# ICAO Regional Supplementary Procedures

# Excerpts from ICAO Doc.7030 by Region

## AFI

**4.1.1.1 RNAV 10 (RNP 10)**
*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation Manual *(Doc 9613), 1.2.3.5.*

*Area of applicability*
4.1.1.1.1 For flights on designated controlled oceanic routes or areas within the Canarias FIR (southern sector), Dakar Oceanic, Recife and Sal Oceanic FIRs, and on designated routes over continental Africa, a lateral separation minimum of 93 km (50 NM) may be applied.

4.1.1.1.2 For flights in the EUR/SAM corridor (Canarias (southern sector), Dakar Oceanic, Recife and Sal Oceanic FIRs), a longitudinal separation minimum of 93 km (50 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 10 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.

4.1.1.1.3 Longitudinal distance-based separation minima of 93 km (50 NM) between RNAV aircraft on the same track on RNP 10 routes over continental Africa shall not be used.

*Means of compliance*
4.1.1.1.4 For application of 4.1.1.1.1 and 4.1.1.1.2, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):
a) aircraft are approved to RNP 10 in accordance with provisions contained in the *Performance-based Navigation Manual* (Doc 9613); and
b) operator programmes shall be established to mitigate the occurrence of large navigational errors due to equipment malfunction or operational error:
1) operator in-flight operating drills shall include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from an ATC-cleared route; and
2) the operator shall establish programmes to provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required.

*Note.— Detailed guidance material on RNP is contained in the* Performance-based Navigation (PBN) Manual *(Doc 9613)*.

**4.1.1.2 RNAV 5**
*Area of applicability*
4.1.1.2.1 The requirements included in the RNAV 5 specification for en-route operations shall apply to all such operations conducted under IFR on designated RNAV 5 routes within the following FIRs as specified in the relevant State AIP or NOTAM:
Sana'a FIR.

*Means of compliance*
4.1.1.2.2 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

*Note.— Guidance material concerning RNAV 5 implementation and the associated navigation specification is contained in the Performance-based Navigation (PBN) Manual (Doc 9613).*

# CAR

**4.1.1.1 RNAV 10 (RNP 10)**

*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation (PBN) Manual (Doc 9613)*, 1.2.3.5.*

*Area of applicability*

4.1.1.1.1 A lateral separation minimum of 93 km (50 NM) may be applied between flights operating on oceanic routes or areas:

a) within the control areas of the San Juan FIR, Miami Oceanic FIR; Houston Oceanic FIR, the oceanic portion of the Gulf of Mexico in the Mexico FIR; the West Atlantic Route System (WATRS); and

b) outside WATRS within the control area of the New York Oceanic FIR, except minimum lateral separation between aircraft transitioning from airspace in the New York Oceanic FIR/CTA to MNPS airspace shall be 110 km (60 NM).

*Note 1.— The WATRS area is defined as beginning at a point 27°00'N/77°00'W direct to 20°00'N/67°00'W direct to 18°00'N/62°00'W direct to 18°00'N/60°00'W direct to 38°30'N/60°00'W direct to 38°30'N/69°15'W, thence counterclockwise along the New York Oceanic control area/FIR boundary to the Miami Oceanic control area/FIR boundary,*
*thence southbound along the Miami Oceanic control area/FIR boundary to the point of beginning.*

*Note 2.— The NAT MNPS are set forth in NAT SUPPS, 4.1.1.5. NAT MNPS airspace is identified in NAT SUPPS, 4.1.1.1.5.1.*

*Means of compliance*

4.1.1.1.2 For application of 4.1.1.1.1, operators and civil aviation authorities must follow the provisions listed below.

4.1.1.1.3 The aircraft and operator must be approved RNP 10 or RNP 4 by the State of the Operator or the State of Registry, as appropriate. RNP 10 is the minimum navigation specification for the application of 93 km (50 NM) lateral separation.

