
ENR 3.0 - ATS ROUTES

1. General

- 1.1. All aircraft operating into/from across India shall follow the prescribed route.
- 1.2. Aircraft shall obtain ATC clearance from the appropriate ATS unit at least 10 minutes. Prior to entering controlled airspace.
- 1.3. Aircraft shall not join or cross ATS routes without prior approval/ATC clearance from the ATS units concerned. This approval/clearance shall be obtained at least 10 minutes prior to entry into ATS routes if in direct contact on VHF and at least 20 minutes prior to such entry if contact is through en-route radio frequency.
- 1.4. All aircraft transiting from one FIR to another FIR shall forward estimates for FIR boundary including flight level to the ATS unit responsible for providing flight information service in the FIR to be entered, at least 10 minutes prior to the entry.
Note: These provisions will not apply to aircraft transiting from one Indian FIR to another Indian FIR. Provisions will continue to apply to all aircraft, when transiting from a foreign FIR into Indian FIR except where specifically indicated otherwise against an ATS route.
- 1.5. Aircraft will join or cross ATS routes at or close to a designated reporting point. Aircraft crossing that route shall do so at the angle of 90⁰ to the direction of the route and at a level appropriate to the magnetic track.
- 1.6. Position reports to the appropriate ATS units shall be made in accordance with ENR 1.7-6
- 1.7. The lateral and vertical limits of the ATS routes have been indicated in the appropriate columns.
- 1.8. Minimum flight altitudes providing 1,000ft clearance from the highest obstacle within the route width are indicated in the appropriate column.
- 1.9. Reference to latest Notam (G-Series) and AIP supplement may be made for any modification to ATS routes.
- 1.10. All aircraft are forbidden to operate within 15NM of the international border of India unless specifically permitted or except when following the ATS route or operating to and from any aerodrome situated within 15NM of the international border of India.
- 1.11. ATS routes with "W" designators are exclusively available for domestic operators only.
- 1.12. Air Traffic Service is provided to aircraft as indicated against ATS routes.
- 1.13. Flying outside of ATS routes is prohibited within Indian FIRs, unless otherwise authorised by ATC.
- 1.14. Scheduled international flights are permitted to flight plan using domestic ATS routes segments to/from destination, departure and approved alternate airports in India which are not connected by international ATS route.
- 1.15. A longitudinal separation minimum of 15 (fifteen) minutes shall be applicable between the aircraft flying on same track, at the same level, climbing or descending through the level of another aircraft, flying in the same direction unless otherwise specified in the remarks column of relevant ATS route.
- 1.16. Unless otherwise specified longitudinal separation minimum based on time for aircraft flying on crossing tracks whether at the same cruising level or climbing/descending through the level of another aircraft shall be 15 (fifteen) minutes if the tracks are not crossing over navigational aids.
- 1.17. A longitudinal separation minimum of 80 NM RNAV or 10 (Ten) minutes based on Mach No. Technique (MNT) is applicable between the aircraft flying on the same track, at the same level, climbing or descending through the level of another aircraft flying in the same direction on all EMARSSH routes namely L301, L301A, L333, L507, L645, L759, L759N, L759S, M300, M770,

M770A, M638, N519, N563, N571, N877, N895, N895E, N895W, P318N, P323, P570, P574, P628, P646 and P762.

2. Establishment of Change over points (COP)

- 2.1.** COP at the mid point of route segments defined with reference to VOR in the case of straight routes segments or at the intersection of radials in the case of route segments which change direction between the VOR established, except when
- i) Route segment is a part of SIDs or STARs or
 - ii) The COPs are otherwise published for the route segments or
 - iii) Aircraft is not receiving the VOR to which change was intended or
 - iv) Aircraft has been cleared by ATC to maintain a particular radial from a VOR located on the route segments.
- 2.2.** International operators are to flight-plan one ATS route to cross Bay of Bengal and Arabian Sea in Indian FIRs. Flight-plan change of ATS routes is permitted over the Indian Continental airspace only.

