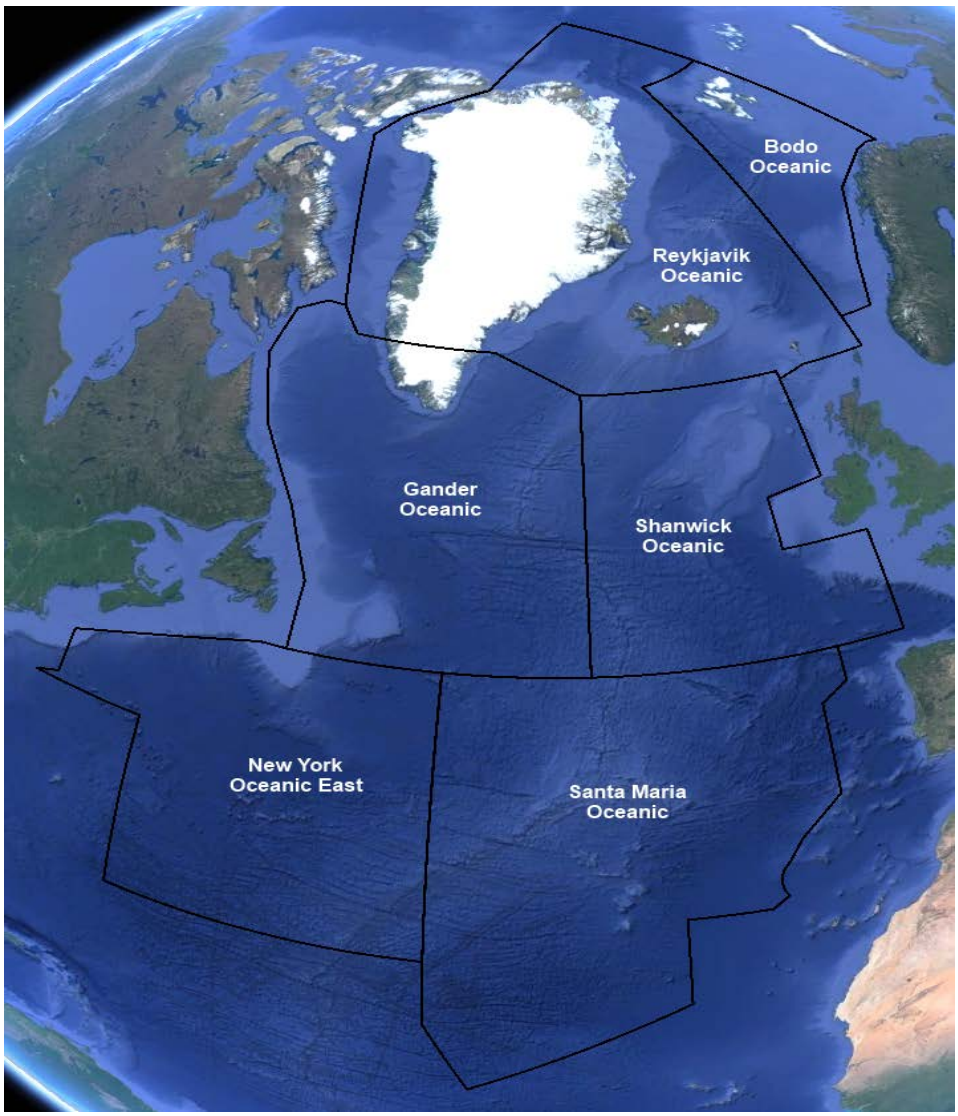
GLOBAL AIR NAVIGATION PLAN (GANP)/AVIATION SYSTEM BLOCK UPGRADES (ASBU) IMPLEMENTATION STATUS REPORT - NORTH ATLANTIC (NAT) REGION



2019

1. INTRODUCTION

1.1 NAT eANP Volume III contains dynamic/flexible plan elements related to the implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the Global Air Navigation Plan (GANP) and.is used as a tool for monitoring and reporting the status of implementation of the above-mentioned elements, through the use of specific tables by appropriate NAT working groups as endorsed by North Atlantic Systems Planning Group (NAT SPG). The status of implementation is updated on a regular basis as endorsed by the NAT SPG.

1.2 The management of Volume III is the responsibility of the NAT SPG.

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

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

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

2.3. The latest 5th Edition of the GANP was endorsed by the 39th Assembly of ICAO in October 2016.

3. PLANNING METHODOLOGY

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

4. REVIEW AND EVALUATION OF AIR NAVIGATION PLANNING

4.1 The progress and effectiveness against the priorities set out in the NAT air navigation plan is periodically reported, using an agreed reporting format, to ICAO.

4.2 NAT IMG agreed (NAT IMG Decision 48/15) that the monitoring and reporting will be carried out by NAT IMG contributory groups by using the following tools:

a) NAT ASBU implementation status forms;

b) NAT Air Navigation Reporting Form-ASBU (NAT ANRF-ASBU) and NAT ANRF - Regional Aviation System Improvements (RASI) forms.

4.3 For those modules that are related to and applicable in the aerodrome areas, e.g AMAN/WAKE/A-SMGCS, the status information is provided only for those aerodromes that are listed in the NAT AOP Table.

4.4 For those modules that are applicable to the en-route phase of flight for operations in the NAT, the status is provided at the State level.

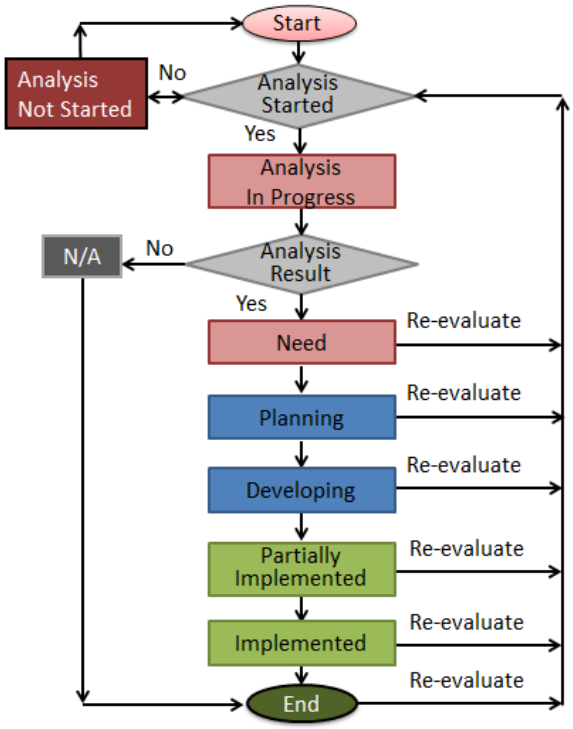
4.5 Depiction of the general planning and timelines is provided through the NAT Service Development Roadmap, which is also maintained by appropriate NAT working groups.

4.6 Figure 1 depicts the workflow for analysing and implementing ASBU Module elements.

4.7 The significance of each step in the workflow is as follows:

- **Analysis Not Started** – The requirement to implement this ASBU Module element has not yet been assessed
- **Analysis In Progress** – A Need Analysis as to whether or not this ASBU Module element is required is in progress
- **N/A** – The ASBU Module element is not required
- **Need** - The Need Analysis concluded that the ASBU Module element is required, but planning for the implementation has not yet begun
- **Planning** – Implementation of this ASBU Module element is planned, but not started
- **Developing** – Implementation of this ASBU Module element is in the development phase, but not yet operational
- **Partially Implemented** – Implementation of this ASBU Module element is partially completed and/or operational but all planned implementations are not yet complete
- **Implemented** - Implementation of this ASBU Module element has been completed and/or is fully operational where the need was identified

FIGURE 1 – ANALYSIS AND IMPLEMENTATION WORKFLOW



5. REPORTING AND MONITORING RESULTS

5.1 Reporting and monitoring results are analyzed by the NAT SPG, States and ICAO 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.

