Curaçao
State Air Navigation Plan

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1. Introduction

This document is Curaçao / Dutch Caribbean ANSP's State Air Navigation Plan (ANP) describing the plan and status of aviation technology implementation. The background of the State ANP and the environment of our air navigation system are presented along with the method and process to evaluate and monitor aviation technology implementation.

1.1 Background

The ICAO Global Air Navigation Plan (Doc 9750, GANP) provides ICAO's vision to achieve sustainable growth of the global civil aviation system. It also presents all States with a comprehensive planning tool supporting a harmonized global air navigation system. The GANP is an overarching framework that includes key civil aviation policy principles to assist ICAO Regions and States with the preparation of their Regional and State Air Navigation Plans (ANPs).

Planning and Implementation Regional Groups (PIRGs) are expected to develop the regional ANPs reflecting the regional requirements. GANP obligates States to map their individual or regional programmes against the harmonized GANP, but provides them with far greater certainty of investment. GANP requires active collaboration among States through the PIRGs in order to coordinate initiatives within applicable regional ANPs.

The GANP introduces the Aviation System Block Upgrades (ASBU) methodology. The ASBU methodology and its description of future aviation capabilities define programmatic and flexible global systems engineering approaches allowing all States to advance their air navigation capacities based on their specific operational requirements.

To this extent, the North American, Central American and Caribbean (NACC) Regional Office (RO), has published the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP, v3.1 in April 2014) aligning the activities and strategies with the ICAO ASBU methodology.

This document is the ANP for Curaçao / Dutch Caribbean ANSP's aligning activities and strategies to the GANP and RPBANIP. The information contained in the Curaçao / Dutch Caribbean ANSP's ANP is related mainly to:

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

The Curaçao / Dutch Caribbean ANSP's ANP would be used as a tool for planning, monitoring, and reporting the status of implementation of the aviation capabilities.

1.2 Environment

The environments of Air Navigation of Curaçao / Dutch Caribbean ANSP' such as authority, airspace and airports, and air traffic are described in this section.

1.2.1 Authority of Curaçao / Dutch Caribbean ANSP

The Curaçao Civil Aviation Authority was established by an Act of Parliament in 2010. Its mission is to **"To advance the safety, security and viability of Curacao Civil aviation."**

Dutch Caribbean ANSP is responsible for managing the TNCF airspace and Control Towers of TNCC and TNCB. Its operation is performed by a highly motivated work force contributing to the sustainable, social and economic development of Curaçao, Bonaire and Aruba.

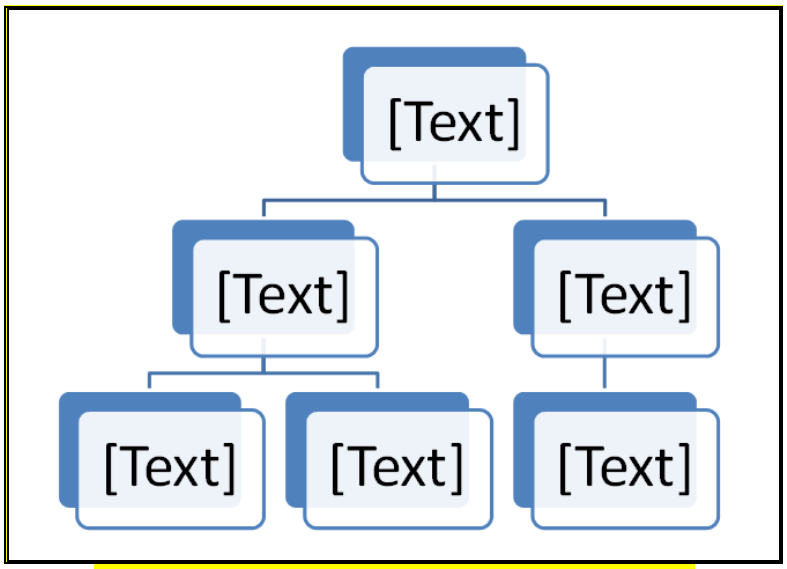


Figure 1.2.1: Organizational Structure of My State

1.2.2 Airspace

Curaçao is located within the TNCF Flight Information Region (FIR) that is managed by Dutch Caribbean ANSP. Refer to Figures 1.2.2a and 1.2.2b for the airspace around Curacao FIR. Describe FIR more in detail if you like.

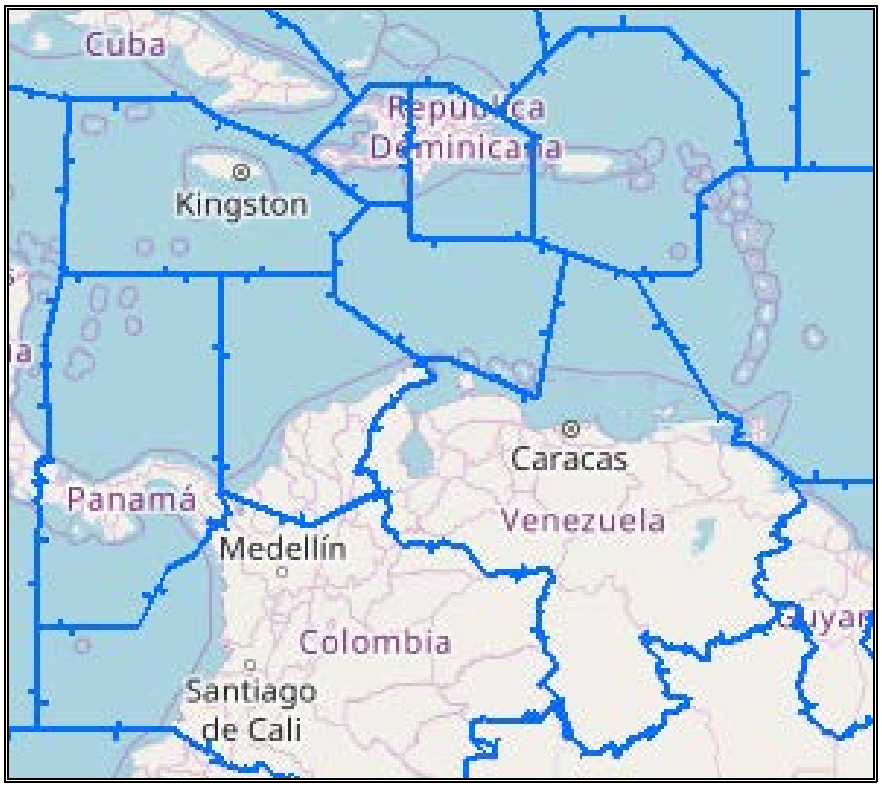


Figure 1.2.2a: Curaçao FIR and adjacent FIRs

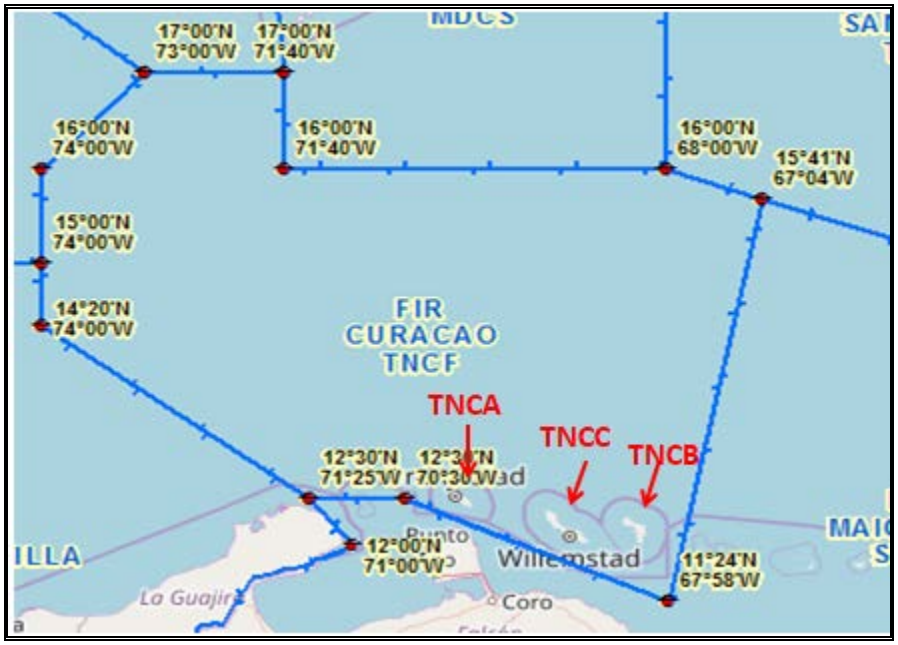


Figure 1.2.2b: TNCF FIR and Curaçao

1.2.3 Aerodromes

Two (Two is an example. Determine the aerodromes to be included in this doc and describe.) major aerodromes in My State are: Wow Wonderful Airport (TWOW) and Beautiful International Airport

(TBTF). These two aerodromes are listed in the ICAO's regional ANP titled, "Caribbean and South American Air Navigation Plan, Volume I (dated October 2015), Table AOP I-1, International Aerodromes Required in the CAR/SAM Regions". The TWOW has the capacity of 8-10 air traffic movements per hour. The TBTF has the capacity of 12-14 air traffic movements per hour.