4.1.1.1.4 States shall ensure, when granting approval for RNP 10 or RNP 4, that operators establish programmes to mitigate the occurrence of large lateral track errors due to equipment malfunction or operational error.

*Note.— The* Performance-based Navigation (PBN) Manual (Doc 9613) *provides guidance on aircraft, operations and maintenance programmes for the initial achievement and continued compliance with the authorized navigation specification.*

**4.1.1.5 Pre-PBN navigation specifications**

*4.1.1.5.1 Minimum navigation performance specifications (MNPS)*

*Area of applicability*

4.1.1.5.1.1 For flights in transit to or from the NAT MNPS airspace, while operating in the control area of the San Juan FIR, a lateral separation minimum of 110 km (60 NM) may be applied.

*Means of compliance*

4.1.1.5.1.2 Aircraft must meet the NAT MNPS specifications.

*Note.— The NAT MNPS area and specifications are set forth in the NAT SUPPS, Chapter 4.*

# EUR

## 3.2 MANDATORY CARRIAGE OF 8.33 KHZ CHANNEL SPACING CAPABLE RADIO EQUIPMENT

(A10, Vol. V – Chapter 4)

3.2.1 All aircraft operating above FL 195 in the European Region shall be equipped with 8.33 kHz channel spacing capable radio equipment.

3.2.2 Exemptions may be granted by States concerned for certain types of aircraft operation and for certain areas of operation.

*Note.— All exemptions granted by States, including the extent to which aircraft from other States can be exempted, should be specified in States' AIPs.*

3.3.1.1 All concerned aircraft operating flights as general air traffic in accordance with instrument flight rules in the airspace defined below shall be equipped with context management (CM) and controller-pilot data link communications (CPDLC) applications capable of supporting the following data link services: data link initiation capability, air traffic control clearance, air traffic control communications management and air traffic control microphone check:
a) from 7 February 2013, in the following FIRs/UIRs above FL285:
Amsterdam FIR, Wien FIR, Barcelona UIR, Brindisi UIR, Brussels UIR, Canarias UIR, France UIR, Hannover UIR, Lisboa UIR, London UIR, Madrid UIR, Milano UIR, Rhein UIR, Roma UIR, Scottish UIR and Shannon UIR; and
b) from 5 February 2015, in the following FIRs/UIRs above FL285:
Bratislava FIR, Bucuresti FIR, Budapest FIR, Kobenhavn FIR, Ljubljana FIR, Nicosia FIR, Praha FIR, Sofia FIR, Warszawa FIR, Finland UIR south of 61°30', Hellas UIR, Malta UIR, Riga UIR, Sweden UIR south of 61°30', Tallinn UIR, Vilnius UIR.

*Note.— Requirements for the CM and CPDLC applications to support the data link services described are contained in RTCA DO-280B/EUROCAE ED-110B Interoperability Requirements Standard For ATN Baseline 1 (INTEROP ATN B1) and RTCA DO-290/EUROCAE ED-120 Safety and Performance Requirements Standard for Air Traffic Data Link Services in Continental Airspace (Continental SPR Standard), including Changes 1 and 2, with the exceptions that:*
*a) uplink message 135, CONFIRM ASSIGNED LEVEL, and uplink message 233, USE OF LOGICAL ACKNOWLEDGEMENT PROHIBITED, will not be used by the ground systems; and*
*b) downlink message 38, ASSIGNED LEVEL (level), is not required by the aircraft*.

3.3.1.2 Conformance to the equipage requirement and operator's approval shall be verified by the State of Registry or the State of the Operator, as appropriate.