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

6. NAT ASBU planning and implementation forms

6.1 Block 0

NAT Region Implementation Status of Block Elements – Block 0 Modules

Data provided by Canada (CAN), Denmark (DK), Iceland (ISL), Ireland (IRL), Norway (NO), Portugal (PO), United States (US) and United Kingdom (UK)

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. implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport.	PO		ISL	DK,NO,UK		CAN		IRL,US
APTA	1. PBN Approach Procedures	PO	DK		UK			ISL,CAN	IRL, NO,US
	2. GBAS Landing System (GLS) Approach procedures	ISL, PO	DK, CAN ,IRL		NO,UK				US
RSEQ	1. AMAN and time-based metering	PO			DK,NO,UK		CAN	ISL	US,IRL
	2. Departure management	ISL, PO			NOUK,IRL	CAN		US	
	3. Point merge				ISL,DK,NO,US,CAN,UK				IRL
SURF	1. Surveillance	PO			DK,NO,UK		ISL	CAN	US,IRL
	2. Alerting	PO			DK,NO,UK		ISL	CAN	US,IRL
	3. Enhanced vision systems for taxi operations	ISL,PO	CAN		US,UK				
WAKE	1. Increasing aerodrome arrival operational capacity	ISL,CAN			DK,NO,UK, PO			IRL,US	
	2. Increasing aerodrome departure operational capacity	ISL,CAN			DK,NO,UK, PO			IRL,US	
Performance Improvement Area 2: Globally Interoperable Systems and Data									
AMET	1. WAFS				DK,IRL,NO,UK				ISL,US,PO,CAN
	2. IAVW				DK,IRL,NO,UK				ISL,US,PO,CAN
	3. TCAC forecasts				ISL,DK,IRL,NO,UK				US,PO,CAN
	4. Aerodrome warnings	ISL,PO			DK,NO,UK			CAN	IRL,US

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
	5. Wind shear warnings and alerts	ISL,PO			,UK			CAN	DK,IRL,US,NO
	6. SIGMET								ISL,DK,IRL,US,NO, UK,PO,CAN
	7. Other OPMET information (METAR, SPECI and/or TAF)		DK						ISL,IRL,US,NO,UK, PO,CAN
	8. QMS for MET								ISL,DK,IRL,US,NO, UK,PO,CAN
DATM	1. Aeronautical Information Exchange Model (AIXM)	UK			DK,NO	CAN ,PO		ISL	US,IRL
	2. eAIP						CAN		ISL,US,IRL,DK,NO, PO,UK
	3. initial introduction of digital processing and management of information, through aeronautical information service (AIS)/aeronautical information management (AIM) implementation		CAN					PO,IRL, UK, ISL	US
	4. QMS for AIM				DK				ISL,US,IRL,NO,CAN ,PO,UK
FICE	1. improve coordination between air traffic service units (ATSUs) by using ATS interfacility data communication (AIDC) defined by the ICAO Manual of Air Traffic Services Data Link Applications (Doc 9694).			CA N	DK,NO			ISL,UK	US,PO, IRL (OLDI)
Performance Improvement Area 3: Optimum Capacity and Flexible Flights									
ACAS	1. ACAS II (TCAS version 7.1)	CAN			US,DK				ISL,IRL, NO,PO,UK
ASEP	1. ATSA-AIRB	ISL,PO			IRL,DK,NO,CAN,UK				US
	2. ATSA-VSA	ISL,CAN,PO			IRL,DK,NO,UK				US
ASUR	1. ADS-B				DK		NO, IRL		ISL,US,CAN,PO,UK
	2.Multilateration (MLAT)				DK,NO,UK			IRL,CA N,	US,PO, ISL

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
FRTO	1. Airspace planning				DK			PO	ISL,US,NO,CAN, IRL,UK
	2. Flexible Use of Airspace (FUA)				DK			PO	ISL,IRL,US,NO,CAN ,UK
	3. Flexible routing				DK				ISL,IRL,US,NO,CAN ,PO,UK
NOPS	1. ATFM				DK			PO	US,IRL,NO,CAN,UK , ISL
OPFL	1. ITP using ADS-B	PO			ISL,DK,NO,CAN,UK, IRL				US
SNET	1. Short Term Conflict Alert implementation (STCA)				DK			ISL,NO	US,IRL,CAN,PO,UK
	2. Area Proximity Warning (APW)	ISL			DK			PO	US,IRL,NO,CAN,UK
	3. Minimum Safe Altitude Warning (MSAW)	ISL			DK,NO,UK			PO	US,IRL,CAN
Performance Improvement Area 4: Efficient Flight Paths									
CCO	1. Implement continuous climb operations in conjunction with performance-based navigation (PBN)				DK			ISL,IRL ,PO	US, NOR,CAN,UK
CDO	1. Use performance-based airspace and arrival procedures allowing an aircraft to fly its optimum profile using continuous descent operations (CDOs).				DK			ISL,PO	US,IRL, NO,CAN,UK
TBO	1. Implement a set of data link applications supporting surveillance and communications in air traffic services				DK				ISL,IRL,US,NO,CAN ,PO,UK

6.2 Block 1

NAT Region Implementation Status of Block Elements – Block 1 Modules

Data provided by Canada (CAN), Denmark (DK), Iceland (ISL), Ireland (IRL), Norway (NO), Portugal (PO), United States (US) and United Kingdom (UK)

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. enhance the planning and management of airport operations and allow their full integration in the air traffic management using performance targets compliant with those of the surrounding airspace	ISL,US,NO,PO			CAN,UK				DK,IRL
APTA	1. Progress further with the universal implementation of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) approaches. PBN and GLS (CAT II/III) procedures	ISL,US,NO,PO	DK,IRL		CAN,UK				
RATS	1. Provision of tower control (TWR) or aerodrome flight information service (AFIS) for single aerodrome(s) by remotely located air traffic controllers (ATCO) or aerodrome flight information service officers (AFISO)	US,PO			DK,NO,CAN,UK		ISL	IRL	
	2. Provision of TWR or AFIS for multiple aerodromes by a single ATCO or AFISO	US,PO	ISL		NO,CAN,UK			IRL	DK
	3. Remote provision of ATS for contingency situations	US, NO	ISL		DK,CAN,UK	PO		IRL	

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
RSEQ	1. Surface management of runway demand and sequencing aircraft on the ground to support departure operations based on precise surface movement tracking	ISL,US,PO			NO,CAN,UK	IRL			DK
	2. Integration of departure sequencing and surface management	ISL,US,PO			DK,NO,CAN,UK				
	3. Arrival metering extended across FIR boundaries	ISL,US,CAN,PO			DK,NO,UK				IRL
	4. Assignment of RNAV/RNP routes linked to controlled time of arrival at metering fixes	ISL,US,CAN,PO			NO,UK				DK
SURF	1. Basic surface situation awareness (SURF) through display of other aerodrome traffic to aircraft via ADS-B or TIS-B	US,PO	ISL		DK,NO,CAN,UK,IRL				
WAKE	1. PANS-ATM aircraft leader/follower pair-wise wake turbulence separation minima	ISL,US,NO,PO			DK,CAN,UK,IRL				
	2. Wake Turbulence Mitigation for Arrivals (WTMA) on parallel runways with runway centre lines spaced less than 760 m (2 500 feet) apart or on a single runway through variable application of wake turbulence separation dependant on the crosswinds present along the approach corridor	US			ISL,DK,NO,CAN,UK,PO,IRL				

