



# X-Plane 12

## ATC System Manual

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# Contents

ATC System Manual .....	1
Introduction .....	3
Features .....	3
Overview .....	4
Controller Types.....	4
Airport Types.....	5
Main ATC Dialog.....	7
General Features .....	7
Opening and Closing .....	7
Push-to-talk.....	8
Frequency List Tab.....	9
Flightplan Tab.....	10
SIDs/STARs .....	12
Settings.....	13
Non-radio Airports .....	13
Interaction with your FMS .....	14
Interaction with Weather .....	15
Request Summary .....	17
Unplanned Flights .....	21
Planned Flights.....	22
A Typical Unplanned Flight .....	23
A Typical Planned Flight .....	29
Special Start Situations .....	36
Arrival at Non-Controlled Airports .....	37
Ground Operations Dialog .....	39
Troubleshooting.....	40
Bug Reports .....	41

# Introduction

This guide describes the new X-Plane 12 ATC system and the options currently available. It is not intended as a guide to real-world ATC services, although obviously the procedures should be very similar.

For an overview of what changed between X-Plane 11 and the initial release of X-Plane 12, see <https://www.x-plane.com/2022/10/new-atc-features-v12/> .

## Features

Some key features of the X-Plane 12 ATC system:

- Regional support for accents and phrasing
- Per-region and per-airport transition altitudes
- Fully voiced
- VR/HOTAS-friendly
- Context-sensitive options
- Both planned and unplanned flight
- Complex, multi-stage commands
- Controller-driven and pilot-driven exchanges
- Load-balancing of busy frequencies where possible
- Relayed clearances
- Visual and ILS landings
- SID/STAR support
- Auto-routing option for flightplans
- Exchange routes with your FMS
- ATIS/AWOS broadcasts
- Small airport (FISO) support outside the US
- Real-world controller boundaries
- Full support for trans-polar and trans-dateline flights
- Wake turbulence accounted for in runway clearances
- Controller-assigned intersection departure

# Overview

The ATC system is intended to keep you and other air users safe by coordinating movements and relaying necessary information. Whether you're using a flightplan and following a predefined route, or just flying around at random, you can still use ATC services. ATC is an essential component of almost all real-world flying scenarios. Remember that to fly an aircraft for real, you need a flight radio license as well as a pilot's license.

You should not try to use X-Plane's native ATC at the same time as any other ATC or ATC-like system. Neither system will be aware of what the other is doing.

In general, your aircraft is the responsibility of one and only one controller at any given time. As soon as you start interacting with ATC, your aircraft becomes associated with the appropriate controller. Once this happens, you should never simply change frequency away from that controller without a clear instruction to do so. In this guide, this association is described as "ownership" – your aircraft will be *owned* by at most one controller at any time. By convention, one of this controller's frequencies should be set as the primary frequency on COM1.

The requests or responses that you can make depend on your current circumstances, which include prior requests, what your aircraft is expected to be doing, and the type of controller you are currently talking to. Several different controller types are simulated, not all of which may be available at every airport.

## Controller Types

- **Clearance Delivery:** If an airport has a Clearance Delivery controller, this is who you should talk to if you wish to file a flightplan. This is the exception to the "ownership" rule; you will never be owned by a Clearance Delivery controller since they have only one function.
- **Ground Control:** This type provides permission and instructions for ground-based operations such as requesting and issuing taxi instructions. You will be owned by Ground until you reach the first in-use runway on your taxi route, even if that runway is not the one you will depart on. Ground also owns your aircraft during taxi between the last in-use runway and your assigned parking spot on arrival.
- **Tower:** The tower controllers are responsible for any aircraft at or near an active runway, whether on the ground or in the air. Tower will give you final departure instructions, permission to depart or land, and other near-airport functions.
- **Tracon or Approach:** These are usually smaller regional controllers which coordinate flight through their airspace and typically funnel arriving and departing aircraft for airports underneath their airspace.
- **Center:** These are the largest controllers simulated, typically responsible for enroute aircraft or any others which are not in another controller's airspace.

Controller sectors – smaller volumes of airspace within the remit of a single control facility – are not yet simulated.

Most of the time whichever controller owns your aircraft will issue instructions as needed and respond to any requests you make. In general, when a controller issues a direct instruction such as "Turn right heading 120" you are expected to immediately follow it, and to read the

instruction back. The readback is to ensure that you have heard the instruction correctly; in the simulator, you are not expected to build the response yourself so your readback is always correct. You are still expected to send a readback message though.

It is important to remember that your FMS (Flight Management System, also known as the FMC) is completely ignored by ATC controllers. Programming a route into the FMS does not mean that that will be the route issued; you need to file a flightplan to tell ATC what route you are going to follow, and then stick to it.

Controller instructions must be followed promptly unless they endanger the aircraft. The general rule is “Aviate; Navigate; Communicate”.

Most controllers will issue you a “squawk code” at some point. You should set this code on your aircraft’s transponder quickly; if your transponder is set to the wrong code, you will receive reminders until it is set correctly. Controllers will also give you atmospheric pressure settings at various points which should be set on your altimeter.

It is considered extremely bad form to transmit while somebody else is talking, even if you think they are finished. Wait for the radio to be clear before transmitting; there will always be a short period, less than half a second, of radio hiss followed by a click at the end of a transmission. You can still prepare a transmission, especially useful for those which consist of several different parts, and just not select the final option until the radio is clear. When there are many AI aircraft on the same frequency it can be difficult to get clear time; this is the same in the real world. The simulator does try to keep requests and responses from AI aircraft together, and will wait for longer than a typical human pilot would before transmitting a new request.

Over time you will learn which transmissions will be followed by a reply, and so are not going to leave time to talk. Even if there is a burst of radio chatter, it will die down before long and you will get your chance to talk. To be on the safe side, wait for a gap of at least a second or so before trying to transmit to make sure that there are no replies, and that the controller has spoken to everyone they need to.

## **Airport Types**

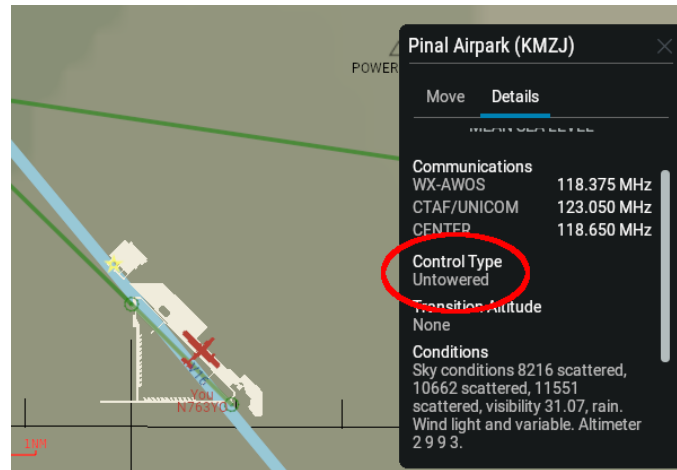
There are three types of airport in the ATC system’s view. The first is typical of a large airport with a professionally-staffed tower and links to a centralised information system. The simulator terms this a “Controlled” airport.

At the other end of the scale is a very small airport with no radio facilities at all. This is termed an “Untowered” airport. Although UNICOM is currently unsupported, minimal ATC operations do exist at these airports, by filing a flightplan and then calling the regional controller to clear it.

In the middle are “FISO” airports, common outside the US, where a published frequency does exist and is staffed by trained personnel, but is *not* part of a centralised system. These still provide a wide range of ATC-type services but are only able to provide information and advice to aircraft, not instructions. Note that you still need to comply with their advice! The main difference in the simulator is that a different set of requests will be available, many of them will be phrased differently, and it is your responsibility to initiate frequency changes. You tell the FISO that you’re going to change frequency rather than requesting their

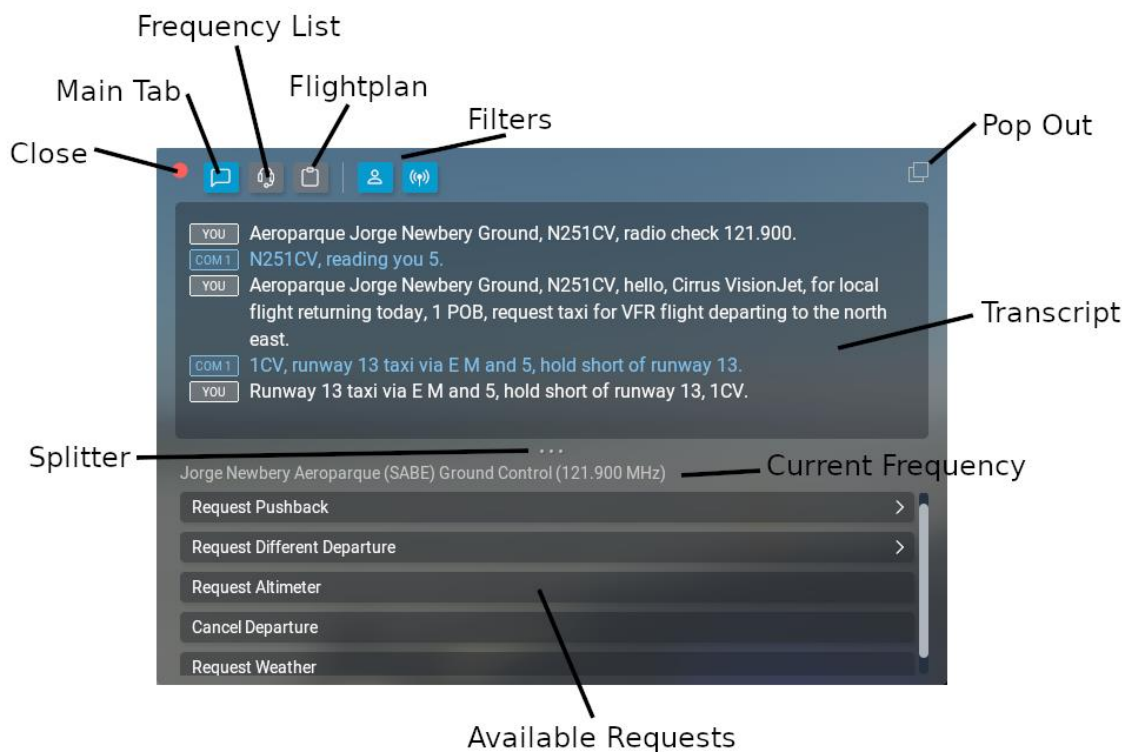
permission. They will not tell you when you reach the edge of their airspace or transmission range because they do not have access to radar.