Runway Information on Hato International Airport (TNCC)

	Runway 11	**Runway 29**
Length x Width	3413 m x 60 m *(11197 ft x 196 ft)*	3413 m x 60 m *(11197 ft x 196 ft)*
Surface Type	Asphalt	Asphalt
TDZ-Elev	32 ft	36 ft
Lighting	IALS (Intermediate Approach lighting System)	-
Displace Threshold	2739 ft	-

Runway Information on Bonaire International Airport (TNCB)

	Runway 10	**Runway 28**
Length x Width	3057 m x 45 m *(10029 ft x 148 ft)*	3057 m x 45 m *(10029 ft x 148 ft)*
Surface Type	Asphalt	Asphalt
TDZ-Elev	18 ft	20 ft
Lighting	SALS	-
Displace Threshold	-	-
Stopway	-	-

Runway Information on Reina Beatrix International Airport (TNCA)

	Runway 11	**Runway 29**
Length x Width	2828 m x 45 m *(9278 ft x 148 ft)*	2828 m x 45 m *(9278 ft x 148 ft)*
Surface Type	Asphalt	Asphalt
TDZ-Elev	12 ft	62 ft
Lighting	SALS 420 5 steps Brightness control	SALS 420 5 steps Brightness control
Displace Threshold	-	-
Stopway	-	-

1.2.4 Traffic Forecast

Number of typical daily operation (arrivals/departures) at Hato International Airport (TNCC) is 50/50 (total of 100 movements), Bonaire International Airport (TNCB) is 25/25 (total of 50 movements) and Reina Beatrix International Airport (TNCA) is 30/30 (total of 60 movements), respectively. The RPBANIP forecasted that average annual growth of air traffic in the Caribbean region would increase 5.9% during 2011-2031. The My Organization believes that this overall Caribbean regional forecast of annual increase of 5.9% is too optimistic for My Organization and more moderate number of 3.0% annual increase might realistic anticipation. Estimated daily operations at TWOW and TBTF are shown in Tables 1.2.4a and 1.2.4b applying the increase forecasts to each year from 2017 to 2031.

Year	TNCC	TNCB	TNCA
2017	50	60	
2018	53	64	
2019	56	67	

Year	TNCC	TNCB	TNCA
2017	50	60	
2018	52	62	
2019	53	64	

2020	59	71	
2021	63	75	
2022	67	80	
2023	71	85	
2024	75	90	
2025	79	95	
2026	84	101	
2027	89	106	
2028	94	113	
2029	99	119	
2030	105	126	
2031	112	134	

Table 1.2.4a: Air Traffic Forecasts at TNCC, TNCB and TNCA (number of daily operation) using annual increase rate of 5.9%

2020	55	66	
2021	56	68	
2022	58	70	
2023	60	72	
2024	61	74	
2025	63	76	
2026	65	78	
2027	67	81	
2028	69	83	
2029	71	86	
2030	73	88	
2031	76	91	

Table 1.2.4b: Air Traffic Forecasts at TNCC, TNCB and TNCA (number of daily operation) using annual increase rate of 5.9%

1.3 Planning Methodology

Guided by the GANP and RPBANIP, the state planning process starts by identifying the state responsible ATM areas, major traffic flows and international aerodromes. An analysis of this data leads to the identification of opportunities for performance improvement. Available technologies and ASBU Elements are evaluated to identify which Elements best provide the needed operational improvements. Depending on the complexity of the selected technology or Elements, additional planning steps may need to be undertaken including financing and training needs. Finally, state plans would be developed for the deployment of improvements and supporting 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.

Considering that some of the ASBU Modules contained in the GANP are specialized packages of implementable capabilities, called Elements, that may be applied where specific operational requirements or corresponding benefits exist, States will decide how each ASBU Element would fit into national and regional plans.

In establishing and updating the implementation priorities detailed in the Curaçao / Dutch Caribbean ANSP's ANP, due consideration should be given to the safety priorities set out in the Global Aviation Safety Plan (GASP) and the NAM/CAR regional safety strategy. Curaçao / Dutch Caribbean ANSP's would establish its own air navigation objectives, priorities and targets to meet its individual needs and circumstances in line with the global and regional air navigation objectives, priorities, and targets.

1.4 Air Navigation Planning Process

The air navigation planning process prescribes evaluation, implementation, reviewing, reporting, and monitoring activities. It is recommended to conduct the process on a cyclical, annual basis. An Air Navigation Reporting Form (ANRF) is a tool to monitor and report the implementation status of capabilities. The Curaçao / Dutch Caribbean ANSP's ANRF is a customized tool for the application of setting planning targets, monitoring implementation, and identifying challenges, measuring

implementation/performance and reporting. The ANRF reflects selected key performance areas as defined in the Manual on Global Performance of the Air Navigation System (ICAO Doc 9883).

Many of the future capabilities are described in terms of ASBU Elements. Some capabilities are specific to the need of the Caribbean Region and/or the State needs. These specific needs are described as Regional Aviation System Improvements (RASI) and State Aviation System Improvements (SASI). Both Analysis and Work Flow and ANRF are useful to manage the implementation status of ASBU, RASI, and SASI capabilities.

1.4.1 Analysis and Work Flow Process

Figure 1.4.1 depicts the workflow for analyzing and implementing ASBU Elements. This flow process should be applied to each of the ASBU Elements. If the Element is applicable to an airport, each airport needs to be evaluated through this flow process. This same flow process is applicable to RASI and SASI.

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
- **Analysis In Progress** – A Need Analysis as to whether or not this ASBU Element is required, is in progress
- **N/A** – The ASBU Element is not required
- **Need** - The Need Analysis concluded that the ASBU Element is required, but planning for the implementation has not yet begun
- **Planning** – Implementation of this ASBU Element is planned, but not yet 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 but all planned implementations are not yet complete
- **Implemented** - Implementation of this ASBU Element has been completed and/or is fully operational everywhere the need was identified

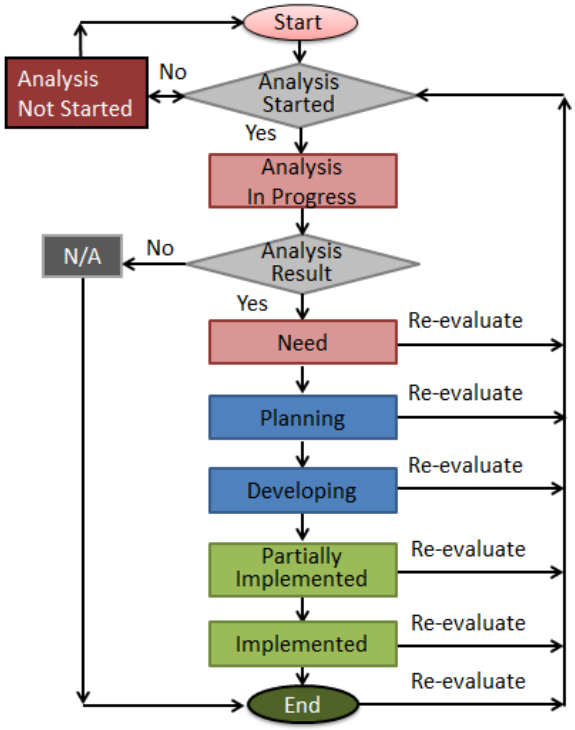


Figure 1.4.1: Analysis and Work Flow

The Need Analysis of ASBU Elements will identify which ASBU Elements are required. In this context, "required" means that the benefits estimated from the implementation would justify the associated implementation costs, or, the potential safety benefits are deemed to justify the implementation costs. The implementation status of ASBU Elements which are not required should be indicated as "N/A", meaning "not applicable".

The analysis and implementation status determined in accordance with the above is reflected in the applicable ANRFs and in the ASBU Implementation Status Tables.

1.4.2 Monitoring and Reporting Results

Monitoring and reporting results will be analyzed by the Regions, States and the 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. The reports will also provide the ICAO Council with detailed annual results on the basis of which tactical adjustments will be made to the performance framework work programme, as well as triennial policy adjustments.

The information provided in the Curaçao / Dutch Caribbean ANSP's ANRFs should be periodically reviewed and updated if subsequent analysis results in a change to the applicability of any ASBU Elements, whether or not they were selected. The explanation of ANRF is provided in Appendix A. The customized Curaçao / Dutch Caribbean ANSP's ASBU Air Navigation Reporting Form Template is provided in Appendix B. The Curaçao / Dutch Caribbean ANSP's RASI and SASI Air Navigation Reporting Form Templates are provided in Appendix C.

1.5 Problem Identification

To provide and promote safe and efficient aviation services to the customers, it is important to resolve on-going challenges that are hindering the mission. It is also important to anticipate and address the potential problems in the future.

1.5.1 Existing Problems

The demands for TWOW and TBTF are only expected to increase in the future. The current infrastructure at both airports, notwithstanding upgrades and expansions over the years, does not adequately meet peak capacity demand. The solution requires a huge investment in airport infrastructure. This includes airport terminal development, runway and turning bay reconstruction and rehabilitation, total drainage redevelopment, new control tower and technical block, and continuous modernization of communication, navigation, and surveillance equipment (e.g. Performance Based Navigation procedures (PBN). The formal implementation of Standard Instrument Departure procedures (SIDs) would improve on the safety, efficiency and management of airspace capacity.

In addition, airport operations need to be improved by introducing capabilities such as Airport Collaborative Decision Making (ACDM). To support airport operations, having accurate and timely weather and aeronautical information is essential. Information such as aerodrome warnings and wind shear warnings/alerts will increase safety of operations. Securing quality data should also be accomplished by introducing the Quality Management System (QMS) to both weather and aeronautical data.

A fundamental component which is critical concern, is the availability of human resource to meet the wide-ranging needs of airport operations. The provision of relevant training for that human resource is paramount.

1.5.2 Future Problems

Anticipating heavier demand at the TWOW and TBTF airports, the introduction of a Ground Based Argumentation System (GBAS) landing system procedure would be effective.