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
	3. Wake Turbulence Mitigation for Departures (WTMD) on parallel runways with runway centre lines spaced less than 760 m (2 500 feet) through reduction of separation between departures when runway crosswinds are of sufficient strength and persistence	US			ISL,DK,NO,CAN,UK,PO,IRL				
Performance Improvement Area 2: Globally Interoperable Systems and Data									
AMET	1. Producing meteorological information elements that can be ingested by automated decision support tools	ISL,US	DK		NO,CAN,UK			PO	IRL
	2. Automated processing of meteorological information to derive predicted effects on airspace capacity	ISL,US,IRL,PO			DK,NO,CAN,UK				
	3. Automated processing of meteorological information to derive predicted effects on aerodrome capacity	ISL,US,IRL,PO			DK,NO,CAN,UK				
	4. Comparison of predicted meteorological airspace capacity constraints to projected demand	ISL,US,IRL,PO			DK,NO,CAN,UK				
	5. Comparison of predicted meteorological aerodrome capacity constraints to projected demand	ISL,US,IRL,PO			DK,NO,CAN,UK				
	6. Meteorological information integrated decision support that creates ranked mitigation strategies	ISL,US,IRL,PO	DK		NO,CAN,UK				

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
DATM	1. Implementation of digital information management using WXXM for meteorological information	ISL,US,PO			DK, NO,UK	IRL, CAN			
	2. Implementation of digital information management using FIXM for flight and flow information	ISL,US,IRL,PO			DK, NO,UK	CAN			
	3. Implementation of digital information management for aircraft performance-related data	ISL,US,IRL,PO			DK, NO,UK	CAN			
FICE	1. introduce FF-ICE, Step 1 providing ground-ground exchanges before departure using common flight information exchange model (FIXM) and extensible markup language (XML) standard formats. FIXM	ISL,US,IRL,PO		UK	DK, NO	CAN			
SWIM	1. Implementation of system-wide information management (SWIM) services (applications and infrastructure) creating the aviation intranet based on standard data models, and internet-based protocols to maximize interoperability.	ISL,US,NO	UK		DK		CAN,PO	IRL	
Performance Improvement Area 3: Optimum Capacity and Flexible Flights									
ASEP	1. Increased capacity and efficiency through interval management	ISL,US,PO			DK,IRL,NO,CAN,UK				
FRTO	1. Free routing,.	US			DK			NO	IRL,ISL, CAN,PO,UK
	2. Reduced route spacing	US			IRL			PO	ISL,UK
	3. Dynamic sectorization	ISL,US			DK	NO			IRL,CAN,UK,PO

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
NOPS	1 Integrating ATFM and Airspace Organization and Management (AOM) in the design of alternative route options for ATFM	ISL,US			DK,NO			PO	IRL,CAN,UK
	2. Using trajectory projections as soon as possible after departure to update ATFM requirements and perform additional ATFM smoothing for single and converging flows	ISL,US			DK,NO,UK			PO	IRL,CAN
	3. Initial User Driven Prioritization Process (UDPP) whereby operators affected by ATFM measures can collaborate with each other and ATFM to devise alternative measures that serve ATFM requirements while at the same time taking account of operators' priorities	ISL,US			DK,,NO,UK			PO	CAN, IRL
	4 Full FUA	ISL,US						PO,UK	IRL
	5. Complexity management	ISL,PO,US,UK							
SNET	1. Enhance safety by reducing the risk of controlled flight into terrain accidents on final approach and the risk of unstable approach through the use of approach path monitor (APM).	ISL,US,PO			DK,NO,CAN,UK,IRL				

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 4: Efficient Flight Paths									
CDO	1. CDO procedures defined as vertical paths to be followed within specified tolerances	US,PO			DK,NO,CAN,UK, IRL			ISL	
RPAS	1. Streamlined process for RPA access to non-segregated airspace	US,PO			DK,NO,CAN,UK				IRL, ISL
	2. Defined airworthiness certification for RPA	US,PO			DK,NO,CAN,UK				IRL, ISL
	3. Defined operator certification for RPA operators	US,PO			DK,NO,CAN,UK				IRL, ISL
	4. Defined communication performance requirements for Command and Control (C2) links and for ATC communications	US,PO			DK,IRL,NO,CAN,UK, IRL			ISL	
	5. Defined remote pilot licencing requirements	US,PO			DK,NO,CAN,UK		ISL		IRL
	6. Defined detect and avoid technology performance requirements	US,PO			DK,NO,CAN,UK, IRL	ISL			
TBO	1. Initial 4D operations by specifying Required Time of Arrival (RTA)	ISL,US,PO			DK,NO,UK, IRL				CAN
	2. Data Link Operational Terminal Information Service (D-OTIS)	ISL,US,PO			DK,NO,CAN,UK			IRL	
	3. Departure clearances via data link (DCL)	US,PO	ISL		DK,NO,CAN,UK				IRL

Module	Elements	Need Analysis				Implementation Status (if Element is needed)			
		Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
	4. Data Link Taxi (D-TAXI)	ISL,US,PO			DK,IRL,NO,CAN,UK				

7. NAT ASBU planning and implementation analysis

7.1 Provisional implementation indicators

Module Code	Module Title	Implementation Indicator	Remarks
1	2	3	4
B0-APTA	Optimization of Approach Procedures including vertical guidance	% of international aerodromes having at least one runway end provided with APV Baro-VNAV or LPV procedures	
B0-WAKE	Increased Runway Throughput through Optimized Wake Turbulence Separation	% of applicable international aerodromes having implemented increased runway throughput through optimized wake turbulence separation	
B0-RSEQ	Improve Traffic flow through Runway Sequencing (AMAN/DMAN)	% of applicable international aerodromes having implemented AMAN / DMAN	
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	% of applicable international aerodromes having implemented A-SMGCS Level 2	
B0-ACDM	Improved Airport Operations through Airport-CDM	% of applicable international aerodromes having implemented improved airport operations through airport-CDM	
B0-FICE	Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration	% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC / OLDI with neighbouring ACCs	
B0-DATM	Service Improvement through Digital Aeronautical Information Management	- % of States having implemented an AIXM based AIS database - % of States having implemented QMS	
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	- % of States having implemented SADIS / WIFS - % of States having implemented QMS	
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	% of FIRs in which FUA is implemented	
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	% of FIRs within which all ACCs utilize ATFM systems	
B0-ASUR	Initial capability for ground surveillance	% of FIRs where ADS-B OUT and/or MLAT are implemented for the provision of surveillance services in identified areas.	
B0-ASEP	Air Traffic Situational Awareness (ATSA)	% of States having implemented air traffic situational awareness	
B0-OPFL	Improved access to optimum flight levels through climb/descent procedures using ADS-B	% of FIRs having implemented in-trail procedures	
B0-ACAS	ACAS Improvements	% of States requiring carriage of ACAS (with TCAS 7.1 evolution)	

Module Code	Module Title	Implementation Indicator	Remarks
1	2	3	4
B0-SNET	Increased Effectiveness of Ground-Based Safety Nets	% of States having implemented ground-based safety-nets (STCA, APW, MSAW, etc.)	
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDO)	- % of international aerodromes / TMAs with PBN STAR implemented - % of international aerodromes/TMA where CDO is implemented	
B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	% of FIRs utilising data link en-route in applicable airspace	
B0-CCO	Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)	- % of international aerodromes / TMAs with PBN SID implemented - % of international aerodromes/TMA where CCO is implemented	