The airport type is determined by data set by the airport designer in WED, or if that does not exist, by heuristic determination in the simulator. It is possible for the airport type in X-Plane to differ from the real airport's type. You can check which type it is in the Airport popout in the map.



*The airport popout in the map, showing the airport control type.*

# Main ATC Dialog



## General Features

There are three tabs in the main ATC dialog, with the first one being most commonly used. This is the communication tab which is split into two panes. The upper pane contains a scrollable message transcript, allowing you to easily see prior messages, and the lower pane contains a list of requests or responses appropriate for the current situation. You can use the splitter bar to make each part larger or smaller in relation to the other; note that there may be many more requests available than can be shown in the available space, so may need to scroll to see them all. In general, the most relevant requests will always be shown at the top of the list.

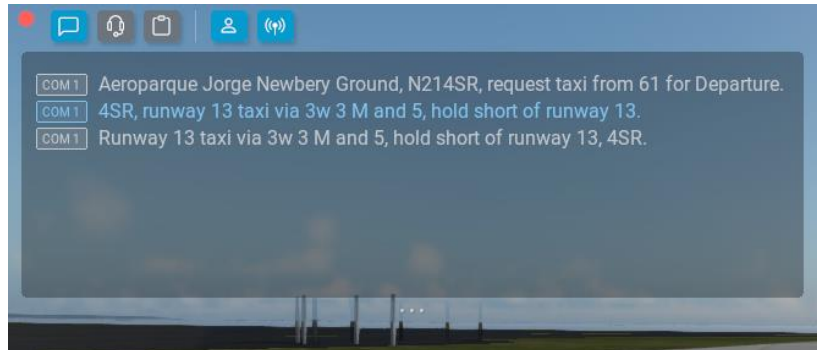
Above the request list the current transmit frequency is shown along with the name and type of the controller listening on this frequency. Transmitters have a maximum range so this can help to confirm that you are talking to the controller you should be, even if you are on the right frequency. If, for example, you set a tower frequency when you're still hundreds of miles away you will very likely be transmitting to a different facility which is closer to you but uses the same frequency.

## Opening and Closing

You can open the ATC dialog at any time during a flight by pressing the assigned key, [Return] by default. Pressing the same key again will immediately close the dialog. Beyond this, there are several other options that affect the visibility of the ATC dialog.

If the setting “Auto-show ATC message history” is enabled (X-Plane Settings, Sound tab), the dialog will briefly show itself when a message directed at you is received. Messages for AI aircraft will not show the dialog automatically, to reduce visual distractions. After a short time, the dialog will return to its prior state; that is, if it was previously in a minimal state then it will minimise again, and if it was completely hidden it will fully hide.

If you have manually opened the dialog it will remain visible until you manually hide it. When it is first opened it will show the full dialog as seen above,



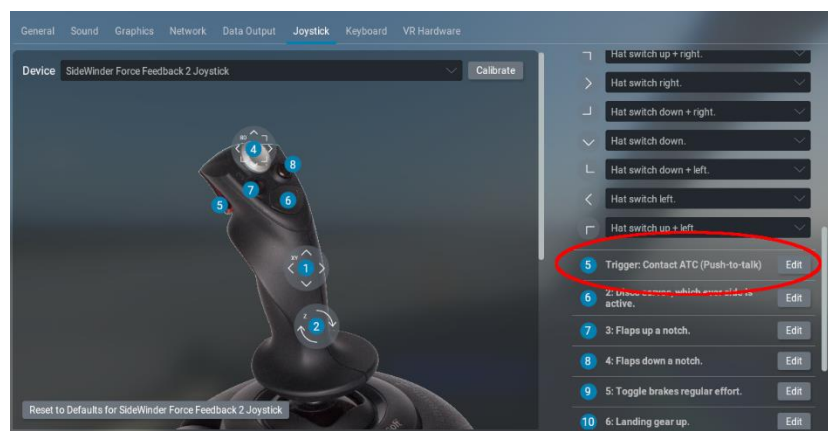
*The ATC dialog in translucent, minimal mode.*

including the request panel at the bottom. After a short time it will reduce itself to a minimal state, keeping the transcript visible in a translucent panel but hiding the request panel. This allows you to keep the transcript visible during a flight without taking up too much screen area. The dialog will return to a full state while you move the mouse over it or hold the push-to-talk button.

## Push-to-talk

To make the ATC system easier to interact with, you can use the “push-to-talk” option instead of using the keyboard and mouse. This works in a similar way to transmitting in a real aircraft by binding a joystick button, typically a trigger or dedicated transmit button, to the “Contact ATC (Push-to-talk)” option. While you hold this button down, the joystick’s hatswitch stops controlling the view direction and works to navigate the ATC command menu. The ATC dialog will automatically appear, the topmost available command will be highlighted, and you can move up or down using the hatswitch. Moving the hatswitch left or right will select a particular sub-option, or move back to a previous sub-option. The message is transmitted when you release the push-to-talk button.

This button is not bound by default but can be set in the Joystick assignment page.



*Joystick assignment page, showing PTT assigned to the trigger.*



When using push-to-talk, the first option in the list of commands is always “- No Option -”. This prevents accidental button-presses from sending unintended radio messages.

## Frequency List Tab

The second tab shows a list of nearby controllers which are likely to be of use to you. Notably, this list excludes controllers for airports that you are unable to use for some reason, such as having no active runway suitable for your aircraft. You can still contact these airports by finding their frequency from the map and setting it directly on your radio.

An asterisk shows the controller that the ATC system expects you to be talking to, and the blue bar shows the controller to which you are currently set to transmit. This takes account of which transmit unit you have selected in your COM stack.

Clicking on any controller will tune your primary radio’s active frequency, or of course you can use cockpit radio controls to do the same thing. Your primary radio is the one you have currently selected to transmit, typically COM1. If you manually tune your radios by clicking on a controller in the list, auto-tune will be disabled. Clicking an ATIS entry will not disable auto-tune.

Available Controllers

Controller	Frequency
EZEIZA Area Control Center	124.900 MHz
EZEIZA Area Control Center	124.100 MHz
AEROPARQUE (SABE) Tower	128.850 MHz
AEROPARQUE (SABE) Tower	118.850 MHz
Jorge Newbery Aeroparque (SABE) Ground Control *	121.900 MHz
Jorge Newbery Aeroparque (SABE) Clearance Delivery	118.250 MHz

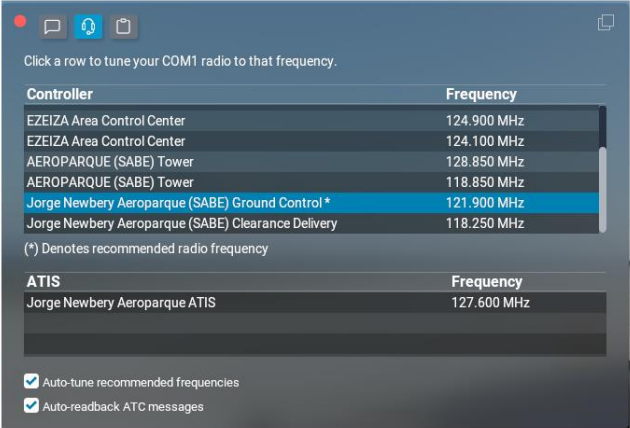
(\*) Denotes recommended radio frequency

Available ATIS

ATIS	Frequency
Jorge Newbery Aeroparque ATIS	127.600 MHz

Radio Assistance Options

- Auto-tune recommended frequencies
- Auto-readback ATC messages



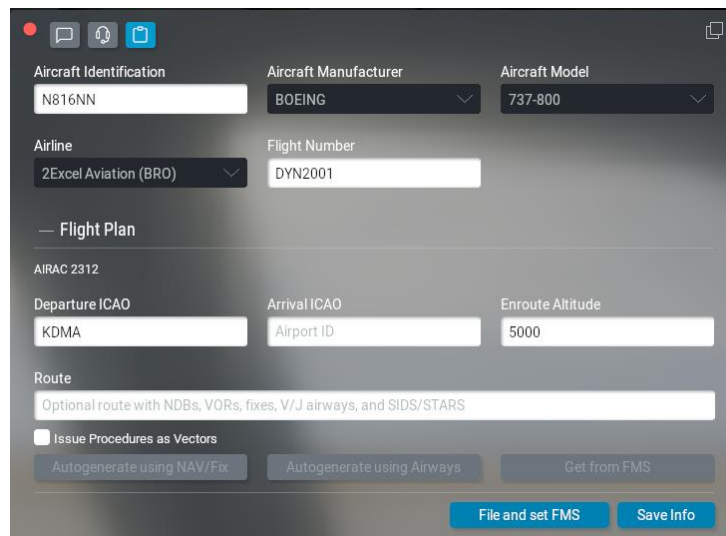
The smaller ATIS (Automated Terminal Information Service) pane works in a similar way, except that clicking a line in this pane will set your secondary radio’s standby frequency. For example, if you have COM1 selected for transmit, clicking a line here would set COM2’s standby. You can then quickly toggle the ATIS message to be audible by swapping active and standby frequencies on the radio itself.

