

En-route Center C1 Training Handbook

Integrated Training for vACC SRM Controllers and Pilots



virtual Air-traffic Control Center
Sri Lanka & Maldives

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Note: Information appear in this document extracted from data available in WWW
For simulated flight and controller use only

1.1 C1 controller handbook is compiled to assist SRM staff to understand the responsibilities & duties relevant to Vatsim En-route Center Controller position. Airspace over Vatwa region countries is divided into FIRs (Flight Information Regions – Fig.1), in line with real world airspace management. Each FIR is handled by one controller and has its own discrete CTR frequency. As a flight progresses from one FIR to another, the pilot is requested to change to the appropriate FIR CTR frequency.

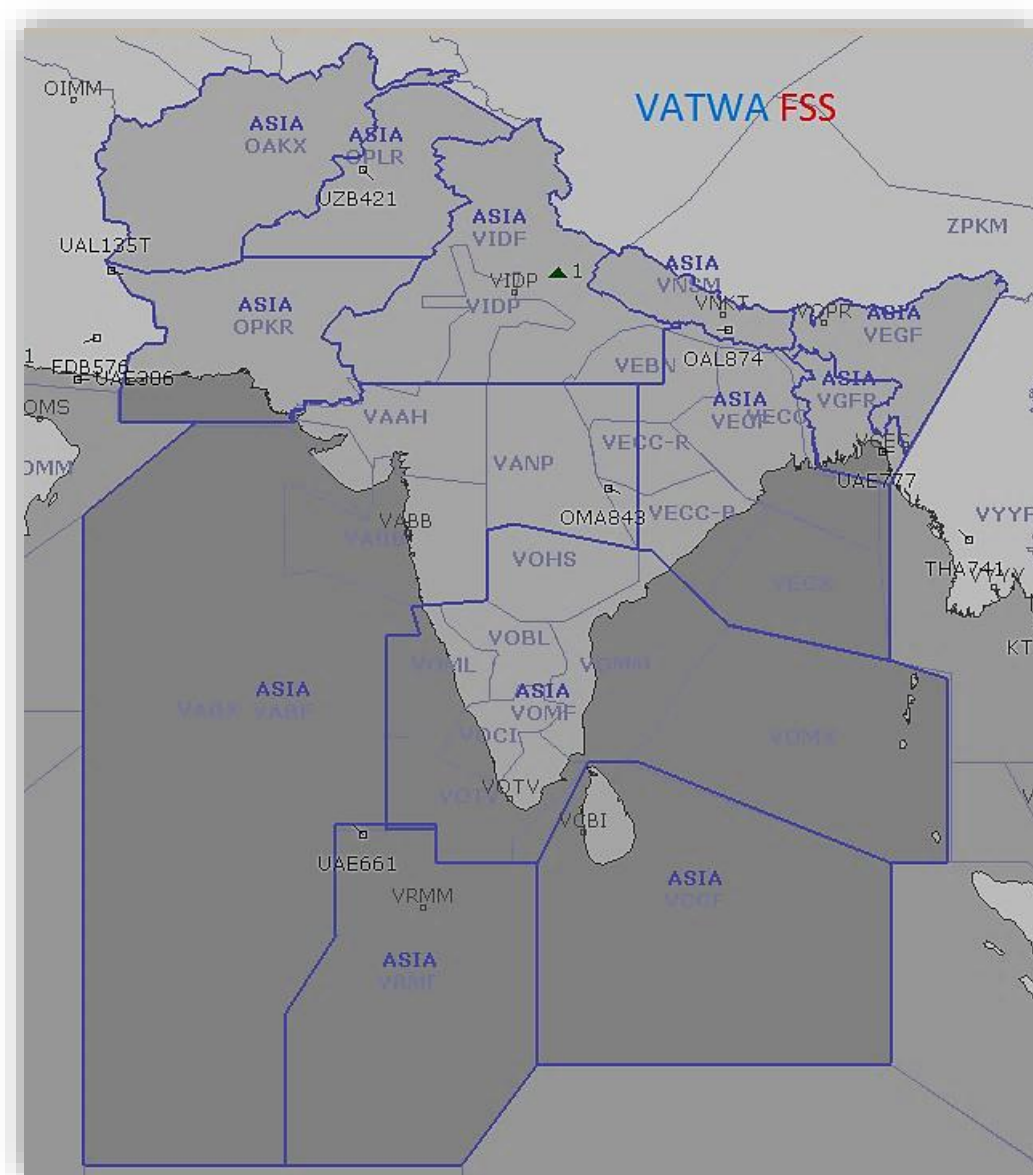


Fig.1: VATWA FIRs

1.2 Example – Fig.2: Flight departing from VCBI to VRMM is under Colombo VCCF_CTR 124.90 until the FIR boundary exit points (SEBLO or TELIG), then hands over to Male VRMF_CTR 123.90. If either position is not manned by a CTR controller aircraft will proceed under Unicom 122.80 & contact the available CTR over the applicable flight plan FIR boundary entry waypoint.