7.2 Implementation progress assessment for B0 modules

B0 Module	Elements	Number of fully or partially implemented	Number of N/A	% of implemented with N/A excluded
ACDM	1. Implement collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport	2	3	40%
APTA	1. PBN Approach Procedures)	5	1	71%
	2. GBAS Landing System (GLS) Approach procedures	1	2	17%
RSEQ	1. AMAN and time-based metering via controlled time of arrival to a reference fix	3	3	60%
	2. Departure management	1	3	20%
	3. Point merge	1	6	50%
SURF	1. Surveillance	3	3	60%
	2. Alerting	3	3	60%
	3. Enhanced vision systems for taxi operations	0	2	0%
WAKE	1. Increasing aerodrome arrival operational capacity	2	4	50%
	2. Increasing aerodrome departure operational capacity	2	4	50%
AMET	1. WAFS	4	4	100%
	2. IAVW	4	4	100%
	3. TCAC forecasts	3	5	100%
	4. Aerodrome warnings	3	3	60%
	5. Wind shear warnings and alerts	5	1	71%
	6. SIGMET	8	0	100%
	7. Other OPMET information (METAR, SPECI and/or TAF)	7	0	88%
	8. QMS for MET	8	0	100%
DATM	1. Aeronautical Information Exchange Model (AIXM)	3	2	50%
	2. eAIP	7	0	88%

B0 Module	Elements	Number of fully or partially implemented	Number of N/A	% of implemented with N/A excluded
	3. initial introduction of digital processing and management of information, through aeronautical information service (AIS)/aeronautical information management (AIM) implementation	5	0	63%
	4. QMS for AIM	7	1	100%
FICE	1. improve coordination between air traffic service units (ATSUs) by using ATS interfacility data communication (AIDC) defined by the ICAO Manual of Air Traffic Services Data Link Applications (Doc 9694).	5	2	83%
ACAS	1. ACAS II (TCAS version 7.1)	5	2	83%
ASEP	1. ATSA-AIRB	1	5	33%
	2. ATSA-VSA	1	4	25%
ASUR	1. ADS-B	5	1	71%
	2.Multilateration (MLAT)	5	3	100%
FRTO	1. Airspace planning	7	1	100%
	2. Flexible Use of Airspace (FUA)	7	1	100%
	3. Flexible routing	7	1	100%
NOPS	1. ATFM	7	1	100%
OPFL	1. ITP using ADS-B	1	6	50%
SNET	1. Short Term Conflict Alert implementation (STCA)	7	1	100%
	2. Area Proximity Warning (APW)	6	1	86%
	3. Minimum Safe Altitude Warning (MSAW)	4	3	80%
CCO	1. Implement continuous climb operations in conjunction with performance-based navigation (PBN)	7	1	100%
CDO	1. Use performance-based airspace and arrival procedures allowing an aircraft to fly its optimum profile using continuous descent operations (CDOs	7	1	100%
TBO	1. Implement a set of data link applications supporting surveillance and communications in air traffic service	7	1	100%

7.3 Implementation progress assessment for B1 modules

B1 Module	Elements	Number of fully or partially implemented	Number of N/A	% of implemented with N/A excluded
ACDM	1. Enhance the planning and management of airport operations and allow their full integration in the air traffic management using performance targets compliant with those of the surrounding airspace	2	2	33%
APTA	1. Progress further with the universal implementation of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) approaches. PBN and GLS (CAT II/III) procedures.	0	2	0%
RATS	1. Provision of tower control (TWR) or aerodrome flight information service (AFIS) for single	1	4	25%

B1 Module	Elements	Number of fully or partially implemented	Number of N/A	% of implemented with N/A excluded
	aerodrome(s) by remotely located air traffic controllers (ATCO) or aerodrome flight information service officers (AFISO)			
	2. Provision of TWR or AFIS for multiple aerodromes by a single ATCO or AFISO	2	3	40%
	3. Remote provision of ATS for contingency situations	1	3	20%
RSEQ	1. Surface management of runway demand and sequencing aircraft on the ground to support departure operations based on precise surface movement tracking	1	3	20%
	2. Integration of departure sequencing and surface management	0	4	0%
	3. Arrival metering extended across FIR boundaries	1	3	20%
	4. Assignment of RNAV/RNP routes linked to controlled time of arrival at metering fixes	1	2	17%
SURF	1. Basic surface situation awareness (SURF) through display of other aerodrome traffic to aircraft via ADS-B or TIS-B	0	5	0%
WAKE	1. PANS-ATM aircraft leader/follower pair-wise wake turbulence separation minima	0	4	0%
	2. Wake Turbulence Mitigation for Arrivals (WTMA) on parallel runways with runway centre lines spaced less than 760 m (2 500 feet) apart or on a single runway through variable application of wake turbulence separation dependant on the crosswinds present along the approach corridor	0	7	0%
	3. Wake Turbulence Mitigation for Departures (WTMD) on parallel runways with runway centre lines spaced less than 760 m (2 500 feet) through reduction of separation between departures when runway crosswinds are of sufficient strength and persistence	0	7	0%
AMET	1. Producing meteorological information elements that can be ingested by automated decision support tools	2	3	40%
	2. Automated processing of meteorological information to derive predicted effects on airspace capacity	0	4	0%
	3. Automated processing of meteorological information to derive predicted effects on aerodrome capacity	0	4	0%
	4. Comparison of predicted meteorological airspace capacity constraints to projected demand	0	4	0%
	5. Comparison of predicted meteorological aerodrome capacity constraints to projected demand	0	4	0%
	6. Meteorological information integrated decision support that creates ranked mitigation strategies	0	3	0%
DATM	1. Implementation of digital information management using WXXM for meteorological information	0	3	0%
	2. Implementation of digital information management using FIXM for flight and flow information	0	3	0%

B1 Module	Elements	Number of fully or partially implemented	Number of N/A	% of implemented with N/A excluded
	3. Implementation of digital information management for aircraft performance- related data	0	3	0%
FICE	1. introduce FF-ICE, Step 1 providing ground-ground exchanges before departure using common flight information exchange model (FIXM) and extensible markup language (XML) standard formats.	0	2	0%
SWIM	1. Implementation of system-wide information management (SWIM) services (applications and infrastructure) creating the aviation intranet based on standard data models, and internet-based protocols to maximize interoperability.	1	1	14%
ASEP	1. Increased capacity and efficiency through interval management	0	5	0%
FRTO	1. Free routing.	6	1	86%
	2. Reduced route spacing	3	1	43%
	3. Dynamic sectorization	4	1	57%
NOPS	1. Integrating ATFM and Airspace Organization and Management (AOM) in the design of alternative route options for ATFM	4	2	67%
	2. Using trajectory projections as soon as possible after departure to update ATFM requirements and perform additional ATFM smoothing for single and converging flows	3	3	60%
	3. Initial User Driven Prioritization Process (UDPP) whereby operators affected by ATFM measures can collaborate with each other and ATFM to devise alternative measures that serve ATFM requirements while at the same time taking account of operators' priorities	3	3	60%
	4 Full FUA	3	0	38%
	5. Complexity management	0	0	0%
SNET	1. Enhance safety by reducing the risk of controlled flight into terrain accidents on final approach and the risk of unstable approach through the use of approach path monitor (APM).	0	5	0%
CDO	1. CDO procedures defined as vertical paths to be followed within specified tolerances	1	5	33%
RPAS	1. Streamlined process for RPA access to non-segregated airspace	2	4	50%
	2. Defined airworthiness certification for RPA	2	4	50%
	3. Defined operator certification for RPA operators	2	4	50%
	4. Defined communication performance requirements for Command and Control (C2) links and for ATC communications	1	5	33%
	5. Defined remote pilot licencing requirements	1	4	25%
	6. Defined detect and avoid technology performance requirements	0	5	0%
TBO	1. Initial 4D operations by specifying Required Time of Arrival (RTA)	1	4	25%
	2. Data Link Operational Terminal Information Service (D-OTIS)	1	4	25%
	3. Departure clearances via data link (DCL)	1	4	25%
	4. Data Link Taxi (D-TAXI)	0	5	0%