The human resource issues, if not addressed in tandem with the infrastructure and procedure development, could result in deficient service provision and delivery. Human resource acquisition and development must coincide with the infrastructure and procedure development.

2. Curaçao / Dutch Caribbean ANSP's **Aviation System Block Upgrade (ASBU) Implementation Status**

The status of ASBU implementation is provided in this section. Though there are Block 0 to Block 4 (B0, B1, B2, and B3), only B0 capacities are ready to be implemented with supporting documents such as standards, procedures, specifications, and training materials. ICAO will provide supporting documents for B1 in 2019, B2 in 2025, and B3 in 2031.

2.1 ASBU Block 0 Implementation Metrics, Targets, and Status

ASBU B0 Implementation Targets and Status are presented in this section. Curaçao considers three airports, Hato International Airport (TNCC), Bonaire International Airport (TNCB) and Reina Beatrix International Airport for airport oriented Elements.

2.1.1 ASBU B0 Implementation Metrics and Targets

Table 2.1.1 provides the ASBU B0 Implementation Metrics, Targets, and Progress for each B0 Element.

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
Performance Improvement Area 1: Airport Operations				
ACDM	**1.** Interconnection between aircraft operator & ANSP systems to share surface operations information	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-ACDM-1 Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCC, TNCA) **B0-ACDM-1 Target 2:** To be Assessed by Q3 2018 **c.** None	Status – Need Only TNCC and TNCA need this capability
	2. Interconnection between aircraft operator & airport operator systems to share surface operations information	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-ACDM-2 Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 3 (TNCC, TNCB, TNCA) **B0-ACDM-2 Target 2:** To be Assessed by Q3 2018 **c.** None	Status – Need
	3. Interconnection between airport operator & ANSP systems to share surface operations information	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-ACDM-3 Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCC, TNCA) **B0-ACDM-3 Target 2:** To be Assessed by Q3 2018 **c.** None	Status – Need Only TNCC and TNCA need this capability
	4. Interconnection between airport operator, aircraft operator & ANSP systems to share surface operations information	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-ACDM-4 Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 3 (TNCC, TNCB, TNCA) **B0-ACDM-4 Target 2:** To be Assessed by Q3 2018 **c.** None	Status – Need

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
	5. Collaborative departure queue management	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-ACDM-5 Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCC, TNCA) **B0-ACDM-5 Target 2:** To be Assessed by Q3 2018 **c.** None	Status – Need Only TNCC and TNCA need this capability
APTA	**1.** PBN approach procedures with vertical guidance to LNAV/VNAV minima	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-APTA-1 Target 1:** Implemented in 2012 **a.** Yes **b.** 2 **B0-APTA-1 Target 2:** Implemented in 2012 **c.** 2	Status – Implemented Only TNCC and TNCB need this capability.
	2. PBN approach procedures with vertical guidance to LPV minima	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-APTA-2 Target 1:** Assesse by Dec 2018 **a.** No **b.** TBD **B0-APTA-2 Target 2:** **c.** TBD	Status – Analysis in progress
	3. PBN Approach Procedures without vertical guidance (LP, LNAV minima; using SBAS)	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-APTA-3. Target 1:** Implemented in 2012 **a.** Yes **b.** 2 **B0-APTA-3 Target 2:** Implemented in 2012 **c.** 2	Status – Implemented Only TNCC and TNCB need this capability.
	4. GBAS Landing System (GLS) Approach procedures	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-APTA-4. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-APTA-4. Target 2:** **c.** TBD	Status – Analysis Not Started
RSEQ	**1.** AMAN via controlled time of arrival to a reference fix	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-RSEQ-1. Target 1:** Assess by Dec 2018 **a.** Yes **b.** None **B0- RSEQ-1 Target 2:** **c.** N/A	Status – Analysis in Progress
	2. Departure management	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-RSEQ-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** None **B0-RSEQ-2. Target 2:** **c.** N/A	Status – N/A
	3. Departure flow management	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-RSEQ-3. Target 1:** Assess by Dec 2018 **a.** Yes **b.** None **B0-RSEQ-3. Target 2:** **c.** N/A	Status – Analysis in Progress

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
	4. Point merge	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-RSEQ-4. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** None **B0-RSEQ-4. Target 2:** **c.** N/A	Status – N/A
SURF	**1.** A-SMGCS with at least one cooperative surface surveillance system	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-SURF-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** N/A **B0-SURF-1. Target 2:** **c.** N/A	Status – N/A
	2. Including ADS-B APT as an element of A-SMGCS	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-SURF-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** N/A **B0-SURF-2. Target 2:** **c.** N/A	Status – N/A
	3. A-SMGCS alerting with flight identification information	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-SURF-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** None **B0-SURF-3. Target 2:** **c.** N/A	Status – N/A
	4. EVS for taxi operations	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-SURF-4. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** None **B0-SURF-4. Target 2:** **c.** N/A	Status – N/A
	5. Airport vehicles equipped with transponders	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-SURF-5. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** N/A **B0-SURF-5. Target 2:** **c.** N/A	Status – N/A
WAKE	**1.** New PANS-ATM wake turbulence categories and separation minima	*ICAO has not developed new minima.*	N/A	Status – N/A
	2. Dependent diagonal paired approach procedures for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-WAKE-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** N/A **B0-WAKE-2. Target 2:** **c.** N/A	Status – N/A

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
	3. Wake independent departure and arrival procedures for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-WAKE-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** N/A **B0-WAKE-3. Target 2:** **c.** N/A	Status – N/A
	4. Wake turbulence mitigation for departures procedures for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-WAKE-4. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** N/A **B0-WAKE-4. Target 2:** **c.** N/A	Status – N/A
	5. 6 wake turbulence categories and separation minima	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-WAKE-5. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** N/A **B0-WAKE-5. Target 2:** **c.** N/A	Status – N/A
Performance Improvement Area 2: Globally Interoperable Systems and Data				
AMET	**1.** WAFS	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-AMET-1.Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-AMET-1.Target 2:** Implemented in 1995 **c.** Yes	Status – Implemented
	2. IAVW	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-AMET-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-AMET-2. Target 2:** Implemented in 2000 **c.** Yes	Status – Implemented
	3. TCAC forecasts	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-AMET-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-AMET-3.Target 2:** Implemented in 1975 **c.** Yes	Status – Implemented
	4. Aerodrome warnings	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-AMET-4. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCC, TNCB) **B0-AMET-4.Target 2:** Implement in2008 **c.** 2	Status – Implemented TNCA info is needed, for now “Not Started”.
	5. Wind shear warnings and alerts	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-AMET-5. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCC, TNCB) **B0-AMET-5.Target 2:** **c.** 2	Status – Implemented TNCA info is needed, for now “Not Started”.

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
	6. SIGMET	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-AMET-6. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-AMET-6. Target 2:** Implemented in 1975 **c.** Yes	Status – Implemented
	7. Other OPMET information (METAR, SPECI and/or TAF)	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-AMET-7. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 3 **B0-AMET-7.Target 2:** Implemented in 1975 **c.** 3	Status – Implemented
	8. QMS for MET	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-AMET-8. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-AMET-8.Target 2:** Implement in 2008 **c.** Yes	Status – Implemented
DATM	**1.** Aeronautical Information Exchange Model (AIXM)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-DATM-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-DATM-1. Target 2:** Implement in 2012 **c.** Yes	Status – Implemented
	2. eAIP	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-DATM-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-DATM-2. Target 2:** Implement in 2016 **c.** Yes	Status – Implemented
	3. Digital NOTAM	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-DATM-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-DATM-3. Target 2:** Implement by TBD **c.** No	Status - Planning
	4. eTOD	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-DATM-4. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-DATM-4. Target 2:** Implement by TBD **c.** No	Status - Analysis in Progress
	5. WGS-84	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-DATM-5. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-DATM-5. Target 2:** Implement in 2011 **c.** Yes	Status – Implemented
	6. QMS for AIM	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-DATM-6. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-DATM-6. Target 2:** Implement by Q4 2018 **c.** No	Status – Developing

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
FICE	**1.** AIDC to provide initial flight data to adjacent ATSUs	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FICE-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-FICE-1. Target 2:** **c.** Yes	Status – Implemented
	2. AIDC to update previously coordinated flight data	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FICE-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-FICE-2. Target 2:** **c.** 2023	Status – Implemented
	3. AIDC for control transfer	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FICE-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-FICE-3. Target 2:** **c.** N/A	Status - Planning
	4. AIDC to transfer CPDLC logon information to the Next Data Authority	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FICE-4. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-FICE-4. Target 2:** **c.** 2023	Status - Planning
Performance Improvement Area 3: Optimum Capacity and Flexible Flights				
ACAS	**1.** ACAS II (TCAS version 7.1)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-ACAS-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-ACAS-1. Target 2:** Implement in2017 **c.** Yes	Status - Implemented
	2. Auto Pilot/Flight Director (AP/FD) TCAS	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-ACAS-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** No **B0-ACAS-2. Target 2:** **c.** N/A	Status - N/A
	3. TCAS Alert Prevention (TCAP)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-ACAS-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** No **B0-ACAS-3. Target 2:** **c.** N/A	Status - N/A
ASEP	**1.** ATSA-AIRB	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-ASEP-1. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-ASEP-1. Target 2:** **c.** TBD	Status – Analysis in Progress
	2. ATSA-VSA	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-ASEP-2. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-ASEP-2. Target 2:** **c.** TBD	Status – Analysis in Progress
ASUR	**1.** ADS-B	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-ASUR-1. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-ASUR-1. Target 2:** Implement by Dec 2019 **c.** TBD	Status – Analysis in Progress