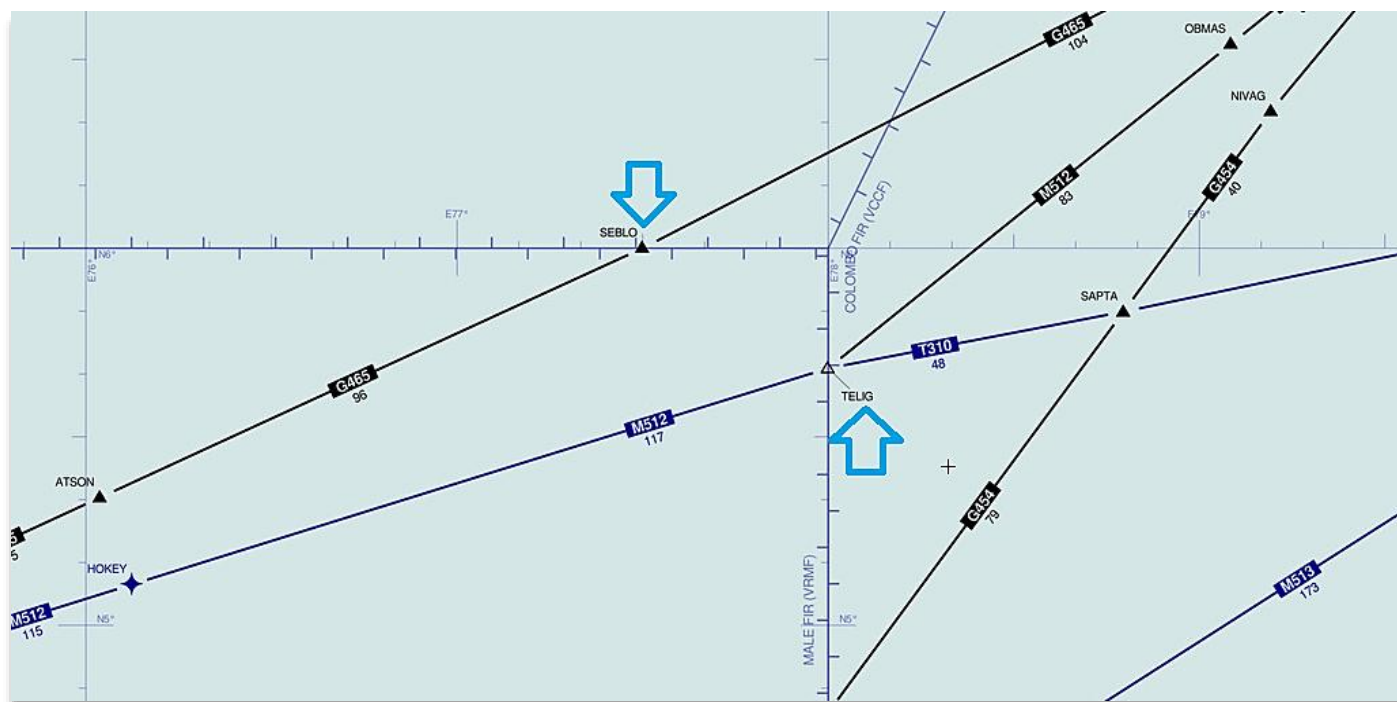


Fig 2: FIR Hand Over Points

1.3 Basic radar controlling skills required in the En Route Center position, such as vectoring and speed adjustment were covered in the SRM Approach/Departure S3 Handbook. However, that information is mostly relevant to an airspace serving a single airport or several airports in a relatively small area. An En Route CTR controller is entirely involved with the "Complete Picture, of the whole FIR airspace." CTR controller is responsible for hundreds of thousands of square miles of airspace and for all the airports within the FIR.

1.4 The Vatsim 'top down' concept where an En Route CTR controller may have the entire airspace, provides services from Clearance Delivery to high altitude cruise, descent, approach and landing. CTR controller is responsible for climbing the aircraft to their requested altitude while at the same time ensuring that the aircraft is properly separated from all other aircraft in the immediate area. Additionally, the aircraft must be placed in a flow consistent with the aircraft's route of flight. This effort is complicated by cross traffic, adverse weather, and traffic density. In the VATSIM operations it is also complicated by widely varying levels of pilot knowledge, skill, scenery, as well as differences in flight sim type. The vast amount of airspace and multiple airports, make working the CTR position very challenging, & demands high level of competency.

1.5 En Route Center (CTR) - Identified as 'Colombo Center' in VCCF FIR, & 'Maldives Center' in VRMF FIR - provides ATC service to aircraft on the en-route phase of flight, as well as departure, arrival & transit traffic. CTR controller is also responsible for all airports within his/her FIR, where Tower and Approach are not manned.

1.6 Flight Service Station (FSS) identified as 'West Asia Control' (135.40) is a Vatsim specific ATC service that provides an extended coverage to all traffic within entire VATWA airspace, providing pilot briefings, relaying of clearances and broadcasting of weather information, etc. FSS airspace is usually above FL245, but allowed to provide Top Down service depending on traffic volume. Fig.1 shows the airspace of West Asia FSS.

3.1 Three fixed route systems are established for air navigation purposes.

- Low Altitude system consisting of GPS, VOR and NDB routes
- The High-Altitude system
- The RNAV route system

3.2 To the extent possible, these route systems are aligned in an overlying manner to facilitate transition between each system.

3.3 The VOR and NDB Airway System consists of airways designated up to but not including 18000 feet MSL. These airways are depicted on IFR Enroute Low Altitude Charts.

