

Briefing Pack
VATSIM First Wings
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Introduction

Welcome to this VATSIM First Wings Event! Whether it's your first time on VATSIM or you are looking to expand your horizons and build your experience, the aim is to provide a friendly, no-pressure environment for you to take your first steps.

Flying online with live ATC provides an added challenge as a result of the dynamic environment which is introduced. If this is your first online flying experience, it is likely that you will for the first time be faced with having to cope with changes to your flight plan and the need to fit in with other traffic and this can be daunting at first, but don't worry: everybody starts somewhere and everybody is still learning!

The most important thing to remember is that air traffic controllers and pilots **work together** to facilitate your flight and the flights of others. Communication is key – if you are unsure about anything then clarify with the controller, and don't worry if you don't know the standard word or phrase for something – plain English is fine (and if there is one you can go and look it up afterwards!).

Your first online flights can be an intense experience and if you are worried about pushing the PTT button for the first time, you are not alone – real student pilots often have the same feeling and so does everybody on VATSIM! However, controllers don't bite and provided you have prepared properly, do your best and try to learn something from every flight to take in to the next and improve upon, you can be assured that you are doing exactly right!

Good luck, relax, enjoy your flight – and see you in the skies!

Simon Kelsey
VP Pilot Training
VATSIM.net

Ready for Takeoff?

All good flights – whether real or virtual – start with good preparation, and the best way to ensure that your flight goes smoothly and with a minimum of stress is to ensure that you have everything you will need at your fingertips before you log in!

Simulator, Aircraft and Pilot Client

Obviously, you will need a compatible flight simulator and a suitable aircraft to fly. You will also need an approved VATSIM Pilot Client – this is a small piece of software which connects your simulator to the VATSIM network and allows you to communicate with other members and see the aircraft being flown by other members in your own simulator.

Pilot Clients

Your choice of pilot client will in part be determined by the simulator you use. A list of currently approved pilot clients can be found in the VATSIM Pilot Learning Centre at <https://my.vatsim.net/learn/vatsim-basics/section/5>.

Once you have installed your pilot client, take some time to read through the documentation supplied. If you have a headset with a microphone, take the time to check in your pilot client's settings that your headset and microphone are selected and your microphone's audio level is properly calibrated.

It is also worthwhile taking a few moments to explore your pilot client's main functions, such as the transponder controls, ATC list and flight plan filing. These details will be explained in your pilot client's documentation.

Aircraft

Select an aircraft which you are familiar with – learning how to fly and operate a new aircraft at the same time as learning how to deal with Air Traffic Control is a big ask and not even real airline pilots would be expected to do so!

Before connecting, you should be comfortable with the general operation of your aircraft from start-up to shut-down. In basic terms, you should be able to:

- Start, taxi, take-off, fly, land and taxi-in in a controlled manner
- Know how to use the navigation systems to enter and fly a flight plan
- Be capable of navigating successfully from one airport to another
- Be able to modify the flight plan in flight (for instance, to select a different departure, arrival or route direct to any particular waypoint)
- Accurately fly any given heading, altitude or airspeed (either manually or by using the autopilot functions)
- Be able to fly an approach and landing (for instance, using the Instrument Landing System (ILS))

The more confident you are with these basic aviation skills the easier you will find flying with live ATC! If you need guidance with these topics you should refer to the documentation supplied with your aircraft.

Weather

Whilst it is not an absolute requirement to fly with real-world weather on the VATSIM network, it is certainly strongly recommended – it helps everybody out if everybody is experiencing the same

conditions. You can imagine the problems that a controller might experience trying to sequence aircraft if one aircraft has a 200 knot tailwind and another is experiencing calm winds!

Charts and Navigation Data

Access to charts for your departure, destination and alternate aerodromes is a must! You can expect instructions to fly various instrument departure or arrival procedures, as well as taxi instructions, and the ability to plan, review and check any particular requirements such as altitude or speed restrictions which may only be printed on the chart is essential.

Charts

Contrary to popular belief, you don't (generally!) need to spend money on charts if you don't want to, although there are a number of benefits to paying for commercially-produced charts if you fly regularly.

Most countries publish charts through their AIP (Aeronautical Information Publication – a set of documents which provides all the information (and more!) that a pilot would need for flying within that airspace such as details of published instrument procedures, local procedures and regulations, details of radio navigation aids such as frequencies, coordinates and range, and so on). ChartFox (<https://chartfox.org/>) is a free service which pulls charts from the AIPs of each country where they are freely available – it is an excellent way to access all the charts you need for a flight in one place and all you need is a VATSIM account!