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
	2. Multilateration (MLAT)	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-ASUR-2. Target 1** Assess by Dec 2018 **a.** No **b.** TBD **B0-ASUR-2. Target 2:** **c.** TBD	Status – Analysis in Progress
FRTO	**1.** CDM incorporated into airspace planning	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FRTO-1. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-FRTO-1. Target 2:** **c.** TBD	Status – Analysis in Progress
	2. Flexible Use of Airspace (FUA)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FRTO-2. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-FRTO-2. Target 2:** **c.** TBD	Status – Analysis in Progress
	3. Flexible route systems	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FRTO-3. Target 1** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-FRTO-3. Target 2:** **c.** No (target 2023)	Status - Planning
	4. CPDLC used to request and receive re-route clearances	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-FRTO-4. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-FRTO-4. Target 2:** **c.** TBD	Status – Analysis in Progress
NOPS	**1.** Sharing prediction of traffic load for next day	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-NOPS-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-NOPS-1. Target 2:** Implement by Q2 2018 **c.** No	Status – Developing
	2. Proposing alternative routings to avoid or minimize ATFM delays	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-NOPS-2. Target 1:** Assessed in Sep 2017 **a.** Yes **b.** No **B0-NOPS-2. Target 2:** Implement by Q3 2018 **c.** No	Status – Developing
OFTL	**1.** ITP using ADS-B	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-OFTL-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** No **B0-OFTL-1. Target 2:** **c.** N/A	Status - N/A
SNET	**1.** Short Term Conflict Alert (STCA)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-SNET-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-SNET-1. Target 2:** **c.** Yes (2006)	Status - Implemented
	2. Area Proximity Warning (APW)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-SNET-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-SNET-2. Target 2:** **c.** Yes (2006)	Status - Implemented

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
	3. Minimum Safe Altitude Warning (MSAW)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-SNET-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-SNET-3. Target 2:** **c.** Yes (2006)	Status - Implemented
	4. Medium Term Conflict Alert (MTCA)	**a.** Have we assessed the need? *Yes or No* **b.** Do we need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-SNET-4. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** Yes **B0-SNET-4. Target 2:** **c.** TBD	Status - Need
Performance Improvement Area 4: Efficient Flight Paths				
CCO	**1.** Procedure changes to facilitate CCO	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-CCO-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCA, TNCC) **B0-CCO-1. Target 2:** **c.** 2 (Q3 2018)	Status – Planning TNCB is N/A.
	2. Route changes to facilitate CCO	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-CCO-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCA, TNCC) **B0-CCO-2. Target 2:** **c.** 2 (Q3 2018)	Status – Planning TNCB is N/A.
	3. PBN SIDs	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-CCO-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 3 (TNCA, TNCB, TNCC) **B0-CCO-3. Target 2:** Implement in 2012 **c.** 3 (TNCA, TNCB, TNCC)	Status – Implemented Needs to revise SIDs
CDO	**1.** Procedure changes to facilitate CDO	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-CDO-1. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCA, TNCC) **B0-CDO-1. Target 2:** **c.** 2 (Q3 2018)	Status – Developing TNCB is N/A.
	2. Route changes to facilitate CDO	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-CDO-2. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 2 (TNCA, TNCC) **B0-CDO-2. Target 2:** **c.** 2 (Q3 2018)	Status – Developing TNCB is N/A.
	3. PBN STARs	Number of aerodromes to be considered: 3 **a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *None, 1, 2, or 3* **c.** How many aerodromes implemented the capability? *None, 1, 2, or 3*	**B0-CDO-3. Target 1:** Assessed in Mar 2018 **a.** Yes **b.** 3 (TNCA, TNCB, TNCC) **B0-CDO-3. Target 2:** Implement in 2012 **c.** 3 (TNCA, TNCB, TNCC)	Status – Implemented Needs to revise STARs

Block 0 Modules	Elements	Metrics	Targets	Status & Remarks
TBO	**1.** ADS-C over oceanic and remote areas	**a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-TBO-1. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-TBO-1. Target 2:** **c.** TBD	Status – Analysis in Progress
	2. CPDLC over continental areas	**a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-TBO-2. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-TBO-2. Target 2:** **c.** TBD	Status – Analysis in Progress
	3. CPDLC over oceanic and remote areas	**a.** Have we assessed the need? *Yes or No* **b.** How many aerodromes need this capability? *Yes or No* **c.** Have we implemented the capability? *Yes or No*	**B0-TBO-3. Target 1:** Assess by Dec 2018 **a.** No **b.** TBD **B0-TBO-3. Target 2:** **c.** TBD	Status – Analysis in Progress

Table 2.1.1: ASBU B0 Implementation Metrics and Targets

2.1.2 ASBU B0 Implementation Status Summary

The summary of ASBU B0 implementation status is provided in the Table 2.1. The details of ASBU B0 implementation status is recorded using ANRFs and provided in Appendix D.

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
Performance Improvement Area 1: Airport Operations									
ACDM	1. Interconnection between aircraft operator & ANSP systems to share surface operations information			2	1				
	2. Interconnection between aircraft operator & airport operator systems to share surface operations information			3					
	3. Interconnection between airport operator & ANSP systems to share surface operations information			2	1				
	4. Interconnection between airport operator, aircraft operator & ANSP systems to share surface operations information			3					
	5. Collaborative departure queue management			2	1				
APTA	1. PBN approach procedures with vertical guidance to LNAV/VNAV minima				1				2
	2. PBN approach procedures with vertical guidance to LPV minima		3						
	3. PBN approach procedures without vertical guidance to LNAV minima				1				2
	4. GBAS Landing System (GLS) procedures to CAT I minima	3							
RSEQ	1. AMAN via controlled time of arrival to a reference fix		3						
	2. Departure management	3							
	3. Departure flow management		3						
	4. Point merge				3				
SURF	1. A-SMGCS with at least one cooperative surface surveillance system				3				
	2. Including ADS-B APT as an element of A-SMGCS				3				
	3. A-SMGCS alerting with flight identification information				3				
	4. EVS for taxi operations				3				
	5. Airport vehicles equipped with transponders				3				
WAKE	1. New PANS-ATM wake turbulence categories and separation minima				3				
	2. Dependent diagonal paired approach procedures for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart				3				
	3. Wake independent departure and arrival operations (WIDAO) for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart				3				

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
	4. Wake turbulence mitigation for departures (WTMD) procedures for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart based on observed crosswinds				3				
	5. 6 wake turbulence categories and separation minima				3				
Performance Improvement Area 2: Globally Interoperable Systems and Data									
AMET	1. WAFS								√
	2. IAVW								√
	3. TCAC forecasts								√
	4. Aerodrome warnings	1							2
	5. Wind shear warnings and alerts	1							2
	6. SIGMET								√
	7. Other OPMET information (METAR, SPECI and/or TAF)								3
	8. QMS for MET								√
DATM	1. Standardized Aeronautical Information Exchange Model (AIXM)								√
	2. eAIP								√
	3. Digital NOTAM					√			
	4. eTOD		3						
	5. WGS-84								√
	6. QMS for AIM						√		
FICE	1. AIDC to provide initial flight data to adjacent ATSUs				√				√
	2. AIDC to update previously coordinated flight data				√				√
	3. AIDC for control transfer				√	√			
	4. AIDC to transfer CPDLC logon information to the Next Data Authority				√	√			
Performance Improvement Area 3: Optimum Capacity and Flexible Flights									
ACAS	1. ACAS II (TCAS version 7.1)								√
	2. AP.FD function				√				
	3. TCAP function				√				
ASEP	1. ATSA-AIRB		√						
	2. ATSA-VSA		√						
ASUR	1. ADS-B		√						
	2. Multilateration (MLAT)		3						
FRTO	1. CDM incorporated into airspace planning		√						
	2. Flexible Use of Airspace (FUA)		√						
	3. Flexible routing					√			
	4: CPDLC used to request and receive re-route clearances		√						
NOPS	1. Sharing prediction of traffic load for next day						√		
	2. Proposing alternative routings to avoid or minimize ATFM delays						√		
OPFL	1. ITP using ADS-B				√				
SNET	1. Short Term Conflict Alert implementation (STCA)								√
	2. Area Proximity Warning (APW)								√
	3. Minimum Safe Altitude Warning (MSAW)								√
	4. Medium Term Conflict Alert (MTCA)			√					
Performance Improvement Area 4: Efficient Flight Paths									
CCO	1. Procedure changes to facilitate CCO				1	2			
	2. Airspace changes to facilitate CCO				1	2			
	3. PBN SIDs								3
CDO	1. Procedure changes to facilitate CDO				1		2		
	2. Airspace changes to facilitate CDO				1		2		
	3. PBN STARs								3
TBO	1. ADS-C over oceanic and remote areas		√						
	2. CPDLC over continental areas		√						
	3. CPDLC over oceanic and remote areas		√						

Table 2.1.2 ASBU B0 Implementation Status Summary

2.2 ASBU Block 1 Implementation Targets and Status

This section will be written after 2019. Appendix E is reserved for ASBU B1 ANRFs.

2.3 ASBU Block 2 Implementation Targets and Status

This section will be written after 2025. Appendix F is reserved for ASBU B2 ANRFs.

2.4 ASBU Block 3 Implementation Targets and Status

This section will be written after 2031. Appendix G is reserved for ASBU B3 ANRFs.

3. ICAO NACC Regional Aviation System Improvements (RASI) Status

The RPBANIP is aligned with GANP and provides guidance to States in the NACC region. The ICAO NACC RO also provides guidance to implement certain capabilities outside the ASBU scope, yet regionally important improvements. Currently 4 aerodrome associated NACC region specific improvements are identified and shown below. RASI ANRF for ICAO NACC Regional Initiatives is prepared and provided in Appendix H.

