Agenda Item 2: Air traffic management (ATM) (by the ATM Working Group)

Amendment No. 6 to the Procedures for Air Navigation Services Air Traffic Management (Doc 4444)

(Presented by the Secretariat)

SUMMARY

This working paper presents information on the approval of Amendment 6 to the Fifteenth Edition of the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) and its main consequences for the work to be done by SAT Group.

References:

- *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) and
- *State* Letter AN 13/2.1-14/48, 30 June 2014

ICAO Strategic Objectives:	*A – Safety; and* *B – Air navigation capacity and efficiency*

1. Introduction

1.1 The Air Navigation Commission, acting under delegated authority, on 29 April 2014, approved Amendment 6 to the Fifteenth Edition of the *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM, Doc 4444), for applicability on 13 November 2014. The amendments were approved on 20 June 2014, by the President of the Council on behalf of the Council in accordance with established procedure. A copy of the amendments is available as attachments to the electronic version of State letter AN 13/2.1-14/48 on the ICAO-NET (http://portal.icao.int) where all other relevant documentation can be accessed. The Amendment 6 to the PANS-ATM - Doc 4444 - is attached as **Appendix A** to this working paper.

1.2 Amendment 6 stems from proposals arising from the Separation and Airspace Safety Panel (SASP), the Operational Data Link Panel (OPLINKP), the International Volcanic Ash Task Force (IVATF) and the Aerodromes Panel (AP). The nature and scope of the proposed amendment is related to:

a) controller-pilot data link communications (CPDLC) and in-trail procedure (ITP) to facilitate en-route climb and descent in oceanic and remote continental airspace where the lack of air traffic services (ATS) surveillance coverage is a limiting factor;

b) automatic dependent surveillance - contract (ADS-C) and CPDLC to improve surveillance, flight monitoring and communications of aircraft operating in oceanic/remote areas, including the provision of timely and adequate search and rescue services;

c) volcanic ash cloud to improve coordination and operations related to pilot and controller procedures when a volcanic ash cloud is reported or forecast;

d) strategic lateral offset procedures (SLOP) to enhance the existing offset capabilities to include micro-offsets and introduce new procedures that will employ the capability of modern aircraft to offset in tenths of nautical mile;

e) 9.3 km (5NM) terminal separation based on required navigation performance (RNP1), performance-based navigation (PBN) and VOR/GNSS lateral separation; and

f) Consequential amendment of PANS-ATM provisions resulting from Amendment 11 to Annex 14 - *Aerodromes*, Volume I — *Aerodrome Design and Operations* related to air traffic control (ATC) phraseologies with respect to runway surface condition and aircraft braking action.

2. **Discussion**

2.1 The main parts of the of the approved Amendment 6 to the Fifteenth Edition of the *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM, Doc 4444) that may have an impact in the South Atlantic Operations are the following:

a) Data Link Communications Initiation Procedures (item 4.15.4).
b) Lateral Separation with use of Fly-Over waypoint (item 5.4.1.1.4).
c) Lateral Separation with use of GNSS (5.4.1.2.1.2).
d) Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes with RNAV 10 (RNP 10), RNP 4, RNP 2 applications or use of GNSS (5.4.1.2.1.6).
e) Lateral separation of aircraft on intersecting tracks or ATS routes with RNAV 10 (RNP 10), RNP 4, RNP 2 applications (5.4.1.2.1.7).
f) Longitudinal Separation Minima Based on Distance Using ADS-B In-Trail Procedure (ITP) (5.4.2.7).
g) ATC Phraseologies for GNSS Service Status and Separation Instructions (12.3.1.14 and 12.3.2.8).
h) ADS-C Contracts in airspace where procedural separation is being applied (13.4.3.4.3.2).
i) Use of CPDLC pre-formatted free text messages (14.3.4).
j) Strategic Lateral Offset Procedures (SLOP) (16.5).
k) Use of letter G in item 10 of the FPL (appendix 2 of Doc 4444).
l) Use of letter G in item 10 of ATS Messages (appendix 3 of Doc 4444).
m) ITP CPDLC Message Set (appendix 5 of Doc 4444).

2.2 Due to the magnitude of the Amendment 6 to the Fifteenth Edition of the *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM, Doc 4444), the following actions must be taken by regulators, ANSP and Aircraft Operators in order to take advantage of the new procedures made available in the mentioned amendment.

a) Amend the national regulations.
b) Amend the Aeronautical Information Publications.
c) Amend the ATS Units Procedures.
d) Amend the Air Crew Procedures.
e) Amend the ANS Safety Oversight Protocols.
f) Train the Air Crew, Air Traffic Controller and Aeronautical Information Operators.
g) Evaluate and change, if necessary, the ATC Systems.

3. Suggested action

3.1 The Meeting is invited to:

a) take note of the information contained in this working paper;

b) implement the Amendment 6 to the fifteenth edition of the *Procedures for Air Navigation Services - Air Traffic Management* (PANS-ATM, Doc 4444), taking into consideration the actions listed in item 2.2.

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APPENDIX A

AMENDMENT No. 6

TO THE

PROCEDURES
FOR
AIR NAVIGATION SERVICES

AIR TRAFFIC MANAGEMENT

(Doc 4444)

INTERIM EDITION

The text of Amendment No. 6 to the PANS-ATM (Doc 4444) was approved by the President of the Council of ICAO on behalf of the Council on **20 June 2014** for applicability on **13 November 2014**. This interim edition is distributed to facilitate implementation of the amendment by States. Replacement pages incorporating Amendment No. 6 are expected to be distributed in October 2014. (State letter AN 13/2.1-14/48 refers.)

JUNE 2014

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**NOTES ON THE EDITORIAL PRESENTATION
OF THE AMENDMENT TO THE PANS-ATM**

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1. ~~Text to be deleted is shown with a line through it.~~	text to be deleted
2. New text to be inserted is highlighted with grey shading.	new text to be inserted
3. ~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

TEXT OF AMENDMENT 6 TO THE

PROCEDURES FOR AIR NAVIGATION SERVICES

AIR TRAFFIC MANAGEMENT

. . .

Chapter 1

DEFINITIONS

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Insert new text as follows:

Free text message element. A message element used to convey information not conforming to any standardized message element in the CPDLC message set.

ITP aircraft. An aircraft approved by the State of the Operator to conduct in-trail procedure (ITP).

ITP distance. The distance between the ITP aircraft and a reference aircraft as defined by:

a) for aircraft on the same track, the difference in distance to an aircraft calculated common point along a projection of each other's track; or

b) for aircraft on parallel tracks, the distance measured along the track of one of the aircraft using its calculated position and the point abeam the calculated position of the other aircraft.

Note.— Reference aircraft refers to one or two aircraft with ADS-B data that meet the ITP criteria described in paragraph 5.4.2.7 and are indicated to ATC by the ITP aircraft as part of the ITP clearance request.

Pre-formatted free text message element. A free text message element that is stored within the aircraft system or ground system for selection.

Standardized free text message element. A message element that uses a defined free text message format, using specific words in a specific order.

Note.— Standardized free text message elements may be manually entered by the user or pre-formatted.

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End of new text.

Chapter 4

GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

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4.15 DATA LINK COMMUNICATIONS INITIATION PROCEDURES

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4.15.4 Failure

~~In the case of an initiation failure, the originator of the data link initiation process shall be informed.~~

4.15.4.1 In the case of an initiation failure, the data link system shall provide an indication of the failure to the ATS unit and the flight crew.

4.15.4.2 The ATS unit shall establish procedures to resolve, as soon as practicable, data link initiation failures. Procedures should include, as a minimum, the following:

a) when a flight plan is available, verify that the aircraft identification, aircraft registration, and other details contained in the data link initiation request correspond with details in the flight plan, and where differences are detected make the necessary changes; or

b) when a flight plan is not available, create a flight plan with sufficient information in the flight data processing system, to achieve a successful data link initiation; then

c) arrange for the re-initiation of the data link.

