

IFATC Study Guide

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Source 1 | ATC Manual

1. Introduction

1.1. Overview

- Notes:
N/A

1.2. Abbreviations/Vocabulary

- Notes:

Abbreviation	Word	Meaning
AAL	Above Aerodrome Level	An attitude that is given above the nearest aerodrome or airport.
AGL	Above Ground Level	The literal height above the ground over which you're flying.
Alt	Altitude	The height of an object or point in relation to sea level or ground level
ATC	Air Traffic Control	A service provided by ground-based air traffic controllers who direct aircraft on the ground and through controlled airspace.
ATIS	Automatic Terminal Information Service	A continuous broadcast of recorded aeronautical information in airports.
FF	Flight Following	A VFR flight receiving radar-like services from a facility
FPL	Flight Plan	Documented points that

		indicate the plane's planned route or flight path.
Ft	Feet	A unit of length.
GMT	Greenwich Mean Time	Mean solar time at the Royal Observatory in Greenwich, London.,
GPS	Global Positioning System	A satellite-based radio navigation system.
GA	General Aviation	All civil aviation.
G/A	Go-Around	A procedure that is performed if a pilot is not completely satisfied that the requirements are in place for a safe landing.
GS	Groundspeed	The horizontal speed of an aircraft relative to the Earth's surface.
G/S	Glideslope	a system of vertical guidance embodied in the instrument landing system which indicates the vertical deviation of the aircraft from its optimum path of descent
HWC	Headwind Component	Faces at the nose of aircraft
KIAS	Knots Indicated Airspeed	N/A
IAS	Indicated Airspeed	The airspeed read directly from the airspeed indicator (ASI) on an aircraft.
ICAO	International Civil Aviation Organization	UN based aviation agency.
IFR	Instrument Flight Rules	A set of regulations that dictate how aircraft are to be operated when the pilot is unable to navigate using visual references under visual flight rules.
ILS	Instrument Landing System	Provides short-range guidance to aircraft to allow them to approach a

		runway at night or in bad weather.
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Kts	Knots	1nm/hr Aviation Speed
LOC	Localizer	A system of horizontal guidance in the instrument landing system,
LUAW	Line Up And Wait	Used by ATC to inform a pilot to taxi onto the departure runway to line up and wait.
METAR	Meteorological Aerodrome Report	A format for reporting weather information.
MSA	Minimum Sector Altitude	Lowest safe altitude.
Nm	Nautical Mile	A unit used in measuring distances at sea.
NOTAMS	Notification to Airmen	A notice containing information essential to personnel concerned with flight operations.
RET	Rapid Exit Taxiway	Designed to be runway exits only.
RV	Radar Vectors	Instructions issued by ATC to facilitate the smooth and expeditious flow of traffic.
RWY	Runway	A strip of hard ground along which aircraft take off and land.
SID	Standard Instrument Departure	A standard ATS route identified in an instrument departure procedure by which aircraft should proceed from the take-off phase to the en-route phase.
STAR	Standard Terminal Arrival Route	A published flight procedure followed by aircraft on an instrument flight rules flight plan just before reaching a destination airport.

TAF	Terminal Aerodrome Forecast	Official FAA forecast of aviation activity.
TOD	Top of Descent	Computed transition from the cruise phase of a flight to the descent phase
TWC	Tailwind Component	Wind that faces the tail of aircraft from the back.
UTC	Coordinated Universal Time	Primary time standard.
VFR	Visual Flight Rules	A pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.
VIS	Visual	N/A
VMC	Visual Meteorological Conditions	The meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling
VNAV	Vertical Navigation	An onboard navigation system displays a constant rate descent path to minimums.

2. Ground

2.1. Runway Selection and Pushback

- Notes:
 - Steps:
 - 1. Familiarize yourself with the taxiway layout, know the largest possible aircraft, see & determine runways in use, scan where traffic is within the airport.
 - 2. Look at the METAR and decide on the best runway to use. Look at the TAF to understand expected wind changes. Try to avoid switching runways, most aircraft can land at 10 TWC.
 - 3. Get on the frequency.
 - 4. If an aircraft requests pushback, check the area is clear, if not, use "hold position", adding on, check if the request is valid, can the aircraft

pushback? Does it need to? Using “expect runway xx” is not always needed unless the aircraft needs to pushback in a certain direction.

2.2. Taxi and Use of Give Way

- Notes:
 - Steps:
 1. Always monitor the ground in case of progressive instructions or giving way.
 2. The First command is for departure is “Taxi to RWYXX, contact tower when ready.” If an aircraft has arrived, when at a suitable speed, the tower will hand it over to you and you should issue a “taxi to parking”.
 3. If you’re using progressive tax instructions, be very careful with it, use it only when necessary, you should send “expect progressive taxi instructions” Once they are not required, send “continue taxi at your own discretion”
 4. If an aircraft is ready to change frequency, and request a change, check if you have already said “change frequency when ready”, if so, send “frequency change already sent”, if not, approve it.