_____

8. NAT ANRF-ASBU and ANRF-RASI forms

8.1 NAT ANRF ASBU

<table>
<tr><td colspan="6">NAT ASBU Air Navigation Reporting Form (NAT ANRF-ASBU)</td></tr>
<tr><td>PIA</td><td>4-Efficient Flight Path</td><td>Block - Module</td><td>B0- TBO</td><td>Date</td><td>April 2019</td></tr>
<tr><td colspan="6">Module Description
Improved Safety and Efficiency through the initial application of Data Link En-Route</td></tr>
<tr><td colspan="6">Element Implementation Status</td></tr>
<tr><td rowspan="2">1</td><td colspan="2">Element Description
Data Link Mandate (DLM) over oceanic and remote areas</td><td colspan="2">Date Planned/Implemented
Phased implementation from Feb 2013 to Jan 2020</td><td>Status
Fully implemented</td></tr>
<tr><td colspan="5">Status Details
Feb 2013 - Implemented on 3 core tracks FL350-390
Feb 2015 - Implemented on all NAT OTS FL350-390
Dec 2017 –Implemented in all NAT HLA FL350-390
Jan 2020 – Implemented in all NAT FL290-FL410
FAA Response: Status=Data Link is implemented, but no mandate by the FAA.</td></tr>
<tr><td rowspan="2">2</td><td colspan="2">Element Description
FANS 1/A</td><td colspan="2">Date Planned/Implemented</td><td>Status
N/A</td></tr>
<tr><td colspan="5">Status Details
FAA Response: Status=Implemented in 2005.</td></tr>
<tr><td rowspan="2">3</td><td colspan="2">Element Description</td><td colspan="2">Date Planned/Implemented</td><td>Status</td></tr>
<tr><td colspan="5">Status Details</td></tr>
<tr><td rowspan="2">4</td><td colspan="2">Element Description</td><td colspan="2">Date Planned/Implemented</td><td>Status</td></tr>
<tr><td colspan="5">Status Details</td></tr>
<tr><td colspan="6">Achieved Benefits</td></tr>
<tr><td colspan="6">Access and Equity
Improved</td></tr>
<tr><td colspan="6">Capacity
Increased</td></tr>
<tr><td colspan="6">Efficiency
Increased access to the most fuel efficient flight profile</td></tr>
<tr><td colspan="6">Environment
Less fuel burn, reduced GHG emissions</td></tr>
<tr><td colspan="6">Safety
Lateral, longitudinal and vertical risk is reduced. Reduction of coordination errors
More timely detection of errors, supporting reduced time at unprotected profile
More accurate position reports and automated processing of position reports. Support normal flight tracking capability.</td></tr>
<tr><td colspan="6">Implementation Challenges</td></tr>
</table>

Ground system Implementation *Monitoring of flight capability against DLM airspace.*
Avionics Implementation FANS 1/A equipage is required
Procedures Availability
Operational Approvals Operators need to obtain PBCS and data link approvals, where applicable
Notes

NAT ASBU Air Navigation Reporting Form (NAT ANRF-ASBU)

PIA	2-Globally interoperable system and data	**Block - Module**	B0-FICE	**Date**	April 2019

Module Description
Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Element Implementation Status

1	**Element Description** *AIDC to provide initial flight data to adjacent ATSUs*	**Date Planned/Implemented** *2013*	**Status** *Implemented*
	Status Details		
2	**Element Description** *AIDC to update previously coordinated flight data*	**Date Planned/Implemented** *2013*	**Status** *Partly implemented*
	Status Details *Iceland planned implementation 2022.* *Fully implemented in Portugal* *FAA Response: Status=Implemented. Updating of data is performed in the AIDC coordination functionality. The United States updates AIDC flight data within system messaging in all of their interfaces with adjacent FIRs. This falls within the coordination phase of AIDC.* *Fully implemented in United Kingdom*		
3	**Element Description** *AIDC for control transfer*	**Date Planned/Implemented** *Note 1*	**Status** *Note 1*
	Status Details Iceland is not planning to implement Element 3. United Kingdom is not planning to implement Element 3. FAA Response: Status=Implemented. AIDC protocols as implemented within the United States ATOP system supports the notification, coordination and specifically the transfer of communications and control phases as defined in bilateral agreements between the United States and interfaced ATSUs.		
4	**Element Description** *AIDC to transfer CPDLC logon information to the Next Data Authority*	**Date Planned/Implemented** *Note 1*	**Status** *Note 1*
	Status Details *Iceland is not planning to implement Element 4.* *United Kingdom no planning to implement Element 4.* *FAA Response: Status=Planning. The US is not scheduled to support this capability until 2020 when AIDC Version 3.0 is projected for implementation.*		

Achieved Benefits

Access and Equity
Improved

Capacity
Increased

Efficiency
Increased access to the most fuel efficient flight profile

Environment
Less fuel burn, reduced GHG emissions

Safety *Reduction of coordination errors* More timely detection of errors, supporting reduced time at unprotected profile
Implementation Challenges
Ground system Implementation Automation upgrades for full AIDC capability
Avionics Implementation
Procedures Availability
Operational Approvals
Notes 1 Elements 3 and 4 will probably not be implemented.

NAT ASBU Air Navigation Reporting Form (NAT ANRF-ASBU)

PIA	3-Optimum capacity and flexible flights	**Block - Module**	B0-ASUR	**Date**	April 2019

Module Description
Initial capability for ground surveillance

Element Implementation Status

1	**Element Description** *ADS-B*	**Date Planned/Implemented** *Phased implementation from 2010 to 2020*	**Status** *Partially implemented*
	Status Details *2010-Ground based ADS-B services provided from 6 sites in Canada and 4 sites in Greenland* *2011- 8 ADS-B stations installed in Iceland at 8 sites, 4 ADS-B stations installed in the Faroe Islands at two sites, 10 ADS-B stations installed in Greenland at 5 sites. 11 ADS-B stations installed in the central group of the Azores Islands at 11 sites* *2014 - ADS-B services implemented in Iceland.6 ADS-B stations installed in the western group of the Azores Islands at 6 sites* *2019 - 1 ADS-B station to be installed in the eastern group of the Azores Islands at 1 site* *2018 – 1 ADS-B station installed in Madeira archipelago* *2019 – ADS-B stations to be installed in Portugal mainland allowing surveillance coverage along the FIR boundaries between Santa Maria and Lisboa/Madrid* *2019 - Space based ADS-B services fully implemented following a trial in Shanwick and Gander* *FAA Response: Status=Implemented. The ADS-B surveillance coverage for the continental United States is completed in 2014. Update on April 16, 2019: The ADS-B OUT mandate starts on January 1, 2020 to fly in most controlled airspace (Class B & C and above 10,000 feet, for example) For more detail, visit www.faa.gov/nextgen/equipadsb/.* *2020 – 1 ground based ADS-B station added in the northern part of Iceland.* *2020 – 3rd of December, Space based ADS-B services to be implemented in Iceland, all of BIRD CTA south of 70N*		
2	**Element Description** *Multilateration(MLAT)*	**Date Planned/Implemented**	**Status**
	Status Details *2011- 11 MLAT stations installed in the central group of the Azores Islands at 11 sites* *2014 - 6 MLAT stations installed in the western group of the Azores Islands at 6 sites* *2019 –MLAT, as part of ATS Surveillance service in Iceland, implemented within the approach area for BIRK and BIKF (60NM radius from BIKF)* *FAA Response: Status=Implemented. Note from December 2013: The FAA has implemented ADS-B and surface multilateration called ASDE-X at 35 aerodromes. The list of 35 aerodromes are below:* *KATL KCLT KDTW KBOS KMEM KMDW KPDX* *KORD KIAH KJFK KMIA KSLC KFLL KCLE* *KDFW KPHL KMSP KIAD KMCO KSAN KSTL* *KDEN KPHX KSFO KLGA KDCA KTPA KCVG* *KLAX KLAS KEWR KSEA KBWI KHNL KPIT* *The FAA has implemented of Wide Area Multilateration (WAM) in Juneau (JNU) in Alaska and Telluride, Montrose, Gunnison, Durango, Rifle and Hayden in Colorado.*		
3	**Element Description**	**Date Planned/Implemented**	**Status**