The two most common commercial (payware) chart providers are Navigraph (<https://navigraph.com/>) and Aerosoft NavData Pro (<https://www.aerosoft.com/en/flight-simulation/flight-simulator-x-steam/tools-missions/1485/navdatapro-charts-one-day-access>).

Various subscription packages are available and it is also possible to purchase both chart access and a navigation data subscription which will ensure that all of your navigation data aligns!

The main advantages of commercially-produced charts are that you get a consistent format and symbology no matter where in the world you are flying, and that the charts are optimised for “flight deck” use – that is to say that they are generally simplified and decluttered in comparison to the AIP charts.

Why is this? The answer is because the AIP charts are essentially “source data” – they have to cater for a wide range of real-world users from pilots to air traffic controllers to airport designers and aircraft performance engineers, all of whom have different needs and requirements. As a result they tend to include far more information than is strictly necessary for pilots alone.

That said, they are still very adequate for flight simulation use and you can be sure they will be up to date so don't be afraid to dive in!

Navigation Data

The world is not static – there are constant changes to airspace and air routes, and to cope with this every 28-days a fresh set of navigation data is published. This regular publication is known as the “AIRAC cycle” – AIRAC standing for Aeronautical Information Regulation And Control.

Each update cycle is given a four-digit number, where the first two digits represent the year and the last two the cycle number. So for instance, the sixth cycle of 2021 would be **2106**, or the first cycle of 1998 would be **9801**.

It is not completely essential to have the very latest navigation data in your simulator – controllers can work around the issue – but it is helpful to be aware of the potential issues which may arise if you do not have up to date navdata. For instance:

- SIDs and STARs may have been re-designated, re-routed or deleted altogether
- Waypoints may have been renamed or deleted (and thus may not be available in your FMS)
- Airways may have been removed, re-routed, added or re-named

These are not insurmountable issues but it pays to be aware of why they may arise.

Preflight Preparation

As they say – fail to prepare, prepare to fail! Good organisation and pre-flight preparation is a key part of any successful flight and especially so when you are flying online.

Flight Planning

Take the time to properly plan your flight. Flight planning consists of more than simply finding a route – you should also take some time to find and review the charts you will need, check how much fuel you will need, and review the route itself – for instance, you could note down which Flight Information Regions (FIR) you will be passing through, the likely ATC positions you will come in to contact with and so on.

If you are nervous you may wish to “chair fly” the route – rehearse the flight, imagining how you will operate the aircraft and the radio calls you will need to make (see below). You could also fly the route offline, but practicing the radio calls!

Get Organised

Being organised and managing your workload effectively is a key part of flying. Take the time before the flight to get everything you will need together, for instance:

- Flight plan and any notes
- Charts – find them, review them and make sure they are available and arranged in the order you will need them
- Notepad and pen – essential for writing down ATC instructions
- Check your simulator is set up, any addon scenery installed correctly, flight controls operating properly etc
- Any other items you may need e.g. aircraft checklists

Good luck!

A Normal Flight

ATIS and Clearance Request

Once you have loaded your simulator and aircraft, connected to the network and filed your flight plan, one of the first things you should do is check the ATIS for your departure airport, if available: check in your Pilot Client's ATC list to see if **XXXX_ATIS** is available (where XXXX is your departure airport's ICAO code).



***TIP:** Make sure you have a pen and paper to hand and make a note of the ATIS information, in particular the ATIS identifier letter, runway in use, wind, significant weather and QNH and any other pertinent information.*

If so, you can double-click (or right click and select "view controller info") and the ATIS will appear in the text message window. You can also tune to the frequency given to listen to the ATIS, although voice ATIS is currently often unreliable so if you don't hear anything – just use the text option instead!

Using the information from the ATIS such as weather and runway in use you can now complete the majority of your aircraft's pre-flight routine – for instance, loading fuel and payload, loading and checking the flight plan and performance figures in the FMS and ensuring that the aircraft is set up ready for flight.

You're now ready to get your ATC clearance! If you are not already, tune your aircraft's communications radio to the **Delivery** frequency (or follow the top-down model if a Delivery position is not online). Listen in and try to gauge the pace of other radio traffic so you can find a natural gap to start your own transmission so that you don't 'step



***TIP:** If a controller has just given another aircraft an instruction they will need to read it back, so wait until the "conversation" has finished before jumping in!*



***TIP:** Have your pen and paper ready and the SID charts open and easily to hand before transmitting*

on' another transmission.



Provence Preflight, Bigjet 29P, Airbus A320 with D, stand 7A, request clearance to Luxembourg.