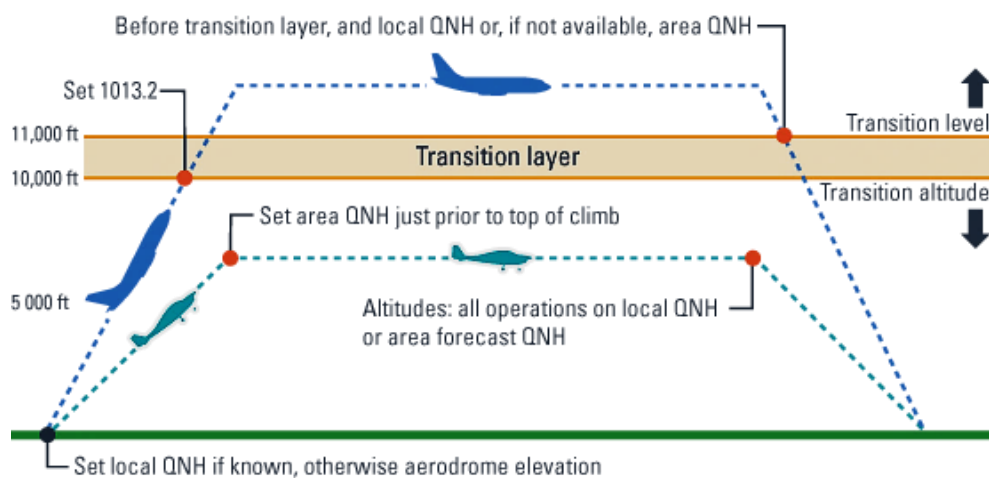
3.4 The En route system consists of high-altitude routes established from 18000 feet MSL to FL 450 inclusive.

3.5 Operation above FL 450 may be conducted on a point-to-point basis. Navigational guidance is provided on an area basis utilizing those facilities depicted on the Enroute high altitude charts.

3.6 CTR Controller may vector aircraft within controlled airspace for separation purposes, noise abatement considerations, when an operational advantage will be realized by the pilot or the controller, or when requested by the pilot. Vectors outside of controlled airspace will be provided only on pilot request. Pilots will be advised as to what the vector is to achieve when the vector is controller initiated and will take the aircraft off a previously assigned non radar route. To the extent possible, aircraft operating on RNAV routes will be allowed to remain on their own navigation. These routes are depicted on Enroute High Altitude Charts.



4 Transition Altitude / Transition Level



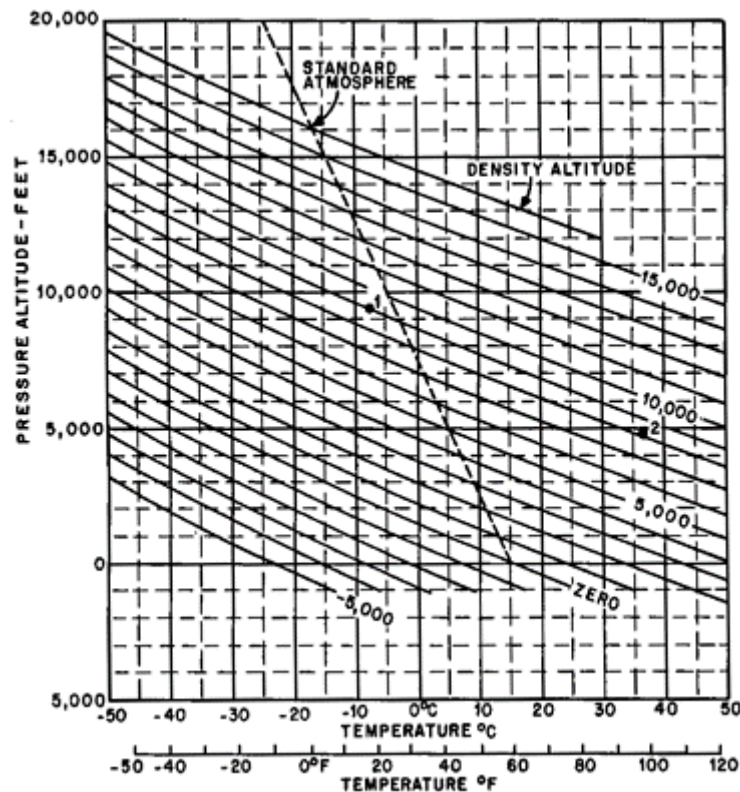
4.1 **Transition altitude** is the altitude at or below which the vertical position of an aircraft is controlled by reference to altitude (or height when QFE is used).

4.2 Wherever possible there is a common transition altitude for aerodromes within a control zone (11000ft within SRM FIRs).

4.3 **Transition level** is the lowest Flight Level available for use above the transition altitude. It is as follows:

- Within controlled airspace by the controlling authority and it will normally be based on the QNH of the major aerodrome.
- Outside controlled airspace by the Aerodrome Operator and based on the aerodrome QNH.

4.4 **Transition layer** is the airspace between the transition altitude and the transition level. Within SRM the first available flight level above the transition altitude is separated by a minimum pressure interval corresponding to a nominal 1000 ft.



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5 Position Reporting

5.1 The safety and effectiveness of traffic control depends on accurate position reporting. In order to provide the proper separation and expedite aircraft movements, ATC must be able to make accurate estimates of the progress of every aircraft operating on an IFR flight plan.

5.2 Position Identification:

- When a position report is to be made passing a VOR radio facility, the time reported should be the time at which the first complete reversal of the “to/from” indicator is accomplished.
- When a position report is made passing a facility by means of a NDB beacon, the time reported should be the time at which the ADF indicator makes a complete reversal.
- If a position is given with respect to distance and direction from a reporting point, the distance and direction should be computed as accurately as possible.
- Except for terminal area transition purposes, position reports or navigation with reference to aids not established for use in the airspace in which flight is being conducted **will not normally be required by ATC**.

5.3 Position Reporting Points:

- Vatsim flying requires pilots to maintain a listening watch on the appropriate frequency and, & to furnish position reports passing certain reporting points, unless operating under the provisions of subparagraph 5.2 d) above.
- Reporting points are indicated by symbols on enroute charts. The designated compulsory reporting point symbol is a solid triangle. ▲
- The “on request” reporting point symbol is the open triangle. △
Reports passing an “on request” reporting point are only necessary when requested by ATC.

