

ENR 1. GENERAL RULES AND PROCEDURES**ENR 1.1 GENERAL RULES****1 GENERAL**

- 1.1 The rules and procedures applicable to air traffic in Colombo FIR conform to Annexes 2 and 11 to the convention on International Civil Aviation and to those portions of the Procedures for Air Navigation Services, Rules of the Air and Air Traffic Services applicable to aircraft and of the Regional Supplementary Procedures applicable to the MID/ASIA Region.

2 FLIGHT PLAN REQUIREMENTS

- 2.1 The requirements and the procedure to be adhered in respect of flight planning within Colombo FIR is explained in sub section **ENR 1.10**.

3 AIR TRAFFIC CONTROL CLEARANCE

- 3.1 An air traffic control Clearance is an authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

- 3.2 An air traffic control clearance will contain the following events of information:

- a) Aircraft identification
- b) Clearance limit and route instruction including RNAV-1 SID & STAR when applicable.
- c) Level assignment
- d) Departure instruction when necessary.
- e) Approach instruction when necessary.
- f) Clearance expiry time when necessary; and
- g) Any special instructions and information.

- 3.3 Clearances are based on known traffic conditions, which affect safety of aircraft operations. Such traffic conditions include not only aircraft in the air and on the manoeuvring area over which control is being exercised, and also any vehicular traffic or other obstructions not permanently installed on the manoeuvring area in use.

- 3.4 A pilot-in-command operating under VFR in controlled airspace shall not

Enter instrument meteorological conditions without first obtaining an ATC clearance. Until such clearance is received, the aircraft must remain in VMC.

- 3.5 The pilot-in-command having acknowledged an air traffic control clearance shall not deviate from the provisions of the clearance unless an amended clearance has been obtained.

- 3.6 If for any reason an air traffic control clearance is not acceptable to the pilot-in-command, he may request an alternative clearance.

- 3.7 An air traffic control clearance may be issued direct to an aircraft by the ACC or through an aerodrome control unit or an air /ground HF RTF communications unit

3.8 ATC CLEARANCE FOR TRAFFIC ON ATS ROUTES A465, G325, L645, L896, M300, M641, N640, P570, P762 AND R461

- 3.8.1 As outlined in the letter of agreement signed between Chennai, Thiruvananthapuram and Colombo ATC centres, the following procedures have been agreed upon by the three centres for traffic operating on ATS routes A465, G325, L645, L896, M300, M641, N640, P570 (North West of BIAC) P762 and R461.

ATS Route A465

- a) Colombo ACC will clear the departing flight initially to FL290 (No PDC) and coordinate with Chennai ACC for higher level and routing after SAGOR.
- b) Chennai ACC will clear the departing flight initially to FL300 (No PDC). All other levels available subject to prior coordination with ACC.

ATS Route P762

- a) Colombo ACC will clear the departing flight initially to FL290 (No PDC) and coordinate with Chennai OCC for higher level.
- b) Inbound traffic to Colombo will be assigned FL320 by Chennai OCC (All other levels available subject to prior coordination with Colombo ACC).

ATS Routes P570 (NW of BIAC), R461 and G325

- a) Colombo ACC will clear the departing flight initially to FL280 (No PDC) and coordinate with Lower Thiruvananthapuram ACC (LTV) or Upper Thiruvananthapuram ACC (UTV) for higher level.

ATS Route N640

- a) Inbound traffic to Colombo will be cleared by Lower Thiruvananthapuram ACC (LTV) or Upper Thiruvananthapuram ACC (UTV) to proceed on ATS route N640 (the diversionary route for P570) from TVM via BIKOK to descend not below FL290 and release to Colombo ACC.

ATS Route M641

- a) Inbound traffic to Colombo will be cleared by Lower Thiruvananthapuram ACC (LTV) or Upper Thiruvananthapuram ACC (UTV) to proceed on ATS route M641 (the diversionary route for R461) from MDI via BIKOK to descend not below FL290 and release to Colombo ACC.

ATS Route G325 (Inbound)

- a) For departing flights from Tiruchirappalli, Pre Departure Coordination (PDC) will be required by Lower Thiruvananthapuram ACC (LTV).

ATS Route L645

- a) Colombo ACC will clear departing flight to FL290 (No PDC) and coordinate with Chennai OCC for higher level.
b) All inbound traffic will be assigned FL300 by Chennai OCC. (All other levels available subject to prior coordination with Colombo ACC).

ATS Route M300

- a) West bound traffic – FL300 not available (All other levels available subject to prior coordination with Lower Thiruvananthapuram ACC(LTV) or Upper Thiruvananthapuram ACC(UTV)
b) East bound traffic – FL290 not available (All other levels available subject to prior coordination with Colombo ACC).

ATS Route L896

- a) West bound traffic – FL320 not available.(All other levels available subject to prior coordination with Chennai OCC)
b) East bound traffic - FL290 not available.(All other levels available subject to prior coordination with Colombo ACC).

3.9 AIRCRAFT JOINING OR CROSSING AIRWAYS.

- 3.9.1 Aircraft in flight wishing to cross or join an airway, controlled airspace or an ATS route should obtain an ATC clearance at least Twenty (20) minutes prior to intended crossing or joining.

- 3.9.2 An in-flight request to cross an airway, controlled airspace or ATS route shall provide the following information to ATC.

- a) Aircraft identification
b) Aircraft type
c) True track
d) Place and estimated time of crossing
e) Desired crossing level
f) Ground speed
g) The words "Request crossing clearance"

- 3.9.3 An in-flight request to join an airway or ATS route shall provide following information to ATC.

- a) Aircraft identification
b) Aircraft type
c) Position
d) Level and flight condition
e) Estimated time at point of joining.
f) Desired level
g) Route and point of first intended landing
h) True airspeed
i) The words "Request joining clearance"

- 3.9.4 The selected crossing point or joining point should whenever possible, be associated with a radio facility or a designated reporting point to facilitate ATC, in the assessment of separation.

4 ESSENTIAL TRAFFIC INFORMATION

- 4.1 Essential traffic is the control traffic to which the provision of separation by ATC is applicable but which is in relation to a particular controlled traffic does not have the required minimum separation.

- 4.2 Essential traffic information shall be issued to controlled flights concerned whenever they constitute essential traffic to each other.

- 4.3 Essential traffic information include:

- a) Direction of flight of aircraft concerned
b) Type of aircraft

	<p>c) Level(s) of aircraft concerned and estimated time of passing or if this is not available estimated time of arrival for the reporting point nearest to where the level will be crossed.</p>
<p>5 Communications and radio navigation requirements.</p>	<p>Airport, RATMALANA / Colombo Intl. Airport Ratmalana and KANKESANTURAI / Jaffna Intl. Airport. ←</p>
<p>5.1 All aircraft operating under IFR or VFR within controlled airspace shall be equipped with CPDLC or VHF RTF or HF RTF enabling them;</p> <p>a) To maintain two way communication with the appropriate ATC unit. The minimum requirements are VHF RTF equipment suitable for communicating on ATC frequencies and HF RTF beyond the range of VHF.</p> <p>b) To maintain track within the lateral limits of the airway and to navigate in accordance with ATC instructions.</p>	<p>6.3 Pilots may use the traffic information provided by the FIC for avoiding collision risks but it should not be used for the purposes of separation, as FIS is not a direct air traffic control service.</p> <p>7 Radio communication failure</p> <p>7.1 In case of complete radio communication failure in an aircraft, the pilot in command is required to adopt the procedures of Annex 10, VOL II, and with the following procedures as appropriate.</p> <p>7.2 In addition, the aircraft when forming part of the aerodrome traffic at a controlled aerodrome shall keep a watch for such instructions as may be issued by visual signals</p>
<p>5.2 The pilot in command shall maintain a continuous listening watch on the appropriate air / ground frequency.</p>	<p>7.3 If in VMC, the aircraft shall;</p> <p>a) Continue to fly in VMC</p> <p>b) Land at the nearest suitable aerodrome, and</p>
<p>5.3 VHF frequency 123.45MHz is available as an air to air VHF communication channel for the use of aircraft in flight out of the VHF range of appropriate ATC centers to facilitate the exchange of operational information and the resolution of operational problems.</p>	<p>c) Report its arrival by the most expeditious means to the appropriate air traffic control unit.</p> <p>7.4 In IMC, or when weather conditions are such that it does not appear feasible to complete the flight in VMC the aircraft shall:</p>
<p>6 Flight information service</p>	<p>a) unless otherwise prescribed on the basis of regional air navigation agreement, in airspace where radar is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan;</p>
<p>6.1 Flight information service is provided by Colombo FIC to all flights operating within Colombo FIR</p>	<p>b) In airspace where radar is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following:</p>
<p>6.2 Flight information service provided by the FIC includes the provision of:</p> <p>i) Present and forecast weather conditions at KATUNAYAKE / Bandaranaike Intl. Airport Colombo, MATTALA/Mattala Rajapaksa Intl. Airport, RATMALANA / Colombo Intl. Airport Ratmalana, KANKESANTURAI / Jaffna Intl. Airport and Chennai aerodromes.</p>	<p>1. The time the last assigned level or minimum flight altitude is reached; or</p> <p>2. The time the transponder is set to code 7600;or</p>
<p>→ ii) Collision hazards to aircraft operating outside control area and control zones.</p> <p>iii) The state of serviceability of navigational aids at KATUNAYAKE / Bandaranaike Intl. Airport Colombo ,MATTALA/Mattala Rajapaksa Intl. Airport and RATMALANA / Colombo Intl. Airport Ratmalana aerodromes.</p>	
<p>→ iv) The state of aerodromes and associated facilities of KATUNAYAKE / Bandaranaike Intl. Airport Colombo , MATTALA/Mattala Rajapaksa Intl.</p>	