3. Application of Data Link Services within Chennai and Kolkata FIR

3.1. Introduction

- 3.1.1. Controller Pilot Data link communications (CPDLC) Automatic Dependent Surveillance (ADS) are operational within Chennai and Kolkata FIR.
- 3.1.2. Data-link services are available to all FANS 1/A equipped aircraft operating in the Chennai and Kolkata FIR on H24 basis.
- 3.1.3. For ADS and CPDLC established aircraft, ADS will be primary means of Surveillance and CPDLC will be the primary means communication outside Terminal Control area. VHF/HF will be back up for communication and position reporting.
- 3.1.4. The procedures described below are applicable to aircraft utilizing ADS/CPDLC services within Chennai and Kolkata FIR. The use of data link services will not affect current procedures for non-data link equipped aircraft operating in the same airspace.

3.2. Applicability

- 3.2.1. Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance (ADS) data link applications will be used to provide services to FANS 1 (or other format compatible to FANS1) equipped aircraft, over the Bay of Bengal oceanic airspace and in particular on ATS routes B466E, N877, P628, P762, P574, N571, N563, L759, P646, L507, N895, G472, L301, M770/770A and L645.

3.3. ADS/CPDLC Service:

- 3.3.1. CPDLC supports the following services:
- i) Emergency alerting;
 - ii) Pilot to Controller down link of position reports and clearance requests
 - iii) Controller to Pilot up link of ATC clearances and instructions; and
 - iv) Free text as a supplement to pre-formatted message elements.
- 3.3.2. Automatic Dependent Surveillance (ADS) supports automatic reporting by the Aircraft Flight Management System (FMS) of aircraft position, intent Information and Meteorological Information (Spot wind and Temperature). The FMS reports the required information in accordance with parameters selected by the ground system. Messages will be transferred by VHF and satellite data links.
- 3.3.3. LOGON Procedures
- 3.3.3.1. The AFN LOGON address for the Chennai FIR is 'VOMF'
- 3.3.3.2. The AFN LOGON address for the Kolkata FIR is 'VECF'
- 3.3.4. ADS/CPDLC is integrated with Flight Data Processing system (FDPS) at Chennai and Kolkata. To avoid mismatch of data, 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.
- 3.3.5. 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. Aircraft requesting Data link services inbound to Chennai or Kolkata FIR are

required to LOGON onto “VOMF” or “VECC” prior to the estimated time for entering Chennai or Kolkata FIR.

- 3.3.6. Data link equipped aircraft departing from aerodromes within the Chennai or Kolkata FIR and requesting data link may LOGON to ‘VOMF’ or ‘VECC’ prior to leaving controlled Airspace. Pilots unable to establish a data link connection are to inform ATC on VHF or HF RTF.
- 3.3.7. Chennai Area Control Centre frequencies are 118.9MHz/125.7MHz, Chennai Oceanic Control 126.15MHz/125.7MHz Chennai Oceanic Control 126.15MHz. HF RTF frequencies are 3470KHz, 6655KHz, 11285KHz, 17907KHz and 13318KHz.
- 3.3.8. Kolkata Area Control Centre frequencies are 132.45MHz/120.7MHz/ 120.1 MHz/126.1 MHz/125.9 MHz. HF RTF frequencies are 2947KHz, 10066KHz, 2872KHz, 5580KHz, 6583KHz, 6556KHz, 8861KHz, 8909KHz, 2923KHz, 6484KHz, 3491KHz and 10051KHz.

