INTERNATIONAL CIVIL AVIATION ORGANIZATION
TWELFTH MEETING ON THE IMPROVEMENT OF THE AIR TRAFFIC SERVICES IN THE SOUTH ATLANTIC

(Sal, Cape Verde, 15 – 17 December 2004)

Agenda Item 3: RVSM Implementation Programmes
Agenda Item 5: CNS/ATM Systems Implementation

Amendment to ICAO SUPPs - Doc. 7030

(Presented by the Secretariat)

Summary

This Information Paper presents the Proposal for Amendment to NAM, CAR, SAM and PAC Regional Supplementary Procedures on RVSM Implementation, submitted to ICAO Council.

1. Introduction

1.1 In view of **Conclusion AP/ATM/7/1 and Decision ATM/3/24**, the Secretariat has submitted the proposal for amendment to NAM, CAR, SAM and PAC Regional Supplementary Procedures, Doc 7030, (Serial No. SAM S04/01-ATM) to ICAO HQ, Montreal, for approval by ICAO Council. The proposal for amendment is presented in **Appendix A** to this Information Paper.

1.2 This proposal for amendment has been developed based on:

a) the discussions and agreements carried out during consecutive AP/ATM and ATM/CNS meetings

b) the exchanges of consultations and opinions with the ATM Section of ICAO HQ in Montreal;

c) the job carried out by the Separation and Airspace Safety Panel (SASP) of the ICAO Air Navigation Commission; and

d) the comments of the Administrations.

2. Discussion

2.2 The comments and modifications made to the proposal for amendment initially circulated were about strategic lateral deviation procedures in oceanic and remote airspaces; which originated an extensive and in depth study by all the parties involved in the RVSM implementation process.

2.3 Subsequently, Circular Letter LT 1/3.1-SA892 dated 6 September 2004, presented in **Appendix B** to this Information Paper, through which the States, Territories and International Organizations were informed on the comments of United Kingdom, United States and ICAO ATM Section in Montreal regarding the work carried out by the Separation and Airspace Safety Panel of ICAO Air Navigation Commission on the revised guidelines of the strategic lateral deviation.

2.4 Additionally, the Administrations were requested to provide their comments on these new guidelines and on the modification to be effected to the original proposal for amendment and no objections were received to the deadline proposed.

3. **Action by the meeting**

3.1 The meeting is invited to take note of the information provided.

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APPENDIX A

PROPOSAL FOR AMENDMENT TO THE
REGIONAL SUPPLEMENTARY PROCEDURES (Doc 7030)
NORTH AMERICA (NAM), CARIBBEAN (CAR), SOUTH AMERICA (SAM) AND PACIFIC (PAC) REGIONS

(Serial No.: SAM-S 04/01-ATM)

a) **Proposed by:**

Canada, United States, and the CAR/SAM Regional Planning and Implementation Group (GREPECAS) on behalf of its member States and International Organizations.

b) **Proposed amendment:**

(cf. Regional Supplementary Procedures, Doc 7030/4-NAM, CAR, SAM and PAC, Part 1— Rules of the Air, Air Traffic Services and Search and Rescue, incorporating Amendment No. 206).

1) **Amend** the SUPPs applicable in the **NAM Region** as shown in Appendix A;

2) **Amend** the SUPPs applicable in the **CAR Region** as shown in Appendix B;

3) **Amend** the SUPPs applicable in the **SAM Region** as shown in Appendix C; and

4) **Amend** the SUPPs applicable in the **PAC Region** as shown in Appendix D.

c) **Intended date of implementation:**

20 January 2005

d) **Proposal circulated to the following States and international organizations**:

Algeria
Argentina
Angola
Australia
Austria
Bahamas
Bangladesh
Barbados
Belgium
Bolivia
Brazil
Brunei Darussalam
Bulgaria
Cambodia
Cameroon
Canada
Cape Verde
Central African Republic
Chile
China
Colombia
Congo
Cote d´Ivoire
Cuba
Czech Republic
Democratic People´s Republic of Korea
Democratic Republic of the Congo
Denmark
Dominican Republic
Ecuador
Egypt
Ethiopia
Finland
France
Gabon
Gambia
Germany
Ghana
Greece
Guinea Bissau
Guyana
Haiti
Hungary
Iceland
India
Indonesia
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Lebanon
Luxembourg
Madagascar
Malaysia
Mexico
Monaco
Mongolia
Morocco
Mozambique
Namibia
Nepal
Netherlands
New Zealand
Niger
Nigeria
Norway
Pakistan
Panama
Paraguay
Peru
Philippines
Poland
Portugal
Republic of Korea
Romania
Russian Federation
Saudi Arabia
Senegal
Sierra Leone
Singapore
Somalia
South Africa
Spain
Suriname
Sweden
Switzerland
Tajikistan
Thailand
Trinidad and Tobago
Tunisia
Turkey
Uganda
Ukraine
United Arab Emirates
United Kingdom
United Republic of Tanzania
United States
Uruguay
Uzbekistan
Venezuela
Viet Nam

ASECNA
COCESNA
EUROCONTROL
IACA
IAOPA
IATA
IBAC
IFALPA
IFATCA

e) **Originators' reasons for amendment:**

1) On 20 January 2005, Canada, United States, Caribbean/South American (CAR /SAM) States and international organizations are planning to implement reduced vertical separation minimum (RVSM) between flight level (FL) 290 and 410 inclusive in the North America (NAM) Region: Canadian Southern Domestic Airspace and United States; and CAR and SAM Regions including Easter Island flight information region (FIR) (Pacific (PAC) Region).

2) Canada implemented RVSM in Canadian Northern Domestic Airspace in April 2002 while Brazil implemented RVSM in the European (EUR)/SAM corridor in February 2002 in the oceanic portion of Atlantic FIR. The proposed revision to paragraph 1.3.2.1 the of NAM Part, and paragraphs 6.3.1.1 and 6.3.1.2 of the SAM Part will complete the list of NAM and SAM FIRs affected. In addition, RVSM implementation will harmonize operations with adjoining airspace where RVSM is now implemented.

f) **Secretariat comments:**

1) Canada, the United States and the CAR/SAM Regional Planning and Implementation Group (GREPECAS) have undertaken the task of implementing RVSM in the NAM, CAR and SAM Regions on the same date. The GREPECAS/11 Meeting (Manaus, Brazil, 3 to 7 December 2002) agreed (Conclusion 11/23) to plan RVSM implementation in a single stage between FL 290 and FL 410 inclusive in the flight information Regions under their jurisdiction in a manner consistent with implementation in the NAM Region.

2) RVSM implementation in the NAM, CAR and SAM regions will allow the operators to receive the benefits that are now experienced in other oceanic and continental airspaces where it has been implemented.

3) Monitoring arrangements for pre and post RVSM implementation were already established for the NAM and CAR/SAM regions through the North Atlantic Approvals Registry and Monitoring Agency (NAARMO) and CAR/SAM Regional Monitoring Agency (CARSAMMA).

4) Implementation of RVSM in Easter Island FIR will avoid implementing a transition area between the PAC and SAM Regions.