Finally there are two checkboxes which enable ease-of-use features. “Auto-tune recommended frequencies” will set your radio to the correct frequency without any interaction from you. This makes being transferred from one controller’s ownership to another’s simpler. “Auto-readback ATC messages” will save you clicking the “Readback” command after receiving instructions from a controller. Since there is a text transcript of all relevant messages, automating readback can reduce the pilot’s load at key moments while still allowing the full instruction to be seen.

Your radio’s range is simulated. Your altitude and the distance from the transmitting station are taken into account, as is the type of aircraft. Line-of-sight is also calculated so the quality of your radio reception may drop significantly when flying at low level through steep terrain. The controllers will always be able to hear you as long as you are in range; you will never be

asked to “Say Again”. If you find it difficult to understand the controllers, you can ask them to “Say Again” as many times as you like. You will always be able to hear the controller that owns you at a minimum of strength 1, even if other considerations say that they should be completely inaudible.

## Flightplan Tab



*The Flightplan tab, with all sections expanded.*

The third tab has two functions. In the upper half, you can set basic information about your aircraft. Normally this will be set automatically when an aircraft is loaded. It affects the content of radio calls which contain your aircraft type, tail number, or flight number. If you wish to change these you need to do so before interacting with ATC in other ways; in other words, once you’ve identified yourself to ATC, those details need to remain until the end of the flight.

If you specify that you are a commercial flight by setting an airline and flight number, controllers will prefer to assign you ILS approaches even in good weather (VMC). Otherwise, they will prefer to assign visual approaches if possible, and ILS approaches in poor conditions. In either case, you can request a change from visual to ILS and vice-versa.

It is only possible to change your flight details – the tail number, airline, flight number etc. – before you contact ATC for the first time, simply because these things would never change mid-flight. If you have started on a runway, you are already ‘in’ the ATC system; to be on the runway, you must have already contacted ATC, gone through all the pre-departure sequence, and then received departure clearance to be there in the first place. This means you can not change flight details at this point. If you wish to change the details, start at the gate; the flight details are saved as aircraft-specific preferences so subsequent runway starts will use your preferences.

The lower half allows you to file a flightplan. It is possible to use ATC features without filing a plan by requesting flight following, but this is a different style of control.

For information, the current version of the AIRAC data which defines SID/STAR departure and arrival procedures is shown at the top of this panel. This will be the same version used

by your FMS for default aircraft. For third-party aircraft using custom FMS units you should ensure that the same AIRAC data version is used, if they maintain their own copy.

Enroute Altitude is specified in feet, and interpreted accordingly depending on whether it is above or below the transition altitude. The transition altitude may vary by region or airport.

The route is optional. You can enter the names for navaids or airways in sequence to tell ATC which route you're going to follow. Once you do this, you should stick to that route because you will be directed to return to it if you deviate too far. Multi-stop routes are not supported; enter a route to your first destination and then, after landing and parking, file a new plan to your next.

If you include the words "NO SID" or "NO STAR" as the first elements in the route, ATC will understand that you are unable to follow procedural departure or arrival routes without additional guidance. You can also check the "Issue Procedures as Vectors" box.

If you do wish to request a specific SID or STAR you can use their names as the first and last items in the route. Note that this is a request; if the procedure you request is not available for some reason, usually because it is not suitable for any active runway, you will be assigned a different one. This will be communicated by the controller, so you should pay attention to their response and reprogram your FMS if necessary.

You can also ask that the system automatically create routes for you, using either VORs/NDBs or airways. When auto-routing using airways, the cruise altitude you have requested is used to choose between alternative routes on low or high level airways.

The "Get from FMS" option will transfer any route that exists in your FMS into the "Route" box, including procedures. This makes it easy to load routes saved by external planning services, provided the versions of AIRAC data match. Note that the route still consists of a request, so you still need to pay attention to the exact route cleared. "File and set FMS" does the reverse, sending a route from the flightplan dialog to the FMS and to ATC at the same time.

The "File Flight Plan" option also files your plan with ATC. At this point you are ready to request clearance for the plan.

## SIDs/STARs

From X-Plane 12.2.0, SID/STAR procedures are supported. These are published approach and departure routes covering many airports worldwide. The intention is to reduce radio traffic and both controller and pilot workload by using common, known routes which need no per-turn instructions. The procedures cover the basics of the route but may also specify minimum or maximum speeds and altitudes, turn directions etc. After being told which procedure to use you are expected to fly that procedure accurately with few or no further instructions.

At the time of writing, X-Plane will allow most faster aircraft to use SIDs/STARs. You can request specific procedures when you file your flightplan and these will be used if at all possible. The only reason that you will not get the procedures you request is if they are usable only from a runway that is not currently in use. Note that runways may be not suitable for your aircraft type even if other types of aircraft are using it and this also counts as “not in use”.

If you don't specify a SID or STAR in your plan then, provided your aircraft is suitable, you will be assigned the best one given the rest of your flightplan. You will be told the procedure to use when getting confirmation of your clearance and at that point, you should set that procedure in your FMS. If you don't wish to use the FMS you can request per-turn spoken instructions as described above, or by using the “No Procedures” radio request.

You can file a STAR as part of your flightplan but many STARs are valid only for specific runways. If the active runway has changed by the time you arrive at your destination, the STAR you requested may not be usable and you will be assigned an appropriate one based on your position and destination. You need to be prepared to change the approach programmed into your FMS at this point.

X-Plane uses a common set of SID/STAR data provided with the simulator for both the FMS and the ATC system. The published procedures change monthly but the simulator's data may be some time out of date compared with, for example, online flight planners. This is commonly seen in mismatched procedure names, which are often numbered to show different versions. You can buy a subscription for navigational data from online providers if you require the latest data. If you only use the simulator's inbuilt route planner then of course there will be no mismatch.

When flying a procedure you should expect minimal communication from ATC. It is your responsibility to listen carefully to the procedure for which you have actually been cleared and ensure you fly the correct one. ATC will correct you if you deviate too far from the procedure, whether for the route or for speed or altitude restrictions.

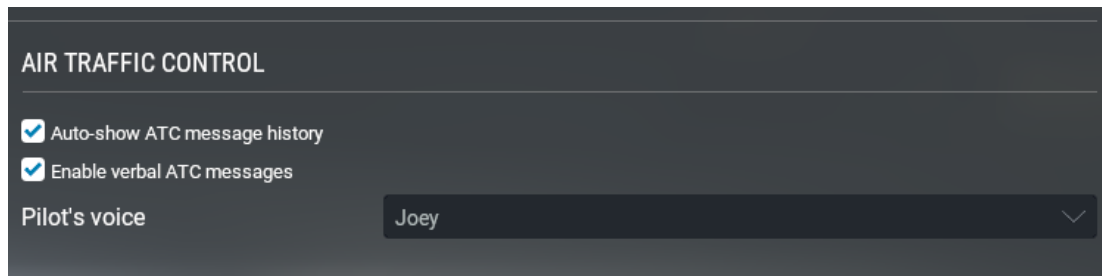
ATC may ask you to ignore certain restrictions, often the altitude, if they would take you above your cruise altitude on departure or current altitude on descent.

Many procedures contain an instruction to “expect vectors” by a particular waypoint, often with a specific heading to fly after passing the waypoint. This tells you that shortly before reaching that point, you will be given additional spoken instructions by ATC. As with any other instruction, you should comply with these immediately.

If you have purchased a subscription to the latest SID/STAR data you may also have access to charts detailing each procedure. These often contain information which is not encoded in the data that the simulator uses. In particular, the charts often contain limitations on aircraft type or phrases such as “only for military”, “only with pre-approval”. Since the data does not contain this information, these restrictions should be ignored.

## Settings

There are some settings that affect the ATC system on the “Sound” tab in X-Plane’s settings, under “Air Traffic Control”.



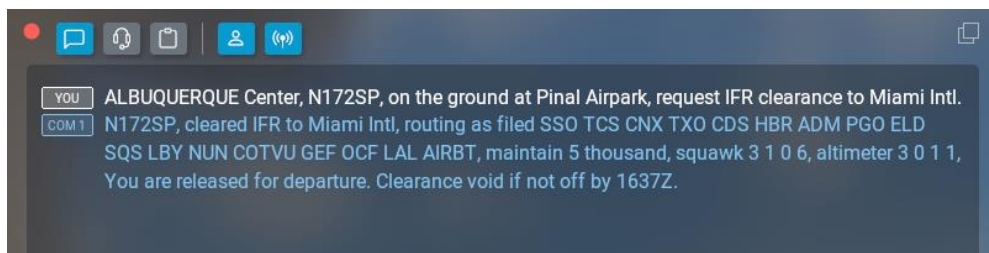
*Settings that affect the ATC system.*

The first controls whether the ATC dialog will automatically show itself when you receive a message. The second enables audio output of transmitted messages. In general this should be left on; switching it off does *not* disable the ATC system, it only mutes the speech.