3.3.1.3 Aircraft are exempted from the requirement stipulated in 3.3.1.1 in the following cases:
a) aircraft with an individual certificate of airworthiness first issued before 1 January 2011 are exempted until 5 February 2015;
b) aircraft with an individual certificate of airworthiness first issued before 1 January 2014 and fitted with data link equipment certified against requirements specified in RTCA DO-258A/EUROCAE ED-100A (or ED-100) are exempted for the life of that particular airframe;
c) aircraft which have a certificate of airworthiness issued before 31 December 1997 and which will cease operation in the airspace referred to in 3.3.1.1 before 31 December 2017 are exempted from the requirement stipulated in 3.3.1.1;
d) state aircraft;
e) aircraft flying in the airspace referred to in 3.3.1.1 for testing, delivery and for maintenance purposes; and
f) operators of types of aircraft reaching the end of their production life and being produced in limited numbers, or types of aircraft for which re-engineering costs required would be disproportionate due to old design, may, based on this criteria, request from the appropriate authority the granting of an exemption. Such requests shall be made prior to 30 September 2012 and include detailed information justifying the need for the granting of the exemption.

**3.7.1 VHF Datalink (VDL) Mode 2 – system characteristics of ground and airborne installations**
(A10, Vol. III, Part I)

3.7.1.1 With effect from 1 January 2010, all VDL Mode 2 ground transmitters in the European Region shall meet the provisions specified in Annex 10, Volume III, Part I, 6.2.4.1.1, 6.2.4.2.1, 6.2.4.2.2 and 6.2.4.3.1, relating to adjacent channel emissions.

3.7.1.2 With effect from 1 January 2010, all VDL Mode 2 airborne transmitters in the European Region shall meet the provisions specified in Annex 10, Volume III, Part I, 6.3.4.1.1, 6.3.4.2.1, 6.3.4.2.2 and 6.3.4.3.1, relating to adjacent channel emissions.

.7.1.3 With effect from 1 January 2010, the receiving function of all VDL Mode 2 installations in the European Region shall meet the provisions specified in Annex 10, Volume III, Part I, 6.3.5.3.1, relating to the specified error rate.

**4.1.1.2 RNAV 5**
*Area of applicability*
4.1.1.2.1 The requirements included in the RNAV 5 (B-RNAV) specification for en-route operations shall apply to all such operations conducted under IFR on designated RNAV 5 routes within the following FIRs as specified in the relevant State AIPs or NOTAMs:
Amman, Beirut, Cairo, Damascus and Tel Aviv.

*Means of compliance*
4.1.1.2.2 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

*Note.— Guidance material concerning navigation requirements associated with RNAV 5 (B-RNAV) operations is contained in EASA AMC 20-4,* Airworthiness Approval and Operational Criteria for the Use of Navigation Systems in European Airspace Designated for Basic RNAV Operations.

*Area of applicability*

4.1.1.2.3 The requirements included in the RNAV 5 (B-RNAV) specification for en-route operations shall apply to all such operations conducted under IFR on the entire ATS route network in the following flight information regions (FIRs)/upper flight information regions (UIRs) as specified in the relevant State AIPs:
Amsterdam, Ankara, Athinai, Baku, Barcelona, Bodø, Bordeaux, Bratislava, Bremen, Brest, Brindisi, Bruxelles, Bucuresti, Budapest, Canarias (AFI area of applicability), Casablanca, Chisinau, Dnipropetrovs'k, France, Hannover, Istanbul, København, Kyiv, Langen, Lisboa, Ljubljana, London, L'viv, Madrid, Malta, Marseille, Milano, München, Nicosia, Odessa, Oslo, Paris, Praha, Reims, Rhein, Riga, Roma, Rovaniemi, Scottish, Shannon, Simferopol, Skopje, Sofia, Stavanger, Sweden, Switzerland, Tallinn, Tampere, Tbilisi, Tirana, Trondheim, Tunis, Varna, Vilnius, Warszawa, Wien, Yerevan, Zagreb.

*Means of compliance*
4.1.1.2.4 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

*Note.— Guidance material concerning navigation requirements associated with RNAV 5 (B-RNAV) operations is contained in EASA AMC 20-4,* Airworthiness Approval and Operational Criteria for the Use of Navigation Systems in European Airspace Designated for Basic RNAV Operations.