3. The aircraft's failure to report its position over a compulsory reporting point, whichever is later, and thereafter adjust level and speed in accordance with the filed flight plan;

- c) When being radar vectored or having been directed by ATC to proceed offset using RNAV without a specified limit, rejoin the current flight plan route not later than the next significant point, taking into consideration the applicable minimum flight altitude;
- d) proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with e) below, hold over this aid or fix until commencement of descent;
- e) commence descent from the navigation aid or fix specified in d) at, or as close as possible to, the expected approach time last received and acknowledged; or as close as possible to, the estimated time of arrival resulting from the current flight plan;
- f) Complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and
- g) Land, if possible, within thirty (30) minutes after the estimated time of arrival specified in (b) above or the last acknowledged expected approach time, whichever is later,

Note 1: If the clearance for the levels covers only part of the route, the aircraft shall be expected to maintain the last assigned and acknowledged cruising level(s) to the point(s) specified in the clearance and thereafter the cruising level(s) in current flight plan.

Note 2: The provision of air traffic control service to other flights operating in the airspace concerned will be based on the assumption that an aircraft experiencing a radio communication failure will comply with the aforesaid rules.

8 FAILURE OF NAVIGATION EQUIPMENT

8.1 If part of an aircraft's radio navigation equipment fails but two-way

communication can still be maintained with ATC, the pilot is required to inform ATC of the failure and report his flight level or altitude and the approximate position. When radar is available, ATC will provide navigational assistance to such aircraft within radar coverage.

9 POSITION REPORTS

9.1 The pilot-in-command shall report position to the Colombo ACC on the appropriate VHF RTF or when outside VHF RTF range, the pilot-in-command shall report position on HF RTF. (Ref. para 5 of this section for the procedure to be used by the aircraft using data link services).

9.2 The pilot-in-command shall report position as soon as possible after the aircraft has passed each designated reporting point.

9.3 The meteorological information should also be included in position reports made on passing the designated ATS / MET reporting points.

9.4 Designated reporting points, ATS / MET reporting points for the various established ATS routes are listed in sub section **ENR 3.1**

9.5 A position report shall comprise the following elements of information.

- (a) Section I (Position information)
 - i) Aircraft identification
 - ii) Position (name of reporting point or position).
 - iii) Time (at the reporting point or position)
 - iv) Flight level or Altitude
 - v) Next position and time over
- (b) Section II (Operational information)
 - (i) Estimated time of arrival
 - (ii) Endurance
- (c) Section III (Meteorological information)
 - (i) Air Temperature
 - (ii) Wind
 - (iii) Turbulence
 - (iv) Aircraft Icing
 - (v) Supplementary Information

9.6 Air-Reports

9.6.1 Position reports may be given in the form of an air-report, where operational and/or routine meteorological information is to be reported.

9.6.2 Air-reports are classified into two categories i.e.

- (i) Routine Air-report or AIREP
- (ii) Special Air-report or AIREP SPECIAL

9.6.3 Routine air-report shall carry the designator "**ARP**" when transmitted in telegraphy and "**AREP**" when spoken in radiotelephony.

9.6.4 Special air-report shall carry the designator "**ARS**" when transmitted in telegraphy and "**Airep special**" when spoken in radiotelephony.

9.6.5 If a phenomenon warranting the making of a special air-report is observed at or near the time or place where a routine air-report is to be made, a report containing the phenomenon warranting the making of a special air-report shall be transmitted in accordance with the examples given below. It is incumbent on the pilot to decide whether the air-report is a routine "**AIREP**" or an "**AIREP SPECIAL**".

9.6.6 Following are the examples of radiotelephony and telegraphic presentation of a routine air-report (AIREP) and a special air-report (AIREP SPECIAL)

(a) Routine Air-report

Radio telephony:

AIREP SRILANKAN TREE WUN
TOO POSITION KIMOP WUN
TOO FOWER TREE FLIGHT
LEVEL TOO NINER ZERO NEXT
POSITION PAMTO WUN TREE
WUN FOWER ENDURANCE
ZERO FIFE TREE ZERO
TEMPERATURE MINUS FOWER
SIX WIND TOO FOWER ZERO
DEGREES SIX FIFE
TURBULENCE MODERATE
SCATTERED CUMULONIMBUS
TOP FLIGHT LEVEL TOO SEVEN
ZERO.

Telegraph:

ARP ALK 312 KIMOP 1243 F290
PAMTO 1314 FUEL 0530 MS 46
240/65 TURB MOD SCT CB TOP
F270.

(b) Special Air-report:

Radio telephony:

AIREP SPECIAL SRILANKAN
WUN ZERO WUN POSITION
MALSO AT WUN ZERO ZERO
NINER WUN TOO THOUSAND
FEET NEXT POSITION MALE AT
WUN ZERO TREE SIX
TURBULENCE SEVERE.

Telegraph:

ARS ALK101 MALSO 1009
12000FT VRMM 1036 TURB SEV

10 CHANGING LEVELS

10.1 An aircraft may be required to change level at a time, or rate specified by ATC. The pilot-in-command shall effect a change of level as soon as possible but not later than one-minute after the time specified. The rate of change of level shall be the specific rate or if no rate has been specified, a rate suitable for the type of aircraft.

10.2 When required, the pilot-in-command may be instructed to reach an assigned level by a specified time or position,. However, the pilot-in-command shall advice the ATC immediately if he is doubtful whether the assigned level can be reached as instructed.

10.3 A pilot-in-command shall report;

- (a) At the time of leaving a level for a newly assigned level
- (b) When leaving or passing through such other levels as may be specified by ATC.
- (c) On reaching an assigned level.

10.4 A pilot-in-command shall read back level-clearance.

11 DIVERSIONS

11.1 Diversion is the act of flying to an aerodrome other than the planned destination with the intention of landing there.

11.2 Normally a diversion is made when any of the following circumstances occur at the planned destination.

- (a) The weather is below the operating company minima.
- (b) There are obstructions on the landing or manoeuvring area constituting hazard to a landing aircraft, and which cannot be cleared within a reasonable time.