4.15.4.3 The aircraft operator shall establish procedures to resolve, as soon as practicable, initiation failures. Procedures should include, as a minimum, that the pilot:

a) verify the correctness and consistency of the flight plan available in the FMS or equipment from which the CPDLC communication is initiated, and where differences are detected make the necessary changes;

b) verify the correct ATSU address; and

c) re-initiate data link.

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Chapter 5

SEPARATION METHODS AND MINIMA

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5.4 HORIZONTAL SEPARATION

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5.4.1 Lateral separation

5.4.1.1 LATERAL SEPARATION APPLICATION

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5.4.1.1.4 When an aircraft turns onto an ATS route via a flyover waypoint, a separation other than the normally prescribed lateral separation shall be applied for that portion of the flight between the flyover waypoint where the turn is executed and the next waypoint (see Figures 5-1 and 5-2).

Note 1.— For flyover waypoints aircraft are required to first fly over the waypoint before executing the turn. After the turn the aircraft may either navigate to join the route immediately after the turn or navigate to the next defined waypoint before re-joining the route. This will require additional lateral separation on the overflown side of the turn.

Note 2.— This does not apply to ATS routes that have turns using fly-by waypoints.

Note 3.— An example of a prescribed lateral separation minima based on a specific navigation performance can be found in 5.4.1.2.1.6.

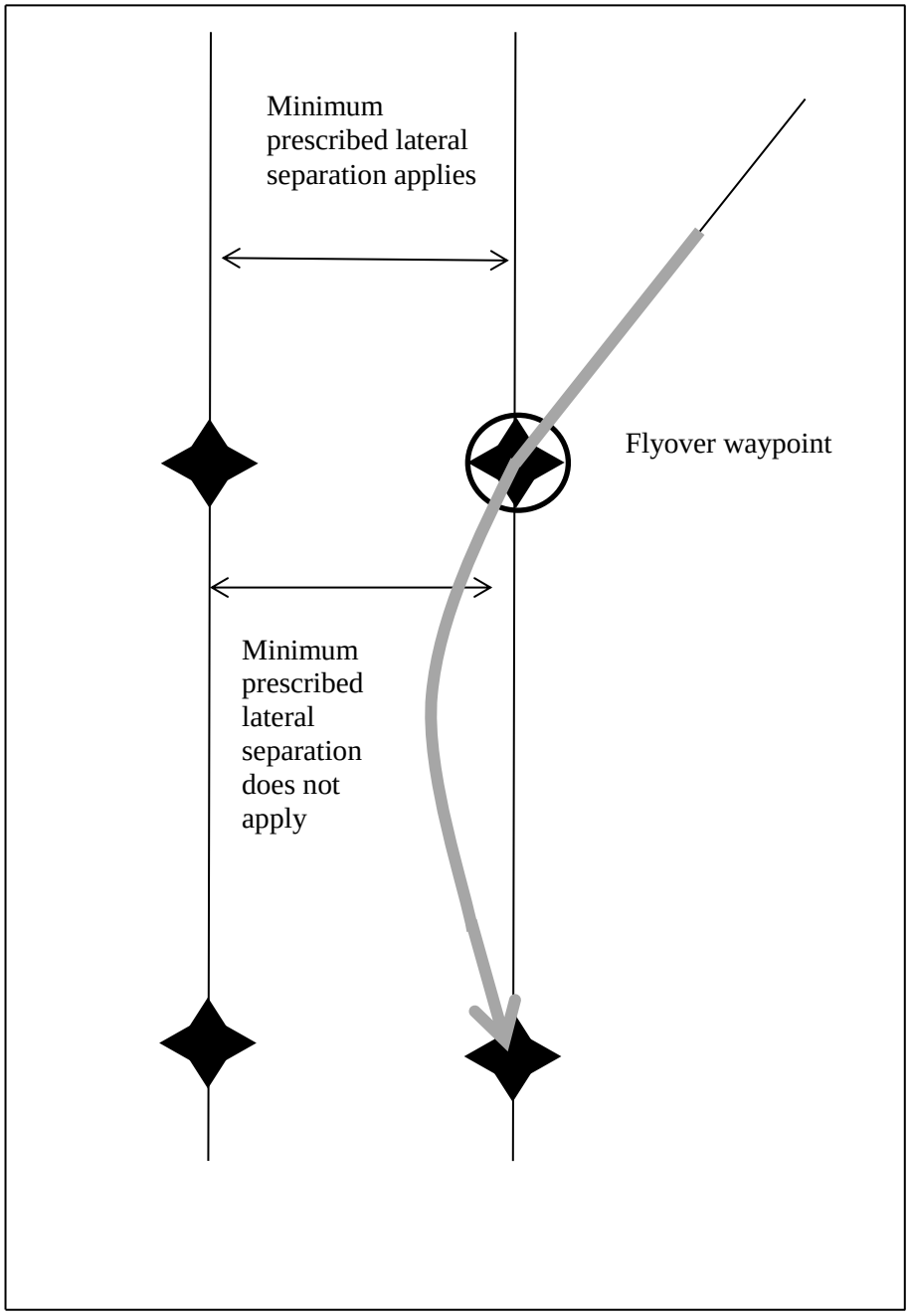

Figure 5-1: Turn over flyover waypoint (See 5.4.1.1.4)

