
# CLEARANCE & GROUND AIR TRAFFIC CONTROL

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# Chapter 1 – Clearance Delivery

1-1 Clearance delivery, All IFR and VFR aircraft departing controlled airspace are required to obtain a clearance prior to departure.

1-2 An IFR clearance is authorization for an aircraft to operate under instrument flight rules in controlled airspace along a route and altitude specified by ATC. It is not a clearance to taxi, takeoff, fly an instrument approach or land.

1-3 When an aircraft calls for its IFR clearance unless you are ready to issue it right away you should tell the aircraft "Clearance on request". The will give you some time to review the flight strip and formulate a clearance.

1-4 When you are ready to issue a clearance with NO changes you should tell the aircraft "Clearance available advise when ready to copy". This will give the pilot time to finish whatever he's doing and get ready to copy the clearance.

1-5 If you have made minor change, like the cruise altitude you with tell the aircraft "Clearance available with amendments advise ready to copy". The lets the pilot know that you have changed something in his flight plan.

1-6 If the flight plan is incorrect due to an error in the selected SID or a incorrect airway to a departure gate you will need to correct this. You will advise the pilot that the routing filed is incorrect and ask him if he is able to accept re-routing.

1-7-1 A detailed IFR clearance contains nine items in the following order:

1. Aircraft Identification
2. Clearance Limit
3. Departure Procedure
4. Rout of Flight
5. Altitude in order to be flown
6. Holding Instructions
7. Special Information
8. Departure Frequency
9. Transponder Code

1-7-2 All IFR clearances MUST contain a clearance limit, route and altitude as a MINIMUM. In practice, the nine detailed items are usually reduced down to five basic elements.

1-7-3 Clearance Limit. This is the farthest point along its route the aircraft may fly. Usually it will be the destination airport but it may also be an intermediate fix where the aircraft will be required to hold.

1-7-4 Route of flight. This is the route the aircraft will take to get to its clearance limit. Usually it will be whatever is in the pilot's flight plan or "As filed." However, you may need to change it depending on traffic and other factors. You will also determine if a SID (Standard Instrument Departure) is available for the airport. If there is a SID you will issue that clearance to fly the SID in the rout section. SID's and STARS are explained in the Approach Training chapters 10 & 11.

1-7-5 Altitude. This will usually be the cruise altitude the pilot has filed in his flight plan or a corrected one close to it. Many of Thailand routes have altitude restrictions. No intermediate altitudes are assigned in Thailand. If the higher controller (Approach or Center) advises you to issue an aircraft a altitude lower than the cruise altitude you will then issue that altitude in the clearance.

1-7-6 Frequency for departure control. This is given on the ground so the pilot can be prepared. The departure frequency will always be the Approach or the center controller whichever is the lower position online. The departure frequency will NEVER be with Tower or Ground. If no ATC is online above the tower position the departure frequency will be 122.800 (Unicom). Thailand Controllers never issue a Departure frequency in the clearance.

1-7-7 Transponder Code. A transponder is an electronic device that produces a response when it receives a radio-frequency interrogation. In aviation, aircraft have transponders to assist in identifying them on radar and on other aircraft's collision avoidance systems. The code will allways be a four digit code. As long as you have the "POF" file loaded the correct Squawk code will be assigned for your position. All VFR aircraft in Thailand airspace shall be issued their own unique squawk code.
We do not issue:

1. 7500 which is the hijack code
2. 7600 which is the lost communications code
3. 7700 which is the emergency code

1-7-8 As you can see this results in the easy to remember mnemonic of CRAFT. Clearance limit, Route, Altitude, Frequency, Transponder. Thailand Controllers include most of this information but in a different format.

Examples and Phraseology:
Flight plan: VTBS to VHHH, H/B772/Q, BKK A202 KRT W37 SAV A202 SIKOU at FL330
Pilot: "Suvarnabhumi Clearance delivery, THA126 at gate A6, Request IFR Clearance to Hong Kong. Flight Level 330. Airway A202 "
ATC: " THA126, Suvarnabhumi Clearance delivery, clearance on request."
ATC: "THA126, Clearance available advise ready to copy."
Pilot: "THA126, ready to copy."
ATC: THA126 cleared to the Hong Kong aerodrome via airway A202, flight plan route. Maintain FL330. COSMO1B departure. Squawk 4502.
Pilot: Pilots reads back clearance and if read back correctly.
ATC: "THA126, Read back correct, contact ground for taxi, good day."