- (c) There is failure of an instrument approach aid which is essential for a safe landing of the aircraft.
- 11.3 A diversion may also be made due to an operational / technical reason of an aircraft in flight
- 11.4 A pilot-in-command deciding to initiate a diversion shall notify ATC whom in turn will notify:
- (a) The aerodrome of destination
- (b) Alternate aerodrome
- (c) Relevant air traffic control centers.
- 12 FUEL DUMPING IN FLIGHT.**
- 12.1 Before authorizing an aircraft to dump fuel in flight, ATC will consider the following two important aspects of the operation:
- a) The recommended minimum altitude from which the fuel should be dumped.
- b) The airspace likely to be affected by the jettisoned fuel.
- 12.2 ATC will therefore recommend that aircraft dumping fuel, in other than emergency circumstances, should maintain a minimum height of 6000FT. This will obviate any flammable mist developing near the ground or that humans and animals will suffer any toxic effects.
- 12.3 The airspace around a dumping aircraft affected by the fuel release is known as "**Vapour Zone**" and is defined as the airspace at least 1000ft above, 2000ft below, 5 miles horizontally behind and 1/2 mile on either side of the aircraft.
- 12.4 In other than emergency circumstances, ATC will nominate an area for the dumping of fuel, because the affected aircraft will maintain radio silence during the operation.
- 12.5 For the purpose of providing separations all the airspace thus nominated, the selected altitude and a full allowance for the "**Vapour Zone**" shall be treated as a reserved airspace from the time dumping is expected to commence until 5 minutes after it has been completed.
- 12.6 In an emergency, when the aircraft is unable to meet the above conditions, or when fuel must be dumped without adequate warning, ATC will make every effort to keep other aircraft clear of the "**Vapour Zone**"
- 13 MILITARY FLIGHTS**
- 13.1 Notification of Flights**
- 13.1.1 ATC shall be notified in advance of any operations by Sri Lanka Air Force (SLAF) aircraft, which are likely to affect civil aircraft operations.
- 13.2 Separation Between Military Traffic**
- 13.2.1 When requested so, by the SLAF authority, reduced separation minima may be applied between SLAF aircraft operating under VFR. However, the standard separations shall be maintained between any such aircraft and any civil aircraft.
- 13.3 Formation Flights**
- 13.3.1 Formation flights by SLAF aircraft flying or intending to fly under IFR will be authorized provided the aircraft of such formations maintain separation from each other visually and are all able to communicate with the formation leader.
- 13.3.2 However, the formation leader shall establish and maintain communication with ATC and shall be responsible for the compliance with the conditions of the ATC clearance issued for such operations.
- 13.4 Military Training Areas**
- 13.4.1 The conditions in above para 13.3.2 shall not apply to aircraft operating within military training areas which have been allocated.
- 13.4.2 For military training and exercise areas, refer sub section ENR 5.2.

- 14 DATA LINK SERVICES IN THE COLOMBO FIR**
- 14.1 Introduction**
- 14.1.1 Data link services are available to FANS 1/A equipped aircraft operating in the Colombo FIR, H24.
- 14.1.2 The introduction of data link services will not affect current procedures for non-data link equipped aircraft operating in the same airspace.
- 14.2 Background**
- 14.2.1 Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance (ADS) data link applications will be used to provide services to FANS 1/A equipped aircraft, over the oceanic airspace beyond the range of existing radar.
- 14.2.2 VHF and Satellite data links will transfer data messages.
- 14.2.3 CPDLC supports the following services:
- Emergency alerting
 - Pilot to Controller down link of position reports and clearance requests.
 - Controller to Pilot up link of ATC clearance and instructions; and
 - Free text as a supplement to preformatted message elements.
- 14.2.4 The provision of Pre-departure Clearance (PDC) via CPDLC to departing aircraft will not be available.
- 14.2.5 Automatic Dependent Surveillance (ADS) supports automatic reporting by the aircraft Flight Management System (FMS) of aircraft position and intent information. The FMS reports the required information in accordance with parameters selected by the ground system.
- 14.3 Logon Procedure**
- 14.3.1 The AFN LOGON address for the Colombo FIR is "VCCF".
- 14.3.2 To avoid automatic rejection of the LOGON, the flight identification number used by the pilot in the LOGON process must be identical to the flight identification number filed in the flight plan.
- 14.3.3 A LOGON must be received from the aircraft before any data link connections can be initiated by the ground system. This is achieved via the ATS facility notification (AFN) LOGON process to be initiated by the pilot in accordance with company procedures.
- 14.3.4 Aircraft requesting data link services in bound to Colombo FIR are required to manually LOGON on to **VCCF** at least 15 minutes prior to the estimated time for entering FIR. Data Link equipped aircraft departing from Colombo are to LOGON 5 minutes prior to leaving TMA. Pilots, who are unable to establish a data link connection, shall inform ATC on VHF or HF RTF accordingly.
- 14.4 Application of CPDLC**
- 14.4.1 Aircraft that have established data link communications may down link their position reports by CPDLC instead of HF RTF. When using CPDLC, the primary and secondary HF voice frequencies will be used as the back-up communications medium.
- 14.4.2 To ensure the correct synchronization of messages, Controller/Pilot dialogues opened by CPDLC must be closed by CPDLC. Controller/Pilot dialogues opened by voice must be closed by voice.
- 14.4.3 Due to inherent integrity checks and a coded reference to any preceding related message contained within CPDLC messages, a clearance issued by CPDLC requires only the appropriate CPDLC response.

- 14.4.4 The downlink response "WILCO" indicates that the pilot accepts the full terms of the whole up link message.
- 14.4.5 A down link response "AFFIRM" is not an acceptable acknowledgement or reply to a CLEARANCE issued by CPDLC.
- 14.4.6 To avoid ambiguity in message handling and response, a CPDLC down link message should not contain more than one clearance request.
- 14.4.7 If multiple clearance requests are contained in a single down link message and the controller cannot comply with all requests, the up link message element "UNABLE" will be sent as a response to the entire message. A separate message containing a response to those requests that can be complied with will be sent by the controller.
- 14.4.8 If any ambiguity exists as to the intent of a particular message, clarification must be sought by voice.
- 14.4.9 Standard pre-formatted message elements must be used whenever possible. Free text messages should be used only when an appropriate pre-formatted message element does not exist or to supplement the pre-formatted message element. The use of free text should be kept to a minimum.
- 14.4.10 When CPDLC connection is established, aircraft will be instructed to transfer from voice to CPDLC. The phraseology used is :
- "TRANSFER TO COLOMBO AIRWAYS ON DATA LINK AT (position), MONITOR (HF frequency primary / secondary)"**
- 14.4.11 Pilots should then down link a CPDLC position report. Pilots are also required to make AIREPs at compulsory reporting points using CPDLC procedures if ADS connection cannot be established positively.
- 14.4.12 CPDLC connections will be terminated 5 minutes before the FIR boundary position or when entering radar coverage. The CONTACT (unit name) (frequency) message and the **END SERVICE** message will be sent as separate messages. The **END SERVICE** message will be sent as soon as possible after receipt of the **WILCO** response to the CONTACT message.
- 14.5 Application of ADS**
- 14.5.1 ADS periodic contracts will be established automatically on receipt of a LOGON.
- 14.5.2 The periodic reporting rate is 27 minutes for aircraft operating outside radar coverage.
- 14.5.3 Following an initial CPDLC position reporting on first contact, ADS reporting will fulfill normal position reporting requirements within the FIR.
- 14.5.4 ADS contracts will be terminated automatically at a system parameter time after the aircraft has left the FIR.
- 14.6 Data Link Failure**
- 14.6.1 Pilots recognizing a failure of a CPDLC connection must immediately establish communications on the appropriate voice frequency. When voice communications have been established, voice must continue to be used as the primary medium until a CPDLC connection has been re-established and the controller has authorized the return to data link.
- 14.6.2 In case of an unexpected CPDLC shutdown, the controller will immediately advise all data link connected aircraft of the failure by voice. Instructions will continue to be issued by voice until the return of the data link system. The return of the system to an operational state will require a new AFN LOGON from the affected aircraft.

15. WEATHER DEVIATION PROCEDURES FOR OCEANIC CONTROLLED AIRSPACE.**15.1 General**

15.1.1 The following procedures are intended to provide guidance for deviations around thunderstorms. All possible circumstances cannot be covered. The pilot's judgment shall ultimately determine the sequence of actions taken and ATC shall render all possible assistance.