- Aerodrome certification – Status: Developing (at both TWOW and TBTF)
- Heliport operational approval – Status: Implemented
- Visual aids for navigation – Status: Implemented
- Aerodrome Bird/Wildlife Organization and Control Programme – Status: Developing

4. Curaçao State (or National) Aviation System Improvements (SASI) Status

Curaçao State Aviation System Improvements (SASI) are broken into three categories; (1) Equipment upgrades; (2) Procedure upgrades; and (3) Infrastructure upgrades. The details of upgrades were recorded using SASI ANRFs and provided in Appendix I.

4.1 Equipment Upgrades

Equipment upgrades are not identified at this time.

4.2 Procedure Upgrades

Procedure upgrades are not identified at this time.

4.3 Infrastructure Upgrades

There are three infrastructure upgrades, shown below, which have been identified to address anticipated airport and airspace demand growth. SASI ANRF for Infrastructure Upgrades is prepared and provided in Appendix I.

- Airport Terminal Development – Status: Planning
- Airport Rwy Rehabilitation and extension – Status: Analysis in Progress
- Control Tower – Status: Planning

5. Curaçao State ANP Next Review Schedule

The next review and revision of this document is scheduled in September 2019. (Yearly?)

Appendix A: ANRF Explained

An ASBU ANRF should be completed for each applicable ASBU Module as follows:

PIA The Performance Improvement Area (1, 2, 3 or 4) for the ASBU Module, as per the *NAM ASBU Handbook*.

Block - Module The Module Designation for the ASBU Module, as per the *NAM ASBU Handbook*.

Date The date when the form was completed or updated.

Module Description The Summary Description for the ASBU Module, as per the *NAM ASBU Handbook*.

Element The descriptive text for each Element, as per the *NAM ASBU Handbook*. It is not necessary to include the Defined, Derived from or Identified By information. Insert additional rows, if necessary, to accommodate all of the Elements listed for the ASBU Module.

Date Planned or Implemented The month and year when the Element was fully implemented or the year when it is planned for the Element to be fully implemented by all applicable States or at all applicable aerodromes. This field should be left blank if the Status for the Element is "Analysis Not Started" or "Not Applicable" for all States or aerodromes in the Region.

Status The Need Analysis or Implementation status for the Element, in accordance with Table NAM ASBU III-1, III-2, III-3 or III-4. Indicate the status as follows:

Not Started: if the Need Analysis has not been started for any of the States or aerodromes

In Progress: if at least one Need Analysis has been started but none have yet been completed

Need: if at least on Need Analysis has determined a requirement for the Element, but no implementation planning has yet been initiated

Not Applicable: 1) if all of the Need Analyses completed to date have concluded the Element is not required, or 2) if the Element is not an aerodrome-related improvement and the Region has not adopted the improvement for region-wide implementation.

Planning: if at least one implementation is in the Planning phase and no implementations have yet been completed.

Developing: if at least one implementation is in the Developing phase but no implementations have yet been completed.

Partially Implemented: if at least one, but not all, implementations have been completed.

Implemented: if all of Needed implementations have been completed.

Status Details Further information to support or explain the reported status. The reason(s) an Element was found to be "Not Applicable" for all the aerodromes (or States) in the Region. The reason(s) why the Need Analysis has not been completed for all or some of the aerodromes (or States) in the Region. Information on where implementation has or has not been completed (as appropriate) if the reported status is "Partially Implemented".

Achieved Benefits Describe the achieved benefits for the entire Module or particular Elements. The benefits can be quantitative or qualitative. The benefits should be described for the following 5 of the 11 Key Performance Areas (KPAs) defined the *Manual on Global Performance of the Air Navigation System* (Doc 9883):

Access & Equity: Improving the operating environment so as to ensure all airspace users have the right of access to ATM resources needed to meet their specific operational requirements; and ensuring that the shared use of the airspace for different airspace users can be achieved safely. Providing equity for all airspace users that have access to a given airspace or service. Generally, the first aircraft ready to use the ATM resources will receive priority, except where significant overall safety or system operational efficiency would accrue or national defence considerations or interests dictate by providing priority on a different basis.

Capacity: Improving the ability to meet airspace user demand at peak times and locations while minimizing restrictions on traffic flow. Responding to future growth by increasing capacity, efficiency, flexibility, and predictability while ensuring that there are no adverse impacts to safety and giving due consideration to the environment. Increasing resiliency to service disruption and minimising resulting temporary loss of capacity.

Efficiency: Improving the operational and economic cost effectiveness of gate-to-gate flight operations from the airspace users' perspective. Increasing the ability for airspace users to depart and arrive at the times they select and fly the trajectory they determine to be optimum in all phases of flight.

Environment: Contributing to the protection of the environment by minimizing or reducing noise, gaseous emissions, and other negative environmental effects in the implementation and operation of the air navigation system.

Safety: Reducing the likelihood or severity of operational safety risks associated with the provision or use of air navigation services.

Implementation Challenges A description of any circumstances that have been encountered or are foreseen that might prevent or delay implementation. Challenges should be categorized and described under the applicable subject area.

Notes Any further information as deemed appropriate.

Appendix B: ASBU ANRF Template

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	4	**Block - Module**	B0 - CDO	**Date**	April 17, 2017

Module Description: To use performance-based airspace and arrival procedures allowing an aircraft to fly its optimum profile using continuous descent operations. This will optimize throughput, allow fuel efficient descent profiles, and increase capacity in terminal areas. The application of PBN enhances CDO.

Element Implementation Status

1	**Element Description:** Procedure changes to facilitate CDO	**Date Planned/Implemented** Dec 15, 2013	**Status** Implemented
	Status Details Describe status.		
2	**Element Description** Route changes to facilitate CDO	**Date Planned/Implemented** Dec 15, 2013	**Status** Planning
	Status Details Describe status.		
3	**Element Description** PBN STARs	**Date Planned/Implemented** Dec 15, 2013	**Status** Developing
	Status Details Describe status.		

Achieved Benefits

Access and Equity

Element 1: Describe if you can, else leave it blank.

Element 3: Describe if you can, else leave it blank.

Capacity

Efficiency

Environment

Safety

Implementation Challenges

Ground system Implementation

Avionics Implementation

Procedures Availability

Operational Approvals

Notes

Provide notes if applicable.

Appendix C: RASI and SASI ANRF Templates

RASI and SASI ANRF templates are the same with ASBU ANRF template with exception of the header as shown in this Appendix. The first header is for the ICAO NACC Regional Office specific improvements while the second header is for the State specific improvements.

Section C.1: Regional Aviation System Improvements (RASI) ANRF Header

Enter appropriate State Name and Date. Describe the Module (i.e., improvement group description.)

Curaçao Civil Aviation Authority RASI Air Navigation Reporting Form (ANRF)		
ICAO NACC Regional Initiatives	**Date**	September 1, 2017
Module Description: ICAO NACC RO has identified airport improvements.		
Refer to the ASBU ANRF for the remaining sections (i.e., Element Implementation Status, Achieved Benefits, Implementation Challenges, and Notes)		

Section C.2: State Aviation System Improvements (SASI) ANRF Header

Enter appropriate State Name, Upgrades category (i.e., Equipment, Procedure, Infrastructure, etc.), Date. Describe the Module (i.e., Upgrades category description.)

Curaçao SASI Air Navigation Reporting Form (ANRF)		
Infrastructure Upgrades	**Date**	September 1, 2017
Module Description: Describe module.		
Refer to the ASBU ANRF for the remaining sections (i.e., Element Implementation Status, Achieved Benefits, Implementation Challenges, and Notes)		

Appendix D: Curaçao ASBU Block 0 ANRFs

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	1	**Block - Module**	B0 - ACDM	**Date**	March 12, 2018
Module Description: To implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management reducing delays on movement and manoeuvring areas and enhance safety, efficiency and situational awareness.					
Element Implementation Status					
1	**Element Description:** Interconnection between aircraft operator and ANSP systems to share surface operations information		**Date Planned/Implemented** Date needs to be planned with all stakeholders involved.	**Status** Analysis in progress	
	Status Details All the Data elements that are relevant to be shared (CDM) needs to be assessed between all involved. This will be included in the ATFM functionality of the ANSP.				
2	**Element Description:** Interconnection between aircraft operator and airport operator systems to share surface operations information		**Date Planned/Implemented** Date needs to be planned with all stakeholders involved.	**Status** Analysis in progress	
	Status Details All the Data elements that are relevant to be shared (CDM) needs to be assessed between all involved.				
3	**Element Description:** Interconnection between airport operator and ANSP systems to share surface operations information		**Date Planned/Implemented** Date needs to be planned with all stakeholders involved.	**Status** Planning	
	Status Details All the Data elements that are relevant to be shared (CDM) needs to be assessed between all involved. This will be included in the ATFM functionality of the ANSP.				
4	**Element Description:** Interconnection between airport operator, aircraft operator and ANSP systems to share surface operations information		**Date Planned/Implemented** Date needs to be planned with all stakeholders involved.	**Status** Planning	
	Status Details All the Data elements that are relevant to be shared (CDM) needs to be assessed between all involved. This will be included in the ATFM functionality of the ANSP.				
5	**Element Description:** Collaborative departure queue management		**Date Planned/Implemented** Date needs to be planned with all stakeholders involved.	**Status** Need	
	Status Details All the Data elements that are relevant to be shared (CDM) needs to be assessed between all involved, to evaluate benefits against costs.				
Achieved Benefits					
Access and Equity: Elements 1 to 4 Users and Airport satisfaction level to be enhanced.					
Capacity: Elements 1 to 3 To improve capacity.					
Efficiency: Will improve planning of additional sectors.					
Environment: Reduced ground holding which reduces emissions.					
Safety: Elements 1 to 3, Better departure management collaborates to safety.					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					

Operational Approvals
Notes Challenge will be to get all stakeholders on board to assess the benefits of the above B0 elements.