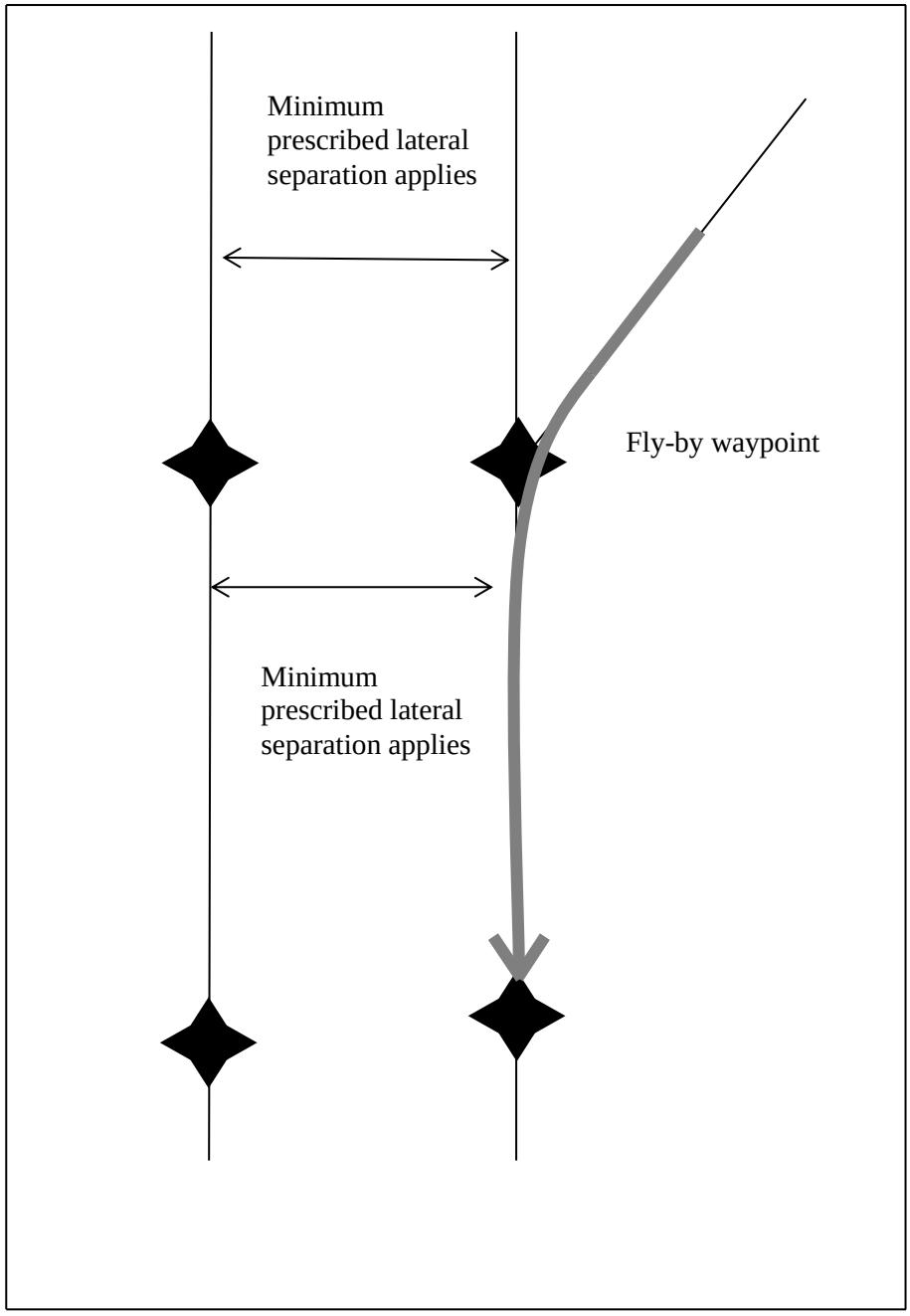

Figure 5-2: Turn at fly-by waypoint (See 5.4.1.1.4)

Renumber subsequent figures.

5.4.1.2 LATERAL SEPARATION CRITERIA AND MINIMA

5.4.1.2.1 Means by which lateral separation may be applied include the following:

5.4.1.2.1.1 *By reference to the same or different geographic locations*. By position reports which positively indicate the aircraft are over different geographic locations as determined visually or by reference to a navigation aid (see Figure 5-~~1~~3).

5.4.1.2.1.2 *By use of ~~the same navigation aid or method~~NDB, VOR or GNSS on intersecting tracks or ATS routes*. By requiring aircraft to fly on specified tracks which are separated by a minimum amount appropriate to the navigation aid ~~or method~~ employed. Lateral separation between two aircraft exists when:

a) *VOR:* both aircraft are established on radials diverging by at least 15 degrees and at least one aircraft is at a distance of 28 km (15 NM) or more from the facility (see Figure 5-~~2~~4);

b) *NDB:* both aircraft are established on tracks to or from the NDB which are diverging by at least 30 degrees and at least one aircraft is at a distance of 28 km (15 NM) or more from the facility (see Figure 5-~~3~~5);

c) *~~dead reckoning (DR)~~GNSS/GNSS:* ~~both~~each aircraft ~~are~~is confirmed to be established on ~~tracks diverging by at least 45 degrees and at least one aircraft is at a distance of 28 km (15 NM) or more from the point of intersection of the tracks, this point being determined either visually or by reference to a navigation aid and both aircraft are established outbound from the intersection (see Figure 5-4)~~ a track with zero offset between two waypoints and at least one aircraft is at a minimum distance from a common point as specified in Table 5-1; or

d) *~~RNAV operations~~VOR/GNSS:* ~~both~~ the aircraft ~~are~~using VOR is established on ~~tracks which diverge by at least 15 degrees and the protected airspace associated with the track of one aircraft does not overlap with the protected airspace associated with the track of the other aircraft. This is determined by applying the angular difference between two tracks and the appropriate protected airspace value. The derived value is expressed as a distance from the intersection of the two tracks at which lateral separation exists~~ a radial to or from the VOR and the other aircraft using GNSS is confirmed to be established on a track with zero offset between two waypoints and at least one aircraft is at a minimum distance from a common point as specified in Table 5-1.

	Aircraft 1: VOR or GNSS Aircraft 2: GNSS	
Angular difference between tracks measured at the common point (degrees)	FL010 – FL190 Distance from a common point	FL200 – FL600 Distance from a common point
15 – 135	27.8 km (15 NM)	43 km (23 NM)
The distances in the table are ground distances. States must take into account the distance (slant range) from the source of a DME signal to the receiving antenna when DME is being utilized to provide range information.		

Table 5-1

Note 1.— The values in the table above are from a larger table of values derived by collision risk analysis. The source table for separation of aircraft navigating by means of GNSS and VOR is contained in Circular 322, Guidelines for the Implementation of GNSS Lateral Separation Minima Based on VOR Separation Minima. *States may refer to Circular 322 for greater detail and other angular differences and separation distances.*

Note 2.— The values in the table above have accounted for distances from the common point encompassed by the theoretical turn area for fly-by turns as specified in the Minimum Aviation System Performance Standard: Required Navigation Performance For Air Navigation *(ED-75B/DO-236B), section 3.2.5.4 and fixed radius transition turns as defined in the* Performance-based Navigation (PBN) Manual *(Doc 9613).*

Note 3.— Guidance material for the implementation of GNSS lateral separation is contained in Circular 322, Guidelines for the Implementation of GNSS Lateral Separation Minima Based on VOR Separation Minima.

5.4.1.2.1.2.1 When aircraft are operating on tracks which are separated by considerably more than the ~~foregoing~~ minimum ~~figures~~in 5.4.1.2.1.2 a) and b), States may reduce the distance at which lateral separation is achieved.

5.4.1.2.1.2.2 Before applying GNSS-based track separation the controller shall confirm the following:

a) ensure that the aircraft is navigating using GNSS; and

b) in airspace where strategic lateral offsets are authorized, that a lateral offset is not being applied.

5.4.1.2.1.2.3 In order to minimize the possibility of operational errors, waypoints contained in the navigation database or uplinked to the aircraft flight management system should be used in lieu of manually entered waypoints, when applying GNSS-based track separation. In the event that it is operationally restrictive to use waypoints contained in the navigation database, the use of waypoints that require manual entry by pilots should be limited to half or whole degree of latitude and longitude.

5.4.1.2.1.2.4 GNSS-based track separation shall not be applied in cases of pilot reported receiver autonomous integrity monitoring (RAIM) outages.

Note.– For the purpose of applying GNSS-based lateral separation minima, distance and track information derived from an integrated navigation system incorporating GNSS input is regarded as equivalent to GNSS distance and track.

5.4.1.2.1.2.5 GNSS receivers used for applying separation shall meet the requirements in Annex 10, Volume I and be indicated in the flight plan.

Delete Figure 5-4.

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5.4.1.2.1.4 *Lateral separation of aircraft on published ~~adjacent~~ instrument flight procedures for*

arrivals and departures.

5.4.1.2.1.4.1 Lateral separation of departing and/or arriving aircraft, using instrument flight procedures, will exist:

a) where the distance between any combination of RNAV 1 with RNAV 1 or, ~~Basic~~ RNP 1, RNP APCH ~~and/~~or RNP AR APCH tracks is not less than 13 km (7 NM); or

b) where the distance between any combination of RNP 1, RNP APCH or RNP AR APCH tracks is not less than 9.3 km (5 NM); or

~~b~~c) where the protected areas of tracks designed using obstacle clearance criteria do not overlap and provided operational error is considered.

Note 1.— ~~The 13 km (7 NM)~~distance values contained in a) and b) above ~~was~~were determined by collision risk analysis using multiple navigation specifications. Information on this analysis is contained in Circular 324, Guidelines for Lateral Separation of Arriving and Departing Aircraft on Published Adjacent Instrument Flight Procedures.

Note 2.— Circular 324 also contains information on separation of arrival and departure tracks using non-overlapping protected areas based on obstacle clearance criteria, as provided for in the Procedures for Air Navigation Services — Aircraft Operations, *Volume II* — Construction of Visual and Instrument Flight Procedures *(PANS-OPS, Doc 8168).*

Note 3.— Provisions concerning reductions in separation minima are contained in Chapter 2, ATS Safety Management, and Chapter 5, Separation Methods and Minima, Section 5.11.