Bigjet 29P, Provence Preflight, cleared to Luxembourg, ETRK 6N departure runway 31R, squawk 3251.



Cleared to Luxembourg, ETRK 6N departure runway 31R, squawk 3251, Bigjet 29P.

Remember: it is not a memory game! Note down the pertinent details as the controller gives your clearance (in this instance, perhaps, the SID (ETREK 6N), departure runway (31L) and squawk code



***WARNING:** You will need to check the initial climb altitude on the SID chart as it will not usually be given.*

(3251).



Bigjet 29P, correct, report ready.

Once you have read back your clearance, you must now:

- **Set** the assigned code in your transponder
- **Check** that the assigned departure procedure is properly programmed in to your navigation system – use the chart to cross-reference and ensure that any speed or altitude restrictions are correctly programmed. It is good practice to set the initial climb altitude in the autopilot altitude selector at this time.
- **Think about how** you will fly the departure – if you are using the autopilot how will you ensure it is following the programmed route? Which modes will you need to select and when? Try to think ahead and anticipate any potential problems you might encounter and how you will deal with them.
- **Think about** the likely taxi route from your parking position to the departure runway – this is a good moment to review the airfield layout chart and think ahead about what instructions you are likely to receive (which way will you need to face when pushing back? Which taxiways are you likely to be assigned for the route? If ATC offer you an intersection departure (from a taxiway which is further up the runway, shortening the takeoff run) could you accept this or does your aircraft's weight/takeoff performance calculation require the full length of the runway?

You should now complete the rest of your aircraft's pre-flight preparation up to the point where you are ready to push back and start engines – so complete any refuelling or boarding, ensure the aircraft is powered up and the flight deck preparation is complete and all that is required is to push back and start the engines.

Don't rush! Many real-world aviation accidents have occurred as a result of pilots feeling pressured in to rushing in to action and cutting short important checks. Feeling under pressure, especially when there is a lot of traffic around, is normal – but part of being a good pilot is having the discipline to ensure that all the proper checks are completed and that sufficient time is allocated or created to ensure that nothing is missed. On stand before pushback is the time to discover that your flight plan is not programmed correctly in to the FMS and fix it, not when you have just got airborne!

Pushback, Start and Taxi

All your pre-flight operations are completed, the fuel and bags are loaded, the doors are closed, the



Ensure your transponder is set to Mode C at this point.

APU is running, the jetbridge is disconnected and the pushback truck is connected and ready to go. We're ready to start!

The role of the Delivery controller, if one is online, is to manage the number of aircraft starting up at any given time to ensure that controllers further down the line (either the Ground or Tower controller at the airport, or even enroute controllers further away if there is a busy event taking place) are not overwhelmed.



Provence Preflight, Bigjet 29P, stand 7A, fully ready.



Bigjet 29P, start approved, hold position, contact Ground 121.9.



"Start" in this context means, in effect "the start of the flight" as opposed to "starting the engines"



Do not start pushing back until you have a clearance to do so from the Ground controller!



Hold position, contact Ground 121.9, Bigjet 29P.

You can now tune to the Ground control frequency given to request pushback and engine start.



Provence Ground, Bigjet 29P, stand 7A, request push and start.



Bigjet 29P, push and start approved, face south.



Push and start approved, face south, Bigjet 29P.

Now you can start pushing back and start your engines. Take care to ensure that you turn to face the correct direction – again, take a moment to **double check** rather than rushing! Once the pushback is



It is strongly recommended to avoid doing anything not directly related to the pushback or engine start procedure until the pushback is complete and the parking brake confirmed set.

complete and your engines are running, you should ensure that the parking brake is set and complete any after start procedures and checklists such as selecting take-off flap, shutting down the APU etc as applicable to your aircraft.



Have your pen and paper ready and your taxi chart in front of you before requesting taxi so that you can follow the route along as the controller issues the instructions.

Once you have completed the after start actions and checklist, you can request your taxi instructions. Again, **don't rush** – it is much better to do things **methodically** and **correctly** rather than racing through and forgetting to do something important.



Bigjet 29P ready for taxi.



Bigjet 29P, taxi runway 31R via G5, C6, C7, C8, hold D9.



Taxi runway 31R via G5, C6, C7, C8, hold D9, Bigjet 29P.

Take a moment to look at the chart and orientate yourself before starting to taxi. Establish exactly where you are and where you need to go before you release the parking brake! In the real world airline pilots are encouraged to verbalise their intentions to their colleague in the flight deck – for instance *“I’m going to take the first right on to G5, then it’s immediately left on to C6 and follow that all the way down to the end”*. Even if you don’t say it out loud, it’s worth saying it to yourself mentally!

