Intro to VFR VATSIM Flying

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Introduction & Planning Your First VFR Flight

Always remember – You are the pilot in command and at all times have the ultimate responsibility for the safety of your aircraft and persons aboard. You are expected to take whatever action necessary whenever needed to insure this safety. Remember these words, "Aviate, Navigate, Communicate; in that order!" In other words, first and foremost fly your aircraft in a safe manner, then insure you are flying the heading and altitude needed, and last but no less important, communicate to ATC or other surrounding aircraft what you are doing.

Note: Before reading this manual, it is assumed you have read MTN's *"Welcome to VATSIM, VFR & IFR"* manual or you have a basic understanding of when and where you can use VFR. This manual is not intended to teach you every aspect of VFR flying, but hopefully provides enough information to get you started with a simple online VFR flight.

OK; you are ready to try a VFR flight online with VATSIM, but have no idea how to get started. It may seem overwhelming at first, but take it one step at a time and after a few times, you will be a Pro!

It is assumed you have your flight simulator software and FSInn (or SquawkBox) up and running, you can connect to VATSIM, and you are generally familiar with your aircraft. If you need help with any of these items, review the appropriate MTN manual(s) on our website, ask questions in the MTN Forum, and/or contact the MTN Training Manager at training@mountain-air.org for personal one-on-one assistance.

First, ask yourself these questions when beginning to think about your upcoming flight:

1) Altitude: Will I remain below 18,000 feet?
2) Weather & Airspace: Will the weather and airspace classification I will be flying in permit VFR?
3) Charts: Do I have all the charts I will need?
4) Fuel & Weight: Have I done my fuel & weight planning?
5) Aircraft Performance: Can the aircraft perform at the altitudes required to safely clear obstacles?
6) Aircraft Operation: Am I familiar with the operation of the aircraft?
7) Flight Plan: Do I have a flight plan written and ready for filing with VATSIM ATC?

It is encouraged that you do your planning first and before flying VFR online with VATSIM, be able to answer *yes* to all seven questions. The following are a few reminders, tips, and basic explanations to help with the planning stage and hopefully make your first online VFR VATSIM flight successful and fun!

1) *Altitude*: When flying VFR you must fly below 18,000 feet. Above 18,000 feet is Class A airspace and VFR is not permitted. If you will be flying at 18,000 feet or above, you will need to fly IFR.

Also, when flying VFR, your cruising altitude is driven by terrain and clouds clearances, and your magnetic cruise heading. Your cruising altitudes should be based upon the aircraft heading rules:

For flights with a cruise heading between 0° and 179° heading, you should fly at an odd thousand foot MSL altitude, plus 500 feet. For example, you are cruising with a heading of 120°, your altitude could be 3,500, 5,500, or 7,500, and so on.
For VFR flights with a cruise heading between 180° and 359° heading, you should fly at an even thousand foot MSL altitude, plus 500 feet. For example, you are cruising with a heading of 260°, your altitude could be 4,500, 6,500, or 8,500, and so on.

Note: In the USA, you must also maintain a speed of 250 knots IAS (Indicated Air Speed) or less when below an altitude of 10,000 feet, unless ATC orders otherwise.

2) _Weather & Airspace_: You need to fly within the weather limitations of the different airspace classifications you will be flying in. Usually if you can see where you are going and can stay out of the clouds, and stay below 18,000 feet, you can fly VATSIM VFR flights.

a.) _Weather_: How do you know what the weather is doing at your departure and arrival airports? There are numerous ways to check airport weather conditions. If you are connected to VATSIM, you can check the weather through your client software, FSInn or SquawkBox (see MTNs' FSInn or SquawkBox manuals). You can also check weather sites on the Internet and in your flight simulator software, but a quick and easy way to check weather is use Mountain Air's webapge (see _"MTN's Using Mountain Air's Website"_ manual). For example, clicking on KDFW when you see it highlighted and underlined would give you the weather METAR at the Dallas-Ft. Worth airport along with important useful airport information. Also on Mountain Air's webpage, you can go to Corporate > Links > NOAA Aviation Weather Center to obtain any USA airport weather report.

Now, you might be asking, "How do I read a METAR?" Again, go to the Corporate > Links page on MTN's webpage and click on, "METAR decoder and tutorial by Wunderground".   Also, by using the NOAA site referenced above, you can learn how to read METARs.

b.) _Airspace_: Make sure you know what airspace classification(s) you will be flying in and what, if any, special procedures will be required.

One last thing about airspace – How do you know what the airspace is where you are going to fly? One way is to look on what is called Sectionals Charts (Sectionals) and Terminal Air Charts (Terminal). The main difference between these charts is what areas they cover – Sections cover large geographically areas such as several states; Terminals are focused on areas around the larger airports, like Denver's KDEN or Salt Lake City's KSLC airports.