Note 4.— Guidance concerning the navigation specifications is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613).*

5.4.1.2.1.6 *Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes.* Within designated airspace or on designated routes, lateral separation between aircraft operating on parallel or non-intersecting tracks or ATS routes shall be established in accordance with the following:

a) for a minimum spacing between tracks of 93 km (50 NM) a navigational performance of RNAV 10 (RNP 10), RNP 4 or RNP ~~4~~2 shall be prescribed;~~ and~~

b) for a minimum spacing between tracks of 55.5 km (30 NM) a navigational performance of RNP 4 or RNP 2 shall be prescribed~~.~~;

c) for a minimum spacing between tracks of 27.8 km (15 NM) a navigational performance of RNP 2 or a GNSS equipage shall be prescribed. Direct controller-pilot VHF voice communication shall be maintained while such separation is applied;

d) for a minimum spacing between tracks of 13 km (7 NM), applied while one aircraft climbs/descends through the level of another aircraft, a navigational performance of RNP 2 or a GNSS equipage shall be prescribed. Direct controller-pilot VHF voice communication shall be maintained while such separation is applied; and

e) for a minimum spacing between tracks of 37 km (20 NM), applied while one aircraft

climbs/descends through the level of another aircraft whilst using other types of communication than specified in d) above, a navigational performance of RNP 2 or a GNSS equipage shall be prescribed.

Note 1.— Guidance material for the implementation of the navigation capability supporting 93 km (50 NM), ~~and~~ 55.5 km (30 NM), 37 km (20 NM), 27.8 km (15 NM)~~,~~ and 13 km (7 NM) lateral separation is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613)* and *Circular 334,* Guidelines for the Implementation of Lateral Separation Minima.

Note 2.— Guidance material for implementation of communication capability supporting 93 km (50 NM) and 55.5 km (30 NM) lateral separation is contained in the Manual on Required Communication Performance (RCP) *(Doc 9869). Information regarding RCP allocations for these capabilities is contained in RTCA DO-306/EUROCAE ED-122* Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (Oceanic SPR Standard).

Note 3.— Existing implementations of the 55.5 km (30 NM) lateral separation minimum require a communication capability of direct controller-pilot voice communications or CPDLC and a surveillance capability by an ADS-C system in which a periodic contract and waypoint change and lateral deviation event contracts are applied.

Note 4.— See Appendix 2, ITEM 10: EQUIPMENT AND CAPABILITIES in relation to the GNSS prescribed in c), d) and e) above.

5.4.1.2.1.7 ~~*RNAV operations (where RNP is specified) on intersecting tracks or ATS routes*. The use of this separation is limited to intersecting tracks that converge to or diverge from a common point at angles between 15 and 135 degrees.~~*Lateral separation of aircraft on intersecting tracks or ATS routes.* Lateral separation between aircraft operating on intersecting tracks or ATS routes shall be established in accordance with the following:

a) an aircraft converging with the track of another aircraft is laterally separated until it reaches a lateral separation point that is located a specified distance measured perpendicularly from the track of the other aircraft (see Figure 5-6); and

b) an aircraft diverging from the track of another aircraft is laterally separated after passing a lateral separation point that is located a specified distance measured perpendicularly from the track of the other aircraft (see Figure 5-6).

This type of separation may be used for tracks that intersect at any angles using the values for lateral separation points specified in the table below:

Navigation	**Separation**
RNAV 10 (RNP 10)	93 km (50 NM)
RNP 4	55.5 km (30 NM)
RNP 2	27.8 km (15 NM)

5.4.1.2.1.8 When applying the 27.8 km (15 NM) separation minima specified in the table above, a GNSS, as indicated in the flight plan by the letter G meets the specified navigation performance.

Note 1.— Guidance material for the implementation of the navigation capability supporting 93 km (50 NM), 55.5 km (30 NM), and 27.8 km (15 NM) lateral separation is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613) and Circular 334,* Guidelines for the Implementation of Lateral

Separation Minima.

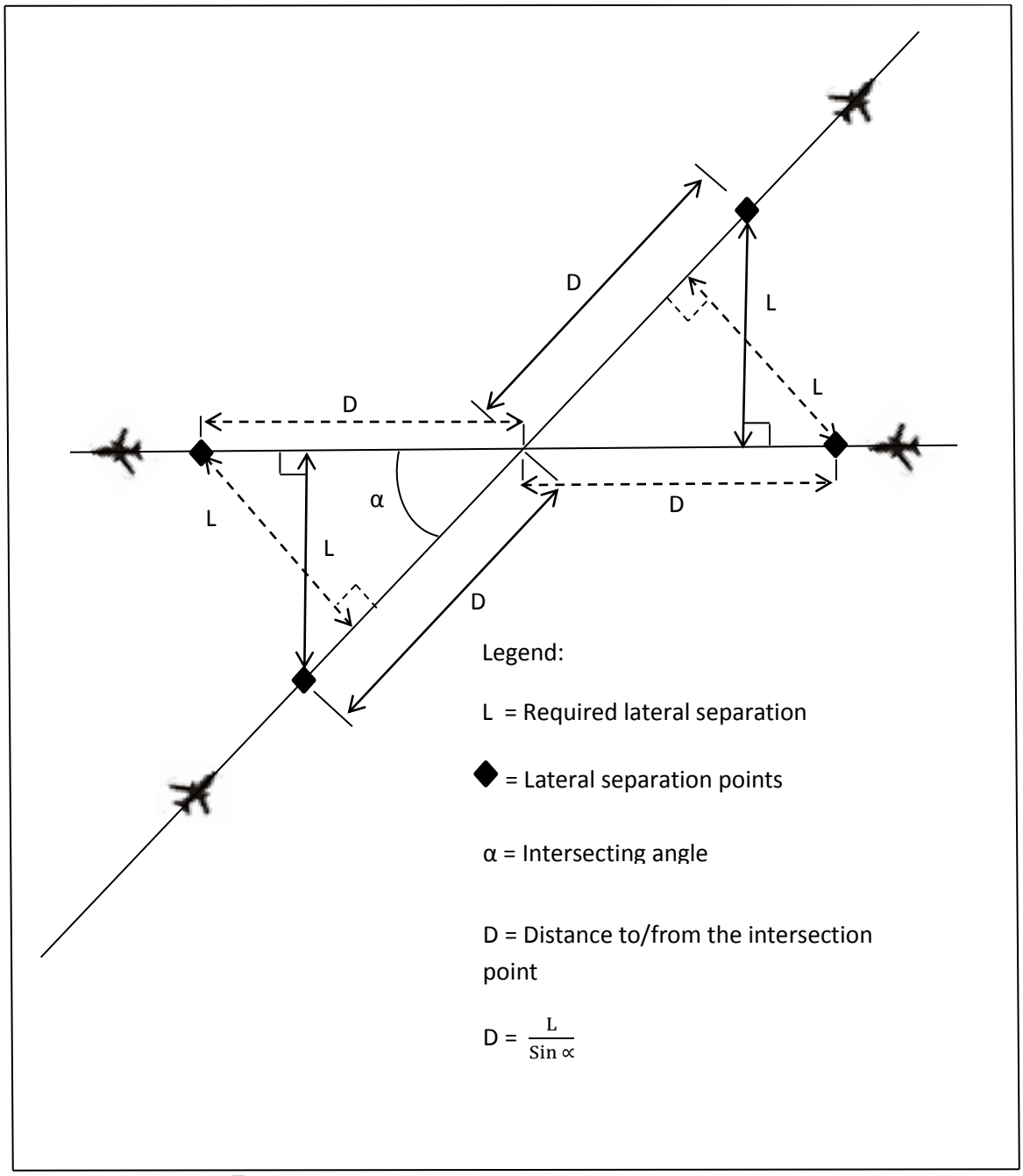

Figure 5-~~5~~6. Lateral separation points ~~and the area of conflict~~ (see 5.4.1.2.1.7.~~1~~)

Renumber subsequent figures.