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A1

APPENDIX A

NORTH AMERICA (NAM) REGION

Amend the SUPPs applicable in the NAM Region as follows:

1.3 **Vertical separation**
(A2 — Appendix 3; PANS-ATM, 5.3.2)

1.3.1 The minimum ~~Reduced~~ vertical separation that shall be applied ~~minimum (RVSM) of 300 m (1 000 ft)~~ between FL 290 and FL 410 inclusive is 300 m (1 000 ft) ~~, may be applied in the area specified in 1.3.2~~.

1.3.2 *Area of applicability*

1.3.2.1 RVSM shall be applicable in ~~either all or part of,~~ that volume of airspace between FL 290 and FL 410 inclusive in the following flight information regions/control areas (FIRs/CTAs):

Albuquerque, Anchorage Arctic, Anchorage Continental, Atlanta, Boston, Chicago, Cleveland, Denver, Edmonton, Fairbanks, Fort Worth, Gander, Great Falls, Houston, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Miami, Minneapolis, Moncton, Montreal, New York, Oakland, Salt Lake City, Seattle, Toronto, Vancouver, Washington, Winnipeg.

Note.— Implementation will be promulgated by appropriate AIP Supplements and included in the respective AIPs.

. . .

1.3.4 *MASPS*

1.3.4.1 The MASPS height-keeping requirements are as follows:

. . .

~~d) the following criteria shall be used in the operational assessment of airspace system safety: the total vertical error (TVE), which is the difference between the geometric height of the aircraft and the geometric height of the flight level to which it is assigned, is required to be such that:~~

~~1) the probability that TVE is equal to or greater than 91 m (300 ft) in magnitude is equal to or less than 2×10^{-3};~~

~~2) the probability that TVE is equal to or greater than 152 m (500 ft) in magnitude is equal to or less than 5.0×10^{-6};~~

~~3) the probability that TVE is equal to or greater than 200 m (650 ft) in magnitude is equal to or less than 1.4×10^{-6};~~

~~4) the probability that TVE is between 290 m and 320 m (950 ft and 1 050 ft), inclusive, in magnitude is equal to or less than 1.7×10^{-7}; and~~

~~5) the maximum proportion of time that aircraft spend at incorrect flight levels, 300 m (1 000 ft), or multiples thereof, away from assigned flight levels while flying in same direction as traffic at incorrect levels is equal to or less than 7.1×10^{-7}~~

. . .

1.3.6 *Approval status and aircraft registration*

1.3.6.1 The letter W shall be inserted in Item 10 of the flight plan (i.e. equipment or equivalent item) ~~Item 10 of the flight plan (Equipment) shall be annotated with the letter W~~ if the aircraft and operator have received RVSM State approval. ~~Furthermore,~~ The aircraft registration shall be indicated in Item 18 of the flight plan.

. . .

1.3.7 Aircraft that have not received RVSM State approval may be cleared to operate in RVSM airspace in accordance with policy and procedures established by the State provided that 600 m (2 000 ft) vertical separation is applied.

~~1.3.7~~ 1.3.8 *Monitoring*

~~1.3.7.1~~ 1.3.8.1 Adequate monitoring of flight operations in the designated RVSM airspace shall be conducted to assist in the assessment of continuing compliance with the height-keeping capabilities in 1.3.4. Monitoring shall include assessment of other sources of risk to ensure that the TLS specified in 1.3.5.1 is not exceeded.

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APPENDIX B

CARIBBEAN (CAR) REGION

Amend the SUPPs applicable in the **CAR Region** as follows:

Delete existing provisions under paragraphs 4.1, 4.2 and 4.3.

~~4.0 SPECIAL PRODURES FOR IN-FLIGHT CONTINGENCIES~~

~~4.1 The following procedures are intended for guidance only. Although all possible contingencies cannot be covered, they provide for cases of inability to maintain assigned level due to weather, aircraft performance, pressurization failure and problems associated with hig-level supersonic flight. They are applicable primarily when rapid descent, tur-back, or both, are required. The pilot's judgement shall determine the sequence of actions taken, having regard to the specific circumstances.~~

~~4.2 General procedures~~

~~The following general procedures apply to both subsonic an supersonic aircraft.~~

~~4.2.1 If an aircraft is unable to continue flight in accordance with its air traffic control clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action, using the radiotelephony distress or urgency signal as appropriate.~~

~~4.2.2 If prior clearance cannot be obtained, an air traffic control clearance shall be obtained at the earliest possible time and, in the meantime, the aircraft shall broadcast its position (including the ATS route designator or the track code, as appropriate) and intentions, on frequency 121.5 MHz at suitable interval until air traffic control clearance is received.~~

~~4.3 Special procedures for supersonic aircraft~~

~~4.3.1 Turn-back procedures~~

~~If a supersonic aircraft is unable to continue flight to its destination and a reversal of track is necessary, it should:~~

~~1) when operating on an outer track of a multi-track system, turn away from the adjacent track;~~

~~2) when operating on a random track or on an inner track of a multi-track system, turn either left or right as follows:~~

~~a) if the turn is to be made to the right, the aircraft should attain a position 30 NM to the left of the assigned track and then turn to the right onto its reciprocal heading, at the greatest practical rate of turn;~~

~~b) if the turn is to be made to the left, the aircraft should attain a position 30 NM to the right of the assigned track and then turn to the left onto its reciprocal heading, at the greatest practical rate of turn:~~

~~3) while executing the turn-back, the aircraft should lose height so that ir will be at least 1 850 m (6 000 ft) below the level at which turn- back was started, by the time the turn-back is completed;~~

~~4) when turn-back is completed, heading should be adjusted to maintain a lateral displacement of 30 NM from the original track in the reverse direction, if possible maintaining the flight level attained on completion of the turn.~~

Insert new text as follows:

4.0 SPECIAL PROCEDURES FOR IN-FLIGHT CONTINGENCIES IN CAR OCEANIC AIRSPACE

4.1 Introduction

4.1.1 Although all possible contingencies cannot be covered, the procedures in 4.2 and 4.3 provide for the more frequent cases such as:

a) inability to maintain assigned flight level due to weather, aircraft performance or pressurization failure;

b) en route diversion across the prevailing traffic flow; and

c) loss of, or significant reduction in, the required navigation capability when operating in an airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations.

4.1.2 With regard to 4.1.1 a) and b), the procedures are applicable primarily when rapid descent and/or turn-back or diversion is required. The pilot's judgement shall determine the sequence of actions to be taken, having regard to the prevailing circumstances. Air traffic control shall render all possible assistance.

4.2 General procedures

4.2.1 If an aircraft is unable to continue the flight in accordance with its ATC clearance, and/or an aircraft is unable to maintain the navigation performance accuracy specified for the airspace, a revised clearance shall be obtained, whenever possible, prior to initiating any action.

4.2.2 The radiotelephony distress signal (MAYDAY) or urgency signal (PAN PAN) preferably spoken three times shall be used as appropriate. Subsequent ATC action with respect to that aircraft shall be based on the intentions of the pilot and the overall air traffic situation.