**4.1.1.4 RNAV 1**
*Area of applicability*
4.1.1.4.1 The requirements included in the RNAV 1 and/or P-RNAV specification shall be applied whenever P-RNAV terminal control area (TMA) procedures, excluding the final and missed approach segments, are used.
*Note 1.— RNAV 1 and/or P-RNAV approvals are not mandatory in the EUR Region.*
*Note 2.— RNAV 1 approved aircraft are approved for P-RNAV.*

*Means of compliance*
4.1.1.4.2 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

*Note.— Guidance material concerning navigation requirements associated*

**5.3.1 Carriage and operation of ACAS II**
(A10, Vol. IV – Chapter 4; P-OPS, Vol. I)
5.3.1.1 ACAS II shall be carried and operated in the EUR Region (and the Canarias FIR) by all turbine-engined aeroplanes having a maximum certificated take-off mass exceeding 5 700 kg or authorized to carry more than 19 passengers.

# MID/ASIA

**4.1.1.1 RNAV 10 (RNP 10)**
*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation Manual *(Doc 9613), 1.2.3.5.*

*Area of applicability*
4.1.1.1.1 For flights on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Ho Chi Minh, Hong Kong, Honiara, Kuala Lumpur, Melbourne, Nauru, New Zealand, Port Moresby, Sanya and Singapore FIRs, a lateral separation minimum of 93 km (50 NM) may be applied.

4.1.1.1.2 For flights on designated controlled oceanic routes or areas within the Auckland Oceanic, Brisbane, Fukuoka, Ho Chi Minh, Hong Kong, Honiara, Kuala Lumpur, Melbourne, Nauru, New Zealand, Port Moresby, Sanya and Singapore FIRs, a longitudinal separation minimum of 93 km (50 NM) derived by RNAV may be applied between RNAV equipped
aircraft approved to RNP 10 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.

*Means of compliance*
4.1.1.1.3 For application of 4.1.1.1.1 and 4.1.1.1.2, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):
a) aircraft navigation performance shall be such that the standard deviation of lateral track errors shall be less than 8.7 km (4.7 NM) (or the aircraft approved to RNP 10); and
b) operator programmes shall be established to mitigate the occurrence of large navigational errors due to equipment malfunction or operational error:
1) operator in-flight operating drills shall include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from ATC-cleared route; and
2) the operator shall establish programmes to provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required

**4.1.1.2 RNAV 5**

*Area of applicability*

4.1.1.2.1 The requirements included in the RNAV 5 specification for en-route operations shall apply to all such operations conducted under IFR on designated RNAV 5 routes within the following FIRs as specified in the relevant State AIP or NOTAM:
Baghdad, Bahrain, Jeddah, Kuwait, Muscat, Tehran and Emirates FIRs.

*Means of compliance*

4.1.1.2.2 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

*Note 1.— Guidance material concerning RNAV 5 implementation and the associated navigation*

*Note 2.— Procedures on the use of RNAV 5 in Sana's FIR are contained in the AFI SUPPs*

**4.1.1.2 RNAV 5**

*Area of applicability*

4.1.1.2.1 The requirements included in the RNAV 5 specification for en-route operations shall apply to all such operations conducted under IFR on designated RNAV 5 routes within the following FIRs as specified in the relevant State AIP or NOTAM:
Baghdad, Bahrain, Jeddah, Kuwait, Muscat, Tehran and Emirates FIRs.

*Means of compliance*

4.1.1.2.2 Conformance to the navigation requirement shall be verified by the State of Registry or the State of the Operator, as appropriate.

*Note 1.— Guidance material concerning RNAV 5 implementation and the associated navigation specification is contained in the Performance-based Navigation (PBN) Manual (Doc 9613).*

*Note 2.— Procedures on the use of RNAV 5 in Sana's FIR are contained in the AFI SUPPs.*

*4.1.1.5.1 RNP 12.6*

*Area of applicability*

4.1.1.5.1.1 For flights on controlled oceanic routes across the Tasman Sea within the Auckland Oceanic, Brisbane, Melbourne and New Zealand FIRs and for flights across the South China Sea within Bangkok, Hanoi, Ho Chi Minh, Hong Kong, Kota Kinabalu, Kuala Lumpur, Manila, Taipei and Singapore FIRs, the minimum lateral separation shall be 110 km (60 NM).

