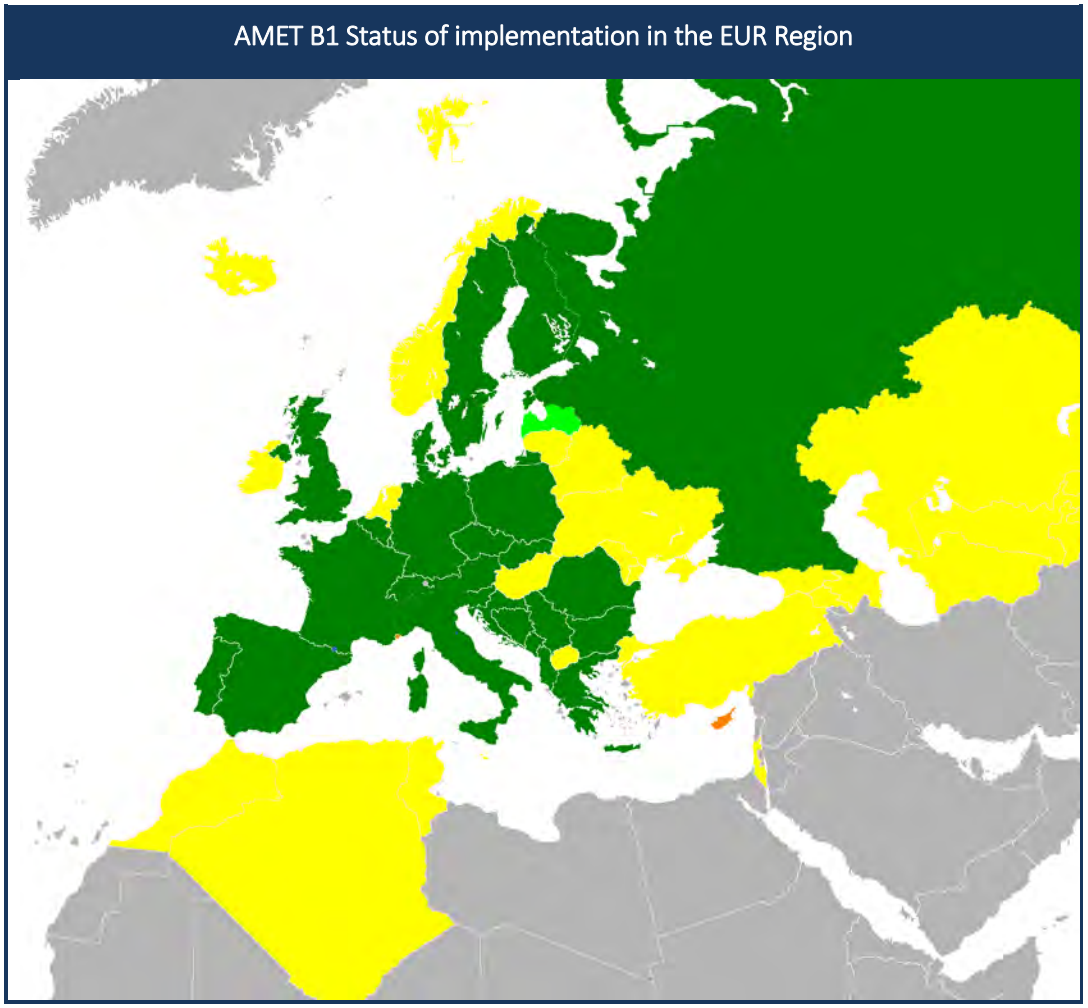
Elements in IWXXM format	***Applicability***	***Performance Indicators/Supporting Metrics***	***Targets***
METAR/SPECI	*States where METAR/SPECI is required as per the EUR ANP Volume II, Table MET II-2*	Indicator: % of relevant States having implemented METAR/SPECI in IWXXM format Supporting metric: number of relevant States having implemented METAR/SPECI in IWXXM format	100% by Nov 2020
TAF	*States where TAF is required as per the EUR ANP Volume II, Table MET II-2*	Indicator: % of relevant States having implemented TAF in IWXXM format Supporting metric: number of relevant States having implemented TAF in IWXXM format	100% by Nov 2020
SIGMET	*States who designated a Meteorological Watch Office to provide SIGMET for a FIR (or FIRs) as per the EUR ANP Volume II, Table MET II-1*	Indicator: % of relevant States having implemented SIGMET in IWXXM format Supporting metric: number of relevant States having implemented SIGMET in IWXXM format	100% by Nov 2020
AIRMET	*States who designated a Meteorological Watch Office to provide AIRMET for a FIR (or FIRs) as per the EUR ANP Volume II, Table MET II-1*	Indicator: % of relevant States having implemented AIRMET in IWXXM format Supporting metric: number of relevant States having implemented AIRMET in IWXXM format	100% by Nov 2020
VAA	***France, United Kingdom***	Indicator: % of VAACs in the EUR Region having implemented Volcanic Ash Advisories (VAA) in IWXXM format Supporting metric: number of States hosting a VAAC having implemented VAA in IWXXM format	100% by Nov 2020
TCA	***Not applicable in EUR Region***	N/A	N/A