4.2.3 If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time and, until a revised clearance is received, the pilot shall:

a) leave the assigned route or track by initially turning 90 degrees to the right or to the left. When possible, the direction of the turn should be determined by the position of the aircraft relative to any organized route or track system. Other factors which may affect the direction of the turn are:

1) the direction to an alternate airport, terrain clearance;

2) any lateral offset being flown, and

3) the flight levels allocated on adjacent routes or tracks.

b) following the turn, the pilot should:

1) if unable to maintain the assigned flight level, initially minimize the rate of descent to the extent that is operationally feasible;

2) take account of other aircraft being laterally offset from its track;

3) acquire and maintain in either direction a track laterally separated by 28 km (15 NM) from the assigned route or track in a multi-track system or otherwise, at a distance which is the mid-point from the adjacent parallel route or track; and

4) once established on the offset track, climb or descend to select a flight level which differs from those normally used by 150 m (500 ft);

c) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, position (including the ATS route designator or the track code, as appropriate) and intentions on the frequency in use and on 121.5 MHz (or, as a back-up, on the inter-pilot air-to-air frequency 123.45 MHz);

d) maintain a watch for conflicting traffic both visually and by reference to ACAS (if equipped);

e) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

f) keep the SSR transponder on at all times; and

g) take action as necessary to ensure the safety of the aircraft.

4.2.4 *Extended range operations by aeroplanes with two-turbine power-units (ETOPS)*

4.2.4.1 If the contingency procedures are employed by a twin-engine aircraft as a result of an engine shutdown or failure of an ETOPS critical system, the pilot should advise ATC as soon as practicable of the situation, reminding ATC of the type of aircraft involved, and request expeditious handling.

4.3 Weather deviation procedures

4.3.1 *General*

Note.— The following procedures are intended for deviations around adverse weather.

4.3.1.1 When the pilot initiates communications with ATC, a rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response. When necessary, the pilot should initiate the communications using the urgency call "PAN PAN" (preferably spoken three times).

4.3.1.2 The pilot shall inform ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to the centre line of its cleared route.

4.3.1.3 *Actions to be taken when controller-pilot communications are established*

4.3.1.3.1 The pilot should notify ATC and request clearance to deviate from track, advising, when possible, the extent of the deviation expected.

4.3.1.3.2 ATC should take one of the following actions:

a) when appropriate separation can be applied, issue clearance to deviate from track; or

b) if there is conflicting traffic and ATC is unable to establish appropriate separation, ATC shall:

1) advise the pilot of inability to issue clearance for the requested deviation;

2) advise the pilot of conflicting traffic; and

3) request the pilot's intentions.

SAMPLE PHRASEOLOGY:

"UNABLE (*requested deviation*), TRAFFIC IS (*call sign, position, altitude, direction*), ADVISE INTENTIONS"

4.3.1.3.3 The pilot should take the following actions:

a) comply with the ATC clearance issued; or

b) advise ATC of intentions and execute the procedures detailed in 4.3.1.3.4 below.

4.3.1.3.4 Actions to be taken if a revised ATC clearance cannot be obtained

Note.— The provisions of this section apply to situations where a pilot needs to exercise the authority of a pilot-in-command under the provisions of Annex 2, 2.3.1.

4.3.1.3.4.1 If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. Until an ATC clearance is received the pilot shall take the following actions:

a) if possible, deviate away from an organized track or route system;

b) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, position (including ATS route designator or the track code) and intentions, on the frequency in use and on 121.5 MHz (or, as a back-up, on the inter-pilot air-to-air frequency 123.45 MHz);

c) watch for conflicting traffic both visually and by reference to ACAS (if equipped);

Note.— If, as a result of actions taken under the provisions of 4.3.1.3.5 b) and c) above, the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

e) for deviations of less than 19 km (10 NM) remain at a level assigned by ATC;

f) for deviations greater than 19 km (10 NM), when the aircraft is approximately 19 km (10 NM) from track, initiate a level change in accordance with Table 1;

Table 1

Route centre line track	*Deviations> 19 km (10 MN)*	*Level change*
EAST 000° - 179° magnetic	LEFT RIGHT	DESCEND 90 m (300 ft) CLIMB 90 m (300 ft)
WEST 180° - 359° magnetic	LEFT RIGHT	CLIMB 90 m (300 ft) DESCEND 90 m (300 ft)

g) when returning to track, be at its assigned flight level when the aircraft is within approximately 19 km (10 NM) of the centre line; and

h) if contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

End of new text.

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. . .

~~**6.3 Vertical separation**~~

~~6.3.1 Above FL 450, vertical separation between supersonic aircraft, and between supersonic aircraft and any other aircraft, shall be considered to exist if the flight levels of the two aircraft differ by at least 1 200 m (4 000 ft).~~

Insert new text as follows:

6.3 Vertical separation

The minimum vertical separation that shall be applied between FL 290 and FL 410 inclusive is 300 m (1 000 ft).

6.3.1 *Area of applicability*

6.3.1.1 RVSM shall be applicable in the volume of airspace between FL 290 and FL 410 inclusive, in the following flight information regions (FIRs):

Barranquilla, Central America, Curacao, Georgetown, Havana, Houston Oceanic, Kingston, Maiquetia, Mazatlan Oceanic, Mexico, Miami Oceanic, Panama, Paramaribo, Piarco, Port-au-Prince, Rochembeau, Santo Domingo and San Juan.

Note 1.— Implementation will be promulgated by appropriate AIP Supplements and included in the respective AIPs.

Note 2.— The volume of airspace referred as to "CAR/SAM RVSM airspace" includes the FIRs listed in the area of applicability of vertical separation in CAR and SAM Regional Supplementary Procedures.

6.3.2 *Establishment of 300 m (1 000 ft) vertical separation minimum (VSM) transition areas*
(A2 — Appendix 3; A6, Parts I and II, 7.2.3; A11 — 3.3.4; P-ATM, 5.3.2)

6.3.2.1 In order to allow for the transition of flights to and from RVSM airspace, the ATS authorities responsible for the FIRs involved may establish designated RVSM transition areas. A 300 m (1 000 ft) vertical separation minimum can be applied between RVSM approved aircraft within these transition areas.

6.3.2.2 An RVSM transition area shall have a vertical extent of FL 290 to FL 410 inclusive, be contained within horizontal dimensions determined by the provider States, be overlapping with or contained within CAR/SAM RVSM airspace and should have direct pilot-controller communications.

6.3.3 *RVSM approval*

6.3.3.1 The minimum separation in 6.3 shall only be applied between aircraft and operators that have been approved by the State of Registry or the State of the Operator, as appropriate, to conduct flights in RVSM airspace and that are capable of meeting the minimum aircraft system performance specification (MASPS) height-keeping requirements (or equivalent).

6.3.4 *MASPS*

6.3.4.1 The MASPS height-keeping requirements are as follows:

a) for all aircraft, the differences between cleared flight level and the pressure altitude actually flown shall by symmetric about a mean of 0 m (0 ft), shall have a standard deviation no greater than 13 m (43 ft) and shall be such that the error frequency decreases with increasing magnitude at a rate which is at least exponential;

b) for groups of aircraft that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance in the RVSM flight envelope (FL 290 to FL 410 inclusive):

1) the mean altimetry system error (ASE) of the group shall not exceed 25 m (80 ft) in magnitude; and

2) the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft);

c) for non-group aircraft for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of aircraft: the ASE shall not exceed 61 m (200 ft) in magnitude in the RVSM flight envelope (FL 290 to FL 410 inclusive).