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	1	**Block - Module**	B0 - APTA	**Date**	March 12, 2018

Module Description: The use of Performance-based Navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) procedures will enhance the reliability and predictability of approaches to runways, thus increasing safety, accessibility and efficiency. This is possible through the application of basic global navigation satellite system (GNSS), Baro-vertical navigation (VNAV), satellite-based augmentation system (SBAS) and GLS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.

Element Implementation Status

1	**Element Description:** PBN approach procedures with vertical guidance to LNAV/VNAV minima	**Date Planned/Implemented** July 2012	**Status** Implemented
	Status Details		
2	**Element Description:** PBN approach procedures with vertical guidance to LPV minima	**Date Planned/Implemented** TBD	**Status** Not implemented
	Status Details		
3	**Element Description:** PBN approach procedures without vertical guidance to LNAV minima	**Date Planned/Implemented** July 2012	**Status** Implemented
	Status Details		
4	**Element Description:** GBAS Landing System (GLS) procedures to CAT I minima	**Date Planned/Implemented** TBD	**Status** Need
	Status Details		

Achieved Benefits
Access and Equity
Capacity
Efficiency
Environment
Safety
Implementation Challenges
Ground system Implementation
Avionics Implementation
Procedures Availability
Operational Approvals
Notes

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	1	**Block - Module**	B0 - RSEQ	**Date**	March 12, 2018
Module Description: To manage arrivals and departures (including time-based metering) to and from a multi-runway aerodrome or locations with multiple dependent runways at closely proximate aerodromes, to efficiently utilize the inherent runway capacity.					
Element Implementation Status					
1	**Element Description:** AMAN via controlled time of arrival to a reference fix		**Date Planned/Implemented** TBD		**Status** Analysis in progress
	Status Details Need analysis needs to be conducted.				
2	**Element Description:** Departure management		**Date Planned/Implemented** N/A		**Status** N/A
	Status Details N/A				
3	**Element Description:** Departure flow management		**Date Planned/Implemented** TBD		**Status** Analysis in progress
	Status Details Need analysis needs to be conducted.				
4	**Element Description:** Point merge		**Date Planned/Implemented** N/A		**Status** N/A
	Status Details				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	1	**Block - Module**	B0 - SURF	**Date**	March 12, 2018

Module Description: First levels of advanced-surface movement guidance and control systems (A-SMGCS) provides surveillance and alerting of movements of both aircraft and vehicles at the aerodrome, thus improving runway/aerodrome safety.
Automatic dependent surveillance-broadcast (ADS-B) information is used when available (ADS-B APT). Enhanced vision systems (EVS) is used for low-visibility operations.

Element Implementation Status

1	**Element Description:** A-SMGCS with at least one cooperative surface surveillance system	**Date Planned/Implemented** N/A	**Status** N/A
	Status Details		
2	**Element Description:** ADS-B APT	**Date Planned/Implemented** N/A	**Status** N/A
	Status Details		
3	**Element Description:** A-SMGCS alerting with flight identification information	**Date Planned/Implemented** N/A	**Status** N/A
	Status Details		
4	**Element Description:** EVS for taxi operations	**Date Planned/Implemented** N/A	**Status** N/A
	Status Details		
5	**Element Description:** Airport vehicles equipped with transponders	**Date Planned/Implemented** N/A	**Status** N/A
	Status Details		

Achieved Benefits

Access and Equity

Capacity

Efficiency

Environment

Safety

Implementation Challenges

Ground system Implementation

Avionics Implementation

Procedures Availability

Operational Approvals

Notes

Airport has not shown complexity that requires this functionality.

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	1	**Block - Module**	B0 - WAKE	**Date**	March 12, 2018
Module Description: Improved throughput on departure and arrival runways through optimized wake turbulence separation minima, revised aircraft wake turbulence categories and procedures.					
Element Implementation Status					
1	**Element Description:** New PANS-ATM wake turbulence categories and separation minima		**Date Planned/Implemented** TBD	**Status** Analysis in progress	
	Status Details Awaiting updated categories from ICAO				
2	**Element Description:** Dependent diagonal paired approach procedures for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart		**Date Planned/Implemented** N/A	**Status** N/A	
	Status Details				
3	**Element Description:** Wake independent departure and arrival operations (WIDAO) for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart		**Date Planned/Implemented** N/A	**Status** N/A	
	Status Details				
4	**Element Description:** Wake turbulence mitigation for departures (WTMD) procedures for parallel runways with centrelines spaced less than 760 meters (2,500 feet) apart based on observed crosswinds		**Date Planned/Implemented** N/A	**Status** N/A	
	Status Details				
5	**Element Description:** 6 wake turbulence categories and separation minima		**Date Planned/Implemented** TBD	**Status** Analysis in progress	
	Status Details Will be evaluated at Radar Automation system change.				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	1	**Block - Module**	B0 - AMET	**Date**	March 12, 2018

Module Description: 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 enroute 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 information supports flexible airspace management, improved situational awareness and collaborative decision making, and dynamically optimized flight trajectory planning.

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.

Element Implementation Status

1	**Element Description:** WAFS	**Date Planned/Implemented** Implemented in 1995	**Status** Implemented
	Status Details *At TNCC*		
2	**Element Description:** IAVW	**Date Planned/Implemented** Implemented in 2000	**Status** Implemented
	Status Details *At TNCC*		
3	**Element Description:** TCAC forecasts	**Date Planned/Implemented** Implemented in 1975	**Status** Implemented
	Status Details *At TNCC*		
4	**Element Description:** Aerodrome warnings	**Date Planned/Implemented** Implemented in 2008	**Status** Implemented
	Status Details *At TNCC*		
5	**Element Description:** Wind shear warnings and alerts	**Date Planned/Implemented** Implemented in 2008	**Status** Implemented
	Status Details *At TNCC*		
6	**Element Description:** SIGMET	**Date Planned/Implemented** Implemented in 1975	**Status** Implemented
	Status Details *At TNCC*		
7	**Element Description:** Other OPMET information (METAR, SPECI and/or TAF)	**Date Planned/Implemented** Implemented in 1975	**Status** Implemented
	Status Details *At TNCC*		
8	**Element Description:** QMS for MET	**Date Planned/Implemented** Implemented in 2008	**Status** Implemented
	Status Details *At TNCC*		

Achieved Benefits

Access and Equity

Capacity

Efficiency

Environment

Safety
Implementation Challenges
Ground system Implementation
Avionics Implementation
Procedures Availability
Operational Approvals
Notes

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	2	**Block - Module**	B0 - DATM	**Date**	March 12, 2018

Module Description: The initial introduction of digital processing and management of information, from origination to publication, through aeronautical information service (AIS)/aeronautical information management (AIM) implementation, use of aeronautical exchange model (AIXM), migration to electronic aeronautical information publication (AIP) and better quality and availability of data.

Element Implementation Status			
1	**Element Description:** Standardized Aeronautical Information Exchange Model (AIXM)	**Date Planned/Implemented** Implemented 2012	**Status** Implemented
	Status Details		
2	**Element Description:** eAIP	**Date Planned/Implemented** July 2016	**Status** Implemented
	Status Details		
3	**Element Description:** Digital NOTAM	**Date Planned/Implemented** TBD (phase 3 of transition to AIM)	**Status** Planning
	Status Details		
4	**Element Description:** eTOD	**Date Planned/Implemented** TBD	**Status** Analysis in progress
	Status Details Assessing implementation method to comply with ICAO requirements.		
5	**Element Description:** WGS-84	**Date Planned/Implemented** Implemented 2011	**Status** Implemented
	Status Details		
6	**Element Description:** QMS for AIM	**Date Planned/Implemented** Q4 2018	**Status** In development
	Status Details Manual is in development.		

Achieved Benefits
Achieved Benefits
Access and Equity
Capacity
Efficiency
Environment
Safety
Implementation Challenges
Ground system Implementation
Avionics Implementation
Procedures Availability

Notes

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	2	**Block - Module**	B0 - FICE	**Date**	March 12, 2018
Module Description: To improve coordination between air traffic service units (ATSUs) by using ATS interfacility data communication (AIDC) defined by ICAO's Manual of Air Traffic Services Data Link Applications (Doc 9694). An additional benefit is the improved efficiency of the transfer of communication in a data link environment.					
Element Implementation Status					
1	**Element Description:** AIDC to provide initial flight data to adjacent ATSUs		**Date Planned/Implemented** 2006	**Status** Implemented	
	Status Details Functionality is part of current Radar Automation system.				
2	**Element Description:** AIDC to update previously coordinated flight data		**Date Planned/Implemented** 2006	**Status** Implemented	
	Status Details Functionality is part of current Radar Automation system.				
3	**Element Description:** AIDC for control transfer		**Date Planned/Implemented** Planned in 5 yr ATM system upgrade (Approx 2023)	**Status** Planning	
	Status Details Being assessed. Requirement to use North American format not compatible with current ATM System.				
4	**Element Description:** AIDC to transfer CPDLC logon information to the Next Data Authority		**Date Planned/Implemented** Planned in 5 yr ATM system upgrade (Approx 2023)	**Status** Planning	
	Status Details Being assessed. Requirement to use North American format not compatible with current ATM System.				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	3	**Block - Module**	B0 - ACAS	**Date**	March 12, 2018
Module Description: To provide short-term improvements to existing airborne collision avoidance systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety. This will reduce trajectory deviations and increase safety in cases where there is a breakdown of separation.					
Element Implementation Status					
1	**Element Description:** ACAS II (TCAS version 7.1)		**Date Planned/Implemented** January 2017		**Status** Implemented
	Status Details Implemented. Atco's trained for changes.				
2	**Element Description:** AP/FD function		**Date Planned/Implemented** N/A		**Status** N/A
	Status Details Flight Ops (State will not require this as mandatory)				
3	**Element Description:** TCAP function		**Date Planned/Implemented** N/A		**Status** N/A
	Status Details Flight Ops (State will not require this as mandatory)				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	3	**Block - Module**	B0 - ASEP	**Date**	March 12, 2018

Module Description: Two air traffic situational awareness (ATSA) applications which will enhance safety and efficiency by providing pilots with the means to enhance traffic situational awareness and achieve quicker visual acquisition of targets:
a) AIRB (basic airborne situational awareness during flight operations).
b) VSA (visual separation on approach).