*Means of compliance*

4.1.1.5.1.2 For application of 4.1.1.5.1.1, aircraft must be RNAV-equipped and RNAV-approved using inertial navigation systems (INS) provided that:

a) the INS is updated at least every 4.5 hours;

b) the standard deviation of lateral track errors shall be less than 11.7 km (6.3 NM);

c) the proportion of the total flight time spent by aircraft 55.5 km (30 NM) or more off the cleared track shall be less than 5.3 × 10–4; and

d) the proportion of the total flight time spent by aircraft between 93 and 130 km (50 and 70 NM) off the cleared track shall be less than 13 × 10–5.

Such navigation performance capability shall be verified by the State of Registry or the State of the Operator, as appropriate. Lateral separation of 185 km (100 NM), or greater if required, shall be used if the track-keeping capability of the aircraft has been reduced for any reason.

*Note.— The navigation performance accuracy contained in b) is considered to be comparable to RNP 12.6 or better.*

4.1.1.5.1.3 When granting approval for operations as indicated in 4.1.1.5.1.1, either the State of Registry or the State of the Operator shall ensure that in-flight operating drills include mandatory navigation cross-checking procedures which will identify navigation errors in sufficient time to prevent the aircraft from inadvertently deviating from the ATC-cleared route.

# NAM

## Chapter 4. NAVIGATION

### 4.1 PERFORMANCE-BASED NAVIGATION (PBN)

*Note.— As the North American (NAM) Region transitions to PBN as contained in the* Performance-based Navigation Manual *(Doc 9613), the contents of 4.1 will be amended.*

#### 4.1.1 Area navigation (RNAV) specifications

##### 4.1.1.1 RNAV 10 (RNP 10)

*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation (PBN) Manual *(Doc 9613), Volume I, 1.2.5.5.*

*Area of applicability*

4.1.1.1.1 For flights within the control area(s) of the Anchorage Arctic, Anchorage Continental and Edmonton FIRs, a lateral separation minimum of 93 km (50 NM) may be applied.

*Means of compliance*

4.1.1.1.2 For application of 4.1.1.1.1, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):

a) aircraft are approved to RNP 10 or RNP 4; and

b) operator programmes shall be established to mitigate the occurrence of large navigation errors due to equipment malfunction or operational error.

*Note.— Detailed guidance material on RNP and RNAV is contained in the* Performance-based Navigation (PBN) Manual *(Doc 9613).*

#### 4.1.1.2 RNAV 5
Nil.

#### 4.1.1.3 RNAV 2
Nil.

#### .1.1.4 RNAV 1
Nil.

#### 4.1.1.5 Pre-PBN navigation specifications
Nil.

### 4.1.2 Required navigation performance (RNP) specifications

#### 4.1.2.1 RNP 4
Nil.

#### 4.1.2.2 Basic RNP 1
Nil.

#### 4.1.2.3 Advanced RNP 1
Nil.

# NAT

**4.1.1.1 RNAV 10 (RNP 10)**
*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation (PBN) Manual *(Doc 9613), Volume I, 1.2.5.5.*

*Area of applicability*
4.1.1.1.1 For flights within the control area(s) of the Anchorage Arctic, Anchorage Continental and Edmonton FIRs, a lateral separation minimum of 93 km (50 NM) may be applied.

*Means of compliance*
4.1.1.1.2 For application of 4.1.1.1.1, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):
a) aircraft are approved to RNP 10 or RNP 4; and
b) operator programmes shall be established to mitigate the occurrence of large navigation errors due to equipment malfunction or operational error.