Managing your workload during the taxi out is important – it can be quite busy with procedures to set the aircraft up for takeoff whilst also navigating the taxi route.

- Try to plan so that any remaining checks or pre-takeoff procedures can be completed once clear of any congested ramp areas or complex taxiway intersections (e.g. once on a long straight taxiway).
- Try to minimise the amount of “heads down” time spent during the taxi – ideally the vast majority of checks and setup should already have been completed with just the final “before takeoff” checks to complete.
- Take your time and taxi at a sensible speed. If in doubt, slow down and/or **stop** if necessary, set the parking brake and request clarification from ATC before continuing.
- If for some reason you need to complete extensive re-programming of the FMS or other more complex actions which cannot be easily done without distracting from the primary task of taxiing the aircraft, **liaise with ATC** to find somewhere convenient that you can **STOP**, set the parking brake and then complete any actions required.

Taxi Tips

Many new pilots struggle with navigating on the ground. Don’t worry – it is often said that the taxi out and in can be the most challenging part of navigation in real life as well! In addition, The scenery in many simulators can often be slightly sketchy or out of date.

If you have taken the time to familiarise yourself with the taxi route as described above this will help significantly. Likewise keep the chart visible and refer to it frequently as you are taxiing.

Taxi slowly – in an airliner no more than an **absolute maximum** of 30 kt on a **long** straight and 5-10 kt in 90 degree turns is a good guideline, and if you are finding it difficult to keep up with where you are or visibility is poor then slow down and stop if need be.

If your scenery is old and/or the layout does not match with the chart then just let the controller know and they will be able to accommodate this.

If in doubt or unsure of your position – **slow down and stop** and **ask the controller** if you are unsure of your route!

What could change?

Sometimes it might be too busy for the controller to give you a taxi route all the way to the runway holding point, or the controller may need to ask you to stop or give way to other aircraft, or occasionally change your taxi route to navigate around an obstruction (an aircraft which is going to be blocking a taxiway for some time for any reason, for instance) which may not have been present at the point at which your initial taxi instructions were provided. Any new taxi instructions override those you were given initially.

It is therefore very important to ensure that you are listening out for your callsign at all times. Some of the instructions you might hear include:



Bigjet 29P, hold short of G8

Here you should bring the aircraft to stop before reaching the given point (which if not a specifically designated holding position may be an intersection with another taxiway for instance). Make sure you allow sufficient room for another aircraft to pass ahead of you.



Bigjet 29P, give way to the company Boeing 777 passing left to right

This is an instruction to allow another aircraft to pass ahead of you, for instance as you are approaching a taxiway intersection. “The company...” means another aircraft of the same airline as yours (for instance, in this case another BigJet Airways B777) – if the other aircraft is from a different airline this will be specified so that you know what to look out for (e.g. “give way to the Air France A319”).

Dealing with such instructions is part of flying in an online environment. Remember, however, to apply the same rules as you did before taxiing away in the first place:

- **Take your time** and make sure you have familiarised yourself with the **new** route before committing – slow down and stop if you need to give yourself time to do so.
- **Verbalise your progress**
- **Re-plan** any “heads down” activities you might have been intending to undertake if the new route is more complex.

Approaching the holding point, you will be handed over to the Tower controller who is responsible for the runways – including all take-offs, landings and any aircraft which need to cross an active runway.



Bigjet 29P, contact Provence Tower 133.1.



Provence Tower 133.1, Bigjet 29P.



Provence Tower, Bigjet 29P, at D9.



Bigjet 29P, Provence Tower, hold at D9.



Hold at D9, Bigjet 29P.

Aim to ensure your “Before Takeoff” checks are completed so that you are ready to take off. However, don’t let completing these checks distract you from stopping at the holding point, and equally don’t be pressured in to accepting a line-up or takeoff clearance from ATC if you are not ready to go!

Takeoff and Initial Climb

Takeoff

Before accepting a clearance to line up or take off, ensure that you are **ready** to comply promptly – if you need a little more time to finish doing checks or configure the aircraft then it is much better to decline the clearance and remain at the holding point until you are ready than to line up and either

mess up the departure as a result or have to wait on the runway whilst you finish up and potentially cause another aircraft to go around or be delayed!



Bigjet 29P, runway 31R, line up and wait.



A "line up and wait" instruction may be omitted if traffic permits – in this instance you can simply be cleared for takeoff in which case you may simply taxi on to the runway, line up and take-off without delay.



Runway 31R, line up and wait, Bigjet 29P.