Finally you can select your pilot’s voice. Currently only two options are available, one for a male voice, one for female.

## Non-radio Airports

Operations at airports without any radio facilities are very limited. You can still file and activate a flightplan by contacting an appropriate nearby controller. They will give you slightly different clearances when compared with normal, which include a time limit. You should prepare your aircraft before requesting clearance to ensure that you are able to depart before the time limit expires, and then contact the controller once airborne to confirm.



*Example of a flightplan clearance at an untowered airport.*

UNICOM is currently not supported.

## Interaction with your FMS

As described above, you can exchange a flightplan between the ATC Flightplan tab and your FMS before you request clearance. After this, any changes to the route need to be made as they happen, either by requesting a route change from ATC, or by adding or removing waypoints from your FMS.

Setting a given route in your FMS is *not* a way of interacting with the ATC system. The FMS is there to assist you, the pilot, to conform with your filed plan and ATC's instructions. ATC neither knows nor cares what your FMS is telling you to do.

If you find yourself receiving unexpected turn instructions, especially for a reverse course, during a planned flight it is almost certain that you have taken a shortcut without letting ATC know. You need to request a route change *before* you take a shortcut.

## Interaction with Weather

The ATC system is fully aware of weather conditions. The most likely place to come across this, apart from weather details being passed, is in runway selection.

Each airport is either defined with, or has generated, a set of rules covering which runways are in use at any given time. The most common rules take account of wind speed and direction, but other rules may cover visibility, ceiling, or time of day. The selection also takes account of your aircraft's type and capabilities, and surface conditions. Whether departing or arriving, you will be given a specific runway to use from the ones that are currently active, according to these rules. You can request a change to another runway provided it is also active and suitable for your aircraft. Requesting the use of a non-active runway is not currently supported.

The flow rules provided or generated are likely to be different to those used by the corresponding real-world airport. Other factors also contribute to the selected flow, including other (AI) aircraft. Aircraft taxiing out, or nearby the airport and intending to land, can hold a flow open for a short time after the airport would normally have changed it. You may be given a gate-hold, or an in-air hold, to allow existing aircraft to clear the runways on an old flow and allow the new, more appropriate flow to be enabled. These differences mean that you should not expect the assigned runway to always match one you see in use in real-time online flight tracking services.

Each controller will have a specific altimeter setting at any given time. This will be passed to you when it is needed, or on request, and you should set your altimeter to that value immediately to make sure that you fly at the correct altitude as far as ATC is concerned. For controllers covering large areas, the altimeter setting may not be the same as the one used by a local airport. The controller will maintain a single value across their entire airspace.

Some airports also provide an ATIS broadcast which will give you an indication of local weather conditions. ATIS messages are pre-recorded, usually hourly. Unless things have changed significantly, the same message will remain in effect for the entire hour so these can also vary from current conditions. ATIS support is currently incomplete in that the pilot will never say "... have information X" if you have listened to the ATIS broadcast before contacting the tower. The tower will always give you the relevant information.

Other airports may offer an AWOS broadcast. These are fully automated and so will update in realtime. Rarely, an AWOS message will be broadcast on a VOR frequency so you will need to enable the audio monitor on your radio for NAV1 or NAV2 to hear it.

Weather in the simulator can differ from any weather reports you see elsewhere, including in the simulator's own data files. While it should always be similar to those conditions, many aspects of the weather simulation will always create differences. Especially for wind speed and direction where small differences can result in a different runway-flow rule being chosen, you need to expect to fly the conditions as they exist in the simulator rather than expecting a digit-for-digit match with any particular set of weather conditions.

If you do require a specific runway, for example, you can affect the controller's choice by setting the wind appropriately before the flight starts. Set your flight up initially with real-weather download enabled. Enter the weather configuration dialog and, after the initial

download is complete, switch from “Real Weather Download” to “Manual Weather” mode. The real-weather settings will remain in place. You can then change wind direction and speed for the wind layers closest to the ground. Note that many airports define a “low wind” flow, and that wind speeds close to the ground are often lower than those higher up, so you may need to increase the wind speed a few knots to ensure that a specific directional flow is used. Generally 10 knots or above is enough to trigger a directional flow, but this does vary with each airport.



# Request Summary

This is a short summary of each of the available radio calls the pilot may make. All calls are only available in the ATC dialog when they are appropriate, as a means of guidance. You will never, for example, be given the ability to “Request VFR departure” if you already have different departure clearance, or are already airborne.

In general, the most relevant calls in any given situation are at the top of the list in the ATC dialog.

- **Radio Check.** This does what it says on the tin; it checks your radio. If a controller can hear you – and remember that your transmitter range will be very limited on the ground – then they will respond giving an indication of how well they can hear you. This tells you that your radio is able to both transmit and receive. It’s one of the few requests which do not require or affect ownership by a specific controller.
- **Readback Transmission.** After you have received any instruction from a controller you are expected to “read it back”, literally to repeat what the controller said to let them know that you heard it correctly.
- **Repeat Last Transmission.** If you are not using auto-readback, you can request that the controller repeat their last instruction immediately if you didn’t hear it fully.
- **Request VFR Departure.** This tells the controller that you would like to take off, but do not wish to file or use a flightplan. You can choose options for indicating your initial direction from the airport, to give the controller a better chance of assigning an appropriate runway, or to depart for circuits.
- **Request Clearance.** After filing a flightplan, you need to request clearance for that plan to activate it and tell ATC that you are about to fly it.
- **No Procedures.** Immediately after clearing a flightplan, tell the controller that you are unable to follow a SID/STAR procedure and request that they issue turn-by-turn instructions instead.
- **Cancel Departure.** This cancels a prior VFR departure request.
- **Cancel IFR.** Tell a controller that you no longer wish to continue with your flightplan. This can also be done in the air, leaving you with no controller as owner.
- **Request Pushback.** Once you have permission to taxi you can request a pushback truck if the airport provides them. You can also do this directly from the Ground Operations dialog.
- **Stop Pushback.** Cancels a previous pushback request, before the truck has arrived.
- **Request Different Departure.** After you have been given the initial departure details you can request a change, either for a different SID if your aircraft is capable, or for a different active runway.
- **Request Taxi.** After you have requested clearance for your flightplan, you need to request permission to taxi to the departure runway. Note that at present, if you request VFR departure clearance, taxi permission is granted immediately.
- **Request Altimeter.** The controller will give you the current atmospheric pressure to set on your altimeter.
- **Request Weather.** The controller will give you a summary of the airport’s current weather.
- **Request Weather Enroute.** Request weather conditions at any waypoint along your planned route. If you are flying VFR, a route programmed into your FMS will be used

to provide these waypoints. This is consistent since it is the pilot reading the FMS, not an ATC controller.

- **Request Departure Information.** At an airport with no ATIS facilities, the controller will give you basic information about current weather and active runways.
- **Check In With Controller.** After being told to change frequency for a different controller, this will be the only command available; the old controller has “handed you off”, and you must contact the new controller to let them know you have changed to their frequency.
- **Ready for Departure.** When you have reached the hold-short line for your departure runway, tower will ask you to “Report ready”. This is your response, telling them that you have your aircraft set up and ready to enter the runway and depart immediately. They will then let you know once it is safe to enter the runway; you must not do this until you hear “cleared for takeoff”.
- **Request Taxi to Gate.** During taxi out, you can request a return to parking, optionally choosing a specific gate. This will also cancel your departure intent. Used on arrival, it allows you to choose your gate.
- **Request Bearing.** When airborne, you can ask a controller for a direct bearing to nearby airports. This is for information only, it does not signify an intent to actually fly there.
- **Uncertain of Position.** Euphemism for “I’m lost”. The controller will give you an indication of your location in relation to a nearby airport.
- **Request Frequency Change.** Under normal circumstances you will rarely have to do this. However, you can request to be passed to a different relevant nearby controller if you wish.
- **Changing Frequency.** As above, this states that you will be changing to a different frequency. The difference is that it is you that is telling the controller, not the other way round. This is used only when talking to a FISO controller at a small airport, when it is your responsibility to initiate frequency changes.
- **Request Visual Landing.** Ask the airport or regional controller to issue instructions to allow you to land. Depending on the controller type, you may be able to specify which airport as well. The landing will be a normal, visual landing although you are of course free to use an ILS if one exists on the assigned runway. Note that a regional controller is unable to arrange landing permission at an airport that is not fully controlled. See the section on landing at non-controlled fields.
- **Request ILS Landing.** Ask the airport or regional controller to issue instructions to allow you to land. Depending on the controller type, you may be able to specify which airport as well. The landing will use a runway with an ILS if one is available. Note that a regional controller is unable to arrange landing permission at an airport that is not fully controlled. See the section on landing at non-controlled fields.
- **Request Low Pass.** When already set up for landing, request that the landing type is changed to a low pass, where you fly low and slow along the runway to allow the tower to visually check your aircraft.
- **Request Touch and Go.** When already set up for landing, request that the landing type is changed to a touch-and-go, where you briefly touch down and immediately depart again without stopping.
- **Cancel Approach Clearance.** Tell a controller that you no longer intend to land, after being given initial clearance to do so.