3.4. CPDLC Procedures

- 3.4.1. Aircraft that have established data link communications may transmit their Position reports by CPDLC instead of HF RTF. However SELCAL check is required to verify HFRT connectivity.
- 3.4.2. In Chennai FIR Remote controlled Air Ground (RCAG126.15MHz) will be used as primary back up frequency for CPDLC on routes P762 (between LULDA and BIKEN), N571 (Between LAGOG and BIKEN), P628 (Between IGREX and VATLA) and N877 (Between LAGOG and ORARA), Primary and Secondary HF frequencies shall continue to be back up communication for the entire airspace.
- 3.4.3. In Kolkata FIR Remote controlled Air Ground (RCAG132.45MHz) will be used as primary back up frequency for CPDLC on routes L759 (between LEMEX and LIBDI), N895/G472 (Between “BBS” and SAGOD), P628 (Between LARIK and VATLA) and N877 (Between VVZ and ORARA), L301 (Between VVZ and RINDA), P646 (Between DOPID and IBITA) , M770/770A (Between BUBKO and MEPEL) and L507 (Between ESDOT and TEBOV) Primary and Secondary HF frequencies shall continue to be back up communication for the entire airspace.
- 3.4.4. To ensure the correct synchronization of messages, Controller/pilot dialogues opened by voice must be closed by voice.
- 3.4.5. 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, not a read back as would be required if the clearance had been issued by voice.
- 3.4.6. The down link response “WILCO” indicates that the pilot accepts the full terms of the whole up link message.
- 3.4.7. A down link Response: AFFIRM” is not an acceptable acknowledgement or reply to a CLEARANCE issued by CPDLC.
- 3.4.8. To avoid ambiguity in message handling and response, a CPDLC down link message should not contain more than one clearance request.
- 3.4.9. If multiple clearance requests are contained in a single down-link message and the controller cannot approve 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.
- 3.4.10. If any ambiguity exists as to the intent of a particular message, clarification must be sought by voice.
- 3.4.11. Standard pre-formatted message elements must be used whenever possible. Free text message 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.
- 3.4.12. When CPDLC connection is established, aircraft will be instructed to transfer from voice to CPDLC.
- 3.4.13. The phraseology used is:

TRANSFER TO CHENNAI Oceanic Control ON DATA LINK (position)
MONITOR (VHF 126.15 ALTERATE HF Primary/secondary (Frequencies)
Pilots should then down-link a CPDLC POSITION REPORT
OR
TRANSFER TO KOLKATA Control ON DATA LINK (position);
MONITOR (VHF 132.45 / 120.7 ALTERATE HF Primary/secondary (Frequencies)
Pilots should then down-link a CPDLC POSITION REPORT

3.5. CPDLC Termination

- 3.5.1. For aircraft Inbound to Chennai / Kolkata Terminal Control area (TMA), pilot should disconnect CPDLC after positive VHF voice communication is established with Chennai/Kolkata ACC.
- 3.5.2. For aircraft existing Chennai FIR, Next Data Authority (NAD) will be notified via CPDLC 30 minutes prior to crossing FIR boundary. Transfer of communication shall be completed at the FIR boundary.
- 3.5.3. For aircraft existing Chennai FIR, Next Data Authority (NAD) will be notified via CPDLC 20 minutes prior to crossing FIR boundary. Transfer of communication shall be completed at the FIR boundary.
- 3.5.4. In case the next FIR does not have data link services, CPDLC connections will be terminated at the FIR boundary position.
- 3.5.5. 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.

3.6. ADS Procedures

- 3.6.1. ADS Periodic contacts will be established automatically on receipt of a LOGON. The periodic reporting rate is 27 minutes.
- 3.6.2. Aircraft logged on to ADS need not give position report on CPDLC F/VHF outside TMA except at the boundary points.
- 3.6.3. ADS contracts will be manually terminated by ATC at the FIR boundary.

3.7. Data Link Failure

- 3.7.1. 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.
- 3.7.2. In the event of an expected 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.