Note.— Guidance material regarding the initial achievement and continued maintenance of the height-keeping performance in 6.3.4.1 is contained in the Guidance Material on the Implementation of a 300 m (1 000 ft) Vertical Separation Minimum (VSM) for Application in the CAR/SAM Regions.

6.3.5 *Target level of safety (TLS)*

6.3.5.1 Application of RVSM in the airspace designated in 6.3.1.1 shall meet a TLS of 5×10^{-9} fatal accidents per aircraft flight hour due to all causes of risk in the vertical dimension.

6.3.6 *Approval status and aircraft registration*

6.3.6.1 The letter W shall be inserted in Item 10 of the flight plan (i.e. equipment or equivalent item) if the aircraft and operator have received RVSM State approval. The aircraft registration shall be indicated in Item 18 of the flight plan.

6.3.7 *Operation of aircraft not approved for RVSM*

6.3.7.1 Except for areas where transition areas have been established, aircraft not approved for RVSM operations in accordance with the requirements of 6.3.3.1 shall not be allowed to operate in CAR/SAM RVSM airspace.

6.3.7.2 Exceptionally, aircraft that have not received RVSM State approval may be cleared to operate in airspace where RVSM may be applied in accordance with policy and procedures established by the State provided that 600 m (2000 ft) vertical separation is applied.

Note.— Transitions to and from RVSM levels will normally take place in the first FIR in CAR/SAM RVSM airspace.

6.3.8 *Monitoring*

6.3.8.1 Adequate monitoring of flight operations in the CAR/SAM RVSM airspace shall be conducted to assist in the assessment of continuing compliance of aircraft with the height-keeping capabilities in 6.3.4.1. Monitoring shall include assessment of other sources of risk to ensure that the TLS specified in 6.3.5.1 is not exceeded.

Note. — Details of the policy and procedures for monitoring established by the CAR/SAM Monitoring Agency (CARSAMMA) are contained in the Guidance Material on the Implementation of a 300 m (1 000 ft) Vertical Separation Minimum (VSM) for Application in the CAR/SAM RVSM Airspace.

6.3.9 Special procedures for strategic lateral offsets in Oceanic Controlled Area (OCA) and remote continental airspace within CAR Region

Note. — 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.

6.3.9.1 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.

6.3.9.2 The application of lateral offsets to provide lateral spacing between aircraft, in accordance with the procedures specified in 6.3.9.3 and 6.3.9.4, can be used to mitigate the effect of this reduction in random lateral deviations, thereby improving overall system safety.

Implementation considerations for ATS authorities

6.3.9.3 The application of lateral offsets requires authorization from the ATS authority responsible for the airspace concerned. The following considerations shall be taken into account by the ATS authority when planning authorization of 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 within radar coverage, transiting aircraft should normally be allowed to initiate or continue offset tracking.

b) Strategic lateral offsets 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 55.5km (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) These 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).

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

Lateral offset procedures to be applied by pilots

6.3.9.4 In the application of strategic lateral offsets, pilots should take the following points into consideration:

a) Offsets shall only be applied in airspace where this has been approved by the appropriate ATS authority.

b) Offsets shall be applied only by aircraft with automatic offset tracking capability.

c) The decision to apply a strategic lateral offset is the responsibility of the flight crew.

d) The offset shall be established at a distance of one or two nautical miles to the right of the centre line relative to the direction of flight.

e) 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 (centreline, 1 NM or 2 NM right offset) shall be used.

f) In airspace where the use of lateral offsets has been authorized, pilots are not required to inform air traffic control (ATC) that an offset is being applied.

g) Aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.

6.3.9.5 Pilots may, if necessary, contact other aircraft on the air-to-air frequency 123.45 MHz to coordinate offsets.

End of new text

6.4 Information on application of separation minima
(A11 – 3.4; ~~P-RAC, Part III – 7, 8 and 9~~ P-ATM, 5.4.1, 5.4.2 and 5.11)

6.4.1 Where, circumstances permitting, separation minima lower than those specified in 6.1 and 6.2 will be applied in accordance with the PANS-~~RAC~~ATM, appropriate information should be published in Aeronautical Information Publications so that users of the airspace are fully aware of the portions of airspace where the reduced separation minima will be applied and of the navigation aids on the use of which those minima are based.

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APPENDIX C

SOUTH AMERICA (SAM) REGION

Amend the SUPPs applicable in the **SAM Region** as follows:

1.2 **Air traffic advisory service**
(P-ATM, ~~8.1.4~~ 9.1.4)

. . .

2.1.1 *Mach number*

2.1.1.1 For turbo-jet aircraft intending to operate:

a) within airspace and/or ~~along the specified~~ routes between ~~San Juan (Peru) and Tongoy or Antofagasta (Chile) and on the specified routes between~~ the west coast of ~~Perú and Chile~~ Santiago and Lima FIRs and the adjacent control areas of the PAC Region; or;

. . .

4.0 SPECIAL PROCEDURES FOR IN-FLIGHT CONTINGENCIES IN SAM OCEANIC AIRSPACE

4.1 Introduction

4.1.1 ~~The following procedures are intended for guidance only and will be applicable within the EUR/SAM corridor~~. Although all possible contingencies cannot be covered, the procedures in 4 .2 and 4.3 they provide for more frequent cases, such as ~~of~~ :

a) inability to maintain assigned flight level due to weather, aircraft performance or pressurization failure ~~and problems associated with high level supersonic flight~~;

~~b~~ c) loss of, or significant reduction in, the required navigation capability when operating in ~~parts of~~ and ~~the~~ airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations~~; and~~.

~~c~~ b) en-route diversion across the prevailing ~~EUR/SAM~~ traffic flow; and

4.1.2 With regard to 4.1.1 a) and ~~c)~~ b) ~~above~~, the procedures are applicable primarily when rapid descent and/or turn-back or ~~both~~ diversion are required. The pilot's judgement shall determine the sequence of actions to be taken, having regard to the ~~specific~~ prevailing circumstances. Air traffic control ~~(ATC)~~ shall render all possible assistance.

4.2 General procedures

~~4.2.1 The following general procedures apply to both subsonic and supersonic aircraft.~~

~~4.2.1.1~~ 4.2.1 If an aircraft is unable to continue the flight in accordance with its ATC clearance, and/or an aircraft is unable to maintain the navigation performance accuracy specified for the airspace, a revised clearance shall be obtained, whenever possible, ~~be obtained~~ prior to initiating any action~~, using the distress or urgency signal as appropriate. Subsequent ATC action with respect to that aircraft shall be based on the intentions of the pilot and the over-all traffic situation.~~

4.2.2 The radiotelephony distress signal (MAYDAY) or urgency signal (PAN PAN) preferably spoken three times shall be used as appropriate. Subsequent ATC action with respect to that aircraft shall be based on the intentions of the pilot and the overall air traffic situation.