- **Go Around.** Tell the tower controller that you are going to re-try your landing.
- **Request Zone Transit.** Ask a tower controller for permission to fly through their airspace without landing.
- **Zone Transit Overhead.** After being granted a zone transit, inform the controller that you are overhead the airport.
- **Leaving your Zone.** After passing overhead the airport during a zone transit, inform the controller that you are leaving their airspace. You may then change frequency back to the regional controller and resume flight following.
- **Request Flight Following.** Ask a regional controller to provide basic services to you. These include traffic proximity alerts, terrain alerts and others. It also allows you make your own requests of the controller, such as for information or to request landing. It is generally seen as good practice to use flight following as a basic safety feature.
- **Cancel Flight Following.** If you are currently receiving a flight-following service, this will ask the controller to stop providing it. Generally this command is not useful since flight following will be cancelled automatically by the controller when it is no longer needed.
- **Request Descent.** When flying a planned route, tell the controller that you want to start descending to land. This is only possible within a certain range of your destination airport, and the controllers will give you descent instructions automatically when they think it is appropriate. This is only needed if you wish to start your descent early.
- **Request Route Change.** This has several sub-options. You can divert to a nearby airport, turn by a selected angle for a distance, go straight to a navaid that already forms part of your flightplan, or onto a specific heading for a distance.
- **Request Vectors to Destination.** Ask the controller to route you directly to your planned destination airport and issue instructions.
- **Request Altitude Change.** This is for changing your cruise altitude, for example to climb over a storm. It is *not* for use during descent; this will simply delay the controller giving you actual descent instructions.
- **Report Field in Sight.** After requesting a landing from a regional controller they will ask you to “report field in sight” before handing you over to the airport’s tower controller for final approach instructions.
- **Report On Localiser.** Similar to “Report field in sight” but used for ILS approaches. In bad weather you may not be able to see the field at all, so being correctly set up for the ILS is used instead.
- **Report Downwind.** As you fly an approach pattern to a smaller airport, and certainly if you are flying circuits, you should report “Downwind” when you are on the downwind leg. This tells the controller that you are a short time from landing.
- **Report Final.** After calling “Downwind”, the next call will be “Final” when you are lined up on the approach with the runway immediately ahead of you, and you will be landing imminently.
- **Report Overhead.** Tell a controller that you are passing a compulsory reporting point on a SID or STAR procedure in the event that your transponder is broken. Rarely used.

- **Transponder Inoperative.** Tell the controller that your transponder is not working. This will silence the controller's reminders to set your transponder, and require you to report overhead any compulsory reporting points.
- **Transponder Operational.** The opposite of the previous call; if you previously reported your transponder as not working, this tells the controller it is working again.
- **Request Different Approach.** After you have been given approach details, you can request that a different runway or procedure approach is used. Only active runways can be requested.
- **Shutdown.** After taxiing to your assigned parking spot, tell ATC that you are parked and are about to stop your engines and end the flight.

## Unplanned Flights

If you don't wish to fly with the formality of following a flightplan and being fully controlled, you can still use ATC services. Instead of filing a plan, request VFR departure. Once you have departed the airport's immediate area you will be free to fly whatever route you decide. If you depart a fully-controlled airport you will automatically receive flight-following service (also known as traffic service) when you are passed to the regional controller, otherwise it is up to you to contact them and request it.

Flight-following informs the regional controller that you are in their airspace, and you then become their responsibility. They will provide traffic advisories and terrain clearance warnings, and may periodically confirm your position with you. Beyond this they will mostly leave you alone to enjoy your flight.

You may make a number of requests of a controller providing flight-following. Most of these are for information, but you can also request a landing at fully-controlled airports underneath the controller's airspace and they will arrange this for you. Flight-following is considered a safety net for the pilot and courtesy to the controller, so should be used whenever possible.

When you approach the edge of their airspace, they will instruct you to contact another controller to continue your flight-following service. This is an instruction, and you should comply after reading back the instruction. Outside of this handoff period, you are free to cancel flight following at any time. You should not simply change frequencies without the controller knowing you are doing so. You can request a frequency change at any time although typically you would only do this if you wanted to contact a smaller airport and request a landing directly. Requesting a frequency change implicitly cancels your flight following service; being instructed to change frequency to another regional controller does not.

The concept of protected airspace, for example class A airspace around major airports that VFR flights should not enter, is not currently implemented.

If you use the "Flight→AI Flies Your Aircraft" menu option, the AI will immediately file a flightplan to a random nearby airport and continue the flight according to the plan.

## Planned Flights

To perform a planned flight with full ATC guidance you must first file a flightplan to tell ATC what route you intend to follow. In X-Plane 12 this is done by using the third tab in the ATC dialog. You need to specify your destination airport, requested cruise altitude, and any details of a particular route you wish to follow. Routes can usually be pasted directly from other flight-planners, copied from your FMS, or the simulator can generate a route for you. Any problems are indicated at the bottom of the dialog in red.

The most common issue with routes is that waypoint names, or more likely procedure names, don't match. The data for these is updated regularly but the data that is provided with the simulator will almost always be older. The actual version of the simulator's data is shown in the ATC dialog's flightplan tab as "AIRAC xxxx". Third parties provide subscriptions to access the latest available data, optionally including charts, if this is important to you.

Once you have requested flight clearance, your flightplan has been accepted and you are now seen to be a planned flight.

You may also file and clear a flightplan while already airborne, allowing you to change from uncontacted or unplanned flight at almost any time.

Note that your flightplan is a request. X-Plane will never adjust enroute sections of a requested route, but may not assign a specific SID or STAR that you requested. This will only be done if the one you requested is not suitable for any currently active runway. It is your responsibility to notice this – the clearance message will include the word "except" as a marker – and alter any route you may have entered into your FMS. You may also not receive the exact cruise altitude you requested.

After your plan is cleared you are expected to follow the planned route exactly. The controllers will issue flight instructions, most commonly changes of heading or altitude, to guide you along your planned route during phases of flight when instructions are required. If you need to take a shortcut, you can request this from ATC using the "Request Route Change" command.

# A Typical Unplanned Flight

An example of the radio traffic of a typical unplanned flight follows. This takes place in the UK, which allows FISO airfields, and one of these is used as the starting point.

## **Denham Tower, N30114, radio check 130.725.**

The flight starts with a basic radio check. This is as useful inside the simulator as it is in a real aircraft – it verifies that you are in two-way communication with the controller you're about to speak to.

## **N30114, reading you 5.**

In this case the controller is very close so even though you're on the ground, there is a very strong signal.

## **Denham Tower, N30114, request departure information.**

Get ahead of the situation by requesting the weather details.

## **N30114, departure runway 30, wind 3 1 0 degrees 11 knots, QNH 9 9 7, temperature 6, dewpoint 1.**

## **Denham Tower, N30114, hello, Piper PA-28R-201 Arrow, from Denham to Cambridge, 1 POB, departing north east.**

As an unplanned flight there is naturally no need to file a flightplan. This field has no separate ground frequency so Tower handles everything. All they need to know is who you are, and an indication of your intent.

## **114, runway 30 taxi via 24, cross runway 06, hold short of runway 30.**

The FISO 'tower' still issues instructions while you're on the ground, in this case immediately giving you taxi instructions.

## **Runway 30 taxi via 24, cross runway 06, hold short of runway 30, 114.**

The pilot reads back the taxi instructions to confirm they've been heard correctly.

## **114, cross runway 30, hold short of runway 30.**

At the first runway intersection, you immediately get clearance to cross and then, after taxiing parallel, to hold before re-entering.

## **Cross runway 30, hold short of runway 30, 114.**

Readback.

## **114, report ready.**

Having reached the far end of the runway, you get a moment to perform any final preparations on your aircraft before entering the runway for departure.

## **Wilco, 114.**

“Will Comply”.

**114, ready for departure.**

After doing final checks and lowering flaps, you’re ready to go.

**114, runway 30, takeoff at your discretion, wind 3 1 0 degrees at 11 knots.**

A FISO doesn’t issue clearances, only advice, so takeoff is at the pilot’s discretion. Double-check the runway’s clear and then enter it.

**Runway 30, takeoff at my discretion, 114.**

Readback, followed by takeoff.

**114, changing frequency to LONDON Control on 118.480.**

Some time later, typically approaching the edge of the airport’s control zone, tell the FISO tower that you’re leaving their frequency.

**114, freecall LONDON Control, 118.480.**

They tell you to freecall another controller. Again, this is advice, it’s up to you whether you do this. The “Freecall” tells you that the FISO is unable to tell the next controller about you, you will need to pass full details after contact...

**LONDON Control, N30114, hello, Piper PA-28R-201 Arrow, from Denham to Cambridge, altitude 1 thousand, 1 POB, request traffic service.**

... like so.

**N30114, hello, squawk 1 2 0 1, QNH 9 9 7, traffic service.**

You’re issued a squawk code – these may change during the flight – and the regional QNH. There’s a confirmation that you’ve been granted traffic service.

**Hello, squawk 1 2 0 1 QNH 9 9 7, traffic service, N30114.**

Readback.

**114, radar contact.**

The controller confirms that they can see your squawk code correctly identified on their radar.

**114, squawk 7 0 0 0, contact London Heathrow Approach, 119.730. Goodbye.**

In this part of the world, airspace is very tightly packed. It’s not long before there’s a handoff to another regional controller, complete with an instruction to reset your transponder to VFR – 7000 in this part of the world.