15.1.2 If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an airtraffic control clearance shall be obtained at the earliest possible time, until an ATC clearance is received, the aircraft shall follow the procedure detailed in para 15.4.

15.1.3 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 centerline of its cleared route.

15.2 Obtaining priority from ATC when weather deviation is required.

15.2.1 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.

15.3 Actions to be taken when controller-pilot Communications are established.

15.3.1 The Pilot notifies ATC and requests clearance to deviate from track, advising when possible the extent of the deviation expected.

15.3.2 ATC takes one of the following actions:

- i. If there is no conflicting traffic in the horizontal plane, ATC will issue clearance to deviate from track.; or
- ii. If there is conflict in the horizontal plane, ATC separates aircraft by establishing appropriate separation; or.
- iii. If there is conflicting traffic in the horizontal dimension and ATC is unable to establish vertical separation, ATC shall;
 - a. advise the pilot that standard separation cannot be applied; and
 - b. advise the pilot of conflicting traffic ;
 - c. request the pilots intentions.

SAMPLE PHRASEOLOGY:

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

15.3.3 The Pilot will take the following actions:

- a). advise ATC of intentions; and
 - i. comply with the ATC clearance issued; or
 - ii. execute the procedures in para 15.4 below; and
- b). if necessary, establish voice communications with ATC to expedite dialogue on the situation

15.4. Actions to be taken if a revised air traffic control clearance can not be obtained;.

15.4.1 The provisions of this section apply to situations where a pilot has the need to exercise the authority of a pilot-in-command under the provisions of Annex 2, para 2.3.1.

15.4.2 If a revised ATC clearance can not be obtained and deviation from track is required to avoid weather, 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 broadcasting at suitable intervals - aircraft identification, flight level, position, ATS route designator and intentions on the frequency in use and on frequency 121.5MHz (or, as a back-up, on the VHF inter-pilot air-to-air frequency 123.45MHz);
- c) watch for conflicting traffic both visually and by reference to ACAS/TCAS (if equipped).
- d) Turn on aircraft exterior lights (commensurate with appropriate operating limitations).
- e) for deviations of less than 10 NM, aircraft should remain at a level assigned by ATC.
- f) for deviations greater than 10 NM, when the aircraft is approximately 10NM from the track,

- g) Initiate a level change based on the following criteria.

Route Centerline Track	Deviation > 10 NM	Level Change
EAST 000 ⁰ - 179 ⁰ magnetic	LEFT RIGHT	DESCEND 90m (300ft) CLIMB 90m (300ft)
WEST 180 ⁰ - 359 ⁰ magnetic	LEFT RIGHT	CLIMB 90m (300ft) DESCEND 90m (300ft)

- h) When returning to track, be at its assigned level, when the aircraft is within approximately 10 NM of centerline.
- i) If contact was not established before 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.

16. RNP 10 OPERATIONS WITHIN COLOMBO FIR

16.1 RNP 10 Airspace

The airspace detailed below has been designated as RNP 10 Airspace within Colombo FIR:

16.1.1 Lateral and Vertical Limits:

Lateral Limits :

The lateral limits of the RNP 10 Airspace is identical to those limits of Colombo FIR inclusive of the delegated airspace (Ref. ENR 2.2, para 1.1.1) as follows:

100000N 0800000E-100000N 0820000E-060000N 0920000E-020000S 0920000E-020000S 0780000E-060000N 0780000E-060000N 0770000E-070000N 0770000E-090000N 0793000E-100000N 0800000E.

Vertical Limits :

FL245 to FL460 (both inclusive).

16.1.2 Class of Airspace : Class A

16.2 RNP 10 NAVIGATION REQUIREMENTS:

16.2.1 SEPARATION MINIMA

Lateral Separation Minima:

Lateral separation minima of 50NM will only be applied between aircraft equipped in accordance with RNP 10 navigation requirements.

Longitudinal Separation Minima:

50 NM longitudinal separation minima with Mach Number Technique(MNT) will be applied between RNP10 approved aircraft equipped with FANS 1/A, which are successfully able to Logon to Colombo CPDLC (VCCF) meeting the requirement of DCPC (VHF & ADS/CPDLC) within Colombo RNP 10 Oceanic Airspace.

10 minutes Longitudinal Separation with Mach Number Technique (MNT) will be applied between RNP10 approved aircraft that does not meet the DCPC requirement within Colombo RNP10 Oceanic Airspace.

16.3 Pilots must advise ATC of any deterioration or failure of the navigation systems below the navigation requirements for RNP 10 ATC shall then provide alternative clearance to the pilot.

16.4 Pilots of aircraft meeting RNP 10 requirements must indicate "R" in item 10a and "PBN/A1" in item 18 of the ICAO Flight Plan.

16.5 Safety Assessment Criteria

16.5.1 The safety criteria associated with the introduction of the reduced lateral separation minima of 50 NM will be in accordance with the requirement for RNP 10 navigation performance. i.e aircraft navigation performance shall be such that the standard deviation of lateral track errors shall be less than 8.7KM (4.7NM).

16.6 Monitoring of Aircraft Navigation Performance

16.6.1 Monitoring of aircraft navigation performance is a joint responsibility between operators, States of Registry or States of Operators (as applicable), regulatory authorities and the ATS providers. The detection and reporting of non-conformance with the navigation requirements against the following parameters will rely primarily on radar and ADS monitoring by ATC units:

- a) **Large Lateral Deviation (LLD)**
LLD is classified as any deviation of 15NM or more to the left or right of the current flight plan track.

- b) **Large Longitudinal Error (LLE)**
Any unexpected change in longitudinal separation between an aircraft pair, or for an individual aircraft the difference between an estimate for a given fix and the actual time of arrival over that fix, as applicable, in accordance with the criteria set out for longitudinal deviations;

Category of error	Criteria for reporting
Aircraft – pair (Time-based separation applied)	Infringement of longitudinal separation standard based on routine position reports
Aircraft – pair (Time-based separation applied).	Expected time between two aircraft varies by 3 minutes or more based on routine position reports.
Individual aircraft (Time-based separation applied)	Pilot estimate varies by 3 minutes or more from that advised in a routine position report.
Aircraft-pair (Distance-based separation applied)	Infringement of longitudinal separation standard, based on ADS-C, radar measurement or special request for RNAV position report.
Aircraft-pair (Distance-based separation applied)	Expected distance between an aircraft pair varies by 10NM or more, even if separation standard is not infringed, based on ADS-C, radar measurement or special request for RNAV position report.

- 16.6.2 ATC will advise the pilot when such deviations are observed and implement the required investigation procedure in conjunction with the aircraft operator and the State of Registry, or the State of the Operator, as applicable.

16.7 Operations By Aircraft Not Meeting RNP 10 Requirements.

- 16.7.1 Pilots of aircraft not meeting RNP 10 requirements also may flight plan to operate below the lower limits of the RNP 10 airspace.

- 16.7.2 Operations at or above the lower limit of the RNP 10 airspace by aircraft not meeting RNP 10 requirements would be subject to coordination and approval by ATC.

- 16.7.3 Pilots of aircraft not meeting RNP 10 requirements wishing to operate at or above the lower limit of the RNP 10 airspace should indicate their level requirements in item 18 of the ICAO flight Plan as RMK/REQ FL (insert level).

- 16.7.4 ATC units receiving a request for a non-RNP 10 approved aircraft to operate in the RNP 10 airspace at or above the lower limit, will coordinate with the adjacent ATC units affected by the flight. In deciding whether or not to approve the flight, each ATC unit will take into consideration;

- a) Traffic density,
- b) Communications, including the non-availability of normal communication facilities.
- c) Weather conditions en-route.
- d) Any other factors pertinent at the time.

17. RVSM PROCEDURES IN THE COLOMBO FIR

17.1 Identification of RVSM airspace

17.1.1 RVSM airspace is prescribed within the Colombo FIR within controlled airspace between FL290 and FL 410 (inclusive).