	Status Details		
4	**Element Description**	**Date Planned/Implemented**	**Status**
	Status Details		
5	**Element Description**	**Date Planned/Implemented**	**Status**
	Status Details		
Achieved Benefits			
Access and Equity Improved			
Capacity Increased			
Efficiency Increased access to the most fuel efficient flight profile			
Environment Less fuel burn, reduced GHG emissions			
Safety Provide for surveillance capability in oceanic airspace. Provides for normal flight tracking capability and location of aircraft in distress.			
Implementation Challenges			
System Implementation Timely availability of SB ADS-B system and completion of standardisation work			
Avionics Implementation			
Procedures Availability			
Operational Approvals			
Notes			

<table>
<tr><td colspan="6">NAT ASBU Air Navigation Reporting Form (NAT ANRF-ASBU)</td></tr>
<tr><td>PIA</td><td>2-Globally interoperable system and data</td><td>Block - Module</td><td>B0- ATM</td><td>Date</td><td>April 2019</td></tr>
<tr><td colspan="6">Module Description
Service Improvement through Digital Aeronautical Information Management.</td></tr>
<tr><td colspan="6">Element Implementation Status</td></tr>
<tr><td rowspan="2">1</td><td colspan="2">Element Description
Aeronautical Information Exchange Model (AIXM)</td><td colspan="2">Date Planned/Implemented
Dec 2018</td><td>Status
Partially implemented</td></tr>
<tr><td colspan="5">Status Details
Iceland fully compliant.
Portugal plans to be fully compliant by end of 2020
FAA Response: Status=Implemented. Comment from 2013: The introduction of digital processing and digital management of information using the aeronautical information exchange model (AIXM) has been initiated, but not complete. The FAA currently provides a subset of Aeronautical Information in AIXM including digital NOTAM in AIXM 5.1. Comment on April 16 2019: The FAA knows how to use AIXM and has been demonstrated. The FAA operates multiple systems that can use AIXM and will convert those systems to use AIXM as we update them. We consider this capability is implemented and will not keep track of each and all systems within the FAA. However we will ensure that our systems to be interoperable with other states' systems where AIXM should be used for the communication.</td></tr>
<tr><td rowspan="2">2</td><td colspan="2">Element Description
eAIP</td><td colspan="2">Date Planned/Implemented
Dec 2018</td><td>Status
Partially implemented</td></tr>
<tr><td colspan="5">Status Details
Iceland fully compliant.
Portugal eAIP fully implemented.
United Kingdom eAIP fully implemented.
FAA Response: Status=Implemented. An HTML version of eAIP is available via https://www.faa.gov/air_traffic/publications/.</td></tr>
<tr><td rowspan="2">3</td><td colspan="2">Element Description
Digital NOTAM</td><td colspan="2">Date Planned/Implemented
Dec 2016</td><td>Status
Partially implemented</td></tr>
<tr><td colspan="5">Status Details
Iceland planned to be fully compliant by end of 2021.
Portugal plans to be fully compliant by end of 2020
FAA Response: Status=Implemented. Comments on December 2013: Digital NOTAM has been implemented. More than 400 airports are capable of producing Digital NOTAM. Update Comments on June 12, 2018 - The legacy (analog) United States NOTAM system (USNS) is migrating to the digital Federal NOTAM System (FNS), with FNS now generating around 80% of NOTAMs digitally. The new system has SWIM connectivity, resulting in improvements to efficiency and safety for airspace users. FNS allows for the automatic transformation from the US NOTAM format to ICAO and plain language formats. It uses business rules for validation and allows for information exchange by using AIXM 5.1 format.</td></tr>
<tr><td>4</td><td colspan="2">Element Description
eTOD</td><td colspan="2">Date Planned/Implemented
Dec 2018</td><td>Status
Partially implemented</td></tr>
</table>

	Status Details *Iceland fully compliant.* *Portugal plans to be fully compliant by end of 2020* *FAA Response: Status=Implemented. Comments on December 2013: Currently providing point data in NAD83/NAVD88. Plans in place to provide AIXM 5.1 obstacle point data in WGS-84. Update Comments on June 12, 2018 - The majority of eTOD related terrain collection is the responsibility of the United States Geologic Survey (USGS) and is available for download from their website, free of charge.*		
5	**Element Description** *WGS-84*	**Date Planned/Implemented** Sep 2015	**Status** *Implemented*
	Status Details *Iceland fully compliant.* *Portugal fully compliant*		
6	**Element Description** *QMS for AIM*	**Date Planned/Implemented** Sep 2015	**Status** *Implemented*
	Status Details *Iceland fully compliant.* *Portugal QMS implemented*		
Achieved Benefits			
Access and Equity Improved			
Capacity Increased			
Efficiency Increased			
Environment Less fuel burn, reduced GHG emissions			
Safety *Improved*			
Implementation Challenges			
System Implementation			
Avionics Implementation			
Procedures Availability			
Operational Approvals			
Notes			

NAT ASBU Air Navigation Reporting Form (NAT ANRF-ASBU)					
PIA	2-Globally interoperable system and data	**Block - Module**	B0- AMET	**Date**	Sep 2016
Module Description *Meteorological information supporting enhanced operational efficiency and safety*					
Element Implementation Status					
1	**Element Description** *WAFS*			**Date Planned/Implemented** *SADIS FTP* *(1 September 2015)*	**Status** *Implemented*
	Status Details *Secure SADIS FTP is implemented*				
2	**Element Description** *IAVW*			**Date Planned/Implemented** *Sep 2015*	**Status** *Implemented*
	Status Details • *(Canada, France United Kingdom, United States) All VAACS issue fully compliant volcanic ash advisory (VAA) and volcanic ash advisory information in graphical format (VAG)* • *(Iceland, Portugal) All volcanic observatories issue fully compliant volcano observatory notice for aviation (VONA)*				
3	**Element Description** *TCAC forecasts*			**Date Planned/Implemented** *Sep 2015*	**Status** *Implemented*
	Status Details *The TCAC issues fully compliant tropical cyclone advisory (TCA) and tropical cyclone advisory in graphical format (TCG).*				
4	**Element Description** *Aerodrome warnings*			**Date Planned/Implemented**	**Status** *Need Analysis Not Started*
	Status Details *FAA Response: Status=Implemented. Airport weather warnings are issued for US civil airports by the National Weather Service (NWS) Weather Forecast Offices (WFOs) based on agreed airport warning criteria and dissemination procedures.*				
5	**Element Description** *Wind shear warnings and alerts*			**Date Planned/Implemented**	**Status** *Need Analysis Not Started*
	Status Details FAA Response: Status=Implemented. Wind shear warnings and alerts are provided for major civil airports. Over 120 US airports have ground-based wind shear detecting systems installed. These systems included the Low Level Wind Shear System (LLWS) and the Terminal Doppler Weather Radar (TDWR) as an input component of the Integrated Terminal Weather System (ITWS).				
6	**Element Description** *SIGMET*			**Date Planned/Implemented** Nov 2018	**Status** *Partially Implemented*
	Status Details Not all States issue fully compliant SIGMET For the NAT, the target level of performance is: - 98% of SIGMETs coded in compliance with Annex 3 SARPs FAA Response: Status=Implemented. The NWS provides SIGMETs for all US controlled airspace in compliance with ICAO Annex 3 with filed State exceptions as well as supporting NWS, FAA or DoD publications.				
7	**Element Description** *Other OPMET information (METAR, SPECI and/or TAF)*			**Date Planned/Implemented**	**Status** *Partially Implemented*