**Squawk 7 0 0 0, contact London Heathrow Approach, 119.730, 114. Goodbye.**

Readback.



**114, hello, Piper PA-28R-201 Arrow, from Denham to Cambridge, altitude 2 thousand 8 hundred, 1 POB, request traffic service.**

And the following check-in.

**N30114, squawk 3 0 0 5, QNH 9 9 7, traffic service.**

This controller has issued a different squawk code, there's no continuity between controllers as an unplanned flight.

**Squawk 3 0 0 5 QNH 9 9 7, traffic service, N30114.**

Readback.

**114, radar contact.**

Confirmation that you've set your transponder correctly.

**114, request bearing to White Waltham.**

Just for information, check what bearing should be flown to get to White Waltham airfield. This isn't where you intend to go, it's just for information.

**114, fly heading 2 2 5 for White Waltham.**

The controller gives you the information you've requested.

**Heading 2 2 5 for White Waltham, 114.**

Readback, just to confirm you've got the message.

**114, report your position.**

Some time later, the controller decides to double-check your position.

**Position 7 miles north east of Panshanger, altitude 2 thousand 4 hundred QNH 9 9 7, 114.**

The pilot's response in this case is not a repeat like most readback, it's a rough description of the current location in relation to a nearby airport. QNH is included to verify the altitude given is valid.

**114, request landing at Cambridge.**

About 15 miles from Cambridge, a controlled airport, request that the regional controller arranges a landing there. You could also have requested a frequency change to Cambridge and then requested a landing directly, and this method would be usable for non-controlled fields as well.

**114, climb and maintain 2 thousand 5 hundred, turn right heading 0 6 5, runway 23, wind 3 1 0 degrees at 11 knots.**

You're given a heading to fly to enter the airport's pattern and an indication of which runway to expect.

**Climb and maintain 2 thousand 5 hundred, turn right heading 0 6 5, runway 23, 114.**

Readback.

114, expedite climb.

Soon after, the controller sees that you've not yet reached 2,500 ft and don't appear to be climbing.

**Expedite climb, 114.**

Readback.

114, turn left heading 0 4 0, descend and maintain 2 thousand.

The instructions for the next leg of the pattern approach are given. No STAR is used because the aircraft is not fast enough – the simulator prevents slow aircraft from using SID/STAR procedures.

**Turn left heading 0 4 0, descend and maintain 2 thousand, 114.**

Readback.

114, turn right heading 0 3 5.

A few minutes later the aircraft is a little to the right of the intended course and gets a course correction.

**Turn right heading 0 3 5, 114.**

Readback.

114, turn left heading 0 3 0.

The same happens again.

**Turn left heading 0 3 0, 114.**

Readback.

114, turn left heading 3 2 5.

This is a proper turn, onto the next leg of the approach.

**Turn left heading 3 2 5, 114.**

Readback.

114, turn left heading 2 6 5.

Turn towards the airport, to intercept the runway centerline.

**Turn left heading 2 6 5, 114.**

Readback.

114, turn left heading 2 3 5, report the field in sight.

The last turn, onto the centerline. At this point the regional controller wants to hand you off to the airport's tower, just as soon as you can confirm you're able to see the airport.

**Turn left heading 2 3 5, report the field in sight, 114.**

Readback.

**114, field in sight.**

Soon afterwards the airport becomes visible.

**114, cleared visual approach runway 23, contact Cambridge Tower, 125.900. Goodbye.**

The regional controller hands you off to Cambridge tower, who will know who you are because the details would have been passed to them already.

**Cleared visual approach runway 23, contact Cambridge Tower, 125.900, 114. Goodbye.**

Readback, confirming approach – but not landing – clearance.

**N30114, hello, Piper PA-28R-201 Arrow, position 5 miles east of Cambridge, altitude 1 thousand 8 hundred, inbound runway 23.**

Check in to Cambridge tower giving a basic position report and your intention, as confirmation of the details.

**114, continue approach, runway 23, wind 3 1 0 degrees at 11 knots.**

They know who you are and can see that you're where you should be, so simply continue the approach.

**Continue approach, runway 23, 114.**

Readback.

**114, runway 23 cleared to land, wind 3 1 0 degrees at 11 knots, report final.**

As you get closer to the runway, you get landing clearance and a request to report 'final' shortly before landing.

**Runway 23 cleared to land, wilco, 114.**

Readback.

**Final.**

Confirm that you're about to land.

**114, wind 3 1 0 degrees at 11 knots.**

The controller gives you last-minute wind information. This is not an instruction and does not need to be read back.

**114, vacate right.**

After landing, tower tells you to leave the runway to the right but gives no further taxi instructions at this point.

**Vacate right, 114.**

Readback.

**114, taxi ga grass parking 5 via 28 L and B.**

After leaving the runway, the taxi route is passed. The phrase “ga grass parking” is part of the airport definition.

**Taxi ga grass parking 5 via 28 L and B, 114.**

Readback.

**Cambridge Tower, N30114, shutdown.**

Finally, on reaching your parking spot, since this is a controlled airport you should notify tower that you’re about to stop your engines.

**N30114, shutdown approved.**

They confirm.

# A Typical Planned Flight

An example of the radio traffic of a typical planned flight follows.

## **Vancouver Intl Delivery, N750XP, request IFR clearance to Whitehorse Erik Nielsen Intl.**

A flightplan has been entered and filed using the ATC dialog, going from Vancouver International to Whitehorse with a series of waypoints. The simulator assumes that the clearance delivery controller has a form with the route, so the pilot does not give it at this stage; all we are doing here is clearing a previously filed plan.

**N750XP, cleared IFR to Whitehorse Erik Nielsen Intl, routing as filed FSR7 CANRY V317 YVR DCT NUGUV DCT MUXAT GOROV GOROV2, maintain FL 2 7 0, squawk 2 4 0 0, altimeter 3 0 0 3, climb via FSR7.**

The controller responds, giving the full details of the pre-filed route. This particular route includes the SID FSR7 and the STAR GOROV2, and since both of these are listed in the controller's response, these are the procedures that have been cleared. Additional information is included, in particular the squawk code and altimeter setting.

## **Cleared IFR to Whitehorse Erik Nielsen Intl routing as filed FSR7 CANRY V317 YVR DCT NUGUV DCT MUXAT GOROV GOROV2, maintain FL 2 7 0, squawk 2 4 0 0, altimeter 3 0 0 3, climb via FSR7, N750XP.**

The pilot reads the clearance back to the controller to confirm that it has been heard and understood. For brevity the simulator does not read out the full route; the text version is for your information if you review the radio transcript.

**N750XP, readback correct, contact Ground, 121.700, when ready for taxi.**

The controller confirms that your readback is correct and gives you a further instruction to contact the ground controller when you are ready. You can take this time to set the transponder and altimeter, ensure your FMS is set correctly, and any other pre-departure tasks you may want to do

## **Vancouver Intl Ground, N750XP, request taxi from 10 for Departure.**

The pilot is parked in a spot named "10". After tuning 121.700, the initial request to taxi for departure is the start of the active part of the flight. From here on in, you will be owned by a particular controller and you should talk to no other until told to.

**0XP, runway 08R taxi via G H L and L4, hold short of runway 13.**

The ground controller gives you your taxi route; you will be departing from runway 08R after following taxiways G, H, L and L4. At that point you will reach runway 13, which is an active runway and you must stop at the hold-short line. Only tower can clear you to enter or cross an active runway. You should normally see distinct arrows on screen showing you the route to follow, unless you have disabled them.

## **Runway 08R taxi via G H L and L4, hold short of runway 13, 0XP.**

Readback confirming the taxi route. If you don't read an instruction back fast enough, the controller will assume that you have not heard them and repeat the initial message.

**0XP, contact Vancouver Intl Tower, 119.550.**

Some time later, the plane is approaching the hold-short line for runway 13. The ground controller anticipates this and hands you over to tower to obtain clearance to cross the active runway.

**Contact Vancouver Intl Tower, 119.550, 0XP.**

Readback.

**N750XP, on taxiway L.**

After tuning 119.550, you immediately contact the tower controller and report in giving basic location information. They will be expecting you to report in, having been passed ownership of you from the ground controller.

**N750XP, Vancouver Intl Tower, hold short of runway 13.**

They respond, repeating the hold-short instruction.

**Hold short of runway 13, N750XP.**

Readback.

**0XP, cross runway 13, hold short of runway 08R.**

Shortly afterwards, you are cleared to cross the active runway 13. An airport may have multiple active runways and all of them require clearance to enter, not just the one you will be departing from. The next instruction is to hold short of runway 08R, your departure runway.

**Cross runway 13, hold short of runway 08R, 0XP.**

Readback.

**0XP, report ready.**

Some time later, you approach the hold-short for runway 08R. This time you are already owned by tower so there is no handoff, you get the following instruction immediately. The readback for this is "Wilco" – Will Co-operate – and you should now make sure your aircraft is ready to enter the runway and depart immediately. Any last-minute setup should be done now.

**Wilco, 0XP.**

Readback. In this case because you are confirming a single, short instruction with no additional details, and there is a time delay which depends on your readiness state, the short form "Wilco" is used.

**0XP, ready for departure.**

After a pause to set up the aircraft, you tell tower that you are ready. This only tells tower that they may now give you the instruction to depart; you have not yet received clearance to enter the runway and should not move!