17.2 Airworthiness Operational Approval and Monitoring.

17.2.1 Operators must obtain airworthiness and operational approval from the State of Registry or the State of the Operator, as appropriate, to conduct RVSM operations. On behalf of the Asia Pacific ATS providers The FAA is maintaining a web site containing documents and policy for RVSM approval. The internet address is :
<http://www.faa.gov/ats/ato/rvsm1.htm>.

In the 'RVSM Documentation 'section, under 'documents applicable to all RVSM Approvals', the 'Aircraft /operator Approval Outlines' for the US and Non-US Operators provides an outline of approval process task with reference to related documents.

17.2.2 Operators are required to participate in the RVSM aircraft monitoring program. This is an essential element of the RVSM implementation program in that it confirms that the aircraft altitude - keeping performance standard is being kept. The Asia Pacific Approvals Registry and Monitoring Organization (APARMO) will process the results of monitoring. Further information on RVSM monitoring may be obtained from the APARMO web site by accessing 'RVSM Documentation ' section of the FAA RVSM website and clicking on the link to the APARMO website, or using the internet address:

http://www.tc.faa.gov/act500/rvsm/aparmo_intro.html

17.2.3 Monitoring accomplished for other regions can be used to fulfill the monitoring requirements for the Asia/Pacific region .The APARMO will coordinate with other monitoring requirements to access this information. For monitoring services in the Asia/Pacific region, operators should contact the APARMO monitoring contractor as follows:

Phone : +1 202 8632175
Fax : +1 202 8622398
E-mail : monitor@cssiinc.com

17.3 ACAS II and Transponder Equipage.

17.3.1 The ICAO Asia/Pacific RVSM implementation Task Force recommends that those aircraft equipped with ACAS and operated in RVSM airspace be equipped with ACAS II. (TCAS II system with 7.0 incorporated meet ICAO ACAS II standards).

17.3.2 Operators must take action to inform themselves of ACAS II equipage requirements and plan for compliance. ICAO and individual States have established policies requiring ACAS II equipage and schedules for compliance. In addition, the APANPIRG has endorsed early ACAS II equipage in the region.

17.3.3 ICAO Annex 6, Part II, states that, starting 1st January 2000, international general aviation (IGA) airplanes shall be equipped with a pressure altitude reporting transponder certified by the appropriate state authority as meeting the provisions of Annex 10.

17.4 In-flight Procedures within RVSM Airspace.

17.4.1 Before entering the RVSM airspace, the pilot should review the status of required equipment. The following equipment should be operating normally:

- (a) two primary altimetry system;
- (b) one automatic altitude-keeping device ; and
- (c) one altitude-alerting device.

17.4.2 The pilot must notify ATC whenever the aircraft;

- (a) is no longer RVSM compliant due to equipment failure; or
- (b) experiences loss of redundancy of altimetry system; or
- (c) encounters turbulence that affects the capability to maintain flight level.

(See pages ENR1.1-35 through ENR 1.1-43 or Appendix 5 of FAA IG 91-RVSM for pilot and controller actions in contingency scenarios.)

17.4.3 During cleared transition between levels, the aircraft should not overshoot or undershoot the assigned FL by more than 150ft (45m).

17.4.4 Except in an ADS or radar environment, pilots shall report reaching any altitude assigned within RVSM airspace.

- 17.4.5 Paragraphs 17.5, 17.6, 17.7 and 17.8 below contain procedures for in-flight contingencies that have been updated for RVSM operations. The contingency procedures in paragraphs 17.5 and 17.6 and the set-off procedures in paragraph 17.8 should be applied in Oceanic operations. The weather deviation procedures in paragraph 17.7 may be applied in all airspace in the region.
- 17.5 **Special Procedures for In-flight Contingencies in the Colombo FIR.**
- 17.5.1 The following general procedures apply to both subsonic and supersonic aircraft and are intended as guidance only. Although all possible contingencies cannot be covered, they provide for cases of inability to maintain assigned level due to:
- (a) weather;
 - (b) aircraft performance;
 - (c) pressurization failure; and
 - (d) problems associated with high-level supersonic flight.
- 17.5.2 The procedures are applicable primarily when rapid descent and / or turn-back or diversions to an alternate airport is required. The pilot's judgment shall determine the sequence of actions to be taken, taking into account specific circumstances.
- 17.5.3 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 a distress or urgency signal as appropriate.
- 17.5.4 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;
 - (b) establish communications with and alert an nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position , (including the ATS route designator or the track code) and intentions on the frequency in use, as well as on frequency 121.5MHz (or as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz).
 - (c) watch for conflicting traffic both visually and by reference to ACAS (if equipped); and
 - (d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations).
- 17.6 **In-flight Contingency Procedures for Subsonic Aircraft Requiring Rapid Descent, Turn-back or Diversion in Oceanic Airspace in the Colombo FIR.**
- 17.6.1 **Initial action**
- If unable to comply with the provisions of paragraph 17.5.3 to obtain a revised ATC clearance, the aircraft should have its assigned route or track by turning 90 degrees right or left whenever this is possible. The direction of the turn should be determined by the position of the aircraft relative to any organized route or track system (for example, whether the aircraft is outside, at the edge of, or within the system). Other factors to consider are terrain clearance and the levels allocated to adjacent routes or tracks.
- 17.6.2 **Subsequent action**
- An aircraft able to maintain its assigned level should acquire and maintain in either direction a track laterally separated 25 NM from its assigned route or track and once established on the offset track, climb or descend 500ft (150m).
- 17.6.3 An aircraft NOT able to maintain its assigned level should, whenever possible, minimize its rate of descent while turning to acquire and maintain in either direction a track laterally separated by 25NM from its assigned

- route or track. For subsequent level flight, a level should be selected which differs by 500ft (150m) from those normally used.
- 17.6.4 Before commencing a diversion across the flow of adjacent traffic, the aircraft should, while maintaining the 25NM offset, expedite climb above or descend below levels where the majority of aircraft operate (e.g., to a level above FL 400 or below FL 290) and then maintain a level which differs by 500ft (150m) from those normally used. However, if the pilot is unable or unwilling to carry out a major climb or descent, the aircraft should be flown at a level 500ft above or below levels normally used until a new ATC clearance is obtained.
- 17.6.5 If these contingency procedures are by a twin-engine aircraft as a result of an engine shut down 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 requesting expeditious handling.
- 17.7 **Weather Deviation Procedures in the Colombo FIR**
- General Procedures**
- 17.7.1 The following procedures are intended to provide guidance. All possible circumstances cannot be covered. The pilot's judgment shall ultimately determine the sequence of actions taken and ATC shall render all possible assistance.
- 17.7.2 If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an air traffic control clearance shall be obtained at the earliest possible time. In the meantime, the aircraft shall follow the procedures detailed in paragraph 17.7.9 below.
- 17.7.3 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 centerline of its cleared route.
- 17.7.4 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.
- 17.7.5 The pilot still retains the option of initiating the communications using the urgency call "**PAN PAN**" to alert all listening parties to a special handling condition, which may receive ATC priority for issuance of a clearance or assistance.
- 17.7.6 When controller-pilot communications are established, the pilot shall notify ATC and request clearance to deviate from track, advising, when possible, the extent of the deviation expected. ATC will take one of the following actions:
- (a) if there is no conflicting traffic in the horizontal dimension, ATC will issue clearance to deviate from track; or
 - (b) if there is conflicting traffic in the horizontal dimension, ATC will separate aircraft by establishing vertical separation or, if unable to establish vertical separation, ATC shall:
 - i) advise the pilot unable to issue clearance for requested deviation.
 - ii) advise pilot of conflicting traffic
 - iii) request pilot's intentions
- SAMPLE PHRASEOLOGY:
- "Unable (requested deviation), traffic is (callsign, position, altitude, direction), advise intentions"***
- 17.7.7 The pilot will take the following actions:
- (a) advise ATC of intentions by the most expeditious means available.
 - (b) comply with the air traffic control clearance issued, or
 - (c) execute the procedures detailed in paragraph 17.7.9 below. (ATC will issue essential traffic information to all affected aircraft).

- (d) if necessary, establish voice communications with ATC to expedite dialogue on the situation.