~~4.2.1.2~~ 4.2.3 If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time and, until a revised clearance is received, the pilot shall:

a) ~~if possible, deviate away from an organized track or route system;~~ leave the assigned route or track by initially turning 90 degrees to the right or to the left. When possible, the direction of the turn should be determined by the position of the aircraft relative to any organized route or track system. Other factors which may affect the direction of the turn are:

1) the direction to an alternate airport, terrain clearance;

2) any lateral offset being flown; and

3) the flight levels allocated on adjacent routes or tracks.

b) following the turn, the pilot should:

1) if unable to maintain the assigned flight level, initially minimize the rate of descent to the extent that is operationally feasible;

2) take account of other aircraft being laterally offset from its track;

3) acquire and maintain in either direction a track laterally separated by 28 km (15 NM) from the assigned route or track in a multi-track system or otherwise, at a distance which is the mid-point from the adjacent parallel route or track; and

4) once established on the offset track, climb or descend to select a flight level which differs from those normally used by 150 m (500 ft);

~~b)~~ c) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, ~~aircraft~~ position (including the ATS route designator or the track code as appropriate) and intentions, on the

frequency in use and on ~~frequency~~ 121.5 MHz (or, as a back-up, on the inter-pilot air-to-air frequency 123.45 MHz);

~~c)~~ d) ~~watch for conflicting traffic both visually and by reference to ACAS (if equipped);~~ maintain a watch for conflicting traffic both visually and by reference to ACAS (if equipped);

~~d)~~ e) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

~~e)~~ f) ~~switch on~~ keep the SSR transponder on at all times; and

~~f)~~ g) ~~initiate such~~ take action as necessary to ensure safety of the aircraft.

~~**4.3 Subsonic aircraft**~~

~~4.3.1 *Initial action*~~

~~4.3.1.1 If unable to comply with the provisions of 4.2 to obtain a revised ATC clearance, the aircraft should leave its assigned route or track by turning 90 degrees to the right or left whenever this is possible. The direction of the turn should, where possible, be determined by the position of the aircraft relative to any organized route or track system (e.g. whether the aircraft is outside, at the edge of, or within the system). Other factors which may affect the direction of the turn are the direction to an alternative airport, terrain clearance, any lateral offset being flown and the flight levels allocated to adjacent routes.~~

~~4.3.2 *Subsequent action (RVSM airspace)*~~

~~4.3.2.1 In RVSM airspace, an aircraft able to maintain its assigned flight level should turn to acquire and maintain in either direction a track laterally separated by 46 km (25 NM) from its assigned route or track in a multi-track system spaced at 93 km (50 NM) or otherwise, at a distance which is mid-point from the adjacent parallel route or track; and~~

~~a) if above FL 410, climb or descend 300 m (1 000 ft); or~~

~~b) if below FL 410, climb or descend 150 m (500 ft); or~~

~~c) if at FL 410, climb 300 m (1 000 ft) or descend 150m (500 ft).~~

~~4.3.2.2 An aircraft that is unable to maintain its assigned flight level should:~~

~~a) initially minimize its rate of descent to the extent that it is operationally feasible;~~

~~b) turn while descending to acquire and maintain in either direction a track laterally separated by 46 km (25 NM) from its assigned route or track in a multi-track system spaced at 93 km (50 NM) or otherwise, at a distance which is the mid-point from the adjacent parallel route or track; and~~

~~c) for the subsequent level flight, a level should be selected which differs from those normally used by 300 m (1 000 ft) if above FL 290 or by 150 m (500 ft) if below FL 290.~~

~~4.3.3 *Subsequent action (non-RVSM airspace)*~~

~~4.3.3.1 In non-RVSM airspace, an aircraft able to maintain its assigned flight level should turn to acquire and maintain in either direction a track laterally separated by 46 km (25 NM) from its assigned route or track in a multi-track system spaced 93 km (50 NM) or otherwise, at a distance which is the mid-point from the adjacent parallel route or track and:~~

~~a) if above FL 290, climb or descend 300 m (1 000 ft); or~~

~~b) if below FL 290, climb or descend 150 m (500 ft); or~~

~~c) if at FL 290, climb 300 m (1 000 ft) or descend 150 m (500 ft).~~

~~4.3.3.2 An aircraft unable to maintain its assigned level flight should:~~

~~a) initially minimize its rate of descent to the extent that it is operationally feasible;~~

~~b) turn while descending to acquire and maintain in either direction a track laterally separated by 46 km (25 NM) from its assigned route or track in a multi-track system spaced at 93 km (50 NM) or otherwise, at a distance which is the mid-point from the adjacent parallel route or track; and~~

~~c) for the subsequent level flight, a level should be selected which differs from those normally used by 300 m (1 000 ft) if above FL 290 or by 150 m (500 ft) if below FL 290.~~

~~4.3.4 *En-route diversion across the prevailing SAT air traffic flow*~~

~~4.3.4.1 Before diverting across the flow of adjacent traffic, the aircraft should climb above FL 410 or descend below FL 280 using the procedures specified in 4.3.1 or 4.3.2 or 4.3.3. However, if the pilot is unable or unwilling to carry out a major climb or descent, the aircraft should be flown at a level as defined in 4.3.2.1 or 4.3.3.1 until a revised ATC clearance is obtained.~~

~~4.3.5~~ 4.2.4 *Extended range operations by aeroplanes with two-turbine power-units (ETOPS)*

~~4.3.5.1~~ 4.2.4.1 If ~~these~~ the contingency procedures are employed by a twin-engine aircraft as a result of an engine shutdown or failure of an ETOPS critical system, the pilot should advise ATC as soon as practicable of the situation reminding ATC of the type of aircraft involved, and request expeditious handling.

~~4.4 **Supersonic aircraft**~~

~~4.4.1 *Turn-back procedures*~~

~~4.4.1.1 If a supersonic aircraft is unable to continue flight to its destination and a reversal of track is necessary, it should:~~

~~a) when operating on an outer track of a multi-track system, turn away from the adjacent track;~~

~~b) when operating on a random track or on an inner track of a multi-track system, turn either left or right as follows:~~

~~1) if the turn is to be made to the right, the aircraft should attain a position 46 km (25NM) to the left of the assigned track and then turn to the right into its reciprocal heading, at the greatest practical rate of turn;~~

~~2) if the turn is to be made to the left, the aircraft should attain a position 46 km (25NM) to the right of the assigned track and then turn to the left into its reciprocal heading, at the greatest practical rate of turn;~~

~~c) while executing the turn-back, the aircraft should lose height so that it will be at least 1 850 m (6 000 ft) below the level at which turn-back was started, by the time the turn-back is completed;~~

~~d) when turn-back is completed, heading should be adjusted to maintain a lateral displacement of 46 km (25NM) from the original track in the reverse direction, if possible maintaining the flight level attained on completion of the turn.~~

~~*Note.— For multi-track systems where the route spacing is greater than 93 km (50 NM), the mid-point distance should be used instead of 46 km (25 NM).*~~

~~4.5~~ 4.3 Weather deviation procedure

~~4.5~~ 4.3.1 *General*

~~4.5.1.1~~ *Note.— The following procedures are intended for deviation around adverse weather.* ~~to provide guidance. All possible circumstances cannot be covered. The pilot's judgement shall ultimately determine the sequence of actions taken. ATC shall render all possible assistance.~~

~~4.5. 1.2 If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. Until an ATC clearance is received, the aircraft shall follow the procedures detailed in paragraph 4.5.4 below.~~

~~4.5.1.3 The pilot shall advise ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to the centre line of its cleared route.~~

~~4.5.2 *Obtaining priority from ATC when weather deviation is required*~~

~~4.5.2.1.~~ 4.3.1.1 When the pilot initiates communications with ATC, rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response. When necessary the pilot should initiate the communications using the urgency call "PAN PAN" (preferably spoken three times).