**0XP, runway 08R, wind 1 0 0 degrees at 3 knots, cleared for takeoff.**

Tower responds, in this case immediately, giving you a final confirmation of the departure runway number, basic wind information and the all-important phrase “Cleared for takeoff”. If other aircraft are active, either lined up in front of you or on final approach, you will need to wait until the runway is safe and clear before entering it. If you are in a small aircraft after a large one has been on the runway, the clearance may take a minute or so to be given.

**Runway 08R, cleared for takeoff, 0XP.**

Readback. The runway details and wind directions are not read back; these are not instructions, they are information. Only the clearance is read back.

**0XP, squawk 2 4 0 0.**

Oops! The pilot hadn’t set the transponder correctly either when it was initially passed, or at the runway threshold after the “Report Ready” command. Shortly after takeoff, tower prods the pilot to get the transponder finally set.

**Squawk 2 4 0 0, 0XP.**

Readback.

**0XP, contact VANCOUVER Center, 123.875.**

After the initial departure, tower hands you over to a center controller that controls the airspace you are about to enter.

**Contact VANCOUVER Center, 123.875, 0XP.**

Readback – even after being told to change frequency, you must still read back the instruction.

**N750XP, altitude 3 thousand 9 hundred climbing FL 2 7 0.**

And, after changing frequency, immediately contact the new controller to confirm that you have done so.

**N750XP, VANCOUVER Center, hello, altimeter 3 0 0 5, radar contact.**

The new controller passes you their regional pressure setting and confirm that they have you on radar, identified using your squawk code. If you had still not set the transponder, you would not have had the “Radar contact” message and would soon receive another reminder to set your transponder.

**Altimeter 3 0 0 5, N750XP.**

Readback, confirming the new altimeter setting.

**0XP, climb and maintain FL 2 7 0.**

Soon afterwards you reach the end of the SID and get clearance to climb to your cruise altitude.

**Climb and maintain FL 2 7 0, 0XP.**

Readback.

**0XP, you're off course, fly heading 1 7 0, vectors to NUGUV, maintain FL 2 7 0.**

For some reason, the pilot ended up too far from their planned route and the controller judged that they were not trying to return to it. They issue a brief reminder, along with an explanation of why they're issuing a manual turn instruction.

**Heading 1 7 0, vectors to NUGUV, maintain FL 2 7 0, 0XP.**

Readback.

**0XP, contact SEATTLE Center, 119.225. Goodbye.**

The course correction was done correctly and nothing more needed to be said until the aircraft approached the edge of this controller's airspace. A handoff instruction is issued.

**Contact SEATTLE Center, 119.225, 0XP.**

Readback, confirming the name and frequency...

**N750XP, altitude FL 2 7 0, on heading 1 7 0.**

... and, after tuning the radio, check in to the new controller.

**N750XP, SEATTLE Center, radar contact.**

The transponder is still correct so no further instructions are needed. You just receive a confirmation that they can see you uniquely on radar.

**N750XP.**

This apparently empty message acknowledges their "radar contact" information.

**0XP, turn right heading 3 2 0.**

Another small course adjustment is given.

**Turn right heading 3 2 0, 0XP.**

Readback.

**0XP, turn right direct NUGUV, resume own navigation.**

**Turn right direct NUGUV, resume own navigation, 0XP.**

Followed by the controller seeing that you are approaching the right course and can be left alone to continue flying your planned route.

**0XP, contact VANCOUVER Center, 123.875.**



Again, after proceeding for some time, you approach the edge of the controller's airspace and are handed off to the next.

**Contact VANCOUVER Center, 123.875, 0XP.**

Readback, before changing frequency as instructed.

**N750XP, altitude FL 2 7 0, inbound Whitehorse Erik Nielsen Intl.**

Check-in to the next controller.

**N750XP, VANCOUVER Center, hello, radar contact.**

And, again, simple confirmation that you have been seen on radar with the correct transponder code...

**N750XP.**

... with your acknowledgement.

**0XP, contact EDMONTON Center, 124.150. Goodbye.**

Another handoff/checkin sequence.

**Contact EDMONTON Center, 124.150, 0XP. Goodbye.**

**N750XP, hello, altitude FL 2 7 0, inbound Whitehorse Erik Nielsen Intl.**

**N750XP, EDMONTON Center, hello, radar contact.**

**N750XP.**

**0XP, expect GOROV2 for visual approach runway 14R.**

It is almost time for you to start descending to your destination airport. The controller confirms the STAR that you are to use, in this case the one that you requested, along with the style of approach and the runway.

**GOROV2 for visual approach runway 14R, 0XP.**

A slightly abbreviated readback confirming the name of the STAR, the approach type and the runway.

**0XP, descend via GOROV2 to 8 thousand 3 hundred, expect vectors by SIMKI, for visual approach runway 14R, altimeter 3 0 1 3.**

Soon after, the instruction to descend arrives. This again gives the approach, type and runway because the previous call only said to *expect* these, not that they were actually assigned. In general these should match, though. You also get the altitude to which you have been cleared to descend, and an indication that you will receive more instructions by the time you reach the waypoint called "SIMKI". Until then, you are expected to fly the approach as it is published including all altitude and speed restrictions, with no ATC intervention. The pressure setting is also passed because the altitude given is below the transition altitude.

**Descend via GOROV2 to 8 thousand 3 hundred, expect vectors by SIMKI, for visual approach runway 14R, altimeter 3 0 1 3, OXP.**

Readback.

**OXP, turn right heading 3 4 6.**

Almost at SIMKI, the further instructions start to arrive. These will now be given for each turn.

**Turn right heading 3 4 6, OXP.**

Readback. Note that at this point, exact headings are given without any rounding.

**OXP, turn right heading 3 4 3, descend and maintain 6 thousand, resume normal speed.**

The next turn, with additional descent and speed instructions.

**Turn right heading 3 4 3, descend and maintain 6 thousand, altimeter 3 0 1 3, resume normal speed, OXP.**

Readback.

**OXP, turn left heading 2 4 9, descend and maintain 4 thousand 5 hundred.**

Again, another turn and a further descent instruction. QNH is not passed again because you already have the latest value.

**Turn left heading 2 4 9, descend and maintain 4 thousand 5 hundred, OXP.**

Readback.

**OXP, turn left heading 1 8 9.**

Another turn,

**Turn left heading 1 8 9, OXP.**

... and readback.

**OXP, turn left heading 1 4 1, report the field in sight.**

The final explicit turn instruction, along with an instruction to “report the field in sight”. This tells the regional controller that you are safe to be passed over to the airport’s tower for all further instructions; they have completed their task of guiding you to the airport.

**Turn left heading 1 4 1, report the field in sight, OXP.**

Readback.

**OXP, field in sight.**

Soon after, you spot the airport and confirm with the controller.

**OXP, cleared visual approach runway 14R, contact Whitehorse Erik Nielsen Intl Tower, 118.300. Goodbye.**

They then clear you for approach, confirming the runway, and tell you to contact tower.

**Cleared visual approach runway 14R, contact Whitehorse Erik Nielsen Intl Tower, 118.300, 0XP. Goodbye.**

Readback.

**N750XP, hello, inbound runway 14R.**

... and check-in. Because this is a controlled airport, they already have all your details so a simple confirmation of the runway is all that's given.

**0XP, runway 14R cleared to land, wind light and variable.**

They confirm, immediately issue clearance to land and pass basic wind information. You could get more detailed information from ATIS if you wished, at any time over the last ten minutes or so.

**Runway 14R cleared to land, 0XP.**

Readback, confirming the runway and landing clearance.

**0XP, vacate right.**

After landing, the brief instruction on which side to leave the runway is given. No full taxi instructions are passed at this point because the pilot probably has many other things going on at the same time.

**Vacate right, 0XP.**

Readback.

**0XP, contact Whitehorse Erik Nielsen Intl Ground, 121.900. Goodbye.**

After leaving the runway and approaching the hold-short line from the active side, tower know that you will not have to cross any more active runways to reach your assigned parking. They hand you off to a ground controller to give you the full details of the route.

**Contact Whitehorse Erik Nielsen Intl Ground, 121.900, 0XP. Goodbye.**

Readback.

**N750XP, hello, runway vacated.**

On checking in to ground, you just give a brief message to let them know you need further instructions.

**N750XP, Whitehorse Erik Nielsen Intl Ground, hello, taxi 5 via E.**

The instructions arrive – your final taxi route and the parking spot. In this case the name isn't particularly helpful, just "5". These names are defined by the airport designer – the ATC system can only use what information it has available.

**Hello, taxi 5 via E, N750XP.**

The final readback.

## Special Start Situations

X-Plane provides the ability to start in situations which have no real-world parallel, such as in-air and on-runway starts. In the real world you would never get into an aircraft already parked on an active runway so from ATC's perspective, these flights are already under way.

For on-runway starts, you will already be owned by the tower controller if the airport has one since you would normally never be on an active runway without tower's permission. You will be already cleared for departure for an unplanned flight. Since there is no way to enter a flightplan in the main menu, this is the only sensible state for you to be in; you are already on the runway, therefore you must be cleared for departure, but ATC has no idea what your route is.

If you don't wish to use the ATC system at all, at this point you can simply take off and fly away. There will be no penalty or nags, tower will not contact you at all, and you can ignore ATC entirely. If you want to file a flightplan, you can enter it using the ATC dialog and request clearance as normal and tower will change your departure clearance accordingly. This option is only available if you start the flight on the runway, not if you start as normal in parking and taxi to the runway.