Bigjet 29P, surface wind 290 degrees 8 knots, runway 31R, cleared for takeoff.



Runway 31R cleared for takeoff, Bigjet 29P.

If you are departing from an intersection, as opposed to the full length of the runway, the controller will reiterate the intersection as part of the line-up or takeoff clearance:



Bigjet 29P, via D7, surface wind 290 degrees 8 knots, runway 31R, cleared for takeoff.

Once you are airborne, ensure you are tracking your assigned departure route accurately. Don't be afraid to use the autopilot to reduce your workload!

Shortly after you get airborne you will be handed over to a controller who is responsible for handling departures.



Bigjet 29P, contact Marseille Control 129.15.



Marseille Control 129.15, Bigjet 29P.

Tune your COM radio to the given frequency, and wait for a suitable moment to check in. You will need to give:

- Your callsign
- The altitude you are passing through at the moment of your call
- The altitude you are going to level off at
- The designator of the SID you are flying



Marseille Control, Bigjet 29P passing 2,600 for 5,000, ETREK 6N.

From here, you may be given any number of instructions – the aim of which is to ensure your flight is **safe** first and foremost by ensuring that you are kept separated from any other aircraft, and, assuming that this can be assured, **efficient** – so for instance the controllers will aim to try and climb you continuously to your planned cruising altitude, and offer shortcuts or more optimal routings where possible.

These instructions should be largely self-explanatory (instructions to climb, turn, route direct to waypoints and so on) – a list of standard words and phrases is below.

Standard Words and Phrases

Word/Phrase	Meaning
ACKNOWLEDGE	Let me know that you have received and understood this message.
AFFIRM	Yes.
APPROVED	Permission for the proposed action is granted.
BREAK	Indicates a separation between messages.
BREAK BREAK	Indicates the separation between messages transmitted to different aircraft in a busy environment.
CANCEL	Annul the previously transmitted clearance.
CHECK	Examine a system or procedure. (Not to be used in any other context. No answer is normally expected.)
CLEARED	Authorised to proceed under the conditions specified.
CLIMB... DESCEND...	Climb or descend to the given Flight Level or Altitude and maintain it until otherwise instructed
CONFIRM	I request verification of (clearance, instruction, action, information etc)
CONTACT	Establish communications with...
CORRECT	True or accurate.
DISREGARD	Ignore.
EXPEDITE	In relation to a climb or descent: climb or descend at the maximum safely achievable rate.
HOLD SHORT	Stop before reaching the specified location (only if no defined point exists or to reinforce a clearance limit)
HOW DO YOU READ?	What is the readability of my transmission?
I SAY AGAIN	I repeat for clarity or emphasis
MAINTAIN	Continue in accordance with the conditions specified (or in its literal sense, e.g. "maintain VFR").
MONITOR	Listen out on (frequency)
NEGATIVE	No; or Permission not granted; or That is not correct; or Not capable.
NEGATIVE I SAY AGAIN	May be used if repeated incorrect readbacks are given by the pilot and additional emphasis is required.
PASS YOUR MESSAGE	Proceed with your message
READ BACK	Repeat all, or the specified part of this message back to me exactly as received.
RECLEARED	Used only in relation to a route and NOT for instructions to climb or descend.
REPORT	Pass me the following information...

REQUEST	I should like to know... or I wish to obtain...
ROGER	I have received all of your last transmission. NOTE: Never to be used in reply to a question requiring a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).
SAY AGAIN	Repeat all, or the following part of your last transmission.
SPEAK SLOWER	Reduce your rate of speech.
SQUAWK	Indicates transponder operating instructions (e.g. to set a specific code or select a specific mode).
STANDBY	Wait and I will call you. No response required or expected. NOTE: No onward clearance to be assumed. The caller would normally re-establish contact if the delay is lengthy (several minutes). STANDBY is not an approval or denial.
UNABLE	I cannot comply with your request, instruction or clearance. (Unable is normally followed by a reason)
WILCO	I understand your message and will comply with it (abbreviation for "will comply").

Aircraft are expected to comply with ATC instructions immediately. On occasion, however, it may be left to the pilot's discretion to initiate a climb or descent and this will be indicated by the phrase "WHEN READY".

Altimeter Settings

A common problem which many new pilots have is that of what altimeter setting to use and when. Hopefully the following will clear up the terminology and clarify the purpose of each setting.