	Status Details For the NAT, the target level of performance is: - 95% of required METAR disseminated within 5 minutes of METAR observation time - 95% of required TAF disseminated within 35 minutes (30 minutes lead time plus 5 minutes transit time) FAA Response: Status=Implemented. The NWS issues TAFS for all major civil airports and METAR/SPECI reports are provided at all major airports by the NWS, FAA, Department of Defense (DoD), or other local or state authorities. The TAFS and METAR/SPECI reports are provided in compliance with ICAO Annex 3 with filed State exceptions.		
8	**Element Description** *QMS for MET*	**Date Planned/Implemented** Sep 2015	**Status** *Implemented*
	Status Details		
Achieved Benefits			
Access and Equity Improved			
Capacity Increased			
Efficiency *Increased*			
Environment Less fuel burn, reduced GHG emissions			
Safety Improved			
Implementation Challenges			
System Implementation			
Avionics Implementation			
Procedures Availability			
Operational Approvals			
Notes			

NAT ASBU Air Navigation Reporting Form (NAT ANRF-ASBU)					
PIA	3-Optimum capacity and flexible flights	**Block - Module**	B1- FRTO	**Date**	June 2018

Module Description *Implementation of reduced longitudinal separation minima*			
Element Implementation Status			
1	**Description** *RLongSM Validation Trial*	**Date Planned/Implemented** *2010*	**Status** *Implemented*
	Status Details *Applied between eligible pairs (FANS 1/A CPDLC /ADS-C (RCP240/RSP180 measured)) in Gander, Shanwick and Reykjavik OCA)*		
2	**Element Description** *PBCS*	**Date Planned/Implemented** *March 2018*	**Status** *Implemented*
	Status Details *Upgrade ground automation systems to process PBCS designators- Done* *Establish and implement the PBCS approval process-Done*		
3	**Element Description** *5 minutes longitudinal separation*	**Date Planned/Implemented** *March 2018*	**Status** *Implemented*
	Status Details *Implemented in accordance with the new PANS-ATM separation minima applicable from Nov 2016.*		
4	**Element Description**	**Date Planned/Implemented**	**Status**
	Status Details		
5	**Element Description**	**Date Planned/Implemented**	**Status**
	Status Details		

Achieved Benefits
Access and Equity Improved
Capacity Increased
Efficiency Increased access to the most fuel efficient flight profile
Environment Less fuel burn, reduced GHG emissions
Safety Lateral, longitudinal and vertical risk do not increase
Implementation Challenges
Ground system Implementation Ground automation systems need to be updated
Avionics Implementation FANS 1/A is required for PBCS separation.
Procedures Availability

Operational Approvals Operators need to obtain PBCS and PBN approvals
Notes *Detailed information is provided in the NAT RlongSM, RLatSM, PBCS implementation plans and tasks list.* *Visit http://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx?RootFolder=%2FEURNAT%2FEUR%20and%20NAT%20Documents%2FNAT%20Documents%2FPlanning%20documents%20supporting%20separation%20reductions%20and%20other%20initiatives&FolderCTID=0x012000DAF95319EADD9946B510C5D7B595637D00AA5EB47B299B9A4BAD1968B24E18655C&View={2666E7DD-5F4E-4E64-B16A-CF142A1E5BC9}*

<table>
<tr><td colspan="6">NAT ASBU Air Navigation Reporting Form (NAT ANRF-ASBU)</td></tr>
<tr><td>PIA</td><td>3-Optimum capacity and flexible flights</td><td>Block - Module</td><td>B1- FRTO</td><td>Date</td><td>June 2018</td></tr>
<tr><td colspan="6">Improvement Description
Implementation of reduced lateral separation minima</td></tr>
<tr><td colspan="6">Element Implementation Status</td></tr>
<tr><td rowspan="2">1</td><td colspan="2">Element Description
RLatSM validation trial Phase 1</td><td>Date Planned/Implemented
Dec 2015</td><td colspan="2">Status
Implemented</td></tr>
<tr><td colspan="5">Status Details
Applied on 3 core tracks in Gander, Shanwick and Reykjavik OCA. RNP 4 and FANS 1/A CPDLC /ADS-C (RCP240/RSP180 measured) are required</td></tr>
<tr><td rowspan="2">2</td><td colspan="2">Element Description
RLatSM validation trial Phase 2</td><td>Date Planned/Implemented
Nov 2016</td><td colspan="2">Status
Implemented</td></tr>
<tr><td colspan="5">Status Details
Applied on all NAT OTS in Gander, Shanwick and Reykjavik OCA. RNP 4 and FANS 1/A CPDLC /ADS-C (RCP240/RSP180 measured) are required</td></tr>
<tr><td rowspan="2">3</td><td colspan="2">Element Description
23 NM reduced lateral separation</td><td>Date Planned/Implemented
March 2018</td><td colspan="2">Status
Implemented</td></tr>
<tr><td colspan="5">Status Details
Upgrade ground automation systems to process PBCS designators- ongoing
Establish and implement the PBCS approval process- ongoing</td></tr>
<tr><td rowspan="2">4</td><td colspan="2">Element Description
23 NM reduced lateral separation</td><td>Date Planned/Implemented
March 2018</td><td>Status
Implemented</td></tr>
<tr><td colspan="4">Status Details
Obtaining RNP 4 approvals ongoing. Equipage is increasing</td></tr>
<tr><td rowspan="2">5</td><td colspan="2">Element Description
23 NM reduced lateral separation</td><td>Date Planned/Implemented
March 2018</td><td colspan="2">Status
Implemented</td></tr>
<tr><td colspan="5">Status Details
Applied in New York Eats and Santa Maria OCAs, and on all NAT OTS in Gander, Shanwick and Reykjavik OCAs. RNP 4 and FANS 1/A CPDLC /ADS-C (RCP240/RSP180) are required</td></tr>
<tr><td colspan="6">Achieved Benefits</td></tr>
<tr><td colspan="6">Access and Equity
Improved</td></tr>
<tr><td colspan="6">Capacity
Increased</td></tr>
<tr><td colspan="6">Efficiency
Increased access to the most fuel efficient flight profile</td></tr>
<tr><td colspan="6">Environment
Less fuel burn, reduced GHG emissions</td></tr>
<tr><td colspan="6">Safety
Lateral, longitudinal and vertical risk do not increase</td></tr>
</table>

Implementation Challenges
Ground system Implementation Ground automation systems need to be updated
Avionics Implementation RNP 4 and FANS 1/A equipage is required for the lateral reduction of separation minima.
Procedures Availability
Operational Approvals Operators need to obtain PBCS and PBN approvals
Notes *Detailed information is provided in the NAT RlongSM and RLatSM implementation plans and tasks list. Visit http://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx?RootFolder=%2FEURNAT%2FEUR%20and%20NAT%20Documents%2FNAT%20Documents%2FPlanning%20documents%20supporting%20separation%20reductions%20and%20other%20initiatives&FolderCTID=0x012000DAF95319EADD9946B510C5D7B595637D00AA5EB47B299B9A4BAD1968B24E18655C&View={2666E7DD-5F4E-4E64-B16A-CF142A1E5BC9}*

8.2 NAT ANRF RASI

NAT RASI Air Navigation Reporting Form (NAT ANRF-RASI)			
RASI # - Title	Greenland ATM Improvement Program	**Date**	June 2018

Improvement Description

The Greenland ATM Improvement Program applies to the airspace in the Nuuk FIR north of 6330N between F195 and F285. Traffic in this airspace is mostly domestic traffic in Greenland as well as international traffic to/from airports in Greenland. The applicable separation standards have for the most part been 120 NM lateral separation and 30 minutes longitudinal separation which has precluded efficient operations in the airspace.