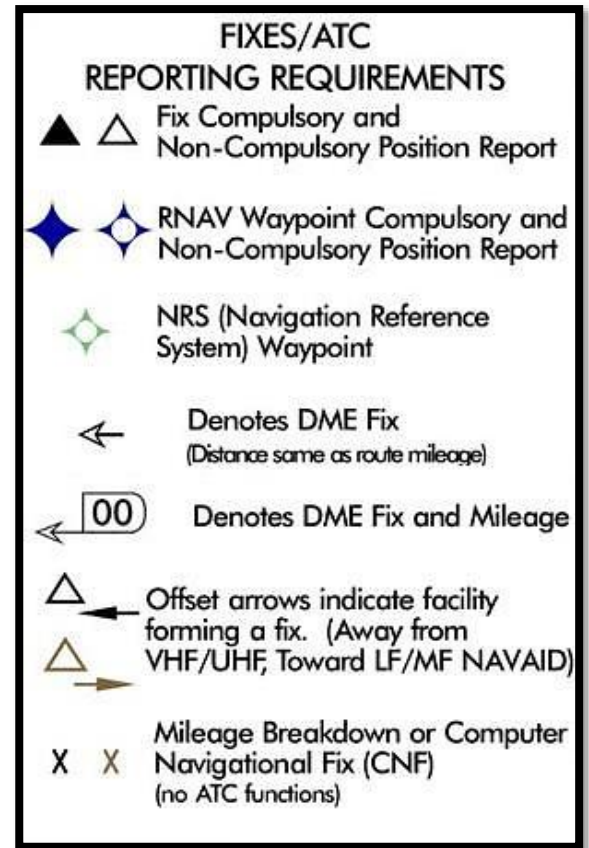
5.4 Position Reporting Requirements:

- Flights along Airways or Routes:** A position report is required if requested by the controller regardless of altitude, including those operating in accordance with an ATC clearance over each designated compulsory reporting point along the route being flown.
- Flights along a Direct Route:** A position report is required if requested by the controller regardless of the altitude or flight level being flown, including flights operating in accordance with an ATC clearance. Pilot must report over each requested reporting point used in the flight plan to define the route of flight.
- Flights in a Radar Environment:** When informed by ATC that their aircraft are in 'Radar Contact,' pilot should discontinue position reports over designated reporting points. Pilot should resume normal position reporting when ATC advises 'RADAR CONTACT LOST' or 'RADAR SERVICE TERMINATED.'
- Flights in an Oceanic (Non-radar) Environment:** A position report is required if requested by the controller. Pilots must report over each point used in the flight plan to define the route of flight, even if the point is depicted on aeronautical charts as an 'on request' (non-compulsory) reporting point. For aircraft providing automatic position reporting via Vatsim Mode C tracking, pilots should discontinue voice position reports.

NOTE-

ATC will inform pilots that they are in 'radar contact':

- When their aircraft is initially identified in the ATC system; and
- When radar identification is re-established after radar service has been terminated or radar contact lost.



5.5 Position Report Items:

Position reports should include the following items:

Ex: SriLankan 302 over position NIXUL at time 1035, flight level 380, IFR, estimating SULEN at 1042, POPAK next, Ops normal.

- | | |
|---|--------------------------|
| a) Identification: | SriLankan 302 |
| b) Position: | over position NIXUL |
| c) Time (Zulu): | at time 1035 |
| d) Altitude or flight level: | flight level 380 |
| e) Type of flight plan: | IFR |
| f) ETA and name of next reporting point: | estimating SULEN at 1042 |
| g) The name of the next succeeding reporting point along the route of flight: | POPAK next |
| h) Appropriate remarks: | Ops normal |

6 Speed Terminology and Relationships

6.1 Four main speeds are used within the ATC environment:

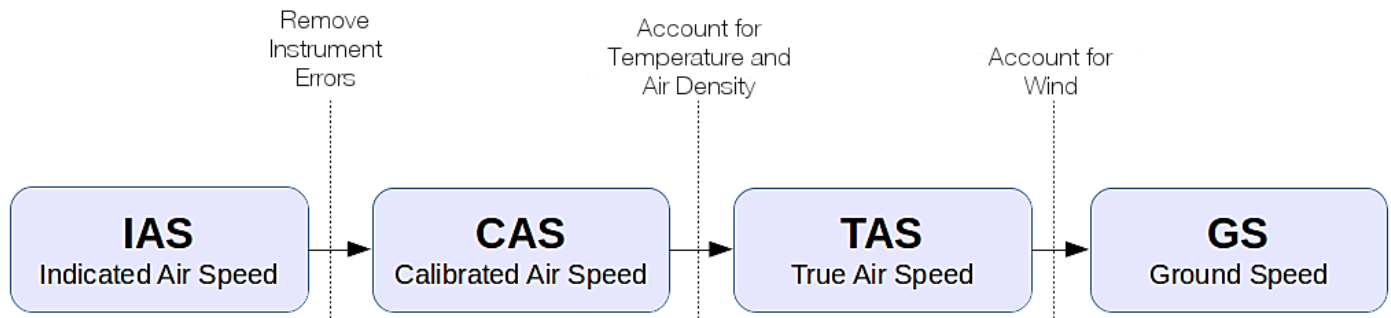


Fig.3 Airspeed types

- Ground speed (GS):** The actual speed of the aircraft over the surface of the earth. This equates to TAS corrected for the effects of wind. (see Fig.3)
- True airspeed (TAS):** The actual speed of the aircraft through the air and is shown on the flight plan and flight progress strips.
- Indicated airspeed (IAS):** Often used by ATC for speed control and varies from the TAS dependant on altitude, air density and temperature.
- Mach number:** TAS expressed as a fraction of the local speed of sound. The speed of sound (Mach 1) is a function of temperature – colder (i.e. higher) equalling slower. In international standard atmosphere (ISA) conditions, at sea level Mach 1 is a little over 661 kt TAS, but at FL360 it has decreased to 572 kt and remains at that figure to around FL600 – FL700.