Actions to be taken if a revised air traffic control clearance cannot be obtained:

17.7.8 The pilot shall take the actions listed below under the provisions that the pilot may deviate from rules of the air (e.g., the requirement to operate on route or track centreline unless otherwise directed by ATC), when it is absolutely necessary in the interests of safety to do so.

17.7.9 If a revised air traffic control clearance cannot be obtained and deviation from track is required to avoid weather, the pilot shall take the following actions:

- a) If possible, deviate away from an organized track or route system;
- b) establish communication with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position (including the ATS route designator or the track code) and intentions (including the magnitude of the deviation expected) on the frequency in use, as well as on frequency 121.5MHz (or, as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz);
- c) watch for conflicting traffic both visually and by reference to ACAS (if equipped);
- d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);
- e) for deviations less than 10NM, aircraft should remain at the level assigned by ATC;
- f) for deviations of greater than 10NM. When the aircraft is approximately 10NM from track, initiate a level change based on the following criteria;

Route centreline track	Deviations >10NM	Level change
EAST 000-179 magnetic	LEFT RIGHT	DESCEND 300FT CLIMB 300FT
WEST 180-359 magnetic	LEFT RIGHT	CLIMB 300FT DESCEND 300FT

Note. Items b) and c) above call for the pilot to broadcast aircraft position and pilot's intentions, identify conflicting traffic and communicate air-to-air with near-by aircraft.

If the pilot determines that there is another aircraft at or near the same FL with which his aircraft might conflict, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

g) 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.

h) when returning to track, be at its assigned flight level, when the aircraft is within approximately 10NM of centreline.

17.8 Procedure to Mitigate Wake Turbulence Encounters and Distracting Aircraft System Alerts in the Oceanic Airspace of the Colombo FIR.

17.8.1 The following special procedures are applicable to mitigate wake turbulence or distracting aircraft system alerts (e.g, ACAS, Ground Proximity Warning System (GPWS) in Asia and Pacific airspace where RVSM is applied.

Note:

In the contingency circumstances below, ATC will not issue clearances for lateral offsets and will not normally respond to actions taken by the pilots.

- 17.8.2 An aircraft that encounters wake vortex, turbulence or experiences distracting aircraft system alerts shall notify ATC and request a flight level, track or speed change to avoid the condition. However, in situations where such a change is not possible or practicable, the pilot may initiate the following temporary lateral offset procedure with the intention of returning to centreline as soon as practicable:
- a) the pilot should establish contact with other aircraft, if possible, on the appropriate VHF inter-pilot air to air frequency, 123.45MHz, and
 - b) one (or both) aircraft may initiate lateral offset(s) not to exceed 2NM from the assigned track, provided that:
 - i. as soon as practicable to do so, the offsetting aircraft notify ATC that temporary lateral offset action has been taken and specify the reason for doing so (ATC will not normally respond); and
 - ii. the offsetting aircraft notify ATC when re-established on assigned route(s) or track(s) (ATC will not normally respond).
- 17.9 **Flight Planning Requirements.**
- 17.9.1 Unless special arrangement is made as detailed below, RVSM approval is required for operators and aircraft to operate within designated RVSM airspace. The operator must determine that the appropriate state authority has granted RVSM operational approval and they will meet the RVSM requirements for the filed route of flight and any planned alternate routes. The letter **“W” shall be inserted in item 10 (Equipment) of the ICAO standard flight plan** to indicate that the aircraft is RVSM approved aircraft.
- 17.10 **Procedure for Operation of Non-RVSM Compliant Aircraft in RVSM Airspace.**
- 17.10.1 It should be noted that RVSM approved aircraft will be given priority for level allocation over non-RVSM approved aircraft.
- 17.10.2 The vertical separation minimum between non-RVSM aircraft operating in the RVSM stratum and all other aircraft is 2000ft.
- 17.10.3 Non-RVSM compliant aircraft operating in RVSM airspace should use the phraseology contained in page ENR 1.1-43.
- 17.10.4 Non-RVSM compliant aircraft may be cleared to climb to and operate above FL290 or descend to and operate below FL410 provided that they:
 - a) do not climb or descend at less than the normal rate for the aircraft and,
 - b) do not level off at an intermediate level while passing through the RVSM stratum.
- 17.10.5 Non-RVSM compliant aircraft may not flight plan between FL290 and FL410 inclusive within RVSM airspace. After special coordination as detailed in paragraph 17.10.6 below, the following non-RVSM aircraft may flight plan at RVSM flight levels in the RVSM stratum:
 - a) is being initially delivered to the State of Registry or Operator (see paragraph 17.11 for additional details and information); or
 - b) was formally RVSM approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval; or
 - c) is transporting a spare engine mounted under the wing; or
 - d) is being utilized for mercy or humanitarian purposes; or
 - e) State aircraft (those aircraft used in military, custom and police services shall be deemed state aircraft.).

- 17.10.6 Aircraft operators requesting approval as above shall;
- a) if departing within COLOMBO FIR, obtain approval from Colombo Area Control Centre normally not more than 72 hours and not less than 4 hours prior to intended departure time. The Colombo Area Centre will provide notification of approval via telephone, AFS, FAX or e-mail as appropriate; or
 - b) if transiting Colombo FIR, obtain approval from the first RVSM affected Centre. (Note: the first centre will coordinate with next centre).
 - c) Include the “ STS / NONRVSM “ in field 18 of the ICAO flight plan.
- (Note: Approval means able to operate in the RVSM stratum. Assignment of cruising levels will be subject to ATC clearance).
- 17.10.7 Contact details for approval request are as follows:
- Colombo Area Control Centre.
Telephone : +94-11-2625555 or
 +94-11-2611572
→ AFS : VCCCFICX and
 VCCFZQZX
Fax : +94-11-2635106
e-mail : acc.ans@airport.lk
- 17.10.8 This approval process is intended exclusively for the purpose indicated above and not as a means to circumvent the normal RVSM approval process.
- 17.11 **Delivery Flights For Aircraft that are RVSM Compliant on Delivery:**
- 17.11.1 An aircraft that is RVSM compliant on delivery may operate in RVSM airspace provided that the crew is trained on RVSM policies and procedures applicable in the airspace and the responsible State issues the operator a letter of authorization approving the operation. State notification to the APARMO should be in the form of a letter, e-mail or fax documenting the one-time flight. The planned date of the flight, flight identification, registration number and aircraft type / series should be included.
- 17.12 **Procedure for Suspension of RVSM.**
- 17.12.1 Air Traffic Services will consider suspending RVSM procedure within affected areas of the Colombo FIR when there are pilot reports of greater than moderate turbulence. Within areas where RVSM procedures are suspended, the vertical separation minimum between all aircraft will be 2000ft.
- 17.13 **Guidance for Pilots and Controller for Action in the Event of Aircraft System Malfunction or Turbulence Greater Than Moderate.**
- 17.13.1 See pages ENR1.1-35 to ENR 1.1-41 for guidance in these circumstances.
- 17.14 **Procedure for Air-Ground Communication Failure.**
- 17.14.1 The air-ground communication failure procedure specified in AIP page ENR 1.1-5 in conjunction with ICAO PANS-ATM Doc 4444 should be applied.

CONTINGENCY SCENARIOS

The following paragraphs summarize pilot actions to mitigate the potential for conflict with other aircraft in certain contingency situations. They should be reviewed in conjunction with the expanded contingency scenarios detailed below, which contains additional technical and operational details.

- **Scenario 1 :** The pilot is;
 - a) unsure of the vertical position of the aircraft due to the loss or degradation of all primary altimetry systems, or
 - b) unsure of the capability to maintain cleared flight level(CFL) due to turbulence or loss of all automatic altitude control systems.