~~5.4.1.2.1.7.1 For intersecting tracks, the entry points to and the exit points from the area in which lateral distance between the tracks is less than the required minimum are termed lateral separation points. The area bound by the lateral separation points is termed the area of conflict (see Figure 5-5).~~

~~5.4.1.2.1.7.2 The distance of the lateral separation points from the track intersection shall be determined by collision risk analysis and will depend on complex factors such as the navigation accuracy of the aircraft, traffic density, and occupancy.~~

~~*Note.— Information on the establishment of lateral separation points and collision risk analyses are contained in the* Manual on Airspace Planning Methodology for the Determination of Separation Minima *(Doc 9689).*~~

~~5.4.1.2.1.7.3 Lateral separation exists between two aircraft when at least one of the aircraft is outside the area of conflict.~~

5.4.1.2.1.~~8~~9 *Transitioning into airspace where a greater lateral separation minimum applies*. Lateral separation will exist when aircraft are established on specified tracks which:

a) are separated by an appropriate minimum; and

b) diverge by at least 15 degrees until the applicable lateral separation minimum is established;

providing that it is possible to ensure, by means approved by the appropriate ATS authority, that aircraft have the navigation capability necessary to ensure accurate track guidance.

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5.4 HORIZONTAL SEPARATION

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5.4.2 Longitudinal separation

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Insert new text as follows:

5.4.2.7 LONGITUDINAL SEPARATION MINIMA BASED ON DISTANCE USING ADS-B IN-TRAIL PROCEDURE (ITP)

Note 1.— Attention is drawn to Circular 325, In-Trail Procedure (ITP) using Automatic Dependant Surveillance – Broadcast (ADS-B).

Note 2.— Guidance material on ITP equipment can be found in RTCA DO-312/EUROCAE ED-159 Safety Performance and Interoperability Requirements Document for the In-Trail Procedure in Oceanic Airspace (ATSA-ITP) Application *and Supplement and RTCA DO-317A/EUROCAE ED-194, Minimum Operational Performance Standards (MOPS) for Aircraft Surveillance Application (ASA) System*.

5.4.2.7.1 The routes or airspace where application of the in-trail procedure is authorized, and the procedures to be followed by pilots in accordance with the provisions of this Section (5.4.2.7), shall be promulgated in aeronautical information publications (AIPs).

5.4.2.7.2 ITP requests and clearances shall be communicated via a CPDLC message exchange only and in accordance with the appropriate message elements in Appendix 5.

5.4.2.7.3 Longitudinal separation between a climbing or descending ITP aircraft and reference aircraft

shall be applied in accordance with 5.4.2.7.3.1, 5.4.2.7.3.2 and 5.4.2.7.3.3. An ITP aircraft shall not be separated simultaneously from more than two reference aircraft using the ITP separation minimum.

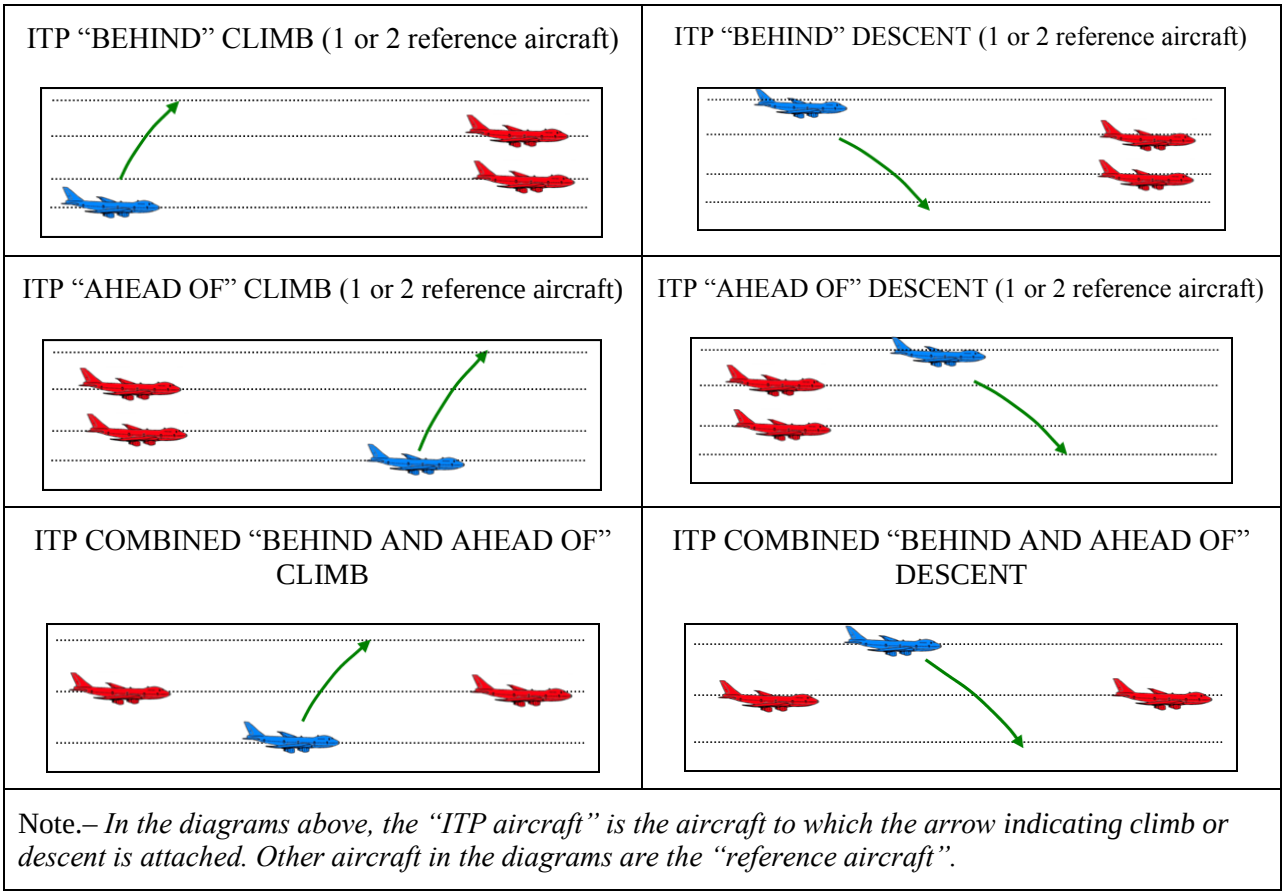

Figure 5-34. ITP flight level change scenarios (see 5.4.2.7.3)

Renumber subsequent figures accordingly.

5.4.2.7.3.1 An ITP climb or descent may be requested by the pilot provided the following ITP criteria are satisfied:

a) the ITP distance between the ITP aircraft and the reference aircraft shall be:

1) not less than 28 km (15 NM) with a maximum closing ground speed of 37 km/h (20 kt); or

2) not less than 37 km (20 NM) with a maximum closing ground speed of 56 km/h (30 kt);

b) the ITP on-board equipment shall indicate that the angle between the current tracks of the ITP aircraft and reference aircraft is less than 45 degrees;

c) the altitude difference between the ITP aircraft and any reference aircraft shall be 600 m (2 000 ft) or less;

d) the climb or descent shall be conducted at a rate of not less than 1.5 m/s (300 ft/min), or any higher rate when specified by the controller; and

e) the climb or descent shall be performed at the assigned Mach number. If no Mach number has been assigned by ATC, the ITP aircraft shall maintain the current cruise Mach number throughout the ITP manoeuvre.

Note.— These criteria are designed to ensure a minimum separation of 19 km (10 NM) between the ITP aircraft and the reference aircraft during the climb or descent.

5.4.2.7.3.2 A controller may clear an aircraft for an ITP climb or descent provided the following conditions are satisfied:

a) the ITP climb or descent has been requested by the pilot;

b) the aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

c) the reported ITP distance between the ITP aircraft and any reference aircraft is 28 km (15 NM) or more;

d) both the ITP aircraft and reference aircraft are either on;

1) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

2) parallel tracks or same tracks with no turns permitted during the manoeuvre.