Flight plan: VTBS to VTHH, H/B772/Q, BKK A202 KRT W37 SAV A202 SIKOU at FL330 "NO SID" or no RNAV capabilities
Pilot: "Suvarnabhumi Clearance delivery, THA126 at gate A6, Request IFR Clearance to Hong Kong. Flight Level 330. Airway A202 "
ATC: " THA126, Suvarnabhumi Clearance delivery, clearance on request."
ATC: "THA126, Clearance available advise ready to copy."
Pilot: "THA126, ready to copy."
ATC: THA126 cleared to the Hong Kong aerodrome via airway A202, flight plan route. Maintain FL330. Expect Radar vectors after departure. Squawk 4502.
Pilot: Pilots reads back clearance and if read back correctly.

ATC: “THA126, Read back correct, contact ground for taxi, good day.”

Some airports do not have Radar or SID’s and the pilot must navigate to his route. Here is an example of a clearance from a airport that provides procedural control (non-radar).

Flight Plan: VTCN to VTPP, DH8/A, NAN W29 PSL at FL100.
Pilot: “Nan Clearance delivery, THA126 at gate 2, Request IFR Clearance to Phitsanolok aerodrome. Flight Level 100. Airway W29 ”
ATC: “ THA126, Nan Clearance delivery, clearance on request.”
ATC: “THA126, Clearance available advise ready to copy.”
Pilot: “THA126, ready to copy.”
ATC: THA126 cleared to the Phitsanulok aerodrome via airway W29, flight plan route. Maintain FL100. Squawk 4502.

Push back request and phraseology:
Pilot: “Suvarnabhumi Ground, THA126 at stand A6 (gate) with information Alpha, request push and start.
ATC: “ THA126, Suvarnabhumi Ground, Push and Start approved. Face North.
Pilot: “THA126, ready for taxi.”
Remaining Taxi instruction in Chapter 7.

1-7-9 Aircraft equipment codes. Equipment codes are placed after the end of the aircraft type ICAO code “/” Examples; B733/E, H/B744/Q, DH8/A

1-7-10 These codes let us know what the capabilities of the aircraft are. Like does the aircraft have DME, Can the aircraft fly to intersections or only VOR to VOR, Can the aircraft fly a RNAV SID or STAR. ** The one thing we must remember is that the many pilot don’t know the true meaning of the equipment codes and may file a flight plan with the “Q” code and then tell you they can’t fly RNAV SID’s or STAR’s.

The Equipment codes are listed below:

| Suffix | Equipment |
|---|---|
| No DME | |
| /X | No Transponder |
| /T | Transponder (No Mode C) |
| /U | Transponder (Mode C) |
| DME | |
| /D | No Transponder |
| /B | Transponder (No Mode C) |
| /A | Transponder (Mode C) |
| TACAN Only | |
| /M | Transponder |
| /N | Transponder (No Mode C) |
| /P | Transponder (Mode C) |

| RNAV | |
|---|---|
| /Y | LORAN, VOR/DME, or INS with no transponder |
| /C | LORAN, VOR/DME, or INS with transponder (No Mode C) |
| /I | LORAN, VOR/DME, or INS with transponder (Mode C) |
| **Advanced RNAV (With Transponder)** | |
| /E | Flight Management System (FMS) with DME/DME and IRU position updating |
| /F | Flight Management System (FMS) with DME/DME position updating |
| /G | Global Navigation Satellite System (GNSS), including GPS or WAAS, with enroute and terminal capability. |
| /R | Required Navigational Performance. The aircraft meets the RNP type prescribed for the route segment(s), route(s) and/or area concerned. |
| **Reduced Vertical Separation Minimum (RVSM)** | |
| /J | /E with RVSM |
| /K | /F with RVSM |
| /L | /G with RVSM |
| /Q | /R with RVSM |
| /W | RVSM |

1-7-11 **RVSM, Reduced Vertical Separation Minima** or **Minimum** (RVSM) is an aviation term used to describe the reduction of the standard vertical separation required between aircraft flying at levels between FL290 (29,000 ft.) and FL410 (41,000 ft.) from 2,000 feet to 1,000 feet (or between 8,900 metres and 12,500 metres from 600 metres to 300 metres in China). This therefore increases the number of aircraft that can safely fly in a particular volume of airspace. The North Atlantic System Groups that implemented RVSM first determined that they were only implementing a change to one minimum from 2,000' to 1,000'; therefore, that minimum being singular the correct terminology is minimum not minima. Thailand Division uses RVSM with the exception of the following routes