2.3. Runway Crossing

- Notes:
 - Steps:
 1. Make sure to make anticipated runway changes and not wait for a pilot.
 2. If & When a pilot requests a runway crossing, first check if it’s needed, see if the pilot can simply taxi to the runway, the space behind a runway is also part of the runway, so they should cross the threshold partition.
 3. If a cross is needed, issue it via the runway being used, so if 18/36 is there, and 18 is in use, but the pilot requests crossing over 36, send him instructions to cross 18.
 4. If runways are not aligned, simply send a runway crossing.
 5. Using progressive taxi commands can be used to ensure the aircraft’s proper exit.

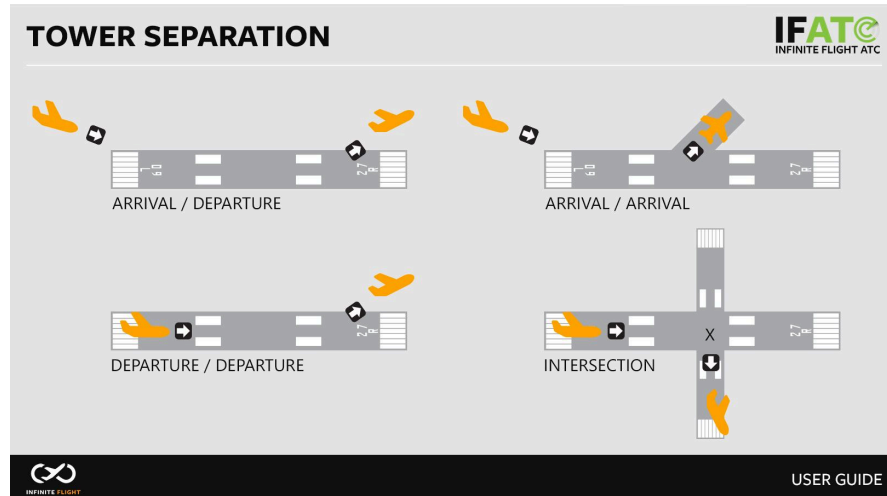
3. Tower

3.1. Separation

- Notes:
 - Steps:

Type	Rule
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Departure / Departure	The first aircraft must be airborne before the second aircraft* commences the take-off roll.
Arrival / Arrival	The first aircraft must have vacated the runway before the second aircraft crosses the threshold.
Departure / Arrival	The first aircraft must be airborne before the second aircraft crosses the threshold.
Intersecting	Arriving/departing aircraft must be beyond the runway intersection prior to a departure beginning its takeoff roll or an arrival crossing the threshold on an intersecting runway.



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- 1. Decide which scenario is happening, think with anticipation.
- 2. Take into account the aircraft type & speed, be efficient, don't use unnecessary hold-shorts or expediting takeoffs.
- 3. If separation is lost, you can cancel T/O clearance, issue a go-around, or ask aircraft to maintain the lowest practical speed. The lowest practical speed shouldn't be used when the aircraft is on approach speed and is 4 miles from touchdown.

3.2. Departures

- Notes:

- Steps:

- 1. Only issue a hold short if you can't clear an aircraft or issue a LUAW command, this is mandatory.
- 2. When issuing a hold short, feel free to use a sequence number, if there is a queue, hold short must be used. If a pilot requests T/O in a sequence, keep it in mind, approve it, and give them a number to follow.

- 3. Issue a back-taxi command when back-taxi needed, if pilots know they need to back taxi, clear them for take-off, if you sense that they don't, issue a back-taxi, with a LUAW, or T/O as they turn to line up.
- 4. If you're dealing with intersection departures, make sure to use departure sequences and anticipate and predict separation.
- When using LAUW, anticipate and predict, you can allow an aircraft to LUAW if you feel that the other aircraft will be airborne by the time their takeoff roll starts. Make sure to take into consideration expected climb-speed.
- 5. Immediate T/O should only be used for D/A where separation could be lost. Done with aircraft is on final with 2nm or less.
- 6. Make sure to understand the distance from an aircraft and the runway, if an aircraft is on a 3 degree GS, there's a range of 2nm when the plane is at 600 feet.
- 7. If you're using Straight Out Dept. , make sure to add fly runway heading until at or above XXXXft" with every aircraft as a final reminder.
- 8. Issue a frequency change when the aircraft is ½ mile of the departure end or when aircraft is 1000 to 1500 feet above airport elevation, not when flying patterns for touch and goes though.

3.3. Inbounds

- Notes:
 - Steps:
 - 1. Any aircraft coming into your airspace should be issued a pattern entry. Make sure the aircraft's FPL doesn't disrupt your plan.
 - 2. Use continue inbound if you're unsure of pattern entry. This must be updated before reaching the pattern.
 - 3. Use sequencing if there are multiple aircraft.
 - 4. You can change runways for certain aircraft if it doesn't disturb other aircraft. If so, a new pattern entry, and clearance must be used
 - 5. When doing pattern work, use Cleared for the Option.
 - 6. If the pilot already had a certain traffic sequence from T/O, then using Cleared for the option, Right/Left traffic shouldn't be used.
 - 7. If a new pattern entry or runway is given, you must clear them for the option.
 - ALL inbounds must first be issued a pattern entry, a sequence if possible, and then clear them for the option. If doing patterns, send a traffic side.