7 Controller Pilot Data Link Communications (CPDLC)

7.1 In SRM FIRs simulated Controller Pilot Data Link Communications (CPDLC) system is available to enhance the pilot's ATC experience. This is to supplement routine Vatsim air/ground voice communications. CPDLC simulation is not mandatory to use, & subject to controller preference.

7.2 The SRM CPDLC simulation criteria:

- Voice remains the primary and controlling air/ground communications means.
- Participating aircraft will receive uplink information as text messages. Pilot's response can be received as either Text or Voice reply.
- En Route CPDLC Services offer the following services:
 - Altimeter Setting (AS)
 - Transfer of Communications (TOC)
 - Initial Contact (IC)
 - Limited route assignments, including airborne reroutes (ABRR)
 - Limited altitude assignments
 - Emergency messages

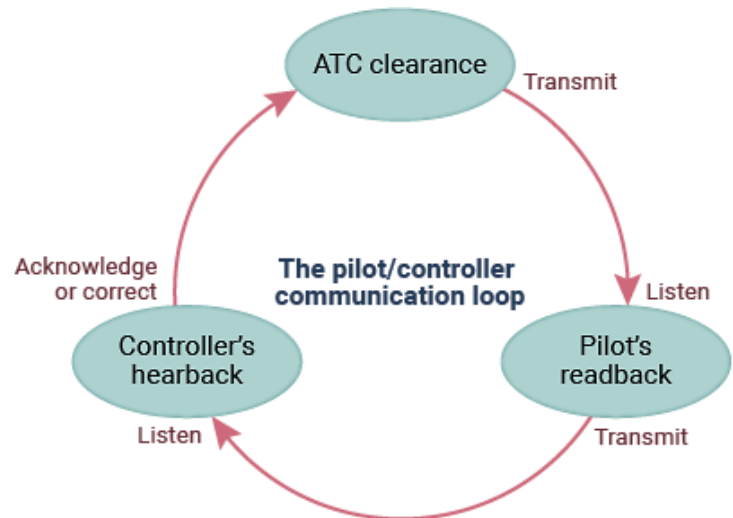
8 Com Radio Outage

8.1 Occasionally, technical problems (network issue or due to the distance between CTR controller & the aircraft) may cause a communication delay but frequency switchover seldom takes more than 60 seconds.

8.2 It is important, therefore, both ATC & Pilot to wait at least 1 minute before deciding that the network has actually experienced a radio communication failure.

8.3 When such an outage does occur, both the controller & pilot should, if workload and equipment capability permit, maintain a listening watch on the affected frequency while attempting to comply with the recommended communications procedure.

8.4 If two-way communications cannot be established with the Center, the controller should attempt to re-contact the transferring controller or send private message to the pilot to confirm the communication issue.



9 Amendments to Clearances

9.1 When an amendment is made to a clearance the new clearance shall be read in full to the pilot and shall automatically cancel any previous clearance. Controller must be aware, therefore, that if the original clearance included a restriction, e.g. "cross SUPSA FL150 or below" then the issue of a revised clearance automatically cancels the earlier restriction, unless it is reiterated with the revised clearance.

9.2 When a controller issues a clearance, which amends the vertical profile of an aircraft on an SID. For example, "climb now FL120" automatically cancels the vertical profile of the SID. If the profile contains a restriction that provides vertical separation from conflicting traffic on another SID, the restriction must be reiterated, e.g. "climb now FL120 cross XYZ 5000 feet or above", unless separation is ensured by other means.

9.3 When controller issue instructions which amend the SID route, they are to confirm the level profile to be followed, e.g. "fly heading 095, climb now FL130" or "route direct IDIBI, stop climb at altitude 5000 feet".



10 Traffic Information to Aircraft

10.1 Traffic information to aircraft shall include the following:

- Bearing from the aircraft in terms of the 12-hour clock (when the aircraft is turning, direction of the unknown aircraft by compass points).
- Distance from the aircraft in miles.
- Direction in which the unknown aircraft is proceeding, e.g. "traffic is opposite direction/crossing left to right", etc.
- Height information when available, this may include the unverified Mode C of unknown aircraft.

10.2 Under some circumstances, controllers may consider it is prudent to inform a pilot of other sector traffic which is separated from his aircraft. In such cases, to prevent any possible confusion, no reference should be made to the actual level of the other aircraft, the pilot should be only informed that the other aircraft is 'XX thousand feet above/below'.

11 Diversion Procedures

11.1 Aircraft may divert from their planned destination to another aerodrome on the initiative of the pilot or as requested by the appropriate authority on the ground.

11.2 Diversions will normally be made for the following reasons:

- When the weather at the planned destination is reported to be below the minima prescribed for the aircraft.
- When obstructions on the landing area, which constitute a hazard to aircraft landing, cannot be cleared within a reasonable period.
- Unacceptable delay due to congestion of Vatsim traffic.

11.3 Diversions Originated by the Pilot:

- The pilot of an aircraft is primarily responsible for its safety, therefore pilot will normally decide whether s/he can or cannot effect a safe landing at a given aerodrome. Pilot will normally be aware of weather conditions at his planned destination and alternate aerodromes, thus whenever considers a diversion to be necessary, will make the intention known to an ATC unit and request diversion clearance.