# Chapter 2 - An introduction to ground control

2-1 Ground Control is responsible for the airport "movement" areas, or areas not released to the airlines or other users. This generally includes all taxiways, holding areas, and some transitional aprons or intersections where aircraft arrive having vacated the runway and departure gates. Exact areas and control responsibilities are clearly defined in local documents and agreements at each airport. In the real world any aircraft, vehicle, or person walking or working in these areas is required to have clearance from the ground controller. Ground control is vital to the smooth operation of the airport because this position might constrain the order in which the aircraft will be sequenced to depart, which can affect the safety and efficiency of the airport's operation.

2-2 In real-life, Ground Control and Local Control (TWR) are located next to each other in the Tower Cab. They can communicate by visual signals or simply speaking to each other. They control aircraft based primarily on what they see out the windows. Here on VATSIM with your radar client, it is a bit more complicated. You can’t see when TWR points to an aircraft, chatboxes aren’t nearly as quick as speaking, and you can’t throw the flight strip for the next departure at TWR to get his attention. Neither of you can actually see the aircraft holding short or exiting the runway. Several controlled airports in Thailand do not have a ground control position. In these cases the tower controller will assume all ground control responsibilities.

# Chapter 3 - Initial Contact and Position Determination

3-1 You should always try to provide airport traffic control service based on known or observed conditions. This is more difficult with ASRC/VRC than in real-life. Even with a specific Ground Control sector file aircraft positions may not be exact. Greater reliance must be put on aircraft position reports. Before you begin controlling an aircraft, you must know where it is. It could be on the other side of the airport from where you think, in someone else's airspace, or even at whole different airport! Issuing control instructions in these cases could easily create a conflict.

3-2 When an aircraft calls you first look for a data block with its callsign. If you do not see any data blocks select Ground or Tower radar mode. In these modes all data blocks will be seen even if they are squawking stand-by. You should also see the aircraft's callsign in the Arrivals/Departures list for ASRC/VRC. When you select the aircraft the data block will change color. If you still can't find the aircraft, just ask the pilot to "*SAY LOCATION*." Once in a great while even these techniques don't work. The only solution is for the aircraft to log off and back on.

# Chapter 4 - Coordination and Observed Abnormalities

4-1 You must obtain approval from Tower before authorizing an aircraft or vehicle to enter any part of an active runway. In real-life, each instance must be individually coordinated. Here in VATUSA, it isn't unusual for TWR to grant a blanket approval to cross when GND sees it's safe to do so. You should coordinate with TWR to determine the method he wants to use when you first sign on. TWR will coordinate with you before using any runway not previously designated as active. This allows you to taxi aircraft on or across any inactive runways without coordination. You must notify TWR anytime you taxi an aircraft to any runway other than the active or to a runway intersection for departure.
If you are working Ground combined with Clearance Delivery you should coordinate with the controller performing the Departure function. This may be DEP, APP, or CTR. Determine any preferred routes or initial altitude restrictions to be included in IFR clearances and what departure frequency and squawks to assign.

4-2 When coordinating with another controller or responding to requests from aircraft use the following terms:
To grant permission for the requested operation, state the operation and the word "*APPROVED*"
"Start Approved"
"Pushback Approved"
To deny permission use the word "*UNABLE*" and when possible give the reason.
"UNABLE Departure off Runway 36 Due To Noise Abatement."
If you aren't able to respond to a request right away, use the word "*STANDBY*." This is neither an approval nor denial; just that you have received the request and will respond later.
Issue information about the airport necessary for an aircraft's safe operation in time for it to be useful to the pilot. Aircraft parked on the movement area is the only one likely to occur in PC/SB. Other information would include construction, less than normal braking action, or other pertinent airport conditions. Issue information about other aircraft, vehicles, or personnel in an easy to understand manner such as "*AIRBUS TO YOUR RIGHT*" or "*L-1011 AHEAD OF YOU*" or "*FIRE TRUCK LEFT OF RUNWAY 27*." When describing any observed abnormal aircraft condition, always use the term "*APPEARS*", e.g. "*IT APPEARS YOU HAVE TAXIED PAST THE RUNWAY END*."