These charts are your critically important road maps for VFR flying. On the charts is a "Key" that explains what is on the charts; such as what symbol/lines designate different types of airspace, navigational aids, airport information, terrain altitudes, significant ground structures, etc. You can buy paper copies of these charts on the Internet or at many pilot shops at airports, but there is an easier way – and it is free! Check out: http://SkyVector.com

On this site you can look at all of the aviation charts in the USA, including Sectionals and Terminals. Enter an airport ICAO code and click on "Go" to easily move to any airport in the USA. With some exploring and practice, you will quickly learn how to navigate your way around in this powerful flight planning website.

Note: Take the time to explore the SkyVector website. This site is invaluable for both VFR and IFR flight simulation flying. Not only can you look at practically every aviation chart in the USA you may ever need, it is a fantastic tool for laying out your flight plan routes!

3) <u>*Charts On-Board*</u>: You should have the appropriate Sectional(s) that cover your entire route, and the individual Airport Diagrams for both your departure and destination airports. Again, an excellent website to get charts from is SkyVector at: http://SkyVector.com
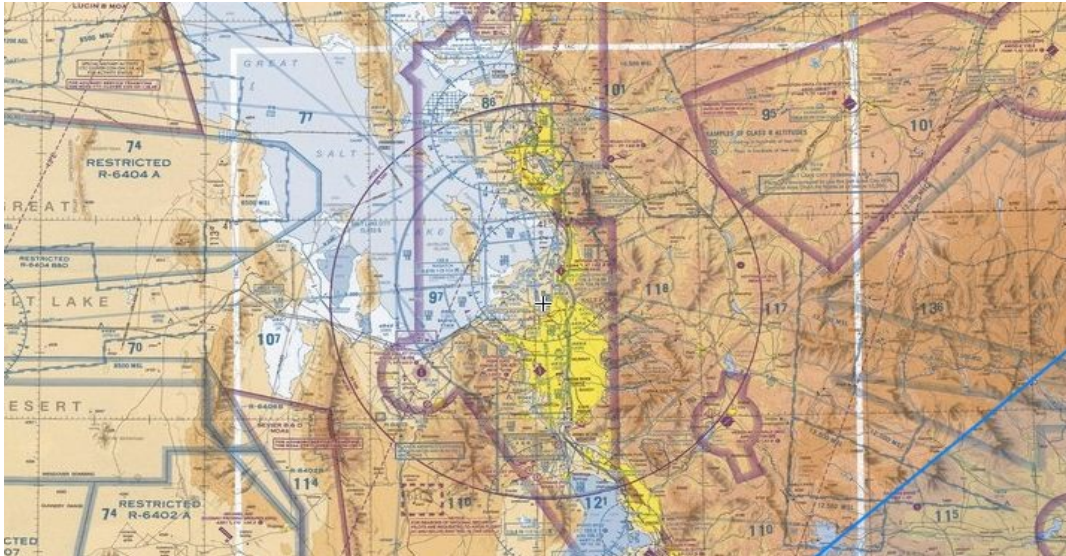

Fig. 1: A part of the Salt Lake City Sectional Chart.

4) <u>*Fuel & Weight*</u>: Accurate fuel planning can be a complex task. Each aircraft you fly has different burn rates and burn rates are affected by altitude, temperature, payload weight, fuel weight, climb rate, etc. The FAA fuel planning requirements for a day VFR flight is adequate fuel to reach the first airport of intended landing with enough reserve fuel to fly an additional 30 minutes. At night, the requirement is enough fuel to fly to the first airport and reserve fuel to remain flying an additional 45 minutes. Prudent pilots always allow for at least one hour of reserve fuel. Reserve fuel is in addition to the fuel needed for the flight from the departure airport to destination airport. <u>For VATSIM flying, figure roughly the amount of fuel you will burn to make your planned trip (flight fuel), and then add enough additional fuel to fly one additional hour (reserve fuel).</u>

To simplify the fuel planning process for many of the larger aircraft, try using the fuel planner program found at: http://fuel.aerotexas.com/   . FYI – this site can also be accessed via MTN's webpage by selecting Corporate > Links > FuelPlan2 .

Weight total and distribution (center-of-gravity) need to be checked to make sure you are not overloaded and the aircraft center-of-gravity is located properly. These can be checked and adjusted in FSX by selecting "Fuel & Payload" in the FSX top toolbar.

5) *Confirm Aircraft Performance*: Check along your planned route on the appropriate Sectional chart(s) to make sure you can safely clear all obstacles with the aircraft you will be flying. Remember not only to consider the aircraft service ceiling limitations, but take into account the fuel and payload weight you have on-board. For example, if you were flying a Cessna 172 with a Service Ceiling of 13,500 feet, you would not want to try to cross the Rocky Mountains by clearing 14,000 feet mountain peaks!