Note.— Same identical tracks are a special case of same track defined in 5.4.2.1.5 a) where the angular difference is zero degrees.

e) no speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;

f) the altitude difference between the ITP aircraft and any reference aircraft shall be 600 m (2 000 ft) or less;

g) no instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;

h) the maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and

i) the ITP aircraft shall not be a reference aircraft in another ITP clearance.

5.4.2.7.3.3 Following receipt of an ITP climb or descent clearance and before initiating the procedure, the pilot of the ITP aircraft shall determine that the ITP criteria referred to in 5.4.2.7.3.1 a) and b) are still being met with respect to the reference aircraft identified in the clearance and:

a) if the ITP criteria are satisfied, the pilot shall accept the clearance and commence the climb or descent immediately; or

b) if the ITP criteria are no longer satisfied, the pilot shall notify the controller and maintain the previously cleared level.

End of new text.

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Chapter 11

AIR TRAFFIC SERVICES MESSAGES

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11.4.3.4 MESSAGES CONTAINING INFORMATION ON AERODROME CONDITIONS

Note.— Provisions regarding the issuance of information on aerodrome conditions are contained in Chapter 7, 7.5.

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11.4.3.4.2 Information that water is present on a runway shall be transmitted to each aircraft concerned, on the initiative of the controller, using the following terms:

DAMP — the surface shows a change of colour due to moisture.

WET — the surface is soaked but there is no standing water.

~~WATER PATCHES — patches of standing water are visible.~~

~~FLOODED — extensive standing water is visible.~~

STANDING WATER — for aeroplane performance purposes, a runway where more than 25 per cent of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by water more than 3 mm deep.

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Chapter 12

PHRASEOLOGIES

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12.3 ATC PHRASEOLOGIES

12.3.1 General

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12.3.1.11 AERODROME INFORMATION	a) [*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number) (condition)*;

b) [*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number)* NOT CURRENT;

c) LANDING SURFACE *(condition)*;

d) CAUTION CONSTRUCTION WORK *(location)*;

e) CAUTION *(specify reasons)* RIGHT (*or* LEFT), (*or* BOTH SIDES) OF RUNWAY *[number]*;

f) CAUTION WORK IN PROGRESS (*or* OBSTRUCTION) *(position and any necessary advice)*;

g) RUNWAY REPORT AT *(observation time)* RUNWAY *(number) (type of precipitant)* UP TO *(depth of deposit)* MILLIMETRES. ~~BRAKING ACTION~~ ESTIMATED SURFACE FRICTION GOOD (*or* MEDIUM TO GOOD, *or* MEDIUM, *or* MEDIUM TO POOR, *or* POOR ~~*or* UNRELIABLE) [*and/or* BRAKING COEFFICIENT *(equipment and number)*~~];

h) BRAKING ACTION REPORTED BY *(aircraft type)* AT *(time)* GOOD (*or* MEDIUM to GOOD, *or* MEDIUM, *or* MEDIUM to POOR, *or* POOR);

~~i) BRAKING ACTION [*(location)*] *(measuring equipment used)*, RUNWAY *(number)*, TEMPERATURE [MINUS] *(number)*, WAS *(reading)* AT *(time)*;~~

~~j~~i) RUNWAY (*or* TAXIWAY) *(number)* WET [*or* ~~DAMP, WATER PATCHES, FLOODED *(depth)*~~ STANDING WATER, *or* SNOW REMOVED *(length and width as applicable)*, *or* TREATED, *or* COVERED WITH PATCHES OF DRY SNOW (*or* WET SNOW, *or* COMPACTED SNOW, *or* SLUSH, *or* FROZEN SLUSH, *or* ICE, *or* WET ICE, *or* ICE UNDERNEATH, *or* ICE AND SNOW, *or* SNOWDRIFTS, *or* FROZEN RUTS AND RIDGES)];

~~k~~j) TOWER OBSERVES *(weather information)*;

~~l~~k) PILOT REPORTS *(weather information)*.

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Circumstances	*Phraseologies*
12.3.1.14 GNSS SERVICE STATUS	a) GNSS REPORTED UNRELIABLE (*or* GNSS MAY NOT BE AVAILABLE [DUE TO INTERFERENCE]); 1) IN THE VICINITY OF *(location) (radius)* [BETWEEN *(levels)*]; or 2) IN THE AREA OF *(description)* (*or* IN *(name)* FIR) [BETWEEN *(levels)*]; b) BASIC GNSS (*or* SBAS, *or* GBAS) UNAVAILABLE FOR *(specify operation)* [FROM *(time)* TO *(time)* (*or* UNTIL FURTHER NOTICE)]; *c) BASIC GNSS UNAVAILABLE [DUE TO (*reason, e.g.* LOSS OF RAIM *or* RAIM ALERT)]; *d) GBAS (*or* SBAS) UNAVAILABLE; e) CONFIRM GNSS NAVIGATION; and *f) AFFIRM GNSS NAVIGATION. * Denotes pilot transmission.

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12.3.2 Area control services

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12.3.2.8 SEPARATION INSTRUCTIONS	a) CROSS *(significant point)* AT *(time)* [OR LATER (*or* OR BEFORE)]; b) ADVISE IF ABLE TO CROSS *(significant point)* AT *(time or level)*; c) MAINTAIN MACH *(number)* [OR GREATER (*or* OR LESS)] [UNTIL *(significant point)*];

d) DO NOT EXCEED MACH *(number)*;

e) CONFIRM ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET];

*f) ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET];

g) MAINTAIN TRACK BETWEEN *(significant point)* AND *(significant point).* REPORT ESTABLISHED ON THE TRACK;

*h) ESTABLISHED ON THE TRACK;

Note.– When used to apply a lateral VOR/GNSS separation confirmation of zero offset is required. (see 5.4.1.2)

i) CONFIRM ZERO OFFSET;

*j) AFFIRM ZERO OFFSET.

* Denotes pilot transmission.

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Chapter 13

AUTOMATIC DEPENDENT SURVEILLANCE — CONTRACT (ADS-C) SERVICES

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13.4 USE OF ADS-C IN THE PROVISION OF AIR TRAFFIC CONTROL SERVICE

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13.4.3 Provision of ADS-C services

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13.4.3.4 GENERAL ADS PROCEDURES

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13.4.3.4.3 *ADS-C AGREEMENTS*

13.4.3.4.3.1 Except as provided for in 13.4.3.4.3.2, ~~I~~initial ADS-C agreements shall be determined by the ATS authority. Subsequent modifications to individual contracts may be made at the discretion of the~~controller based on prevailing traffic conditions and airspace complexity~~ ATS unit.

13.4.3.4.3.2 In airspace where procedural separation is being applied, ADS-C agreements shall, as a minimum, contain the following ADS contracts:

a) a periodic contract at an interval appropriate to the airspace requirements;

b) a waypoint change event contract;

c) a lateral deviation event contract;

d) a level range deviation event contract; and

e) a vertical rate change event contract for climb or descent, using a 27 m/s (5 000 ft/min) threshold.

Note 1.— Circumstances may dictate that periodic contract reporting rate might be increased on receipt of a lateral deviation or level range deviation event report.

Note 2.— A vertical rate change event specified at, for example, a negative vertical rate (i.e. a descent) exceeding 27 m/s (5 000 ft/min), may provide additional indication of an abnormal situation.

13.4.3.4.3.~~2~~3 When the application of specified separation minima is dependent on the reporting interval of periodic position reports, the ATC unit shall not establish periodic contracts with a reporting interval greater than the required reporting interval.

13.4.3.4.3.~~3~~4 Where an expected position report is not received within a prescribed time parameter, action shall be taken, as appropriate, to ascertain the position of the aircraft. ~~This may be achieved by the use of an ADS demand contract, CPDLC or voice communications, or receipt of a subsequent periodic report.~~

Note 1.— This may be achieved by the use of an ADS demand contract, CPDLC or voice communications, or receipt of a subsequent periodic report.