11.4 Diversions Originated by the Controller:

- When, for traffic reasons, a controller considers it advisable to divert an aircraft the request to divert shall be passed to the pilot together with reasons for diversion, an ATC clearance and any further instructions.



12 Speed Control

12.1 Controller may request pilots to increase/decrease speed in order to facilitate a safe and orderly flow of traffic. Speed adjustments should be limited to those necessary to establish and/or maintain a desired separation/deconfliction minima or spacing and should not be outside the speed ranges applicable to aircraft type.

12.2 Pilots shall be advised when a speed control restriction is no longer required.

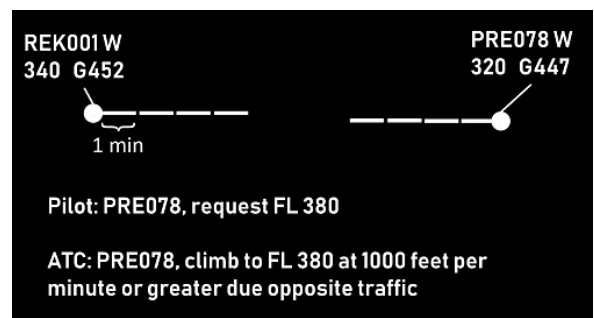
12.3 Speed control should not be applied in the following circumstances:

- In holding patterns, other than where published on approach charts.
- In areas of thunderstorms or known turbulence.

12.4 At levels at or above FL280, speed adjustments for aircraft in the cruise should be expressed in multiples of 0.01 Mach. At levels below FL280, speed adjustments should be expressed in multiples of 10 kt based on indicated airspeed (IAS).

12.5 The application of speed control should be appropriate for the phase of flight, as its application over a long period of time may affect aircraft fuel reserves, and can affect the aircraft's planned operating profile.

12.6 Instructions involving frequent changes of speed should be avoided.



12.7 Pilots will adhere to the speed (IAS or Mach Number) approved or assigned by ATC and will request ATC approval before making any changes thereto.

12.8 Pilots of aircraft unable to maintain the approved or assigned speed (e.g. due to aircraft performance reasons) will inform ATC as soon as possible. In such circumstances, controllers shall apply an alternative method to establish or maintain the desired separation/ deconfliction minima or spacing between the aircraft concerned.

12.9 For aircraft at or above FL280 that have been cleared to descend to levels below FL280, speed adjustments may be based on IAS. However, controller should be aware that pilots might not be able to immediately change to IAS, as the timing of this change is dependent on variable aircraft system factors.

12.10 Instructions for an aircraft to simultaneously maintain a high rate of descent and reduce its speed should be avoided. Where possible, aircraft should be allowed to descend at their own preferred speed. Most preferred economical descent profile is in the speed range 250 – 280 knots, with 270 knots being seen as a good compromise where sequencing is necessary.

12.11 Aircraft should not be instructed to operate at a high speed by one controller and, on transfer to the next sector, be instructed to reduce speed significantly.

12.12 Aircraft should be transferred from enroute to Approach control in the speed range of 250 kt - 300 kt IAS; speeds outside this band should be co-ordinated with the receiving sector.

12.13 Allocated speeds should take into account speed limit points and target levels where published.

12.14 Controller should allow aircraft to operate in a clean configuration for as long as circumstances permit. Arriving aircraft below FL150 should not be allocated a speed of less than 210 kt (180 kt for propeller aircraft) unless within 20 track miles of the runway threshold, at which point the speed may be reduced to between 150 and 180 kt. In exceptional circumstances a pilot may be asked to reduce to 'minimum approach speed'.

12.15 Speed control should not be applied to aircraft after passing a point 4 NM from the threshold on final approach. Commercial aircraft operations require that an approach is flown as a 'Stabilised Approach', in which an aircraft should be in its landing configuration and at its final approach speed by at least 1000 feet above the threshold elevation. The higher the speed applied on final approach, the greater the chance of an approach becoming unstable and a missed approach being initiated.



13 Transfer of Control

13.1 Transfer of control is achieved when a flight, which is operating in accordance with the coordination, has reached the position or level agreed between the transferring and accepting controllers.

13.2 Transfer of control normally takes place:

- a) At an agreed reporting point
- b) On an estimate for an FIR boundary
- c) At or passing an agreed level; or
- d) While the aircraft is climbing or descending to a previously agreed level, provided that the transferring controller has ensured that standard separation will exist between the transferred aircraft and all others for the remainder of the climb or descent.

14 Handing-Over Controller Position

14.1 The responsibility for the accuracy of a hand-over lies with the controller vacating an operational position. If the traffic levels are very high or the traffic situation complex, consideration should be given to splitting the position, where this is possible, before the hand-over takes place. The order in which information should be passed from one controller to another should be as follows:

- a) General information, including any variations from routine operations
- b) Other supplementary information relating to the position
- c) The detailed traffic situation

14.2 Controller taking-over should be alert to the possibility of errors and omissions in the information being provided and must verify the data transferred to them by a thorough check of the situation display, flight progress strips and any other relevant information. Only when they are completely satisfied that they have a total awareness of the situation, should they indicate to the controller handing-over that they are ready to accept responsibility for the operational position.