Altimeter Setting	Purpose	When Used
QNH	Altimeter indicates the aircraft's height above mean sea level .	Below transition altitude/level on departure and arrival
Standard Pressure Setting (1013 hPa/29.92 inHg)	Altimeter indicates the aircraft's Flight Level	At all times above the local transition altitude

Transition Altitude

Transition Altitude (TA) is the altitude above which the altimeter is set to the Standard Pressure Setting (SPS) of 1013 hPa or 29.92 inHg. This ensures that all aircraft will be properly separated without the need to constantly re-adjust their altimeters.

Below the TA, your altimeter should be set to the departure (or arrival if you are descending toward your destination) aerodrome **QNH**, which is the local pressure at the airfield indicates **altitude**, which is your aircraft's height above mean sea level. This is useful because the instrument departure and arrival procedures are designed to ensure you maintain a safe clearance from terrain or obstacles, and these are measured in height above mean sea level.

Above the TA, your altimeter should be set to the Standard Pressure Setting (SPS) of 1013 hPa (equivalent to 29.92 inches of mercury). When set to SPS, your altimeter indicates **Flight Level**. The transition altitude is normally set high enough that terrain is not going to be a factor, so by having all aircraft at these levels (typically in the cruise) setting the *same* altimeter setting, it can be ensured

that they will always be flying at the same levels relative to each other regardless of the actual ambient pressure.

Transition Level

The **Transition Level (TL)** is the lowest Flight Level which is available for use. Below this level your altimeter should be set back to QNH.

Remember: the switch from QNH to SPS occurs passing the transition **altitude** on the way up, and from SPS to QNH passing the transition **level** on the way down!

Flight Levels

Flight Levels are expressed as 100s of feet: for instance, Flight Level 150 (FL150) means flying at 15,000ft with Standard Pressure set.

How do I know what the Transition Altitude/Level is?

The TA can vary between different countries and even between different airports. The local TA will always be published on the airfield charts (usually SID (departure) charts).

The Transition Level likewise can vary and is normally approximately 1,000ft above the Transition Altitude. However this can vary and often the chart will state that the Transition Level is "by ATC". In this case the relevant TL can be obtained from the ATIS.

When should I change?

The easiest way to know which altimeter setting you should be on is by the instructions given to you by ATC:

On the ground before departure you should set **QNH**

If/when you are cleared to a **Flight Level** then you should set **STANDARD**.

If/when you are cleared to an **Altitude** then you should set **QNH** (usually the controller will give the relevant QNH the first time you are cleared to an altitude below the TL).

Cruise

In the cruise you will be handed to each ATC sector along your route in sequence. You may also be given instructions to help separate you from other aircraft and/or give you a more direct and efficient route.

Whilst you can relax a little, it is **very important** that you keep listening to the frequency for your callsign in case the controller needs to contact you!

If you need to step away from the radio for a short period of time, advise the controller to ensure this will not interfere with any upcoming traffic.

Use your time in the cruise wisely to prepare for your arrival! Obtain the destination weather and, ideally, ATIS as early as possible and make sure that you have all the charts you will need ready to hand. Make a note of the weather, particularly the wind, QNH and visibility.

You should also ensure the FMS is programmed correctly for the anticipated arrival and think about **how** you will fly the approach. Think about:

- **Where** on the approach you will want to configure the aircraft for landing
- Consider any **terrain** – where is the high ground and what are the minimum safe altitudes?

- **Tune** any navigation aids such as the ILS, or ensure they are pre-set/will automatically tune if your aircraft does this.
- **Check** the arrival against the FMS programming.
- **After landing** – where will you park and how will you get there from the runway? Which exit do you intend to vacate the runway at and how will you achieve this (if your aircraft has autobrake, which setting will you use?)

Descent and Approach

The descent and approach is easily the most challenging and dynamic part of any flight and adding live ATC in to the mix make this even more dynamic! The key thing to remember is that as Pilot in Command you remain responsible for navigating and operating your aircraft safely, so make sure you maintain an awareness of your position.

When to Descend?

If you have an add-on aircraft with a reasonably capable flight management system which is able to compute a vertical profile it will likely have computer a Top of Descent point for you. It is important to note that this point will only be accurate if the rest of the data in the computer is accurate – particularly the route to be flown and any restrictions, so check that these are correct.

You can and should also cross-check any computer-based descent calculations yourself and getting in to the habit of doing so will give you a much better opportunity to manage your descent and approach successfully. Fortunately the calculations are very straightforward:

To calculate the number of **nautical miles** (i.e. distance) required to descend:
 Multiply your **height in 1000s of feet** by **3**.

For example, cruising at FL360: $36 \times 3 = 108$ NM. You will also need to slow down at some point which will reduce your rate of descent, so add another **10NM** to account for the deceleration and it becomes apparent that you will need to start descending approximately **118NM** from your destination.