~~4.5.2..2 The pilot still retains the option of initiating the communications using the urgency call PAN PAN (preferably spoken three times) to alert all listening parties to a special handling condition which will receive ATC priority for issuance of a clearance or assistance.~~

4.3.1.2 The pilot shall inform ATC when weather deviation is not longer required, or when a weather deviation has been completed and the aircraft has returned to the center line of its cleared route.

~~4.5.3~~ 4.3.1.3 *Actions to be taken when controller-pilot communications are established*

~~4.5.3.2~~ 4.3.1.3.1 The pilot should ~~notifies~~ notify ATC and ~~requests~~ request clearance to deviate from track advising, when possible, the extent of the deviation expected.

~~4.5.3~~. 4.3.1.3.2 ATC should ~~takes~~ take one of the following actions:

a) ~~if there is no conflicting traffic in the horizontal plane, ATC will~~ when appropriate separation can be applied, issue clearance to deviate from track; or

~~b) if there is conflicting traffic in the horizontal plane, ATC separates aircraft by establishing appropriate separation; or~~

~~c)~~ b) if there is conflicting traffic ~~in the horizontal plane~~ and ATC is unable to establish appropriate separation, ATC shall:

1) advise the pilot of inability ~~unable~~ to issue clearance for requested deviation;

2) advise the pilot of conflicting traffic; and

3) request the pilot's intentions.

SAMPLE PHRASEOLOGY

"UNABLE *(requested deviation)*, TRAFFIC IS *(call sign, position, altitude, direction)*, ADVISE INTENTIONS"

~~4.5.3.3~~ 4.3.1.3.3 The pilot should ~~will~~ take the following actions:

~~a) advise with ATC of intentions; and~~

~~1)~~ a) comply with the ATC clearance issued; or

~~2)~~ b) advise ATC of intentions and execute the procedures detailed in ~~4.5~~.4 4.3.1.3.4 below. ~~and~~

~~b) if necessary, establish voice communications with ATC to expedite dialogue on the situation.~~

~~4.5.4~~ 4.3.1.3.4 *Actions to be taken if a revised ATC clearance cannot be obtained*

~~4.5.4.1~~ *Note.— The provisions of this section apply to situation where a pilot ~~has the need~~ needs to exercise the authority of a pilot-in-command under the provisions of Annex 2, 2.3.1.*

~~4.5.4.2~~ 4.3.1.3.4.1 ~~If a revised ATC clearance cannot be obtained and deviation from track is quired to aovid weather, the pilot shall take the following actions.~~ If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. Until an ATC clearance is received the pilot shall take the following actions:

a) if possible, deviate away from ~~the~~ an organized track or route system;

b) establish communications with and alert nearby aircraft broadcasting at suitable intervals: aircraft identification, flight level, ~~aircraft identification,~~ ~~aircraft~~ position (including ATS route designator or the track code) and intentions on the frequency in use and on ~~frequency~~ 121.5 MHz (or, as a back up, on the inter-pilot air-to-air frequency 123.45 MHz);

c) watch for conflicting traffic both visually and by reference to ACAS (if equipped);

Note.— If, as a result of actions taken under the provisions of 4.3.1.3.4.1 b) and c) above the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

e) for deviations of less than 19 km (10 NM), aircraft should remain at a level assigned by ATC;

f) for deviation of greater than 19 km (10 NM), when the aircraft is approximately 19 km (10 NM) from track, initiate a level change based on the following criteria:

Table 1

Route centre line track	Deviations >19 km (10 NM)	Level change
EAST 000°-179° magnetic	LEFT RIGHT	DESCEND 90 m (300 ft) CLIMB 90 m (300 ft)
WEST 180°-359° magnetic	LEFT RIGHT	CLIMB 90 m (300 ft) DESCEND 90 m (300 ft)

~~*Note.— If, as a result of actions taken under the provisions of paragraphs 4.5.4.2 b) and c) above the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.*~~

g) when returning to track, be at its assigned flight level, when the aircraft is within approximately 19 km (10 NM) of centre line; and

h) if contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

...

6.2 **Longitudinal separation**
(P-ATM, 5.4.2 and 5.11)

...

6.2.2 ...

b) 15 minutes between turbo-jet aircraft operating:

~~1) on the specified routes between San Juan (Peru) and Tongoy or Antofagasta (Chile) and~~ on the specified routes ~~between the west coast of Peru and Chile~~ in Lima and Santiago FIRs and the adjacent control areas of the PAC Region; or

...

6.3 Vertical separation

The minimum vertical separation that shall be applied between FL 290 and FL 410 inclusive is 300 m (1 000 ft).

6.3.1 *Area of applicability*

6.3.1.1 The reduced vertical separation minimum (RVSM) shall be applied for flights between FL 290 and FL 410 inclusive, within the following flight information regions (FIRs): ~~Canarias (Southern Sector), Dakar Oceanic, Sal Oceanic and Recife (Oceanic portions):~~

Antofagasta, Amazonas, Asunción, Atlántico to the northwest of the line joining the coordinates 01° 39' 32" S / 030° 13' 45" W and 02° 23' 39" N / 027° 48' 58" W, Barranquilla, Brasilia, Bogota, Comodoro Rivadavia to the west of the meridian 054° W, Córdoba, Curitiba, Ezeiza to the west of the meridian 054° W, Georgetown, Guayaquil, La Paz, Lima, Maiquetía, Mendoza, Montevideo to the west of the line joining the coordinates 34° 00' 00" S / 050° 00' 00" W and 36° 22' 00" S / 054° 00' 00" W, Panamá, Paramaribo, Puerto Montt, Punta Arenas, Recife, Resistencia, Rochambeau and Santiago.

Note.— Implementation ~~will be carried out in phases and~~ will be promulgated by appropriate AIP Supplements and included in the respective AIPs.

6.3.1.2 RVSM shall be also applicable in either all, or part of, the following FIRs: Canarias* (Southern Sector), Dakar Oceanic*, Sal Oceanic*, Recife and Atlántico (EUR/SAM corridor portion).

Note 1.— The volume of airspace to as "CAR/SAM RVSM" airspace includes the FIRs listed in the area of applicability of vertical separation in CAR and SAM Regional Supplementary Procedures.

Note 2.— The volume of airspace specified in 6.3.1.2 will be referred to as "EUR/SAM RVSM" airspace.