AMET B1 Status of implementation in the EUR Region









Legend

- Completed
- Partially Completed (50%+)
- Translation Service used
- Not Started/Not Implemented
- Not Applicable
- Missing Data

The progress for AMET B1 is on-going (with approximately 98% implementation).

Note: These high-level implementation elements are not applicable to Andorra and San Marino.

Module	Elements in IWXXM format	Albania	Algeria	Armenia	Austria	Azerbaijan	Belarus	Belgium	Bosnia and Herzegovina	Bulgaria	Croatia	Cyprus	Czechia	Denmark	Estonia	Finland
AMET B1	METAR/SPECI															
	TAF															
	SIGMET															
	AIRMET															
	VAA															
	TCA															

Module	Elements in IWXXM format	France	Georgia	Germany	Greece	Hungary	Ireland	Israel	Italy	Kazakhstan	Kyrgyzstan	Latvia	Lithuania	Luxembourg	Malta	Monaco
AMET B1	METAR/SPECI															
	TAF															
	SIGMET															
	AIRMET															
	VAA															
	TCA															

Module	Elements in IWXXM format	Montenegro	Morocco	Netherlands	North Macedonia	Norway	Poland	Portugal	Republic of Moldova	Romania	Russian Federation	Serbia	Slovakia	Slovenia	Spain	Sweden
AMET B1	METAR/SPECI															
	TAF															
	SIGMET															
	AIRMET															
	VAA															
	TCA															

Module	Elements in IWXXM format	Switzerland	Tajikistan	Tunisia	Turkey	Turkmenistan	Ukraine	United Kingdom	Uzbekistan
AMET B1	METAR/SPECI								
	TAF								
	SIGMET								
	AIRMET								
	VAA								
	TCA								

DAIM: Digital Aeronautical Information Management

TABLE ASBU-EUR-DAIM-3-1

Automated Data-Centric Environment

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 *Level of Automation*, shown by:

0 – Manual
1 – Data Centric
2 – Automated Workflow
3 – Full AIM Integration

Note 1 – Guidance on automation and description of different levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, Chapter 7 (7.4).

3 Implementation of *Automated processes - Data collection (interfaces with data originators)*, shown by:

FI – Fully Implemented: *when Data collection is at level 3 automation*
PI – Partially Implemented: *when Data collection is at level 1 or 2 automation*
NI – Not Implemented: *when Data collection is at level 0 automation*

Note 2 — Guidance on the levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.4.

Note 3 — Additional guidance on the components of an automated AIM system (Data Input) are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.5.1.

Note 4 — EUROCONTROL Specification for the Origination of Aeronautical Data (DO) provides guidance and comprehensive requirements which should be met when originating aeronautical data within the aeronautical data supply chain.

4 Implementation of *Automated processes - Data processing*, shown by:

FI – Fully Implemented: *when Data processing is at level 3 automation*
PI – Partially Implemented: *when Data processing is at level 1 or 2 automation*
NI – Not Implemented: *when Data processing is at level 0 automation*

Note 5 — Guidance on the levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.4.

Note 6 — Additional guidance on the components of an automated AIM system (Core Processing System and Data Storage) are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.5.2 and 7.5.3.

5 Implementation of *Automated processes - Data provision/distribution*, shown by:

FI – Fully Implemented: *when Data provision/distribution is at level 3 automation*
PI – Partially Implemented: *when Data provision/distribution is at level 1 or 2 automation*
NI – Not Implemented: *when Data provision/distribution is at level 0 automation*

Note 7 — Guidance on the levels of automation are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.4.

Note 8 — Additional guidance on the components of an automated AIM system (Data Product Preparation) are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, 7.5.4.