Element Implementation Status			
1	**Element Description:** ATSA-AIRB	**Date Planned/Implemented** State to review	**Status** Analysis in progress
	Status Details Flight Ops		
2	**Element Description:** ATSA-VSA	**Date Planned/Implemented** State to review	**Status** Analysis in progress
	Status Details Flight Ops		

Achieved Benefits
Access and Equity
Capacity
Efficiency
Environment
Safety
Implementation Challenges
Ground system Implementation
Avionics Implementation
Procedures Availability
Operational Approvals
Notes

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	3	**Block - Module**	B0 - ASUR	**Date**	March 12, 2018
Module Description: To provide initial capability for lower cost ground surveillance supported by new technologies such as ADS-B OUT and wide area multilateration (MLAT) systems. This capability will be expressed in various ATM services, e.g. traffic information, search and rescue and separation provision.					
Element Implementation Status					
1	**Element Description:** ADS-B			**Date Planned/Implemented** Planned in 5 yr ATM system upgrade	**Status** Analysis in progress
	Status Details Being planned in the 5yr Road Map to achieve a Radar Automation system change.				
2	**Element Description:** MLAT			**Date Planned/Implemented** Planned in 5 yr ATM system upgrade	**Status** Analysis in progress
	Status Details Being planned in the 5yr Road Map to achieve a Radar Automation system change.				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	3	**Block - Module**	B0 - FRTO	**Date**	March 12, 2018

Module Description: To allow the use of airspace which would otherwise be segregated (i.e. special use airspace) along with flexible routing adjusted for specific traffic patterns. This will allow greater routing possibilities, reducing potential congestion on trunk routes and busy crossing points, resulting in reduced flight lengths and fuel burn.

Element Implementation Status

1	**Element Description:** CDM incorporated into airspace planning	**Date Planned/Implemented** TBD	**Status** Analysis in progress
	Status Details Implementation with all stakeholders being assessed.		
2	**Element Description:** Flexible Use of Airspace (FUA)	**Date Planned/Implemented** TBD	**Status** Analysis in progress
	Status Details Needs to be assessed if this is applicable.		
3	**Element Description:** Flexible routing	**Date Planned/Implemented** TBD	**Status** Planning
	Status Details Needs to be formalized on paper, individual requests are being assessed and approved.		
4	**Element Description:** CPDLC used to request and receive re-route clearances	**Date Planned/Implemented** Planned in 5 yr ATM system upgrade	**Status** Analysis in progress
	Status Details Being planned in the 5yr Road Map to achieve a Radar Automation system change.		

Achieved Benefits

Access and Equity

Capacity

Efficiency

Environment

Safety

Implementation Challenges

Ground system Implementation

Avionics Implementation

Procedures Availability

Operational Approvals

Notes

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	3	**Block - Module**	B0 - NOPS	**Date**	March 12, 2018

Module Description: Air traffic flow management (ATFM) is used to manage the flow of traffic in a way that minimizes delays and maximizes the use of the entire airspace. Collaborative ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or flight information region (FIR)/sector boundaries and re-route traffic to avoid saturated areas. ATFM may also be used to address system disruptions including a crisis caused by human or natural phenomena.

Element Implementation Status

1	**Element Description:** Sharing prediction of traffic load for next day	**Date Planned/Implemented** Q2 2018	**Status** Developing
	Status Details Last phase of project to be finalized in Q2 2018		
2	**Element Description:** Proposing alternative routings to avoid or minimize ATFM delays	**Date Planned/Implemented** Q3 2018	**Status** Developing
	Status Details Full implementation expected in Q3 2018		

Achieved Benefits

Access and Equity

Capacity

Efficiency

Environment

Safety

Implementation Challenges

Ground system Implementation

Avionics Implementation

Procedures Availability

Operational Approvals

Notes

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	3	**Block - Module**	B0 - OPFL	**Date**	March 12, 2018
Module Description: To enable aircraft to reach a more satisfactory flight level for flight efficiency or to avoid turbulence for safety. The main benefit of ITP is fuel/emissions savings and the uplift of greater payloads.					
Element Implementation Status					
1	**Element Description:** ITP using ADS-B			**Date Planned/Implemented** N/A	**Status** N/A
	Status Details N/A				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes This is mostly used in the pacific by FAA					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	3	**Block - Module**	B0 - SNET	**Date**	March 12, 2018

Module Description: To enable monitoring of flights while airborne to provide timely alerts to air traffic controllers of potential risks to flight safety. Alerts from short-term conflict alert (STCA), area proximity warnings (APW) and minimum safe altitude warnings (MSAW) are proposed. Ground-based safety nets make an essential contribution to safety and remain required as long as the operational concept remains human centred.

Element Implementation Status

1	**Element Description:** Short Term Conflict Alert (STCA)	**Date Planned/Implemented** 2006	**Status** Implemented
	Status Details Functionality is part of current Radar Automation system.		
2	**Element Description:** Area Proximity Warning (APW)	**Date Planned/Implemented** 2006	**Status** Implemented
	Status Details Functionality is part of current Radar Automation system.		
3	**Element Description:** Minimum Safe Altitude Warning (MSAW)	**Date Planned/Implemented** 2006	**Status** Implemented
	Status Details Functionality is part of current Radar Automation system.		
4	**Element Description:** Medium Term Conflict Alert (MTCA)	**Date Planned/Implemented** Being planned in system change.	**Status** Need
	Status Details Being planned as a requirement with the new Radar Automation system.		

Achieved Benefits

Access and Equity

Capacity

Efficiency

Environment

Safety

Implementation Challenges

Ground system Implementation

Avionics Implementation

Procedures Availability

Operational Approvals

Notes

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	4	**Block - Module**	B0 - CCO	**Date**	March 12, 2018
Module Description: To implement continuous climb operations in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles, and increase capacity at congested terminal areas. The application of PBN enhances CCO.					
Element Implementation Status					
1	**Element Description:** Procedure changes to facilitate CCO		**Date Planned/Implemented** Q3 2018		**Status** Planning
	Status Details This element will be planned in current Airspace Restructuring project.				
2	**Element Description:** Airspace changes to facilitate CCO		**Date Planned/Implemented** Q3 2018		**Status** Planning
	Status Details This element will be planned in current Airspace Restructuring project.				
3	**Element Description:** PBN SIDs		**Date Planned/Implemented** July 2012		**Status** Implemented
	Status Details Current SID and STAR's are to revised to obtain separated arrival and departure routes.				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	4	**Block - Module**	B0 - CDO	**Date**	March 12, 2018
Module Description: To use performance-based airspace and arrival procedures allowing an aircraft to fly its optimum profile using continuous descent operations. This will optimize throughput, allow fuel efficient descent profiles, and increase capacity in terminal areas. The application of PBN enhances CDO.					
Element Implementation Status					
1	**Element Description:** Procedure changes to facilitate CDO		**Date Planned/Implemented** Q3 2018		**Status** Developing
	Status Details This element will be planned in current Airspace Restructuring project.				
2	**Element Description:** Airspace changes to facilitate CDO		**Date Planned/Implemented** Q3 2018		**Status** Developing
	Status Details This element will be planned in current Airspace Restructuring project.				
3	**Element Description:** PBN STARs		**Date Planned/Implemented** July 2012		**Status** Implemented
	Status Details Existing STAR's will be revised in the new Airspace structure project.				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Curaçao ASBU Air Navigation Reporting Form (ANRF)					
PIA	4	**Block - Module**	B0 - TBO	**Date**	March 12, 2018
Module Description: To implement a set of data link applications supporting surveillance and communications in air traffic services, which will lead to flexible routing, reduced separation and improved safety.					
Element Implementation Status					
1	**Element Description:** ADS-C over oceanic and remote areas		**Date Planned/Implemented** TBD		**Status** Analysis in progress
	Status Details Need analysis needs to be conducted.				
2	**Element Description:** CPDLC over continental areas		**Date Planned/Implemented** Planned in 5YR plan to change Radar Automation system		**Status** Analysis in progress
	Status Details This functionality will be a system requirement when planning the new Radar Automation system.				
3	**Element Description:** CPDLC over oceanic and remote areas		**Date Planned/Implemented** Planned in 5YR plan to change Radar Automation system		**Status** Analysis in progress
	Status Details This functionality will be a system requirement when planning the new Radar Automation system.				
Achieved Benefits					
Access and Equity					
Capacity					
Efficiency					
Environment					
Safety					
Implementation Challenges					
Ground system Implementation					
Avionics Implementation					
Procedures Availability					
Operational Approvals					
Notes					

Appendix E: Curaçao ASBU Block 1 ANRFs

Insert ASBU B1 ANRFs in the future.