*Indicate FIRs contained in ICAO AFI Region

6.3.2 *Establishment of RVSM transition areas*
(A2 — Appendix 3; A6, Parts I and II, 7.2.3; A11 — 3.3.4; P-ATM — 5.3.2)

6.3.2.1 In order to allow for the transition of flights to and from CAR/SAM and EUR/SAM RVSM airspace, the ATS authorities responsible for ~~Canarias, Dakar Oceanic, Recife and Sal Oceanic FIRs~~ the FIRs concerned may establish designated RVSM transition areas. A 300 m (1 000 ft) vertical separation minimum can be applied between RVSM-approved aircraft within these transition areas.

6.3.2.2 An RVSM transition area shall have a vertical extent of FL 290 to FL 410 inclusive, be contained within horizontal dimensions determined by the provider States, be overlapping with or contained within CAR/SAM RVSM airspace and EUR/SAM RVSM airspace and should have direct pilot-controller communications.

. . .

6.3.4 *MASPS*

6.3.4.1 The MASPS height-keeping requirements are as follows:

a) . . .

b) . . .

c) . . .

~~d) the following criteria shall be used in the operational assessment of airspace system safety: the total vertical error (TVE), which is the difference between the geometric height of the aircraft and the geometric height of the flight level to which it is assigned, is required to be such that:~~

~~1) the probability that TVE equal to or greater than 91 m (300 ft) in magnitude is equal to or less than 2.0×10^{-3};~~

~~2) the probability that TVE equal to or greater than 152 m (500 ft) in magnitude is equal to or less than 5.0×10^{-6};~~

~~3) the probability that TVE equal to or greater than 200 m (650 ft) in magnitude is equal to or less than 1.4×10^{-6};~~

~~4) the probability that TVE between 290 m and 320 m (950 ft and 1 050 ft), inclusive, in magnitude is equal to or less than 1.7×10^{-7}; and~~

~~5) the proportion of time that aircraft spend at incorrect flight levels, 300 m (1 000 ft), or multiples thereof, away from assigned flight levels is equal to or less than 7.1×10^{-7}.~~

Note.— Guidance material regarding the initial achievement and continued maintenance of the height-keeping performance in ~~6.3.4~~ 6.3.4.1 is contained in both the Guidance Material on the Implementation of a 300 m (1 000 ft) Vertical Separation Minimum (VSM) for Application in the CAR/SAM airspace and EUR/SAM Corridor respectively.

. . .

6.3.6 *Approval status and aircraft registration*

6.3.6.1 The letter W shall be inserted in Item 10 of the flight plan (i.e. equipment or equivalent item) ~~Item 10 of the flight plan (Equipment) shall be annotated with the letter W~~ if the aircraft and operator have received RVSM State approval. ~~Furthermore,~~ The aircraft registration shall be indicated in ~~the remarks section~~ Item 18 of the flight plan.

6.3.7 *Operation of aircraft not approved for RVSM*

6.3.7.1 Except for areas where transition areas have been established, aircraft not ~~meeting~~ approved for RVSM operations in accordance with the requirements of 6.3.4 shall not be allowed to operate in CAR/SAM RVSM airspace and EUR/SAM RVSM airspace.

6.3.7.2 . . .

Note.— Transitions to and from ~~EUR/SAM~~ RVSM ~~airspace~~ levels will normally take place in the first FIR in CAR/SAM RVSM airspace and EUR/SAM RVSM airspace.

6.3.8 *Monitoring*

Adequate monitoring of flight operations in the CAR/SAM RVSM airspace and EUR/SAM RVSM airspace shall be conducted to assist in the assessment of continuing compliance of aircraft with the height-keeping capabilities in ~~6.3.4.~~ 6.3.4.1. Monitoring shall include assessment of other sources of risk to ensure that the TLS specified in 6.3.5 is not exceeded.

Note.— Details of the policy and procedures for monitoring established by the CAR/SAM Monitoring Agency (CARSAMMA) and South Atlantic Monitoring Agency (SATMA) are contained in the Guidance Material on the Implementation of a 300m (1 000 ft) Vertical Separation Minimum (VSM) for Application in the CAR/SAM RVSM airspace and EUR/SAM RVSM airspace respectively ~~Corridor~~.

~~6.3.9 *Wake turbulence lateral offsets procedures*~~

~~6.3.9.1 *The following special procedures are applicable to mitigate wake turbulence encounters in the airspace where RVSM is applied.*~~

~~6.3.9.2 An aircraft that encounters wake turbulence should notify air traffic control ATC and request a revised clearance. However, in situations where a revised clearance is not possible or practicable:~~

~~a) the pilot should establish contact with other aircraft, if possible, on the appropriate VHF inter-pilot air-to-air frequency 123.45 MHz; and~~

~~b) one (or both) aircraft may initiate lateral offset(s) not to exceed 3.7 km (2 NM) from the assigned route(s) or track(s), provided that:~~

~~1) as soon as it is practicable to do so, the offsetting aircraft notify ATC that temporary lateral offset action has been taken and specify the reason for doing so; and~~

~~2) the offsetting aircraft notify ATC when re-established on assigned route(s) or track(s).~~

~~*Note. — In the contingency circumstances above, ATC will not issue clearances for lateral offsets and will not normally respond to action taken by pilots.*~~

6.3.9 **Special procedures for strategic lateral offsets in Oceanic Controlled Area (OCA) and remote continental airspace within SAM Region**

Note. — 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.

6.3.9.1 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.

6.3.9.2 The application of lateral offsets to provide lateral spacing between aircraft, in accordance with the procedures specified in 6.3.9.3 and 6.3.9.4, can be used to mitigate the effect of this reduction in random lateral deviations, thereby improving overall system safety.

Implementation considerations for ATS authorities

6.3.9.3 The application of lateral offsets requires authorization from the ATS authority responsible for the airspace concerned. The following considerations shall be taken into account by the ATS authority when planning authorization of 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 within radar coverage, transiting aircraft should normally be allowed to initiate or continue offset tracking.

b) Strategic lateral offsets 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 55.5km (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) These 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).

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

Lateral offset procedures to be applied by pilots

6.3.9.4 In the application of strategic lateral offsets, pilots should take the following points into consideration:

a) Offsets shall only be applied in airspace where this has been approved by the appropriate ATS authority.

b) Offsets shall be applied only by aircraft with automatic offset tracking capability.

c) The decision to apply a strategic lateral offset is the responsibility of the flight crew.

d) The offset shall be established at a distance of one or two nautical miles to the right of the centre line relative to the direction of flight.

e) 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 (centreline, 1 NM or 2 NM right offset) shall be used.

f) In airspace where the use of lateral offsets has been authorized, pilots are not required to inform air traffic control (ATC) that an offset is being applied.

g) Aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.