Note 9 – The following EUROCONTROL Guidance Materials provide detailed information on aeronautical data/information distribution:

- *EUROCONTROL Specification for the Electronic Aeronautical Information Publication (eAIP)*
- *EUROCONTROL Guidelines for Aeronautical Information Publication (AIP) distribution on the Internet*

- *EUROCONTROL Guidelines Operating Procedures for AIS Dynamic Data (OPADD)*
- *EUROCONTROL Guidelines for harmonised AIP publication and data set provision*

Note 10 – Ref. Column 3-5: EUROCONTROL Guidelines on Aeronautical Data Processes describes a common process reflecting the latest advancement in automation and with a focus on a data-centric AIS/AIM environment (https://www.eurocontrol.int/publication/eurocontrol-guidelines-aeronautical-data-processes)

6 Action Plan – short description of the State's Action Plan with regard to the implementation of the items 2 to 5, especially for items with a "PI" or "NI" status, including planned date(s) of full implementation, as appropriate.

7 Remarks – additional information, including detail of "PI" and "NI", as appropriate.

State	Level of Automation (Overall)	Automated Processes			Action Plan	Remarks
		Data collection (interfaces with data originators)	Data Processing	Data provision/ distribution		
1	*2*	*3*	*4*	*5*	*6*	*7*
ALBANIA						
ALGERIA						
ARMENIA						
AUSTRIA						
AZERBAIJAN						
BELARUS						
BELGIUM						
BOSNIA AND HERZEGOVINA						
BULGARIA						
CROATIA						
CYPRUS						
CZECH REPUBLIC						
DENMARK						
ESTONIA						
FINLAND						
FRANCE						
GEORGIA						
GERMANY						
GREECE						
HUNGARY						
IRELAND						
ISRAEL						
ITALY						
KAZAKHSTAN						
KYRGYZSTAN						
LATVIA						
LITHUANIA						
LUXEMBOURG						
MALTA						
MONTENEGRO						
MOROCCO						
NETHERLANDS						
NORTH MACEDONIA						
NORWAY						
POLAND						
PORTUGAL						

State	Level of Automation (Overall)	Automated Processes			Action Plan	Remarks
		Data collection (interfaces with data originators)	Data Processing	Data provision/ distribution		
1	*2*	*3*	*4*	*5*	*6*	*7*
REPUBLIC OF MOLDOVA						
ROMANIA						
RUSSIAN FEDERATION						
SERBIA						
SLOVAKIA						
SLOVENIA						
SPAIN						
SWEDEN						
SWITZERLAND						
TAJIKISTAN						
TUNISIA						
TURKIYE						
TURKMENISTAN						
UKRAINE						
UNITED KINGDOM						
UZBEKISTAN						

TABLE ASBU-EUR-DAIM-3-2

Aeronautical Data Quality

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.

2 Implementation of Quality Assurance and Quality Control, shown by:

FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

Note 1 – Guidance on the implementation of Quality Assurance and Quality Control are contained in Doc 8126 (Aeronautical Information Services Manual), Part II, Chapter 6.

3 Establishment of formal arrangements with originators, shown by:

FC – Fully Compliant
PC – Partially Compliant
NC – Not Compliant

Note 2 – Provisions and guidance on formal arrangements with originators are contained in Annex 15, 2.1.5 and Doc 8126 (Aeronautical Information Services Manual), Part II, 3.3.
Note 3 – Fully compliant (FC) means that the AIS has established formal arrangements with all data originators.
Note 4 – Relevant data quality requirements should be considered in the formal arrangements with originators. Since the Aeronautical Data Catalogue contains all the data elements that the AIS manages, each one being assigned an owner, the AIS can use the Aeronautical Data Catalogue to systematically establish and document formal arrangements with all identified data originators.
Note 5 – Formal arrangements with originators should include requirements related to the provision of metadata.
Note 6 – Provisions related to metadata are contained in Annex 15, 4.2 and PANS-AIM, 4.2. EUROCONTROL Guidelines for the provision of Metadata to support the Exchange of Aeronautical Data provides further guidance on metadata.

4 Action Plan – short description of the State's Action Plan with regard to aeronautical data quality requirements implementation and the establishment of formal arrangements with originators, especially for items with a "PC" or "NC" status, including planned date(s) of full compliance, as appropriate.