The pilot should:	ATC can be expected to:
Maintain CFL while evaluating the situation;	
Watch for conflicting traffic both visually and by reference to ACAS, if equipped;	
If considered necessary, alert nearby aircraft by <ul style="list-style-type: none"> a) making maximum use of exterior lights; b) broadcasting position ,FL and intentions on 121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz may be used). 	
Notify ATC of situation and intended course of action. Possible courses of action include: <ul style="list-style-type: none"> a) maintaining the CFL and route provided that ATC can provide lateral, longitudinal or conventional vertical separation. b) requesting ATC clearance to climb above or descend below RVSM airspace if the aircraft cannot maintain CFL and ATC cannot establish adequate separation from other aircraft. c) executing the contingency maneuver shown in paragraphs 17.5 and 17.6 to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL. 	Obtain the pilot's intentions and pass essential traffic information. If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral. Longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum. If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible. If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue and continue to monitor the situation. Notify adjoining ATC facilities / sectors of the situation.

Scenario 2: There is a failure or loss of accuracy of one primary altimetry system (e.g. greater than 200ft difference between primary altimeters).

The pilot should:
Cross check standby altimeter, confirm the accuracy of a primary altimeter system and notify ATC of the loss of redundancy. If unable to confirm primary altimeter system accuracy, follow pilots actions listed in the preceding scenario.

EXPANDED EQUIPMENT FAILURE TURBULENCE ENCOUNTER SCENARIOS

Operators may consider this material for use in training programs.

* **Scenario 1** : All automatic altitude control system failed (e.g, Automatic Altitude Hold)

The Pilot should	ATC can be expected to
<p>Initially, Maintain CFL</p> <p>Evaluate the aircraft capability to maintain altitude through manual control.</p> <p>Subsequently, Watch for conflicting traffic both visually and by reference to ACAS, if equipped.</p>	
<p>If considered necessary, alert nearby aircraft by ;</p> <ul style="list-style-type: none"> a) making maximum use of exterior lights; b) broadcasting position, FL, and intentions on 121.5MHz (as a back-up, the VHF inter-pilot air-to air frequency, 123.45MHz, may be used). 	
<p>Notify ATC of the failure and intended course of action. Possible course of action include:</p> <ul style="list-style-type: none"> a) maintaining the CFL and route, provided that the aircraft can maintain level. b) execute ATC clearance climb above or descend below RVSM airspace if the aircraft can not establish lateral, longitudinal or conventional vertical separation. c) executing the contingency maneuver shown in paragraphs 17.5 and 17.6 above to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL. 	<p>If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.</p> <p>If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible.</p> <p>If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation.</p> <p>Notify adjoining ATC facilities / sectors of the situation.</p>

* **Scenario 2**: Loss of redundancy in primary altimetry systems.

The Pilot should	ATC can be expected to
<p>If the remaining altimetry system is functioning normally, couple that system to the automatic altitude control system, notify ATC of the loss of redundancy and maintain vigilance altitude keeping.</p>	<p>Acknowledge the situation and continue to monitor progress.</p>

* indicates a pilots transmission.

Scenario 3: All primary altimetry systems are considered unreliable or failed.

The Pilots should	ATC can be expected to
Maintain CFL by reference to the standby altimeter (if the aircraft is so equipped).	
Alert nearby aircraft by; <ul style="list-style-type: none"> a) making maximum use of exterior lights; b) broadcasting position, FL and intentions on 121.5MHz (as back-up, the VHF inter-pilot air-to-air frequency 123.45MHz may be used). 	
<p>Consider declaring an emergency. Notify ATC of the failure and intended course of action. Possible causes of action include:</p> <ul style="list-style-type: none"> a) maintaining CFL and route provided that ATC can provide lateral, longitudinal or conventional vertical separation. b) requesting ATC clearance to climb above or descend below RVSM airspace if ATC cannot establish adequate separation from other aircraft. c) executing the contingency manoeuvre shown in paragraphs 17.5 and 17.6 above to offset from the assigned track and FL, if ATC clearance cannot be obtained. 	<p>If the pilot intends to continue in RVSM airspace, assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.</p> <p>If the pilot requests clearance to exit RVSM airspace, accommodate expeditiously, if possible.</p> <p>If adequate separation cannot be established and it is not possible to comply with the pilot's request for clearance to exit RVSM airspace, advise the pilot of essential traffic information, notify other aircraft in the vicinity and continue to monitor the situation.</p> <p>Notify adjoining ATC facilities / sectors of the situation.</p>

Scenario 4: The primary altimeters diverge by more than 200ft (60m).

The Pilot should:
Attempt to determine the defective system through established trouble-shooting procedure and / or comparing the primary altimeter display to the standby altimeter (as corrected by the correction cards, if required).
If the defective system can be determined, couple the functioning altimeter system to the altitude-keeping device.
If the defective system cannot be determined, follow the guidance in scenario 3 for failure or unreliable altimeter indications of all primary altimeters.

* **Scenario 5:** Turbulence (greater than moderate) which the pilot believes will impact the aircraft's capability to maintain flight level.

The Pilot should:	ATC can be expected to:
<p>Watch for conflicting traffic both visually and by reference to ACAS, if equipped.</p>	
<p>If considered necessary, alert nearby aircraft by;</p> <ul style="list-style-type: none"> a) making maximum use of exterior lights; b) broadcasting position, FL and intentions on 121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency, 123.45MHz, may be used. 	
<p>Notify ATC of intended course of action as soon as possible. Possible course of action include:</p> <ul style="list-style-type: none"> a) maintaining CFL and route provided ATC can provide lateral, longitudinal or conventional vertical separation. b) Requesting flight level change, if necessary. c) executing the contingency manoeuvre shown in paragraphs 17.5 and 17.6 above to offset from the assigned track and FL, if ATC clearance cannot be obtained and the aircraft cannot maintain CFL 	<p>Assess traffic situation to determine if the aircraft can be accommodated through the provision of lateral, longitudinal, or conventional vertical separation, and if so, apply the appropriate minimum.</p> <p>If unable to provide adequate separation, advise the pilot of essential traffic information and request pilot's intentions.</p> <p>Notify other aircraft in the vicinity and monitor the situation.</p> <p>Notify adjoining ATC facilities / sectors of the situation.</p>

PHRASEOLOGY RELATED TO RVSM OPERATIONS.**Controller-Pilot Phraseology.**

Purpose	Phraseology
Used by the controller to ascertain the RVSM approval status of an aircraft:	(callsign) CONFIRM RVSM APPROVED
Used by the pilot to report non-RVSM approval status: a) on the initial call any frequency within the RVSM airspace (controllers shall provide a readback with this same phrase); and b) in all requests for flight level changes pertaining to flight levels within the RVSM airspace; and c) in all readback of flight level clearances pertaining to flight levels within the RVSM airspace. Additionally, except for State aircraft, pilots shall include this phrase to read back flight level clearances involving the vertical transit through FL 290 or FL 410.	NEGATIVE RVSM *
Used by the pilot to report RVSM approval status.	AFFIRM RVSM *
Used by the pilot of a non-RVSM approved State aircraft to report non-RVSM approval status, in response to the RTF phrase (callsign) CONFIRM RVSM APPROVED.	NEGATIVE RVSM STATE AIRCRAFT *
Used by the controller to deny ATC clearance into RVSM airspace.	(callsign) UNABLE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN { or DESCEND TO, or CLIMB TO} FLIGHT LEVEL (number)
Used by the pilot to report when severe turbulence affects the aircraft's capability to maintain the height-keeping requirements for RVSM.	UNABLE RVSM DUE TURBULENCE *
Used by the pilot to report that the aircraft's equipment has degraded below the MASPS that required for flight within the RVSM airspace. (This phrase is to be used to convey both the initial indication of the non-MASP compliance, and henceforth, on initial contact on all frequencies within the lateral limits of the RVSM airspace until such time as the problem ceases to exist or the aircraft has exited the RVSM airspace.)	UNABLE RVSM DUE EQUIPMENT *
Used by the pilot to report the ability to resume operations within the RVSM airspace after an equipment or weather related contingency.	READY TO RESUME RVSM *
Used by the controller to confirm that an aircraft has regained its RVSM approval status, or to confirm that the pilot is ready to resume RVSM operations.	REPORT ABLE TO RESUME RVSM

- indicates pilots transmission.