*Note.— Detailed guidance material on RNP and RNAV is contained in the* Performance-based Navigation

**3.3 CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC)**
*Area of applicability*
3.3.1 All aircraft intending to conduct flights in the airspace defined below shall be fitted with and shall operate controller-pilot data link communications (CPDLC) equipment:
a) from 7 February 2013, on specified tracks and flight levels within the NAT organized track system (OTS); and

b) from 5 February 2015, in specified portions of NAT minimum navigation specifications (MNPS) airspace.

*Note 1.— The specified tracks and flight level band within the NAT OTS will be published by the States concerned in national AIPs and identified daily in the NAT track message.*

*Note 2.— The specified portions of NAT MNPS airspace and aircraft equipment performance requirements where applicable will be published by the States concerned in national AIPs.*
*Means of compliance*

3.3.2 Operators intending to conduct flights within the airspace specified in 3.3.1 shall obtain CPDLC operational authorization, where applicable, either from the State of Registry or the State of the Operator. The State of Registry or the State of the Operator shall verify that the equipment has been certified in accordance with the requirements specified in RTCA DO-258/EUROCAE ED-100 or equivalent, capable of operating outside VHF data link coverage.
3.3.3 The services provided within the airspace specified in 3.3.1 shall comply with the Oceanic Safety and Performance Requirements as specified in RTCA DO-306/EUROCAE ED-122 or equivalent.

*Note.— Additional guidance can be found in the ICAO Global Operational Data Link Document (GOLD).*

**4.1.1.1 RNAV 10 (RNP 10)**
*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation (PBN) Manual *(Doc 9613), 1.2.3.5.*

*Area of applicability*
4.1.1.1.1 A lateral separation minimum of 93 km (50 NM) may be applied between flights operating within the control area of the New York Oceanic FIR.

*Means of compliance*
4.1.1.1.2 For application of 4.1.1.1.1, operators and civil aviation authorities must follow the provisions listed below.

4.1.1.1.3 The aircraft and operator must be approved RNP 10 or RNP 4 by the State of the Operator or the State of Registry, as appropriate. RNP 10 is the minimum navigation specification for the application of 93 km (50 NM) lateral separation.

4.1.1.1.4 States shall ensure, when granting approval for RNP 10 or RNP 4, that operators establish programmes to mitigate the occurrence of large lateral track errors due to equipment malfunction or operational error.

*Note.— The* Performance-based Navigation (PBN) Manual *(Doc 9613) provides guidance on aircraft, operations and maintenance programmes for the initial achievement and continued compliance with the authorized navigation specification.*

**5.3.1 Carriage and operation of ACAS II**
(A2 – Chapter 3; A6, Part I – Chapter 6; A10, Vol. IV;
A11 – Chapter 2; P-OPS, Vol. I; P-ATM – Chapters 4 and 10)

5.3.1.1 ACAS II shall be carried and operated in the NAT Region by all turbine-engined aeroplanes having a maximum certificated take-off mass exceeding 5 700 kg or authorized to carry more than 19 passengers.

**5.4 AUTOMATIC DEPENDENT SURVEILLANCE – CONTRACT (ADS-C)**

*Area of applicability*
5.4.1 All aircraft intending to conduct flights in the airspace defined below shall be fitted with and shall operate automatic dependent surveillance – contract (ADS-C) equipment:
a) from 7 February 2013, on specified tracks and on specified flight levels within the NAT organized track system (OTS); and
b) from 5 February 2015, in specified portions of NAT minimum navigation specifications (MNPS) airspace.

*Note 1.— The specified tracks and flight level band within the NAT OTS will be published by the States concerned in national AIPs and identified daily in the NAT track message.*

*Note 2.— The specified portions of NAT MNPS airspace and aircraft equipment performance requirements, where applicable, will be published by the States concerned in national AIPs.*

*Means of compliance*

5.4.2 Operators intending to conduct flights within the airspace specified in 5.4.1 shall obtain an ADS-C operational authorization, where applicable, either from the State of Registry or the State of the Operator. The State of Registry or the State of the Operator shall verify that the equipment has been certified in accordance with the requirements specified in RTCA DO-258/EUROCAE ED-100 or equivalent, capable of operating outside VHF data link coverage.