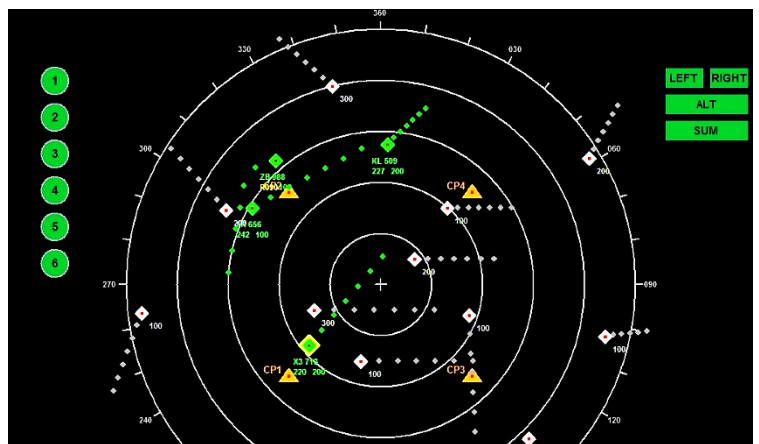
14.3 On the occasions when controllers hand-over a busy and complex situation, they should remain available for a short period following the hand-over. This will enable the accepting controller to seek immediate clarification of any points that may arise during this time.



15 S3 to C1 Assessment

15.1 In order to begin the training process of S3 to C1 upgrading, the S3 controller shall fulfil the following criteria:

- a) Maintaining active controller status at the beginning of and throughout the training process.
- b) Having accumulated a minimum of 100 hours of controlling in SRM FIR positions, of which 50 hours shall be accumulated as a S3 controller. However, this may be waived if the controller was admitted to the controller team as a controller with real-world experience or with experience on another flight-simulation network, subject to the discretion of both the Training Manager of SRM VACC and the Training Director of VATWA.
- c) Having participated and staffed SRM VACC position as a S3 rated controller in two or more advertised events hosted by the SRM VACC.



15.2 The training sessions for C1 competencies will take approximately 10 hours, in addition to the preparation work and documents readings outside of these sessions, which should take 2 hours on average. Controllers training under Solo Approach Validation should take into account the additional hours incurred prior to their practical exam.

15.3 C1 trainee controller at SRM VACC shall demonstrate competency in the following areas:

- a) Traffic management
- b) Separation
- c) Airspace Services

15.4 Training Session Guidelines

Preparation prior to 1st practical session: (SRM Instructor will assist as required)

- a) C1 Training Preparation:
 - Review sections in SRM training handbooks that are relevant to all ATC positions.
 - After reviewing the training handbooks ensure that trainee had no issues with understanding the training materials.
 - Assign/complete the C1 exam on ATSIM.
- b) First Practical Session:
 - Preparation for online CTR control Time.
 - Answer questions over the training handbook and/or SOP.
 - Review important points from training hand books with the trainee.
 - Explain the FIR CTR Radar process to the trainee.
 - Introduce the CTR Radar airspace and the FIR borders to the trainee.
 - Discuss handoff procedures to neighbouring FIRs.
 - Discuss separation methods in the context of CTR Radar airspace.
 - Discuss how to initiate descent for arrival aircraft.
- c) Second Practical Session:
 - CTR Online Control Training.
 - Provide examples on radar identifying aircraft.
 - Demonstrate examples of separation within the CTR Radar airspace.
 - Demonstrate how to initiate the descent of an arrival aircraft and properly sequence it for arrival.
 - Provide examples of effective handoff to neighbouring FIRs.
 - Provide examples of effective handoff to the 'Top Down' controllers.
- d) Solo Radar Validation Time:
 - Maximum 90 days of solo validation is allowed iaw VATSIM regulations. Trainee shall take advantage of the Solo Radar Validation programme to refine the newly obtained skills on CTR control and to prepare themselves for the OTS Exam.

15.5 Assessment:

SRM member wishing to obtain the C1 rating must pass evaluation exams consisting of two parts:

- a) **A multiple-choice / short answer C1 exam** related to theoretical knowledge on the ATSIM exam system. This exam must be completed and passed before the second practical training session mentioned in section 15.4C in this document.
 - The content of ATSIM C1 exam shall be consistent with the requirement of the VATSIM Global Rating Policy. A second attempt is permitted if the trainee fails the first attempt. If the trainee fails the second attempt, the Instructor shall discuss with the trainee and identify any misconception and areas of incompetency.
 - Once the errors are identified & corrected, the trainee may be given the third and last attempt to pass the C1 exam.
- b) **A Controller Practical Test (CPT)** either online or via Sweatbox. This exam shall be taken and passed any time within the period of Solo Validation in accordance to the requirements of VATSIM Global Rating Policy.

15.6 Throughout the course of training, trainer shall track and record the performance and competency of the trainee as specified by the Training Manager. This record will be used to determine when the trainee is ready for the C1-to-C3 training, as well as used for internal evaluation.

15.7 The Controller Practical Test (CPT) normally shall be conducted in VATSIM online environment in accordance to the guidelines set by the VATSIM Global Rating Policy.

15.8 SRM vACC Training Department shall arrange the CPT within a reasonable timeframe after having been requested to do so by the member. Member can also opt to request that a VATWA examiner to conduct the CPT (whose evaluation will be final) at a randomly chosen FIR.

15.9 The Controller Practical Test (CPT) will focus on the following:

A) GENERAL

- Demonstrate understanding of the ATS role.
- Demonstrate service delivery awareness.
- Manage communication priority.
- Use correct phraseology in English.
- Manage Flight Strips, Tags and Flight Plans.
- Display professional behaviour and pleasant attitude.