Appendix F: Curaçao ASBU Block 2 ANRFs

Insert ASBU B2 ANRFs in the future.

Appendix G: Curaçao ASBU Block 3 ANRFs

Insert ASBU B3 ANRFs in the future.

Appendix H: Curaçao RASI ANRFs

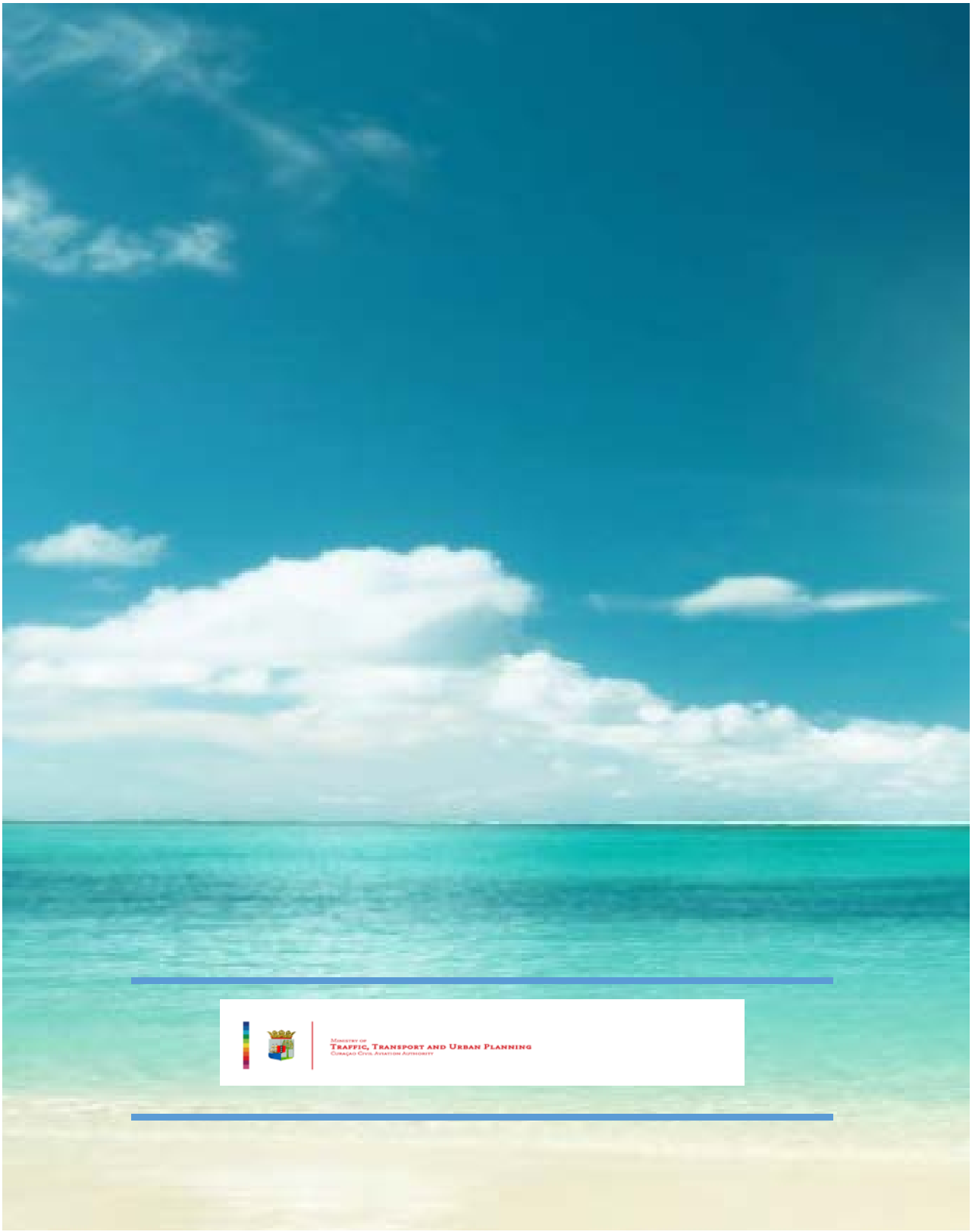
Curaçao RASI Air Navigation Reporting Form (ANRF)			
ICAO NACC Regional Initiatives		**Date**	March 13, 2018
Module Description: ICAO NACC RO has identified airport improvements.			
Element Implementation Status			
1	**Element Description:** Aerodrome certification	**Date Planned/Implemented** Dec 2018	**Status** Partially Implemented
	Status Details TNCA – obtain the information. TNCB – need to re-certified. TNCC is certified.		
2	**Element Description:** Heliport operational approval	**Date Planned/Implemented** Sep 2017	**Status** N/A
	Status Details ICAO NACC region has a goal to have CAR heliports in its regional ANP Table AOP I-1 certified. TNCC has only helipad. Curacao Civil Aviation Authority (CCAA) will issue approval.		
3	**Element Description:** Visual aids for navigation	**Date Planned/Implemented** Mar 2018	**Status** Implemented
	Status Details ICAO NACC region has a goal to have CAR airports in its ANP Table AOP I-1 compliant with Annex 14 requirements. This capability is implemented at TNCA (need to verify), TNCB, and TNCC.		
4	**Element Description:** Aerodrome Bird/Wildlife Organization and Control Programme	**Date Planned/Implemented** Dec 2018	**Status** Developing
	Status Details ICAO NACC region has a goal to have CAR airports in its ANP Table AOP I-1 have an aerodrome bird/wildlife organization and control programme. TNCC is developing the program. Need to verify the status for TNCA and TNCB.		
Achieved Benefits			
Access and Equity Element 1 - Aerodrome certification: International operators may not be permitted to operate to aerodromes that are not certified Element 2. Heliport operational approval: International operators may not be permitted to operate to heliports that are not approved Element 3. Visual aids for navigation: International operators may not be permitted to operate to aerodromes that are not compliant with Annex 14			
Capacity: No report			
Efficiency Element 3. Visual aids for navigation: Annex 14 compliant visual aids for navigation assist flights to more efficiently complete ground movements			
Environment: No report			
Safety Element 1 - Aerodrome certification: Certification should be contingent upon the airport complying with applicable ICAO SARPs. Certification and the associated regulatory oversight should increase the effectiveness of SSP and SMS processes to identify and correct safety issues at certified aerodromes. Element 2. Heliport operational approval: Certification should be contingent upon the heliport complying with applicable ICAO SARPs. Approval and the associated regulatory oversight should increase the effectiveness of SSP and SMS processes to identify and correct safety issues at approved heliports. Element 3. Visual aids for navigation: Annex 14 compliant visual aids for navigation reduce flight crew confusion and assist in avoiding runway incursions or other ground movement errors. Element 4. Aerodrome Bird/Wildlife Organization and Control Programme: An effective organization and control programme reduces the potential for aircraft to strike wildlife or ingest wildlife into engines or propellers.			
Implementation Challenges			

Ground system Implementation: No report: No report
Avionics Implementation: No report
Procedures Availability: No report
Operational Approvals: No report
Notes

Appendix I: Curaçao SASI ANRFs

Curaçao SASI Air Navigation Reporting Form (ANRF)			
Infrastructure Upgrades		**Date**	March 14, 2018
Module Description: Curacao: Type info. Aruba: Need info. Bonaire: Need info Development of major components of the overall Airport/Aerodrome to meet the demands of the growing Aviation Industry. This will improve capacity and safety in the in terminal and allow seamless maneuvering of wide body Aircraft (example B777) at the turning bay. Such maneuvering will reduce runway occupancy time and reduce surface wear and tear. New ATC facility is required to meet the demands of increase staffing. Improving operational space is vital to meet the need of increased traffic. The benefits of such infrastructure upgrades will increase an overall traffic management efficiency and enhance safety.			
Element Implementation Status			
1	**Element Description:** Airport Terminal Development	**Date Planned/Implemented** TBD	**Status** Planning
	Status Details Current terminal building does not meeting the passenger demands during peak periods. With the current airport terminal situation, the security and safety are likely to be compromised.		
2	**Element Description:** Airport Runway Rehabilitation and Extension	**Date Planned/Implemented** TBD	**Status** Analysis in Progress
	Status Details Certain areas of the runway require improvement. For example, it is highly important to be fully compliance with ICAO Aerodrome 4E.		
3	**Element Description:** Control Tower and Technical Building Upgrades	**Date Planned/Implemented** TBD	**Status** Planning
	Status Details Control Cab was originally designed to house one ATCO per shift. However, the Control Cab currently operating with three ATCOs per shift to meet the traffic demands. In addition, significantly more equipment was installed in the already crowded Control Cab. No quiet room (rest) facility can be implemented in current installation. The expected increase of workload due to the increased traffic will only make the work environment of the Control Cab worse and impact on safety and efficiency of the ATC operation.		
Achieved Benefits			
Access and Equity			
Capacity Element 1 - Airport Terminal Development: Increase the capacity to handle passengers smoothly at the peak arrival periods.			
Efficiency			
Environment			
Safety Element 2 - Airport Runway Rehabilitation and Extension: Improve operational safety of aircraft. Element 3 - Control Tower and Technical Building Upgrades: Improve operational safety of aircraft and ATCOs.			
Implementation Challenges			
Ground system Implementation			
Avionics Implementation			
Procedures Availability			

Operational Approvals
Notes Element 1 - Airport Terminal Development: Address the airport terminal security issues.


Ministry of
Traffic, Transport and Urban Planning
Curaçao Civil Aviation Authority