# Chapter 5 - Gate-Hold and Taxi Delays

5-1 Once demand exceeds runway capacity at an airport, airway capacity, surface congestion increases, which in turn may cause a delay/hold due to the narrowness of taxiways and ramp area alleyways. These delays/holds are known as "gate-hold/delays" which are observed at selected airports to hold aircraft at the gate or other ground location whenever departure delays exceed or are anticipated to exceed 15 minutes. In Thailand 10 minute separation is required between aircraft on same airway at same cruise altitudes.

5-2 As we mentioned in the introduction, some facilities will place gate-holds in effect due to large amounts of traffic as a result of an airport event.

5-3 When gate-hold procedures are in effect, advise departing aircraft of the time they can expect to receive engine startup approval.

"GATE HOLD PROCEDURES ARE IN EFFECT. EXPECT ENGINE START AT (TIME)."

5-4 Advise all aircraft when gate hold procedures are terminated.

"GATE HOLD PROCEDURES NO LONGER IN EFFECT."

Advise departing aircraft when to start engines and to advise when ready to taxi.

"START ENGINES, ADVISE WHEN READY TO TAXI."

or

"ADVISE WHEN READY TO TAXI"

# Chapter 6 – Ground Movement Operations

6-1 Issue specific instructions which approve or disapprove the movement of aircraft or vehicles on the movement area. It isn't likely you will control many vehicles on ASRC/VRC but if the situation comes up you should apply these procedures.

6-2 Do not issue conditional instructions that are dependent upon the movement of an arrival aircraft on or approaching the runway or a departure aircraft established on a takeoff roll. Do not say, "POSITION AND HOLD BEHIND LANDING TRAFFIC," or "TAXI/PROCEED ACROSS RUNWAY THREE SIX BEHIND DEPARTING/LANDING JETSTAR." The above requirements do not preclude issuing instructions to follow an aircraft observed to be operating on the movement area in accordance with an ATC clearance/instruction and in such a manner that the instructions to follow are not ambiguous.

6-3 Do not use the word "cleared" in conjunction with authorization for aircraft to taxi or equipment/vehicle/personnel operations. Use the prefix "taxi," "proceed," or "hold," as appropriate, for aircraft instructions and "proceed" or "hold" for equipment/vehicles/personnel.

6-4 Intersection departures may be initiated by a controller or a controller may authorize an intersection departure if a pilot requests. Issue the measured distance from the intersection to the runway end rounded "down" to the nearest 50 feet to any pilot who requests and to all military aircraft, unless use of the intersection is covered in appropriate directives.

6-5 Sometimes it is more efficient for an aircraft to depart from a runway intersection instead of going all the way to the end. Issue the estimated distance from the intersection to the runway end to any pilot who requests it and to all military aircraft e.g. "RUNWAY 36 INTERSECTION DEPARTURE ESTIMATED 4000 FEET AVAILABLE." Be careful about initiating or approving pilot requests for intersection departures. Depending on aircraft weight categories an intersection departure may incur a greater delay due to wake turbulence separation or the aircraft may block landing aircraft from exiting the runway.

# Chapter 7 – Taxi Instructions

7-1 There are several types of taxi instructions:

1. Taxi without hold instructions
2. Taxi with holding instructions
3. Taxi to intersection with or without holding instructions
4. Progressive taxi instructions
5. Helicopter taxi instructions

7-2 When you instruct an aircraft to taxi or proceed to any point other than an assigned takeoff runway, if you don't issue any hold short instructions the aircraft may cross all taxiways and runways that intersect the taxi route, including the active runway. If you want the aircraft to hold short at any point along the taxi route you must issue specific hold short instructions.

7-3 Use the phrase "Taxi to holding point (number)[Runway (number)]" when instructing an aircraft to taxi to an assigned takeoff runway without hold short instructions. This authorizes the aircraft to cross all runways and taxiways which intersect the taxi route except the assigned takeoff runway at any point.
Pilot: "Suvarnabhumi Ground, THA126, ready for taxi."
ATC: " THA126, Suvarnabhumi Ground, Taxi to holding point B1 runway 19R QNH (xxxx)."

Or

ATC: " THA126, Suvarnabhumi Ground, Taxi to holding point runway 19R QNH (xxxx)."

Or

ATC: " THA126, Suvarnabhumi Ground, Taxi to holding point B1 runway 19R via Golf, Foxtrot Bravo Bravo one QNH (xxxx)."

Or

ATC: " THA126, Suvarnabhumi Ground, Taxi to holding point runway 19R via Golf, Foxtrot, Bravo, Bravo one QNH (xxxx)."