3.8. Flight-plan Notification

- 3.8.1. Aircraft planning to utilize data link communications must annotate their ICAO flight plan as follows:
- 3.8.2. Data Link capability must be notified by inserting the designator "J" in Item 10 (Communication and Navigation Equipment).
- 3.8.3. The Data Link equipment carried must be notified in item 18 by the use of Prefix "DAT/" followed by one or more letters as follows:
DAT/S for Satellite data link.
DAT/V for VHF data link.
DAT/SV for satellite and VHF datalink.
Aircraft registration must be inserted in Item 18 as the ground system uses the information during the AFN LOGON.
- 3.8.4. Serviceable ADS equipment carried must be annotated on the flight plan by adding the letter "D" to the SSR equipment carried.
- 3.8.5. For ADS/CPDLC in KOLKATA FIR, all messages to be addressed to VECFZQZX, VECCZPZX, VECCZRZX and should include SSR code assigned to them.
- 3.8.6. All west bound flights on L301/L301A, N571 and P574 must report PSN at NOBAT, SUGID and BISET respectively to Mumbai Radio in addition to Mumbai Area Control.

4. Application of Strategic Lateral Offset Procedures (SLOP) in Oceanic airspace of Chennai, Kolkata and Mumbai FIR.

4.1. Introduction

- 4.1.1. ICAO separation minima, including lateral route spacing, are based on the assumption that aircraft operate on the centerline of a route. In general, unauthorized deviations from this requirement could compromise safety. However, the use of highly accurate navigation systems [such as Global Navigation Satellite System (GNSS)] reduces the magnitude of lateral deviations from the route

center line and consequently increases the probability of a collision if a loss of vertical separation between aircraft on the same route occurs.

- 4.1.2. By using offsets to provide lateral spacing between aircraft, the effect of reduction in the magnitude of random lateral deviations (which is, of course, due to the increased capability of flights to adhere to the center line of ATS Routes) can be mitigated, thereby reducing the risk of collision. These guidelines provide information on how such a strategic lateral offset procedure should be implemented.
- 4.1.3. The Strategic Lateral Offset Procedures [SLOP], as described below are applicable in oceanic airspace in Chennai, Kolkata, and Mumbai FIRs on route segments mentioned in part 3 below. The application of Strategic Lateral Offset Procedures is intended to reduce the risk of collision due to a loss of planned vertical separation.
- 4.1.4. The Strategic Lateral Offset Procedures described hereunder are being implemented simultaneously by all the States in the Asia / Pacific region to provide for seamless navigational procedures to the airlines.

4.2. Strategic Lateral Offset Procedure (SLOP)

4.2.1. The following basic requirements apply to the use of the Strategic Lateral Offset Procedures (SLOP)-

- i) Strategic Lateral Offset Procedures shall be applied only by aircraft with automatic offset tracking capability.
- ii) The decision to apply a strategic lateral offset is the responsibility of the flight crew.
- iii) The offset shall be established at a distance of one or two nautical miles to the RIGHT of the centerline of the ATS route relative to the direction of flight.
- iv) The offsets shall not exceed 2 NM right of centerline of the ATS route.
- v) 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 (centerline, 1NM or 2NM right offset) shall be used.
- vi) 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.
- vii) Aircraft transiting areas of radar coverage in airspace where offset tracking is permitted may initiate or continue an offset.
- viii) Aircraft without automatic offset tracking capability must fly the centerline of the ATS Route being flown.

4.3. ATS Route segments in Oceanic airspace where SLOP is applied

4.3.1. The segments of ATS Routes in Bay of Bengal and Arabian Sea area, where Strategic Lateral Offset Procedure is applicable are identified below. However for Air Traffic Control purposes the appropriate ATC unit may cancel the offset.