To calculate the **height you should be at** for a given number of track miles:
 Multiply **miles to run** by **3** to give **height in 100s of feet**.

For instance, with 20 NM to go you should be at $20 \times 3 = 6000$ feet.

If you keep a running check of distance against height in this way you will be able to quickly identify if you are higher or lower than you should be and take corrective action. Some good usual “gates” to aim for are as follows:

Distance	Height	Speed	Configuration
50 NM	FL150	280 kt	Clean
33 NM	FL100	250 kt	Clean
20 NM	6,000ft	220 kt	First stage flap
10 NM	3,000ft	180 kt	First/second stage flap as required
6 NM	1,800ft	160 kt	Intermediate flap Gear down
3.3 NM	1,000ft	Final Approach Speed	Landing configuration

Note that the “gates” above are generic so you will need to adjust the configuration guidance to suit your aircraft on the day, and if there is a tailwind during the descent you may need to move them

“back” slightly to allow more room to slow down, but they should be a good general guide for most jet aircraft.

ATC Instructions

Controllers generally know approximately where aircraft need to start descending on particular routes, but if you are approaching your calculated top of descent point and you have not had a clearance to descend then simply ask the controller:



Bigjet 29P ready for descent.



Bigjet 29P, when ready descend FL160 to be level by LX887.



Descend FL160 to be level by LX887, Bigjet 29P.

Note that “**when ready**” here means that you may start your descent whenever you are ready. If the instruction were instead:



Bigjet 29P, descend FL160 to be level by LX887.

In this instance you would be expected to start your descent immediately.

In both cases of the example, a crossing restriction of FL160 at LX887 has been given. It is important to comply with any crossing restrictions given as they may be critical for separation from other aircraft. If you will not be able to make any particular restriction, or it becomes apparent that you will not achieve the restriction, **tell the controller** so that they can come up with an alternative plan if need be.

As you get closer to your destination it is likely that you will be **radar vectored** to the final approach. Radar vectoring is when a controller issues a series of heading, altitude and possibly airspeed instructions in order to sequence aircraft, in this case on to an approach.

It is **very important** that you comply promptly with any vectoring instructions because as you can imagine, a long delay in responding can result in a carefully-planned string of aircraft going awry very quickly!

The Approach Controller will usually aim to place you on a closing heading (normally with no greater than a 30° intercept) to the ILS at a suitable height to intercept the glidepath (though you will need to be proactive in ensuring that you descend quickly enough – don’t be afraid to use speedbrake or other drag devices to increase your rate of descent if need be). Once you are cleared for the approach you will hear:



Bigjet 29P, cleared ILS approach runway 24



Cleared ILS approach runway 24, Bigjet 29P

Once you are cleared for the approach you may intercept and descent with the ILS indications toward the runway.

Occasionally it may be necessary for the controller to give separate instructions to establish on the the localiser and then the glidepath.



Bigjet 29P, turn left heading 270, report localiser established runway 24



Left heading 270, wilco, Bigjet 29P

If you are asked to “report established”, you should announce this once you have captured the localiser beam and are tracking inbound.

Once you are established on the glidepath, set the missed approach altitude in the altitude window in case you need to go around.

Speed Control

If ATC have asked you to fly a specific speed on approach this will normally be to a specified DME distance (e.g. to 4 DME) from the runway – once you reach this distance you should start slowing to your final approach speed. If in doubt confirm with ATC, and if you are not comfortable with a particular instruction (e.g. you would like more time to configure) then you should request this with the controller, for instance:



Bigjet 29P, maintain speed 160 knots to 4 DME



Unable 160 knots to 4 DME, request 160 knots to 5 DME, Bigjet 29P



Bigjet 29P, roger, maintain speed 160 knots to 5 DME



160 knots to 5 DME, Bigjet 29P

Remember that the relationship between pilots and controllers is a **partnership** – we have to work together to achieve a safe and efficient flight for all, and that requires communication and bit of “give and take” on both sides!

Final Approach and Landing

At some point from here the Approach controller will hand you over to the Tower controller:



Bigjet 29P, contact Luxembourg Tower 118.1



Contact Luxembourg Tower 118.1, Bigjet 29P

Tune your radio to the given frequency and call the Tower controller:



Luxembourg Tower, Bigjet 29P, ILS 24.



Bigjet 29P, Luxembourg Tower, continue approach.

An instruction to “continue approach” likely means that there is another aircraft ahead of you, so you should simply continue your approach as usual and wait to be called again.