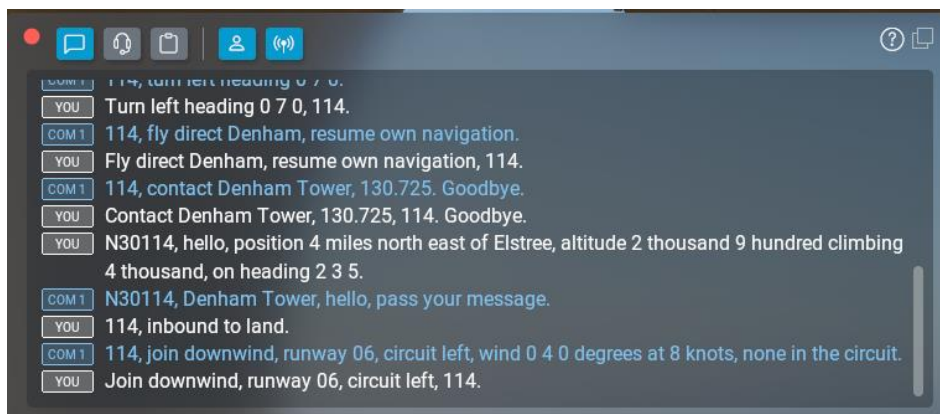
If you want to continue as an unplanned flight receiving flight-following after an on-runway start, you will need to make any call to tower before you leave the airport's immediate vicinity. This tells the system that you intend to use ATC services. Tower will not even hand you over to a regional controller if you haven't made at least one call to 'opt in' to the ATC experience.

If you choose one of the in-air start locations which align you with a runway, the "3NM" or "10NM" starts, you will initially be owned by the airport's tower. You can then make requests as normal, most likely either requesting landing or a frequency change to an appropriate regional controller. You can also simply ignore ATC and, as with the on-runway start, you will receive no further ATC prompts.

# Arrival at Non-Controlled Airports

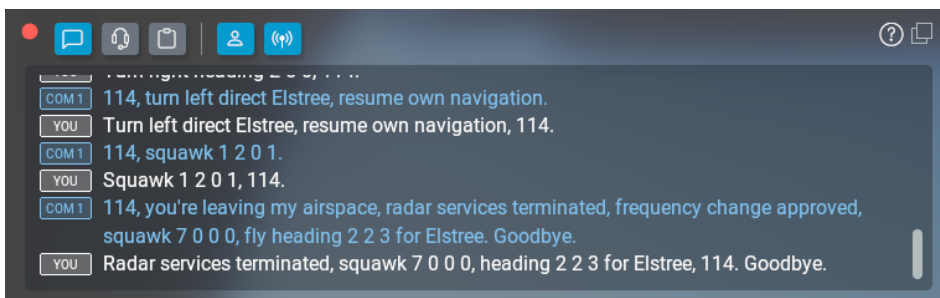
It is possible to have an untowered or FISO field as your destination, whether or not you are filing a flightplan. If you have filed a flightplan, the regional or approach controller will get you to within a short distance of the destination airport and then give you instructions on what to do next. If you are on an unplanned flight and are receiving a flight-following service, it is up to you to request a frequency change from the controller to your destination field when you are within a reasonable distance, typically 15-20 miles or less.

For a FISO airport, which has no data connection to any centralised ATC system, you will need to contact them and request landing. In real life you would probably have already contacted them before the flight to give them advance notice; this is termed “PPR” – Prior Permission Required.



Example radio exchange for requesting landing at a FISO.

For an untowered airport, you will need to navigate and land by yourself. Note that UNICOM is not currently implemented in the simulator.



Example radio exchange for arrival at an untowered airport.

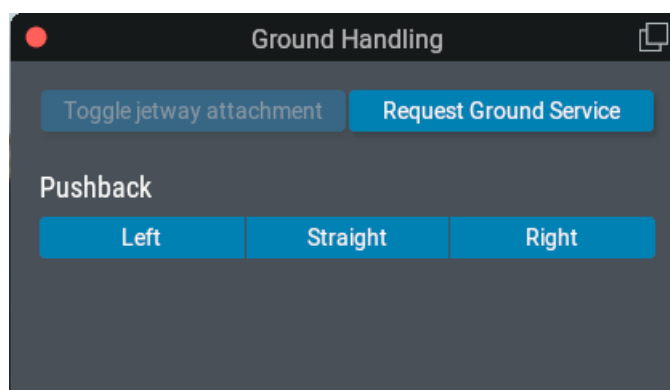
## **Interaction with Third-Party AI Systems**

At present the simulator has no way of interacting with AI aircraft provided by plugins. It is aware of their types and locations if the plugin provides TCAS data, but not their intentions.

The simulator will try to interpret the external AI's movements in some situations and will communicate proximity warnings to you. It will also take account of AI movements when making decisions about access to active runways, if this is detectable. ATC will not transmit instructions to external AI since the AI itself will not respond to those instructions.

## Ground Operations Dialog

The Ground Operations dialog allows you to interact with services before departing. When you request pushback, the initial call will be made via radio to whichever of the airport's controllers is most suitable, typically "Ground" if it is available. You may make this call using the ATC dialog as normal, or by clicking one of the three "Pushback" buttons in the Ground Operations dialog. If you do the latter, your main radio will be tuned automatically to the correct frequency even if auto-tune is disabled.



After requesting pushback, you can request "Stop Pushback". If the push truck has not yet arrived then this call is also made by radio. After the truck arrives, a physical cable is simulated and no further radio communication is needed.

# Troubleshooting

Some advice for common situations that people have trouble with:

- If you have no call options available in the list of commands in the ATC dialog, it means you have tuned your radio to a controller while still being owned by a different one. You must always interact with a controller when changing frequency, unless they have given you a clear instruction to do so. Return to your previous controller's frequency – autotune will help if you're unsure – and tell them you are leaving.
- Some of the commands have sub-options which show a list of runways or airports. These are filtered according to the situation, so it is possible for nearby airports to not be included in these lists for certain commands. For example, if you are flying the A330, many smaller airports will not be suitable for your aircraft at all so will not be given as an option.
- The above also applies to the list of frequencies shown in the ATC dialog's "Nearby Frequencies" tab. Auto-tune will always select the appropriate frequency, regardless of the contents of this list. If you do need to talk to an airport that is not listed, you can disable auto-tune and manually set the radio frequency after, of course, interacting with your current controller to let them know you are leaving their frequency.
- For technical reasons, slower aircraft are currently prevented from using SID/STAR procedures. You will not be able to file a plan with SIDs or STARs, and will not be assigned one by a controller.
- The QNH/altitude value given by a controller is the one you should use, under all circumstances. It may differ from the local reading, especially for large regional controllers.
- All weather values given in an ATIS broadcast may differ from current values because ATIS is normally only updated twice per hour unless a significant change has occurred.
- If you are unable to call 'downwind' when flying circuits or a pattern approach to a smaller airport, it almost always means you're out of position. In particular, if you are flying circuits then it is generally not acceptable to start your initial turn immediately after taking off. Make your circuit wider and ensure you reach the standard circuit altitude, typically 1000ft AGL. Also pay attention to the circuit direction given to you by the tower.
- It is possible that the simulator's guess about the control level of a particular airport is incorrect, leading to a style of communication that is different from what you expect. The correct control level (i.e. Controlled or FISO) can be set as part of the airport's definition in WED. Please report these as airport bugs with the X-Plane Scenery Gateway, at [https://gateway.x-plane.com/bug\\_reports](https://gateway.x-plane.com/bug_reports).
- Taxiway and parking spot names are defined as part of each airport; the simulator's ATC system simply reads the information as it is provided. If these names are incorrect, please also file an airport bug on the X-Plane Scenery Gateway.
- The runway you are assigned by the simulator is the one that best matches the simulator's weather conditions and airport flow definitions, both of which can be different to real-world conditions. Do not expect the simulator's runway to match actual active runways as shown in online flight tracking or planning systems.



## Bug Reports

With the complexity and variability of the situations that the ATC system needs to deal with, it is inevitable that things will not be handled correctly on occasion. To help with improving the system, please file bug reports giving full details of how to reproduce the problem.

Note that ad-hoc reports given on public forums are *not* bug reports and are unlikely to reach the developer. In short, if you haven't filed it, it's not a bug. The official bug reporting tool is at <https://www.x-plane.com/x-plane-bug-report-form/>.

X-Plane 12 currently generates two log files in the same folder as the simulator's executable file, called "Log.txt" and "Log\_ATC.txt". For a bug report to be useful, both of these files must be included.

If your report is situational – that is, if it might depend on exactly where you were at the time - it is always a good idea to send a screenshot of the simulator's map, with the "Flight path" checkbox on. It is also a good idea to temporarily switch on the "Toggle Air Traffic Paths" option on the "Developer" menu before taking this screenshot. If in any doubt, please include this screenshot.

If you need to report an issue with a particular runway, please also use the "Developer→Dump to Log → Dump Weather State to Log" option. If you wish to report a bug while the simulator is still running, for example if you are partway through a long flight, use any of the "Developer→Dump to Log" options to ensure that the log is fully written to disk.

In all cases, remember that the logs are over-written every time the simulator or any of the associated tools start. If you send an empty log, or one which is for a different flight than the one you are reporting, it makes identifying the problem significantly harder.