Note 2.— Requirements concerning the provision of an alerting service are contained in Chapter 9.

13.4.3.4.3.~~4~~5 An ADS-C aircraft observed to deviate significantly from its cleared flight profile shall be advised accordingly. Action shall be taken, as appropriate, to ascertain the position and intentions of the aircraft. Appropriate action shall also be taken if, in the opinion of the controller, such deviation is likely to affect the air traffic service being provided.

Note.— This may be achieved by the use of an ADS demand contract, CPDLC or voice communications.

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Chapter 14

CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC)

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14.3 EXCHANGE OF OPERATIONAL CPDLC MESSAGES

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14.3.4 Free text messages

The use of free text messages by controllers or pilots, other than ~~pre-formatted~~standardized free text message~~s~~ elements, should be avoided. Standardized free text message elements should be pre-formatted and made available to controllers and pilots to facilitate their use.

Note 1.— While it is recognized that non-routine and emergency situations may necessitate use of free text, particularly when voice communications have failed, the avoidance of utilizing free text messages is intended to reduce the possibility of misinterpretation and ambiguity.

Note 2.— Provisions concerning the use of ~~pre-formatted~~standardized free text message~~s~~ elements are contained in Annex 10, Volume II, Chapter 8.

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Chapter 15

PROCEDURES RELATED TO EMERGENCIES, COMMUNICATION FALURE AND CONTINGENCIES

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15.8 PROCEDURES FOR ~~AN ATC~~ATS UNITS WHEN A VOLCANIC ASH CLOUD IS REPORTED OR FORECAST

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15.8.1 If a volcanic ash cloud is reported or forecast in the ~~FIR~~airspace for which the ~~ACC~~ATS unit is responsible, the ~~controller~~following actions should be taken:

a) relay ~~all~~pertinent information ~~available~~immediately to ~~pilots~~flight crews whose aircraft could be affected to ensure that they are aware of the ash cloud's current and forecast position and the flight levels affected;

b) accommodate requests for re-routing or level changes to the extent practicable;

~~b~~c) suggest ~~appropriate~~ re-routing ~~to the flight crew~~ to avoid ~~an~~or exit areas of ~~known~~reported or forecast ash clouds when requested by the pilot or deemed necessary by the controller; and

~~c~~d) ~~inform pilots that volcanic ash clouds are not detected by relevant ATS surveillance systems;~~when practicable, request a special air-report when the route of flight takes the aircraft into or near the forecast ash cloud and provide such special air-report to the appropriate agencies.

~~d) if the ACC has been advised by an aircraft that it has entered a volcanic ash cloud the controller should:~~

~~1) consider the aircraft to be in an emergency situation;~~

~~2) not initiate any climb clearances to turbine-powered aircraft until the aircraft has exited the ash cloud; and~~

~~3) not initiate vectoring without pilot concurrence.~~

Note 1.— Experience has shown that the recommended escape manoeuvre for an aircraft which has encountered an ash cloud is to reverse its course and begin a descent if terrain permits. The final responsibility for this decision, however, rests with the pilot-in-command as specified in the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds *(Doc 9691), 5.2.4.1.*

Note 2.— The final authority as to the disposition of the aircraft, whether to avoid or proceed through a reported or forecast ash cloud, rests with the pilot-in-command, as prescribed in Annex 2, 2.4.

15.8.2 ~~Each State should develop appropriate procedures and contingency routings for avoidance of volcanic ash clouds that meet the circumstances of the State and fulfill its obligations to ensure safety of aircraft.~~When the flight crew advises the ATS unit that the aircraft has inadvertently entered a volcanic ash cloud, the ATS unit should:

a) take such action applicable to an aircraft in an emergency situation; and

b) initiate modifications of route or level assigned only when requested by the pilot or necessitated by airspace requirements or traffic conditions.

Note 1.— General procedures to be applied when a pilot reports an emergency situation are contained in Chapter 15, 15.1.1 and 15.1.2.

Note 2.— Guidance material concerning the effect of volcanic ash and the impact of volcanic ash on aviation operational and support services is provided in Chapters 4 and 5 of Doc 9691.

~~15.8.3 Controllers should be trained in procedures for avoidance of volcanic ash clouds and be made aware that turbine engine aircraft encountering an ash cloud may suffer a complete loss of power. Controllers should take extreme caution to ensure that aircraft do not enter volcanic ash clouds.~~

~~*Note 1. There are no means to detect the density of a volcanic ash cloud or the size distribution of its particles and their subsequent impact on engine performance and the integrity of the aircraft.*~~

~~*Note 2. Guidance material is provided in Chapters 4 and 5 of the* Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds *(Doc 9691).*~~

Chapter 16

MISCELLANEOUS PROCEDURES

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16.5 STRATEGIC LATERAL OFFSET PROCEDURES (SLOP) ~~IN OCEANIC AND REMOTE CONTINENTAL AIRSPACE~~

~~16.5.1~~*Note 1.— SLOP are approved procedures that allow aircraft to fly on a parallel track to the right of the centre line relative to the direction of flight~~. *to mitigate the lateral overlap probability due to*

increased navigation accuracy, and wake turbulence encounters. Unless specified in the separation standard, a~~A~~n aircraft's use of these procedures does not affect the application of prescribed separation standards.

~~*Note 1.— The use of highly accurate navigation systems (such as the global navigation satellite system (GNSS)) by an increasing proportion of the aircraft population has had the effect of reducing the magnitude of lateral deviations from the route centre line and, consequently, increasing the probability of a collision, should a loss of vertical separation between aircraft on the same route occur.*~~

~~*Note 2.— The following incorporates lateral offset procedures for both the mitigation of the increasing lateral overlap probability due to increased navigation accuracy, and wake turbulence encounters.*~~

Note ~~3~~2.— Annex 2, 3.6.2.1.1, requires authorization for the application of strategic lateral offsets from the appropriate ATS authority responsible for the airspace concerned.

16.5.1 Implementation of strategic lateral offset procedures shall be coordinated among the States involved.

Note.— Information concerning the implementation of strategic lateral offset procedures is contained in the Implementation of Strategic Lateral Offset Procedures *(Circ 331)*.

~~16.5.2 The following shall be taken into account by the appropriate ATS authority when authorizing the use of strategic lateral offsets in a particular airspace:~~

~~a) strategic lateral offsets shall only be authorized in en-route oceanic or remote continental airspace. Where part of the airspace in question is provided with an ATS surveillance service, transiting aircraft should normally be allowed to initiate or continue offset tracking;~~

~~b) strategic lateral offsets do not affect lateral separation minima and may be authorized for the following types of routes (including where routes or route systems intersect):~~

~~1) uni-directional and bi-directional routes; and~~

~~2) parallel route systems where the spacing between route centre lines is not less than 55.5 km (30 NM);~~

~~c) in some instances it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance;~~

~~d) strategic lateral offset procedures should be implemented on a regional basis after coordination between all States involved;~~

~~e) the routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs); and~~

~~f) air traffic controllers shall be made aware of the airspace within which strategic lateral offsets are authorized.~~

16.5.2 Strategic lateral offsets shall be authorized only in en-route airspace as follows:

a) where the lateral separation minima or spacing between route centre lines is 55.5 km (30 NM) or more, offsets to the right of the centre line relative to the direction of flight in tenths of a nautical mile up to a maximum of 3.7 km (2 NM); and

b) where the lateral separation minima or spacing between route centre lines is 11.1 km (6 NM) or more and less than 55.5 km (30 NM), offsets to the right of the centre line relative to the direction of flight in tenths of a nautical mile up to a maximum of 0.9 km (0.5 NM).

16.5.3 The routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs). In some instances, it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance. Route conformance monitoring systems shall account for the application of SLOP.

16.5.~~3~~4 The decision to apply a strategic lateral offset shall be the responsibility of the flight crew. The flight crew shall only apply strategic lateral offsets in airspace where such offsets have been authorized by the appropriate ATS authority and when the aircraft is equipped with automatic offset tracking capability.