5.4.3 The data link services provided within the NAT airspace shall comply with the Oceanic Safety and Performance Requirements as specified in RTCA DO-306/EUROCAE ED-122 or equivalent. Conformance monitoring shall provide alerts to the controller when reports do not match the current flight plan, and the following ADS contracts shall be used:

a) ADS periodic contracts at an interval consistent with safety requirements and published by the States concerned in national AIPs; and

b) ADS event contracts that include the following event types:

1) lateral deviation event (LDE) with a lateral deviation threshold of 9.3 km (5 NM) or less;

2) level range deviation event (LRDE) with a vertical deviation threshold of 90 m (300 ft) or less; and

3) waypoint change event (WCE) at compulsory reporting points.

*Note.— Additional guidance can be found in the ICAO Global Operational Data Link Document (GOLD)*

**4.1.1.1 RNAV 10 (RNP 10)**

*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation Manual *(Doc 9613), 1.2.3.5.*

# PAC

*Area of applicability*

4.1.1.1.1 For flights on designated controlled oceanic routes or areas within the Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a lateral separation minimum of 93 km (50 NM) may be applied.
4.1.1.1.2 For flights on designated controlled oceanic routes or areas within the Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a longitudinal separation minimum of 93 km (50 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 10 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.
*Means of compliance*

4.1.1.1.3 For application of 4.1.1.1.1 and 4.1.1.1.2, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):
a) aircraft navigation performance shall be such that the standard deviation of lateral tracks shall be less than 8.7 km (4.7 NM) (or the aircraft approved to RNP 10); and
b) operator programmes shall be established to mitigate the occurrence of large navigational errors due to equipment malfunction or operational error:
1) operator in-flight operating drills shall include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from ATCcleared route; and
2) the operator shall establish programmes to provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required.

**4.1.2.1 RNP 4**

*Area of applicability*

4.1.2.1.1 For flights on designated controlled oceanic routes or areas within the Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a lateral separation minimum of 55.5 km (30 NM) may be applied.

4.1.2.1.2 For flights on designated controlled oceanic routes or areas within the Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic and Tahiti FIRs, a longitudinal separation minimum of 55.5 km (30 NM) derived by RNAV may be applied between RNAV-equipped aircraft approved to RNP 4 or better, in accordance with the provisions of the PANS-ATM, 5.4.2.6.

*Means of compliance*

4.1.2.1.3 Aircraft must be approved by the State of Registry or the State of the Operator to RNP 4.

# SAM

## 4.1 PERFORMANCE-BASED NAVIGATION (PBN)

4.1.1 Only aircraft holding airworthiness and operations approval to carry out RNAV 10 (RNP 10) and RNAV 5 operations may file flight plans in RNAV 10 or RNAV 5 designated airspace or routes as specified in the relevant AIP or NOTAM of each State. State aircraft, aircraft conducting SAR missions, humanitarian and maintenance or first delivery flights may be cleared to operate on designated RNAV routes without the RNAV 10 (RNP 10) or RNAV 5 approval.

### 4.1.2 Area navigation (RNAV) specifications

#### 4.1.2.1 RNAV 10 (RNP 10) approved aircraft operations

*Note.— RNAV 10 retains the RNP 10 designation, as specified in the* Performance-based Navigation (PBN) Manual *(Doc 9613), 1.2.5.5.*

*Area of applicability and separation minima*

4.1.2.1.1 A lateral separation minimum of 93 km (50 NM) shall be applied for flights on designated controlled oceanic routes or areas within the Canarias FIR (southern sector), Atlántico, Dakar Oceanic, Recife and Sal Oceanic FIRs.