Coordination between ATS Units:

Purpose	Phraseology
To verbally supplement an automated estimate message exchange which does not automatically transfer item 18 flight plan information.	NEGATIVE RVSM or NEGATIVE RVSM STATE AIRCRAFT (as applicable).
To verbally supplement estimate messages of non-RVSM approved aircraft.	NEGATIVE RVSM or NEGATIVE RVSM STATE AIRCRAFT (as applicable)
To communicate the cause of a contingency relating to an aircraft that is unable to conduct RVSM operations due to severe turbulence or other sever weather-related phenomenon (or equipment failure, as applicable)	UNABLE RVSM DUE TURBULENCE (or EQUIPMENT , as applicable)

- 18. LATERAL OFFSET PROCEDURES IN THE NON-RADAR OCEANIC AIRSPACE OF THE COLOMBO FIR.**
- 18.1** The revised 2NM lateral offset procedures to the right of the route centreline are applied in the non-radar oceanic airspace of the Colombo FIR.
- 18.2** Offsets are applied only by aircraft with automatic offset tracking capability.
- 18.3 Purpose**
- 18.3.1** The purpose of this procedure is to standardize procedures to reduce the likelihood of pilots inadvertently applying procedures different from those specified for the airspace in which they are operating. It is also necessary to ensure that the application of offsets to reduce the risk of collision as a result of loss of vertical separation would not unduly increase the risk of loss of lateral separation between aircraft on adjacent tracks.
- 18.3.2** 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.(centreline, 1NM or 2NM right offset) shall be used.
- 18.4 Operators Procedures.**
- 18.4.1** The decision to apply a strategic lateral offset is the responsibility of the flight crew.
- 18.4.2** The offset shall be established at a distance of one or two nautical miles to the right of the centreline relative to the direction of flight.
- 18.4.3** 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.
- **19. ADOPTION OF SID/STAR SPECIFIC PHRASEOLOGY WITHIN COLOMBO FIR**
- 19.1 Introduction**
- 19.1.1** The SID/STAR specific phraseologies incorporated in PANS-ATM (DOC 4444) amendment 7-A are adopted.
- 19.1.2** These core phraseologies are expected to positively reinforce lateral, vertical and speed requirements embedded in a SID or STAR that will continue to apply, unless explicitly cancelled or amended by the controller.
- 19.1.3** A level instruction issued with the words "VIA SID" or "VIA STAR" alerts the pilot that they are flying a procedure with published restrictions that must be complied with.
- 19.1.4** The requirement specified in ICAO Annex 10, Volume II promulgated in Sri Lanka under Implementing Standard 038 of CAASL for the highest standard of discipline to be applied to all communications at all times and the speed limits associated to airspace classification (Chapter 2 and Appendix 4 of ICAO Annex 11 promulgated in Sri Lanka under Implementing Standard 025 of CAASL) are not cancelled by the instructions in the SID and STAR procedures.
- 19.2 Overview of core SID/STAR Phraseologies**
- 19.2.1** Clearance to aircraft on a SID/ STAR with published level and/ or speed restrictions shall indicate if such restrictions are to be followed or are cancelled.
- 19.2.2** The SID/STAR specific phraseologies incorporated in PANS-ATM (Doc 4444) amendment 7-A are detailed in ENR 1.1-49 & ENR 1.1-51.
- 19.2.3** If there are no published level or speed restrictions on the SID/ STAR, the phrase CLIMB TO (*level*)/ DESCEND TO (*level*) should be used respectively.
- 19.2.4** When subsequent speed restriction instructions are issued and if the cleared level is unchanged, the phrases CLIMB VIA SID TO (*level*)/ DESCEND VIA STAR TO (*level*) should be omitted.
- 19.2.5** When a departing/ arriving aircraft is cleared to proceed direct to a published waypoint on the SID/ STAR, the speed and level restrictions associated with the bypassed waypoints are cancelled. All remaining published speed and level restrictions shall remain applicable.
- 19.2.6** When a departing/ arriving aircraft is vectored or cleared to proceed to a point that is not on the SID/ STAR, all the published speed and level restrictions of the SID/ STAR are cancelled and the controller shall:
- (a) Reiterate the cleared level;
 - (b) Provide speed and level restrictions as necessary; and
 - (c) Notify the pilot if it is expected that the aircraft will be instructed to subsequently rejoin the SID/ STAR.
- 19.2.7** ATC instructions to an aircraft to rejoin a SID/ STAR shall include:
- (a) the designator of the SID/ STAR to be rejoined, unless advance notification of rejoining has been provided in accordance with para 19.2.5
 - (b) the cleared level in accordance with para 19.2.1; and
 - (c) the position at which it is expected to rejoin the SID/ STAR, as per the phraseology on rejoin instructions given in Chapter 12 of PANS-ATM Doc. 4444.
- 19.3** Further guidance on SID/STAR phraseologies are available in ICAO website which is accessible through the following web address
https://www.icao.int/airnavigation/sid_star/Pages/CHANGES-TO-SID_STAR-PHRASEOLOGIES.aspx

19.4 Clearances on a SID

PHRASEOLOGY	AIRCRAFT REQUIREMENT
CLIMB VIA SID TO (<i>level</i>):	(i) climb to the cleared level and comply with published level restrictions; (ii) follow the lateral profile of the SID; and (iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.
CLIMB VIA SID TO (<i>level</i>), CANCEL LEVEL RESTRICTION(S):	(i) climb to the cleared level; published level restrictions are cancelled; (ii) follow the lateral profile of the SID; and (iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.
CLIMB VIA SID TO (<i>level</i>), CANCEL LEVEL RESTRICTION(S) AT (<i>point(s)</i>):	(i) climb to the cleared level; published level restriction(s) at the specified point(s) are cancelled; (ii) follow the lateral profile of the SID; and (iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.
CLIMB VIA SID TO (<i>level</i>), CANCEL SPEED RESTRICTION(S):	(i) climb to the cleared level and comply with published level restrictions; (ii) follow the lateral profile of the SID; and (iii) published speed restrictions and ATC-issued speed control instructions are cancelled.
CLIMB VIA SID TO (<i>level</i>), CANCEL SPEED RESTRICTION(S) AT (<i>point(s)</i>):	(i) climb to the cleared level and comply with published level restrictions; (ii) follow the lateral profile of the SID; and (iii) published speed restrictions are cancelled at the specified point(s).
CLIMB UNRESTRICTED TO (<i>level</i>) or CLIMB TO (<i>level</i>), CANCEL LEVEL AND SPEED RESTRICTION(S)	(i) climb to the cleared level; published level restrictions are cancelled; (ii) follow the lateral profile of the SID; and (iii) published speed restrictions and ATC-issued speed control instructions are cancelled.

19.5 Clearances on a STAR

PHRASEOLOGY	AIRCRAFT REQUIREMENT
DESCEND VIA STAR TO (level):	(i) descend to the cleared level and comply with published level restrictions; (ii) follow the lateral profile of the STAR; and (iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.
DESCEND VIA STAR TO (level), CANCEL LEVEL RESTRICTION(S):	(i) descend to the cleared level; published level restrictions are cancelled; (ii) follow the lateral profile of the STAR; and (iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.
DESCEND VIA STAR TO (level), CANCEL LEVEL RESTRICTION(S) AT (point(s)):	(i) descend to the cleared level; published level restriction(s) at the specified point(s) are cancelled; (ii) follow the lateral profile of the STAR; and (iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.
DESCEND VIA STAR TO (level), CANCEL SPEED RESTRICTION(S):	(i) descend to the cleared level and comply with published level restrictions; (ii) follow the lateral profile of the STAR; and (iii) published speed restrictions and ATC-issued speed control instructions are cancelled.
DESCEND VIA STAR TO (level), CANCEL SPEED RESTRICTION(S) AT (point(s)):	(i) descend to the cleared level and comply with published level restrictions; (ii) follow the lateral profile of the STAR; and (iii) published speed restrictions are cancelled at the specified point(s).
DESCEND UNRESTRICTED TO (level) or DESCEND TO (level), CANCEL LEVEL AND SPEED RESTRICTION(S):	(i) descend to the cleared level; published level restrictions are cancelled; (ii) follow the lateral profile of the STAR; and (iii) published speed restrictions and ATC-issued speed control instructions are cancelled.