Remind yourself which side of the runway you will be vacating and don’t forget to fly the aeroplane – ensure you are properly configured and at the correct speed with your landing checks completed in good time (by the “one thousand” radio altimeter call is a good “gate” to aim for).

Once the runway is clear, you will be cleared to land:



Bigjet 29P, surface wind 220 degrees 6 knots, runway 24, cleared to land.



Cleared to land runway 24, Bigjet 29P

How Late is Too Late?

Especially if it is busy, your landing clearance may be issued quite late. There is no specific point at which a landing clearance *must* have been issued, but clearly you cannot land *without* a clearance. At the busiest airports in the real world, landing clearances may be given as late as 50ft on occasion!

Missed Approach

It may be necessary to perform a missed approach. This can be initiated by either the pilot (for instance, because the approach is not satisfactorily stable) or by the controller (because the runway is blocked, for instance).

In any event, it is important that you are prepared for the possibility of a missed approach, so as part of your approach preparation make sure that you have reviewed the missed approach procedure on the chart and thought about **how** you will fly the published missed approach route. Likewise make sure you know how to perform a missed approach in your aircraft – real airline pilots will brief and rehearse the actions required as part of the descent preparation and it is worth refreshing your memory as you turn on to final as well.

If the controller needs to initiate a missed approach they will use the following phraseology:



Bigjet 29P, go around, I say again, go around.



Going around, Bigjet 29P

The “go around” instruction may include specific instructions as to how the go-around should be performed – this may be the standard missed approach procedure, in which case you should proceed as laid out on the chart, or an alternative instruction (for example, to fly a specific heading) may be issued.

If you initiate the missed approach, then remember that you should **Fly, Navigate, Communicate** – so get the aircraft safely climbing away first, although you do need to communicate promptly in case any special instructions need to be issued.



Bigjet 29P, going around.



Bigjet 29P, roger, fly heading 300 degrees climb to altitude 3,000 feet.



Heading 300 degrees, climb to altitude 3,000 feet, Bigjet 29P.

If you have initiated the missed approach the controller may ask you the reason for the missed approach – this is in case following aircraft may be affected (e.g. windshear, an obstruction on the runway etc). Again, though, remember to **fly, navigate, communicate** – so don't be afraid to tell the controller to "standby" if you are busy with the aeroplane and don't have the capacity to respond immediately.

Once you are climbing away you will likely be handed back to the Approach controller to be sequenced back in to the arrival stream for another approach.

After Landing and Taxi In

So you've greased your landing – what next?

- Do vacate the runway promptly to avoid causing delays for aircraft behind.
- Do ensure you are fully clear of the runway and any rapid exit taxiways before stopping
- Don't rush – once you have vacated, bring the aircraft to a stop in a safe place on the first taxiway and set the parking brake to tune the ground frequency and do your After Landing procedures.

You will now be handed over to the Ground controller. Make sure you have your taxi chart available and visible, and your pen and paper ready before you call!



Bigjet 29P, contact Ground 121.9



Ground 121.9, Bigjet 29P



Ground, Bigjet 29P on B2.



Bigjet 29P, Ground, taxi via B2, B1, L7 stand G04.



B2, B1, L7 stand G04, Bigjet 29P

That's it! You may wish to thank the controller at this point as this is likely to be your last interaction.

Follow the same guidance for taxiing as for the taxi out: make sure you identify the route you need to take and take your time.

Arriving on stand, park up, shut down your engines and pat yourself on the back – you have just completed a flight on VATSIM!

Quick Reference

Clearance Request

(CONTROLLER CALLSIGN), (AIRCRAFT CALLSIGN), (AIRCRAFT TYPE), (STAND NUMBER), WITH (ATIS LETTER), REQUEST CLEARANCE TO (DESTINATION)

Readback Requirements

Full readbacks are required for any the following instructions:

Taxi instructions | Climb or descent instructions | Headings | Speeds | Route clearances | Approach clearances | Runway in use | Clearance to enter/cross/land/take-off/backtrack or hold short of any active runway | Transponder operating instructions | Altimeter settings | Frequency changes | Transition levels

Departure Briefing

Threats | Weather | QNH | Taxi route | Runway | SID | Transition Altitude | Terrain | Review

Approach Briefing

Threats | Weather | QNH | Terrain | STAR | Runway | Approach | Missed Approach | Navigation Aids | Flap Setting | Braking | Transition Level | Runway Exit/Taxi Route | Review

FLY – NAVIGATE – COMMUNICATE

Don't allow anything to distract you from flying the aeroplane!

Phonetic Alphabet

A	Alpha	N	November
B	Bravo	O	October
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-Ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

Notes