B) ATC COORDINATION

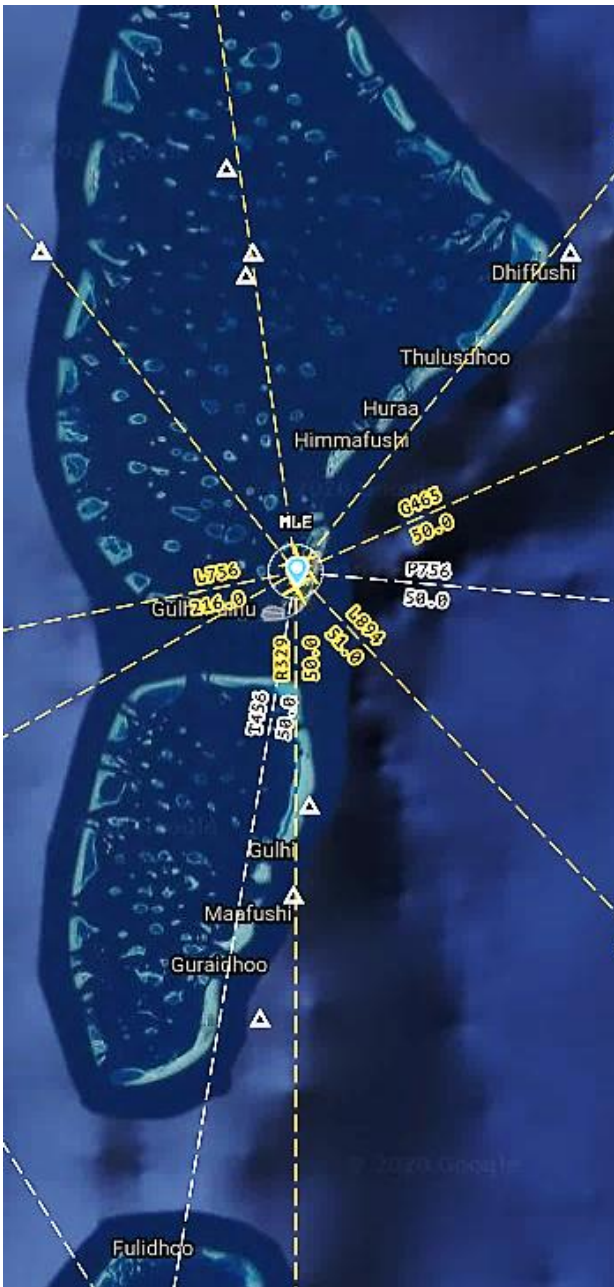
- Ability to service multiple airports/positions.
- Ability to handle IFR and VFR flights sharing the same airspace.
- Ability to handle abnormal situations.
- Ensuring the steady traffic-flow.
- Traffic awareness covering the entire FIR.
- Ability to coordinate with adjacent controllers.

C) TRAFFIC MANAGEMENT

- Issue appropriate CTR instructions as required.
- Apply advanced altimetry concepts.
- Provide suitable vectors to aircraft when required.
- Initiate holding when necessary to regulate traffic flow.
- Adjust aircraft speed or track to achieve initial sequencing for arrival.
- Provide traffic services appropriate for class of airspace.
- Provide additional information or navigation service.
- Issue airways clearance to aircraft entering FIR sectors.
- Issue RNAV/SID/STAR clearance where necessary.
- Provides services appropriate to VFR aircraft.
- Terminate services for aircraft leaving FIR sectors.
- Correctly transfers aircraft to next ATC unit.

D) SEPARATION

- Provide separation service appropriate for class of airspace.
- Apply appropriate vertical separation between aircraft.
- Apply appropriate vertical separation to aircraft operating in the RVSM airspace.
- Apply time separation between aircraft in a non-radar environment.
- Apply separation between aircraft in a radar environment.
- Pre-emptively apply separation assurance to avoid, rather than resolve conflicts.



15.10 C1 to C3 Upgrade

15.11 According to VATSIM's Global Rating Policy (GRP) no ATC position can require a higher rating than Enroute Controller (C1). However, the Senior Controller rating C3, whilst not directly linked to an ATC position as such, is considered to be the highest controller rating recognizing the knowledge, skill and seniority that a member can achieve and one achieved, remains a permanent rating.

15.12 All members holding a C1 rating are eligible to apply for a promotion to C3 rating based on the following criteria.

- a) The member shall be C1 rated for at least one year
- b) Has completed 100 hours as a C1 in SRM FIR ATC positions.
- c) Has served 100 hours as active ATC within the last 12 months.
- d) Has spent 25 hours as a mentor in a C1 position (acknowledged by VACC Director).
- e) Be able to prove that s/he has made a positive contribution to the development/promotion of student controllers in SRM.
- f) Have successfully passed a CPT (to be determined by at least two examiners, with at least one divisional examiner and at least one local examiner).
- g) Be recommended for promotion by the VACC Director.

Measurement of	Units
Distance used in navigation, position reporting, etc; generally in excess of 2 to 3 nautical miles	Nautical miles and tenths but spoken as 'miles'
Distance from cloud	Metres
Relatively short distances such as those relating to aerodromes (e.g. runway lengths, distances of obstructions from runway or of facilities from the aerodrome where accuracy of greater than one tenth of a nautical mile is required)	Metres
Radar-position reporting and ranges from touchdown	Nautical miles and/or fractions thereof but spoken as 'miles'
Radar-azimuth displacement from final approach track	Metres
Altitudes elevations and heights	Feet
Depths of snow and slush	Centimetres or millimetres
Horizontal speed including wind speed	Knots
Vertical speed	Feet per minute
Wind direction for landing and take-off	Degrees Magnetic
Wind direction except for landing and taking off	Degrees True
Visibility (including flight visibility)	Kilometres and Metres
Runway visual range	Metres
Altimeter setting	Hectopascals
Temperature	Degrees Celsius
Weight	Metric tons or Kilogrammes
Time	Hours and minutes, the day of 24 hours beginning at midnight UTC

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