6.3.9.5 Pilots may, if necessary, contact other aircraft on the air-to-air frequency 123.45 to coordinate offsets.

~~**6.4 Vertical separation**~~

~~6.4.1 Above FL 450, vertical separation between supersonic aircraft, and between supersonic aircraft and any other aircraft, shall be considered to exist if the flight levels of the two aircraft differ by at least 1 200 m (4 000 ft).~~

~~6.5~~6.4 Information on application of separation minima
(A11 – 3.4; P-ATM, 5.4.1, 5.4.2 and 5.11)

~~6.5.1~~ 6.4.1 Where, circumstances permitting, separation minima lower than those specified in 6.1 and 6.2 will be applied in accordance with the PANS-ATM, appropriate information should be published in Aeronautical Information Publications so that users of the airspace are fully aware of the portions of airspace where the reduced separation minima will be applied and of the navigation aids on the use of which those minima are based.

. . .

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APPENDIX D
PACIFIC (PAC) REGION

Amend the SUPPs applicable in the **PAC Region** as follows:

. . .

6.5 **Vertical separation**

6.5.1 *Area of applicability*

6.5.1.1 The reduced vertical separation minimum (RVSM) shall be applied for flights within the Anchorage Arctic, Anchorage Continental, Anchorage Oceanic, Auckland Oceanic, Easter Island, Los Angeles, Nadi, Oakland, Oakland Oceanic, Seattle, Tahiti and Vancouver flight information regions (FIRs).

. . .

— END —

APPENDIX B

LT 1/3.1-SA892 6 September 2004

To: ICAORD,Mexico (kindly retransmit to Bahamas, Barbados, Canada, Cuba, Dominican Republic, Haiti, Jamaica, Mexico; Trinidad and Tobago, United States and COCESNA)
Mr. Jean-Marc Sansovini/DIRAC, French Guiana
Mr. Chabeenanan Ramphul/CAD Guyana
Mrs. Marlene Harris/Permanent Secretary Suriname
IAOPA
IATA LATAM/CAR
IBAC
IFALPA CAR/SAM
IFATCA

cc.: Mr. Gerald Daniel/Chief Guyana Aeronautical District
Mr. John Veira/Director of Civil Aviation, Suriname

Subject: **Proposal for amendment of the NAM, CAR, SAM and PAC PARTS of Regional Supplementary Procedures (SUPPS), Doc. 7030 - Serial No. SAM S04/01-ATM**

Ref: **LT 1/3.1-SA671, dated 12 July 2004**

Action required: **Reply before 30 September 2004**

Sir,

I have the honour to address you in reference to my LT 1/3.1-SA671, dated 12 July 2004, requiring the States, Territories and International Organizations' comments regarding the proposal for amendment of the ICAO NAM, CAR, SAM and PAC Regional Supplementary Procedures, Doc. 7030 – (Serial No. SAM S04/01-ATM).

In this connection, United Kingdom and the United States have sent their respective comments concerning paragraphs *6.3.9 Wake turbulence lateral offsets procedures* and *6.3.10 Use of lateral offsets other than those special procedures prescribed to mitigate wake turbulence and distracting aircraft systems alert,* corresponding to both CAR and SAM parts.

As you may recall, strategic lateral offset procedures in oceanic and remote airspaces have been an ICAO constant concern in RVSM implementation and, taking into account the importance of these procedures for air operations safety in such process, the Separation and Airspace Safety Panel (SASP) of ICAO's Air Navigation Commission has been issuing guidelines that enable its safe application in oceanic and remote RVSM airspaces.

When the ICAO's ATM Section of Headquarters in Montreal received the referred proposal for amendment for comments prior to its circulation to States, Territories and International Organizations, the SASP had not finalized its work on development of revised guidelines for strategic lateral offsets.

Up to date this work has already been finalized and distributed by State Letter AN 13/11.6-04/85 dated 27 August 2004.

The new guidelines provide a single set of procedures covering both the use of lateral offsets for mitigation of risk in the event of loss of vertical separation, and for avoidance of wake turbulence. Such State letter also indicates that these new lateral offset procedures should be incorporated in the Regional Supplementary Procedures (Doc. 7030) as soon as practicable to reduce the likelihood of pilots inadvertently applying procedures different from those specified for the airspace in which they are operating.

Taking in consideration that the studies and safety analyses carried out by the SASP allow that these procedures, globally applicable, would result in an overall increase in the safety of operations in remote and

oceanic airspaces, it is required that the two mentioned paragraphs for the CAR and SAM parts be deleted and replaced by a new paragraph 6.3.9 as shown in **Attachment A** to this letter.

In accordance with established procedure for the amendment of regional supplementary procedures, I am to enquire whether your Government/Organization has any objection to the new proposed paragraph 6.3.9, which it would be incorporated to the amendment proposal that will send to the ICAO's Headquarter in Montreal for approval.

Since it is desirable to finalize action on these proposals with minimum of delay, I shall be grateful if you will let me have your reply by the earliest practicable date and, in any event, **not later than 30 September 2004.**

In the event that the views of your Government/Organization are not received by that date, it will be presumed that it has no objection to the proposed changes and the proposals will be processed accordingly.

Accept, Sir, the assurances of my highest consideration.

Original signed by

José Miguel Ceppi
ICAO Regional Director
South American Office
Lima

Attachment

Attachment A

Proposal for amendment — SAMS 04/01-ATM

Paragraph 6.3.9 **Delete** current text entirely, and insert the following new text

Nota.- (See the amendment proposal Serial N° SAM S04/01-ATM, attached to the LT 1/3.1-SA671, dated 12 de July 2004)

Start of new text

6.3.9 **Special procedures for strategic lateral offsets in Oceanic Controlled Area (OCA) and remote continental airspace within SAM Region**

Note. — 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.

6.3.9.1 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.

6.3.9.2 The application of lateral offsets to provide lateral spacing between aircraft, in accordance with the procedures specified in 6.3.9.3 and 6.3.9.4, can be used to mitigate the effect of this reduction in random lateral deviations, thereby improving overall system safety.

Implementation considerations for ATS authorities

6.3.9.3 The application of lateral offsets requires authorization from the ATS authority responsible for the airspace concerned. The following considerations shall be taken into account by the ATS authority when planning authorization of 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 within radar coverage, transiting aircraft should normally be allowed to initiate or continue offset tracking.

b) Strategic lateral offsets 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 55.5km (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) These 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).

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

Lateral offset procedures to be applied by pilots

6.9.3.4 In the application of strategic lateral offsets, pilots should take the following points into consideration:

a) Offsets shall only be applied in airspace where this has been approved by the appropriate ATS authority.

b) Offsets shall be applied only by aircraft with automatic offset tracking capability.

c) The decision to apply a strategic lateral offset is the responsibility of the flight crew.

d) The offset shall be established at a distance of one or two nautical miles to the right of the centre line relative to the direction of flight.

e) 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 (centreline, 1 NM or 2 NM right offset) shall be used.

f) In airspace where the use of lateral offsets has been authorized, pilots are not required to inform air traffic control (ATC) that an offset is being applied.

g) Aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.

6.3.9.5 Pilots may, if necessary, contact other aircraft on the air-to-air frequency 123.45 to coordinate offsets.

End of new text

Paragraph 6.3.10 **Delete** current text entirely

Nota.- (See the amendment proposal Serial N° SAM S04/01-ATM, attached to the LT 1/3.1-SA671, dated 12 de July 2004)

— END —