4.3.2. Chennai FIR

i)	L 645	SAMAK 075842N 0942500E	SULTO 073836.6N 0880151.2E
ii)	N 563	MEMAK 060000N 0930500E	AKMIL 115135.4N 0800654.6E
iii)	P 574	NOPAK 063614N 0942500E	MMV VOR 125936.1N 0801014.5E
iv)	N 571	IGOGU 073101N 0942500E	GURAS 140004.8N 0804954.2E
v)	N877	LAGOG 083538.5N 0915949.5E	ORARA 155904.4N 0845452.3E
vi)	P 628	IGREX 094328N 0942500E	VATLA 144404.9N 0891850.4E
vii)	L 759	MIPAK 115000N 0942500E	NISUN 135605.2N 0921949.2E
viii)	P 762	LULDA 122345N 0942500E	DUGOS 085306.3N 0844752.6E
ix)	UL 425	TVM VOR 082829.3N 0765529.0E	ANODA 095805.8N 0722358.1E

x)	P 570	TVM VOR 082829.3N 0765529.0E	POMAN 115605.3N 0715958.2E
xi)	M 300	CLC VOR 110806.5N 0755717.5E	IGAMA 134104.8N 0715958.2E

4.3.3. Kolkata FIR

i)	N 877	ORARA 155904.4N 0845452.3E	VVZ VOR 174003.9N 0831510.0E
ii)	L 301	RINDA 153500N 0920000E	VVZ VOR 174003.9N 0831510.0E
iii)	P 628	VATLA 144404.9N 0891850.4E	LARIK 185003.6N 0845222.2E
iv)	L 759	LIBDI 141505.1N 0915949.3E	LEMAX 195433.3N 0860921.6E
v)	M 770	MEPEL 160200N 0920000E	KAKID 203833.1N 0865951.2E
vi)	M 770A	BUBKO 191103.7N 0883950.5E	LEGOS 213802.9N 0880520.6E
vii)	N 895	SAGOD 175548.2N 0915949.1E	BBS VOR 201437.2N 0854846.7E
viii)	P 646	IBITA 191703.8N 0915949.0E	DOPID 205503.2N 0891216.1E
ix)	L 507	TEBOV 202503.5N 0915949.0E	CEA VOR 223842.6N 0882710.4E

4.3.4. Mumbai FIR

i)	UL 425	ANODA 095805.8N 0722358.1E	ASPUX 174403.6N 0600003.8E
ii)	P 570	POMAN 115605.3N 0715958.2E	KITAL 200300N 0601800E
iii)	M 300	IGAMA 134104.8N 0715958.2E	LOTAV 203700N 0605700E
iv)	N 563	KAKIB 150004.4N 0734707.4E	REXOD 211230N 0613830E
v)	P 574	OKILA 163533.9N 0730627.7E	TOTOX 215030N 0622230E
vi)	N 571	Crossing 072° E	PARAR 222630N 0630700E
vii)	L 301A	EXOLU 201249.8N 0713410.4E	NOBAT 210902.5N 0680000.1E
viii)	L 301	ACTIV 201502.8N 0731457.6E	RASKI 230330N 0635200E
ix)	M 638	NOBAT 210902.5N 0680000.1E	SAPNA 233001.7N 0675000.2E
x)	A 451	BISET 182321.4N 0691806.5E	ANGAL 161404.1N 0600003.8E
xi)	G 450	DARMI 174741.6N 0703438.8E	DOGOD 131249.9N 0630002.4E
xii)	UM 551	DONSA 143518.5N 0651133.4E	ANGAL 161404.1N 0600003.8E
xiii)	B 459	GUNDI 172136.7N 0712936.4E	UBDOR 100005.8N 0655554.0E
xiv)	A 474	ERVIS 170527.8N 0720314.2E	POPET 071342.5N 0681336.0E
xv)	R 456	BIBGO 073006.5N 0705647.8E	KITAL 200300.0N 0601800.0E
xvi)	P 323	DONSA 143518.5N 0651133.4E	GIDAS 142008.6N 0600003.8E

xvii)	G 424	ALATO 134044.8N 0634402.0E	LADUP 124935.0N 0630002.4E
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Note: The ATS route segments listed above for the application of the Strategic Lateral Offset Procedures, in some cases, encompass a portion of continental airspace of India. This has been done for ease of application of the procedures and to avoid insertion of additional waypoints on the ATS routes.

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