3.4. Pattern Work/Transitions/Flight of XX

- Notes:
 - Steps:
 - 1. When using pattern work, please make sure for GA aircraft, the altitude is 1000ft AAL, and 1500ft AAL for jets.
 - 2. Double check that your airport can use pattern work, do a test round before opening, follow VMC, basically you need a minimum of 3 nm.
 - 3. Airports with terrain can't be used for patterns.
 - 4. If traffic is too much, controllers and temporarily turn pattern work off, afterwards, you must resume pattern.
 - Aircraft have to request a transition if they are in the most immediate ring surrounding the airport and are within 5000ft of the ground.
 - Transition Altitude is calculated adding 2,500ft to the airport elevation, and round it up to the nearest 500ft. Why 2,500ft? 1,500ft are for the maximum pattern altitude (for jets) + 1,000ft of vertical separation.
 - The rule of 3nm and 500(GA) and 1000(TJ) separation must be used in transition.
 - When dealing with Flight of XX, send commands only to the leading aircraft, separation is the pilot's responsibility.

3.5. Exit Runway/Go-Around

- Notes:
 - Steps:
 - 1. Exit Runway Command should be given when the aircraft is less than 70kts. The expedite command should not be used unnecessarily. If there are aircraft on a 2nm-3nm final, and another aircraft is to depart or another landing, this must be used.
 - 2. If aircraft do not switch frequency, issue a freq. Change approved, or a contact ground command
 - 3. Use hold short/cross runway commands when dealing with parallel runways
 - 4. When issuing a go-around, send a traffic pattern, sequencing and clearance is required though.

Source 2 | YouTube Videos

- Video Links:
 - IN PROGRESS OF MAKING

Source 3 | Practice Test

- Test link:
 - Link:
 - Try 1 %
 - Try 2 %
 - Try 3 %
 - Try X %

| Feedback & Notes From Sessions |

- **Session 1: [KSAN]**
- Ground was good
- Separation is something you have to be aware of. As @DannyHL said, you missed quite a few go arounds, especially during base and final. In the end I had to announce go around due to lost separation, which the controller is the one to give such an instruction, not the pilot.
- In general you missed a lot of Go Arounds, remember it is the controller whom should initiate this, and not the pilot.
- 09:06:36 There were no other planes on the airport or in the air by then.
- The maintain slowest practical speed was unnecessary.
- 09:06:38 Very late clearance. I was less than 1nm to the runway and the clearance should be issued during downwind or base.
- 09:07:19 Late exit runway command, it was at 50 knots instead of 70.
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- Only use expect runway XX when you know that you need them to face that direction to avoid any conflicts.
- I had no idea why you sent me back to the ground frequency, hence the "request frequency change"
- Really slow departure rhythm. Me and HB-ANT had multiple gaps for us to depart in. A good rule of thumb is, if the arrival is under 3 nm away it's a good idea to wait.
- I didn't receive any clearance or sequence during my entire pattern as a result I tried to hint it to you that you needed to give me a clearance + sequence with reporting position along the way. A good way to ensure this is to have everyone "green" on your screen before at the latest late downwind. You can already begin to sequence people on their crosswind leg.
- Saudia001VA should have been sequenced behind G-KEDZ after their transition, followed by a sequence to me to follow Saudia.
- In general you missed a lot of Go Arounds, remember it is the controller whom should initiate this, and not the pilot.
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- Incorrect transition altitude, 2000ft was too low. The pattern altitude at SAN is 1500 using the formula (airport elevation + pattern alt for jet which is 1500 AAL). From this, you need to add 1000ft to the pattern altitude and round it up to the nearest thousand. This would mean transition altitude at SAN is 2500ft AAL.
- Slow response times in general, be speedier to catch conflicts.
- I could of fit before Alaska, best thing was to sequence them behind me but sequencing me behind them was also fine. I would of had fit if you had faster response times.
- Pattern entry and sequence was good.
- No direction with clearance for the option, tell me what direction to make when it touch and go so i know where to fly the pattern. I made right traffic to not confuse you.
- No sequencing on second pattern, you needed to sequence me behind Alaska.
- No clearance for the option, had to announce my position and i still had not recieved any clearance.
- Got very close to HB-ANT. Despite my speed, you should have canceled their takeoff and sent me around. They had to stop themselves. Additionally, i had to call go around because i had not recieved any landing clearance.
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- No issu for ground
- Very long delay to receive a "hold short" instruction. I requested departure in sequence, what means you can give me "number 2 for departure" as N1DL was also waiting for takeoff.
- Could have told me to LUAW after the aircraft passed the threshold. You can be more efficient with arrival/departure.
- You should have cancelled my takeoff clearance and told G-KEDZ to Go-Around
- =====
- EHRD

Tower	Pattern Entry	No need to give "Turn Crosswind", you can just give me enter right/left downwind, and sequence (if needed).	Proficiency Level 6
Tower	Clearance	I should be number 2, not 1.	Proficiency Level 6
Tower	Clearance	Don't forget to sequence before clearing someone.	Proficiency Level 5
Tower	Clearance	No need to reclear.	Proficiency Level 5

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