4.1.2.1.2 A longitudinal separation minimum of 93 km (50 NM) shall be applied for flights in the EUR/SAM corridor (Canarias (southern sector), Atlántico, Dakar Oceanic, Recife and Sal Oceanic FIRs), in accordance with the provisions of the PANS-ATM, 5.4.2.6.

4.1.2.1.3 A lateral separation minimum of 93 km (50 NM) and a longitudinal separation minimum of 10 minutes or 150 km (80 NM) shall be applied for aircraft at same level operating between flight levels FL 290 and FL 410 (inclusive), in the segments of parallel routes UL780 and UL302 within the SANTIAGO DE CHILE – LIMA RNP 10 airspace (corridor) (S142324 W0774952, S140933 W0760604, S272216 W0720034, S275539 W0734645). The longitudinal separation minimum will be applied with the Mach number technique.

*Means of compliance*
4.1.2.1.4 For application of 4.1.2.1.1, 4.1.2.1.2 and 4.1.2.1.3, the aircraft and the operator must have been approved by the State of Registry or the State of the Operator, as appropriate, to meet the following requirements (or equivalent):
a) aircraft are approved to RNP 10 in accordance with provisions contained in the *Performance-based (PBN) Navigation Manual* (Doc 9613); and
b) operator programmes shall be established to mitigate the occurrence of large navigational errors due to equipment malfunction or operational error:
1) operator in-flight operating drills shall include mandatory navigation cross-checking procedures to identify navigation errors in sufficient time to prevent aircraft from inadvertent deviation from an ATC-cleared route; and
2) the operator shall establish programmes to provide for the continued airworthiness of aircraft navigation systems necessary to navigate to the degree of accuracy required.

*Note.— Detailed guidance material on RNP is contained in the* Performance-based Navigation (PBN) Manual *(Doc 9613)*.

**4.1.2.2 RNAV 5 approved aircraft operations**
*Area of applicability*
4.1.2.2.1 RNAV 5 provisions shall apply to the following FIRs on designated RNAV 5 continental routes: Antofagasta, Amazonica, Asuncion, Barranquilla, Brasilia, Bogota, Comodoro Rivadavia, Cordoba, Curitiba, Ezeiza, Georgetown, Guayaquil, La Paz, Lima, Maiquetía, Mendoza, Montevideo, Panama, Paramaribo, Puerto Montt, Punta Arenas, Recife, Resistencia, Rochambeau and Santiago.

*Means of compliance*
4.1.2.2.2 Aircraft operating on designated RNAV 5 routes shall be equipped at least with RNAV equipment that meets a lateral and longitudinal en-route navigation accuracy of ±5 NM (±9.26 km) 95 per cent of the total flight time. Other considerations regarding airborne separations are listed in 4.1.2.2.6 and 4.1.2.2.7.

4.1.2.2.3 The State of Registry or the State of the Operator, as applicable, shall verify compliance with the navigation specifications.

*Note.— Guidance on navigation specifications is contained in the* Performance-based Navigation (PBN) Manual *(Doc 9613).*

4.1.2.2.4 The proper operation of the RNAV system on board the aircraft shall be verified before starting an operation on an RNAV 5 route. This verification should include, among others:
a) a review of records and forms to make sure that maintenance action has been taken to correct defective equipment;
b) a validity check of the database (current AIRAC cycle), if installed; and
c) a check of the cleared flight path, comparing the charts and other applicable resources with the navigation system data display and the aircraft display, if applicable. The exclusion of specific radio aids should be confirmed, if applicable.

4.1.2.2.5 The proper operation of the on-board RNAV system shall be verified when operating on an RNAV 5 route, including that:
a) the equipment required for the RNAV 5 operations has not been degraded during the flight;
b) the route corresponds to the authorization;
c) the navigation accuracy of the aircraft is appropriate for RNAV 5 operations, making use of crosschecks; and
d) other navigation aids are selected to allow for cross-check or immediate reversal in case of losing RNAV capability.