~~16.5.4 The strategic lateral offset shall be established at a distance of 1.85 km (1 NM) or 3.7 km (2 NM) to the right of the centre line relative to the direction of flight.~~

Note 1.— Pilots may contact other aircraft on the inter-pilot air-to-air frequency 123.45 MHz to coordinate offsets.

Note 2.— The strategic lateral offset procedure has been designed to include offsets to mitigate the effects of wake turbulence of preceding aircraft. If wake turbulence needs to be avoided, ~~one of the three available options (centre line, 1.85 km (1 NM) or 3.7 km (2 NM) right offset) may be used~~an offset to the right and within the limits specified in 16.5.2 may be used.

Note 3.— Pilots are not required to inform ATC that a strategic lateral offset is being applied.

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Appendix 2

FLIGHT PLAN

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2. Instructions for the completion of the flight plan form

ITEM 10: EQUIPMENT AND CAPABILITIES

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A	GBAS landing system	J6	CPDLC FANS 1/A SATCOM (MTSAT)
B	LPV (APV with SBAS)	J7	CPDLC FANS 1/A SATCOM (Iridium)
C	LORAN C	K	MLS
D	DME	L	ILS
E1	FMC WPR ACARS	M1	ATC RTF SATCOM (INMARSAT)
E2	D-FIS ACARS	M2	ATC RTF (MTSAT)
E3	PDC ACARS	M3	ATC RTF (Iridium)
F	ADF	O	VOR
G	GNSS. If any portion of the flight is planned to be conducted under IFR it refers to GNSS receivers that comply with the requirements of Annex 10, Volume I *(See Note 2)*	P1–P9	Reserved for RCP
		R	PBN approved *(See Note 4)*
		T	TACAN
		U	UHF RTF
		V	VHF RTF
		W	RVSM approved
H	HF RTF	X	MNPS approved
I	Inertial Navigation	Y	VHF with 8.33 kHz channel spacing capability
J1	CPDLC ATN VDL Mode 2 *(See Note 3)*	Z	Other equipment carried or other capabilities *(See Note 5)*
J2	CPDLC FANS 1/A HFDL		
J3	CPDLC FANS 1/A VDL Mode 4		
J4	CPDLC FANS 1/A VDL Mode 2		
J5	CPDLC FANS 1/A SATCOM (INMARSAT)		

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Appendix 3

AIR TRAFFIC SERVICES MESSAGES

1. Message contents, formats and data convention

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Field Type 10 – Equipment and capabilities

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SINGLE HYPHEN

(a) *Radiocommunication, navigation and approach aid equipment and capabilities*

1 LETTER as follows:

N no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable

OR S Standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (s*ee Note 1*)

AND/OR ONE OR MORE OF THE FOLLOWING LETTERS to indicate the serviceable COM/NAV/approach aid equipment and capabilities

A	GBAS landing system	J7	CPDLC FANS 1/A SATCOM (Iridium)
B	LPV (APV with SBAS)	K	MLS
C	LORAN C	L	ILS
D	DME	M1	ATC RTF SATCOM (INMARSAT)
E1	FMC WPR ACARS	M2	ATC RTF (MTSAT)
E2	D-FIS ACARS	M3	ATC RTF (Iridium)
E3	PDC ACARS	O	VOR
F	ADF	P1–P9	Reserved for RCP
G	GNSS. If any portion of the flight is planned to be conducted under IFR it refers to GNSS receivers that comply with the requirements of Annex 10, Volume I *(See Note 2)*	R	PBN approved *(see Note 4)*
		T	TACAN
		U	UHF RTF
		V	VHF RTF
		W	RVSM approved
H	HF RTF	X	MNPS approved
I	Inertial navigation	Y	VHF with 8.33 kHz channel spacing capability
J1	CPDLC ATN VDL Mode 2 *(see Note 3)*	Z	Other equipment carried or other capabilities *(see Note 5)*
J2	CPDLC FANS 1/A HFDL		
J3	CPDLC FANS 1/A VDL Mode A		
J4	CPDLC FANS 1/A VDL Mode 2		
J5	CPDLC FANS 1/A SATCOM (INMARSAT)		
J6	CPDLC FANS 1/A SATCOM (MTSAT)		

Note 1.— If the letter S is used, standard equipment is considered to be VHF RTF, VOR and ILS, unless another combination is prescribed by the appropriate ATS authority.

Note 2.— If the letter G is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ separated by a space.

Note 3.— See RTCA/EUROCAE Interoperability Requirements Standard for ATN Baseline 1 (ATN B1 INTEROP Standard – DO-280B/ED-110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check.

Note 4.— If the letter R is used, the performance-based navigation levels that can be met are specified in Item 18 following the indicator PBN/ . Guidance material on the application of performance-based navigation to a specific route segment, route or area is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613).*

Note 5.— If the letter Z is used, specify in Item 18 the other equipment carried or other capabilities, preceded by COM/ , NAV/ and/or DAT, as appropriate.

Note 6.— Information on navigation capability is provided to ATC for clearance and routing purposes.

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APPENDIX 5. CONTROLLER-PILOT DATA LINK COMMUNICATIONS (CPDLC) MESSAGE SET

1. Uplink messages

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Insert new table as follows:

Table A5-12. Spacing messages (uplink)

Number	*Message intent/use*	*Message element*	*URG*	*ALRT*	*RESP*
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is behind the reference aircraft. This message element is always concatenated with a vertical clearance.	ITP BEHIND *(aircraft identification of reference aircraft)*	N	L	R
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is ahead of the reference aircraft. This message element is always concatenated with a vertical clearance.	ITP AHEAD OF *(aircraft identification of reference aircraft)*	N	L	R
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is behind	ITP BEHIND *(aircraft identification of reference aircraft)* AND BEHIND	N	L	R

	both reference aircraft. This message element is always concatenated with a vertical clearance.	*(aircraft identification of reference aircraft)*			
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is ahead of both reference aircraft. This message element is always concatenated with a vertical clearance.	ITP AHEAD OF *(aircraft identification of reference aircraft)* AND AHEAD OF *(aircraft identification of reference aircraft)*	N	L	R
*	ATS acknowledgement for the pilot use of the in-trail procedure when the ITP aircraft is behind one reference aircraft and ahead of one reference aircraft. This message element is always concatenated with a vertical clearance.	ITP BEHIND *(aircraft identification of reference aircraft)* AND AHEAD OF *(aircraft identification of reference aircraft)*	N	L	R
* Use UM169 when sending these messages as free text.					

Renumber subsequent tables accordingly.

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2. Downlink messages

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Insert new table as follows:

Table A5-24. Spacing messages (downlink)

Number	*Message intent/use*	*Message element*	*URG*	*ALRT*	*RESP*
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance to the reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP (distance) BEHIND *(aircraft identification of reference aircraft)*	N	L	N
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance from the reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP *(distance)* AHEAD OF *(aircraft identification of reference aircraft)*	N	L	N
*	Advisory indicating that the pilot	ITP *(distance)* BEHIND	N	L	N

	has the ITP equipment, and provides the distance to both reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	*(aircraft identification of reference aircraft)* AND *(distance)* BEHIND *(aircraft identification of reference aircraft)*			
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance from both reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP *(distance)* AHEAD OF *(aircraft identification of reference aircraft)* AND *(distance)* AHEAD OF *(aircraft identification of reference aircraft)*	N	L	N
*	Advisory indicating that the pilot has the ITP equipment, and provides the distance to one reference aircraft and distance from another reference aircraft, including aircraft identification. This message element is always concatenated with a vertical request.	ITP *(distance)* BEHIND *(aircraft identification of reference aircraft)* AND *(distance)* AHEAD OF *(aircraft identification of reference aircraft)*	N	L	N
* Use DM67 when sending these messages as free text.					

Renumber subsequent tables accordingly.

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- END -