5 Remarks – additional information, including detail of "PC" and "NC", as appropriate.

State	Quality Assurance /Quality Control	Formal Arrangement with Originators	Action Plan	Remarks
1	*2*	*3*	*4*	*5*
ALBANIA				
ALGERIA				
ARMENIA				
AUSTRIA				
AZERBAIJAN				
BELARUS				
BELGIUM				
BOSNIA AND HERZEGOVINA				
BULGARIA				

State	Quality Assurance /Quality Control	Formal Arrangement with Originators	Action Plan	Remarks
1	*2*	*3*	*4*	*5*
CROATIA				
CYPRUS				
CZECH REPUBLIC				
DENMARK				
ESTONIA				
FINLAND				
FRANCE				
GEORGIA				
GERMANY				
GREECE				
HUNGARY				
IRELAND				
ISRAEL				
ITALY				
KAZAKHSTAN				
KYRGYZSTAN				
LATVIA				
LITHUANIA				
LUXEMBOURG				
MALTA				
MONTENEGRO				
MOROCCO				
NETHERLANDS				
NORTH MACEDONIA				
NORWAY				
POLAND				
PORTUGAL				
REPUBLIC OF MOLDOVA				
ROMANIA				
RUSSIAN FEDERATION				
SERBIA				
SLOVAKIA				
SLOVENIA				
SPAIN				
SWEDEN				
SWITZERLAND				
TAJIKISTAN				
TUNISIA				
TURKIYE				
TURKMENISTAN				
UKRAINE				
UNITED KINGDOM				
UZBEKISTAN				

TABLE ASBU-EUR-DAIM-3-3

National Plans for the provision of Digital Data Sets

EXPLANATION OF THE TABLE

Column:

1 Name of the State or territory.
2 AIP Data Set
3 Obstacle Data Set for area 1
4 Obstacle Data Sets for airports (area 2, 3, 4, as applicable)
5 Instrument Flight Procedures Data Sets (IFPD)
6 Airport Mapping Data Sets (AMD)
Note 1 – EUROCONTROL supporting material for (ICAO) Aerodrome Mapping Data Sets https://ext.eurocontrol.int/aixm_confluence/display/ACGAMD/%28ICAO%29+Aerodrome+Mapping+Data+Sets+-+Supporting+Material assists with the provision of AMD encoded in AIXM 5.1.1 and facilitation of data translations with Geographic Information System (GIS) solutions based on EUROCAE ED99() /RTCA DO272() and EUROCAE ED119() / RTCA DO 291().
7 Terrain Data Set for area 1
8 Terrain Data Sets for airports (area 2, 3, 4, as applicable)
Note 2 – Ref columns 3-4 and 7-8: European ATM Master plan Level 3 contains an implementing objective INF07 — Electronic Terrain and Obstacle Data (eTOD) https://www.atmmasterplan.eu/depl/essip_objectives/1000383. This objective includes actions for development of the national TOD policy and oversight by the regulator and planning of the relevant processes by the ANSP and Aerodrome operators, but not the actual provision of the Obstacle data set.
Note 3 – Ref columns 3-4 and 7-8 EUROCONTROL Terrain and Obstacle Data (TOD) Manual provides assistance to those tasked with implementing electronic terrain and obstacle data.
Note 4 – Ref columns 2-8 Note: EUROCONTROL Guidelines for harmonised AIP publication and data set provision https://www.eurocontrol.int/publication/eurocontrol-guidelines-harmonised-aip-publication-and-data-set-provision provides in chapter 3 'Data set provision guidelines' some additional guidance.
9 Removal of AIP tables
Note 5 – EUROCONTROL Guidelines for harmonised AIP publication and data set provision https://www.eurocontrol.int/publication/eurocontrol-guidelines-harmonised-aip-publication-and-data-set-provision provides in section 3.1.4 'Data set provision checklist' guidance on steps to be considered before removal of tables from the AIP.
Note 6 – When status of implementation is reflected in the table for digital datasets, it is shown by:
For required datasets: FC (Fully Compliant), PC (Partially Compliant), NC (Not Compliant), N/A (Not Applicable)
For recommended datasets: FI (Fully Implemented), PI (Partially Implemented), NI (Not Implemented), N/A (Not Applicable)
10 Date of last update/review

Table ASBU-EUR-DAIM-3-3

Table is provided as a separate excel spreadsheet

TABLE ASBU-III-EUR-3 – EUR REGION IMPLEMENTATION STATUS OF BLOCK 2 ELEMENTS

FURTHER WORK REQUIRED

_____

TABLE ASBU-III-EUR-4 – EUR REGION IMPLEMENTATION STATUS OF BLOCK 3 ELEMENTS

FURTHER WORK REQUIRED

EUR ANP, VOLUME III

PART III - AIR NAVIGATION SYSTEM/REGIONAL AVIATION SYSTEM IMPROVEMENT (RASI) IMPLEMENTATION

1. INTRODUCTION

1.1 Part III indicates the implementation status of planned improvements to the EUR Region aviation system which are not covered in Part II. (e.g. additional functionalities exceeding Block 0 requirements such as detailed in the European ATM Master Plan, etc.)

1.2 To be developed…

- END -

Companion Document

ASBU Implementation Monitoring Report, ICAO EUR States, Reference Period 2021