Or

ATC: " THA126, Suvarnabhumi Ground, Taxi to holding point B1 runway 19R via runway 19R taxi route QNH (xxxx)." Use this only if the airport has a published taxi route.

7-4 Use the phrase "Taxi to holding point (number) [Runway (number)] via (route), Hold short of (Runway or taxiway). When instructing an aircraft to taxi in this manner, the aircraft must follow the routing you issue and hold at the point given in the taxi clearance. The pilot should report holding at the point given to hold at. You must then follow up with a second clearance to have the aircraft to cross the holding point and issue the routing to the next holding point.
Pilot: "Suvarnabhumi Ground, THA126, ready for taxi."
ATC: " THA126, Suvarnabhumi Ground, Taxi to holding point B1 runway 19R via Golf, Bravo, Hold short of taxiway Delta."

Or

ATC: " THA126, Suvarnabhumi Ground, Taxi to holding point runway 19R via Golf, Bravo, Hold short of taxiway Delta."
Pilot: "THA126, holding short of Delta."
ATC: " THA126, Cross Taxiway Delta, Taxi to holding point B1 runway 19R via Bravo"

Or

ATC: " THA126, Cross Taxiway Delta, Taxi to holding point runway 19R via Bravo"

7-5 Progressive taxi instructions are usually not necessary unless requested. If a pilot requests progressive taxi information you should make the instruction concise and easy to understand.

Pilot: “Suvarnabhumi Ground, THA126, ready for taxi, request progressive taxi instructions.”
ATC: “ THA126, Suvarnabhumi Ground, Taxi straight ahead, turn left at the next intersection”

7-6 Intersection Departures.
Pilot: “Suvarnabhumi Ground, THA126, ready for taxi, request intersection departure at Bravo three.”
ATC: “ THA126, Suvarnabhumi Ground, Taxi to holding point Bravo three at runway 19R via Golf, Bravo.”
Remember that if you need hold an aircraft and a point along the taxi rout to issue a taxi instruction with Hold Short instructions.

7-7 Taxing helicopters. Helicopters can HOVER TAXI which is taxing in ground effect below 20 kts or AIR TAXI which is taxing below 100 AGL above 20 kts
Pilot: “Suvarnabhumi Ground, Helicopter126, ready for taxi,
ATC: “ Helicopter126, Suvarnabhumi Ground, Air Taxi to the East pad”
Or
ATC: “ Helicopter126, Suvarnabhumi Ground, Air Taxi to the East pad via ALPHA, ECHO”
Or
ATC: “ Helicopter126, Suvarnabhumi Ground, Hover Taxi to the East pad”

# Chapter 8 – Departure Information

8-1 Before an aircraft departs you must provide current departure information. This is normally done when the aircraft taxis. Departure information contained in the ATIS broadcast may be omitted if the pilot states the appropriate ATIS code. If a pilot reports that he “has the numbers,” this is not the same as having the ATIS information. When a pilot “has the numbers,” he knows the Runway in Use, Surface Winds, and Altimeter. He does not necessarily have the other departure information. If a pilot states he “has the numbers,” you may omit the Runway, Winds, and Altimeter from your transmissions, similar to when a pilot has the ATIS information.

8-2 Departure information consists of:

1. Runway in use.
2. Surface wind.
3. Altimeter setting.
4. Ceiling and visibility when below VFR conditions.
5. Taxi information. You need not issue taxi route information unless specifically requested.
6. Time (UTC), when requested.
7. An advisory for General Aviation aircraft to "CHECK DENSITY ALTITUDE" if the field elevation/temperature (F) is above 2000/85, 3000/80, 4000/75, 5000/70, 6000/65, 7000/60.
8. Braking action reports any time braking action is reported as "POOR" or "NIL."

ATC: “ THA126, Suvarnabhumi Ground, Taxi to holding point B1 runway 19R via Golf, Foxtrot Bravo Bravo one, Winds 190 at 5 QNH 1004.”

Additional Phrases used by ground:
Use these to allow a aircraft to taxi on a runway
Backtrack approved
Backtrack Runway 19
ATC: “ THA126, Suvarnabhumi Ground, Taxi to holding point runway 19R, follow the 737 passing right to left.”
ATC: “ THA126, Suvarnabhumi Ground, Taxi to holding point runway 19R, give way to the 737 at your left.”
Expedite taxi
Hold position
Taxi to terminal

See ICAO Document 4444 for additional information.
Written by John Holt
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