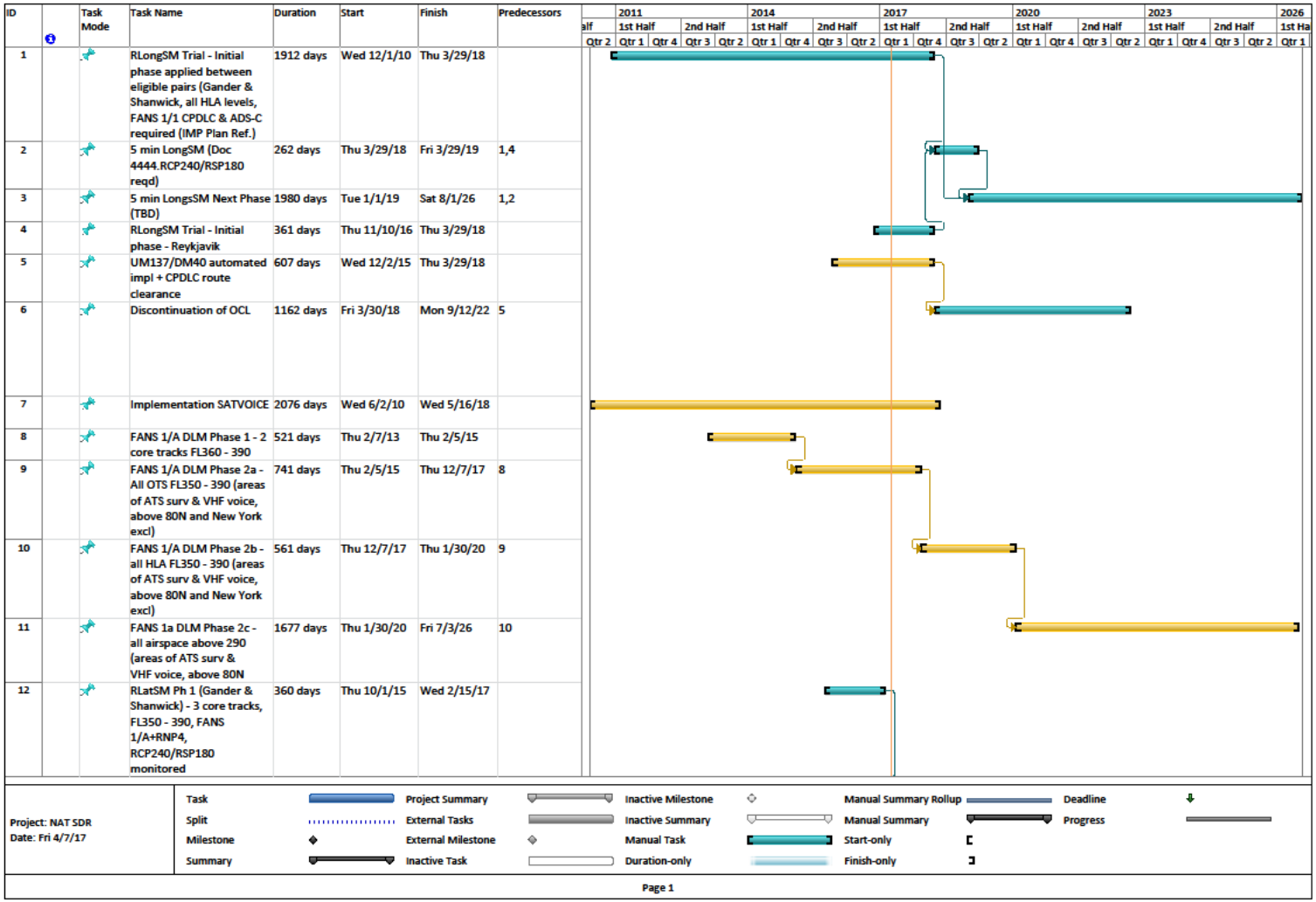
The aim of the Greenland ATM Improvement Program is implementation of new and improved procedural separation standards, introduction of ADS-B surveillance services and Direct Controller Pilot (DCPC) VHF voice communications.

Element Implementation Status

1	**Description** Operational trial of 20 NM lateral separation between GNSS equipped aircraft climbing/descending through the level of other GNSS equipped aircraft.	**Date Planned/Implemented** 2013	**Status** Implemented
	Status Details		
2	**Description** Implementing 15 minutes longitudinal separation between other than turbojet aircraft using third party VHF communication.	**Date Planned/Implemented** 2013	**Status** Implemented
	Status Details		
3	**Description** Implementing 15 minutes longitudinal separation between other than turbojet aircraft using DCPC VHF communication.	**Date Planned/Implemented** 2015	**Status** Implemented
	Status Details		
4	**Description** Implementing 15 NM lateral separation between GNSS equipped aircraft in DCPC VHF voice communication.	**Date Planned/Implemented** 2015	**Status** Implemented
	Status Details		
5	**Description** Implementing 7 NM lateral separation between GNSS equipped aircraft in DCPC VHF voice communication and climbing/descending through the level of other GNSS equipped aircraft	**Date Planned/Implemented** 2015	**Status** Implemented
	Status Details		
6	**Description** Implementing ADS-B surveillance separation of 10 NM	**Date Planned/Implemented** 2015	**Status** Implemented

	Status Details		
7	**Description** Application of “traditional” PANS-ATM procedural separation between aircraft in DCPC VHF voice communication.	**Date Planned/Implemented** 2016	**Status** Implemented
	Status Details		
8	**Description** Implementing all the Greenland ATM Improvement program separation rules, both lateral and longitudinal in BIRD FIR	**Date Planned/Implemented** 2017	**Status** Implemented
	Status Details		
Achieved Benefits			
Access and Equity Improved			
Capacity Increased			
Efficiency Increased access to the most fuel efficient flight profile			
Environment Less fuel burn, reduced GHG emissions			
Safety No increase in safety risk			
Implementation Challenges			
Ground system Implementation			
Avionics Implementation			
Procedures Availability			
Operational Approvals			
Notes			

9. NAT SDR



ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		RLongSM Trial - Initial phase applied between eligible pairs (Gander & Shanwick, all HLA levels, FANS 1/1 CPDLC & ADS-C required (IMP Plan Ref.)	1912 days	Wed 12/1/10	Thu 3/29/18	
2		5 min LongSM (Doc 4444.RCP240/RSP180 reqd)	262 days	Thu 3/29/18	Fri 3/29/19	1,4
3		5 min LongsSM Next Phase (TBD)	1980 days	Tue 1/1/19	Sat 8/1/26	1,2
4		RLongSM Trial - Initial phase - Reykjavik	361 days	Thu 11/10/16	Thu 3/29/18	
5		UM137/DM40 automated impl + CPDLC route clearance	607 days	Wed 12/2/15	Thu 3/29/18	
6		Discontinuation of OCL	1162 days	Fri 3/30/18	Mon 9/12/22	5
7		Implementation SATVOICE	2076 days	Wed 6/2/10	Wed 5/16/18	
8		FANS 1/A DLM Phase 1 - 2 core tracks FL360 - 390	521 days	Thu 2/7/13	Thu 2/5/15	
9		FANS 1/A DLM Phase 2a - All OTS FL350 - 390 (areas of ATS surv & VHF voice, above 80N and New York excl)	741 days	Thu 2/5/15	Thu 12/7/17	8
10		FANS 1/A DLM Phase 2b - all HLA FL350 - 390 (areas of ATS surv & VHF voice, above 80N and New York excl)	561 days	Thu 12/7/17	Thu 1/30/20	9
11		FANS 1a DLM Phase 2c - all airspace above 290 (areas of ATS surv & VHF voice, above 80N	1677 days	Thu 1/30/20	Fri 7/3/26	10
12		RLatSM Ph 1 (Gander & Shanwick) - 3 core tracks, FL350 - 390, FANS 1/A+RNP4, RCP240/RSP180 monitored	360 days	Thu 10/1/15	Wed 2/15/17	

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