6) *Aircraft Operations*: It is recommended that you fly the aircraft off line several times so you are familiar with how it performs and how all of the controls work before flying online with VATSIM.

7) *Flight Plan*: Filing of a Flight Plan to VATSIM via FSInn (or Squawkbox) is required before you can fly your flight online, no matter if you are flying VFR or IFR. See Fig. 2 (see MTN's FSInn or Squawkbox manuals if you need help with those programs).

The following information must appear on your Flight Plan when submitted:

- Your Name & Homebase Location

- MTN Callsign (MTNxxxx – xxxx is your MTN number)

- Aircraft Prefix/ICAO/Suffix (see "Aircraft" below)

- Number of Persons On Board

- Designate the flight as VFR

- Departure Airport ICAO Code (see "Airport" below)

- Destination Airport ICAO Code (see "Airport" below)

- Alternate Airport ICAO Code (optional)

- Flight Route (enter "VFR Direct" - see "Route" below)

- Cruising Altitude (enter "VFR")

- Cruising True Airspeed (knots)

- Remarks (see "Remarks" below)

Fig. 2: FSInn Flight Plan (Squawkbox has a similar Flight Plan window).

- Estimated Departure Time UTC (optional) (24 hour clock)

- Estimated Time En-route UTC (optional) (24 hour clock)

- Fuel On Board (optional) (what time will your fuel run out – 24 hour clock)
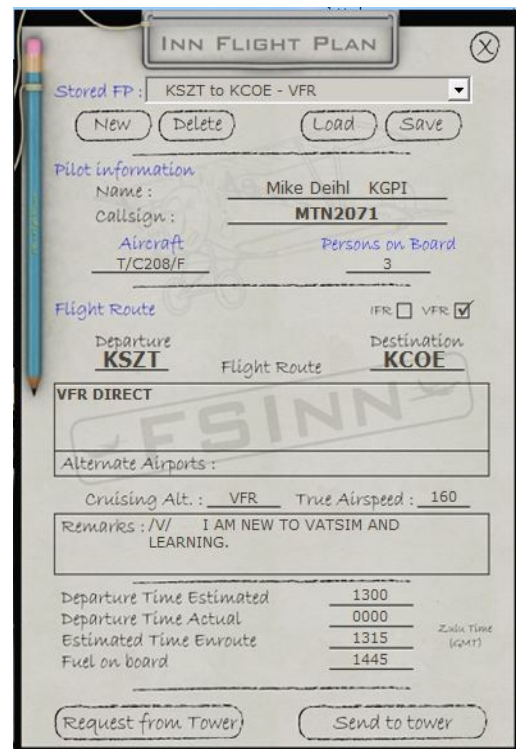
Note: Times are enter as UTC: Universal Time Coordinated is also referred to as GMT or Zulu Time.

Aircraft: Notice in the Flight Plan there is a code entered – T/C208/F. This is a unique code that identifies the type of aircraft and describes what communication/navigational equipment are on-board. In this case the "prefix" is "T", the aircraft code is "C208", and the "suffix" is "F"; a Cessna C208 with FSInn TCAS radar, and the on-board GPS navigation system that is considered a Flight Management System in the VATSIM world.

Here is a breakdown of how to make sure you have the correct codes entered:

The "Prefix": This portion of the code is optional. It tells ATC if you are "heavy" (aircraft maximum gross takeoff weight is 255,000 pounds or greater; exception is the B757 due to large wake turbulence).

T = TCAS on-board (FSInn's Radar is considered TCAS)
H = Heavy
B = Heavy with TCAS

The "Suffix": This portion of the code is required. The code is determined by using the FAA codes listed in Table 1 below.

Table 1: FAA Equipment Suffix Codes	
Suffix	**Equipment Capability**
/X /T /U	**NO DME** - No transponder - Transponder with no Mode C - Transponder with Mode C
/D /B /A	**DME** - No transponder - Transponder with no Mode C - Transponder with Mode C
/M /N /P	**TACAN ONLY** - No transponder - Transponder with no Mode C - Transponder with Mode C
/Y /C /I	**AREA NAVIGATION (RNAV)** - LORAN, VOR/DME, or INS with no transponder - LORAN, VOR/DME, or INS, transponder with no Mode C - LORAN, VOR/DME, or INS, transponder with Mode C
/E /F	**ADVANCED RNAV WITH TRANSPONDER AND MODE C** (If an aircraft is unable to operate with a transponder and/or Mode C, it will revert to the appropriate code listed above under Area Navigation.) - Flight Management System (FMS) with DME/DME and IRU position updating - Flight Management System (FMS) with DME/DME position updating

/G	- Global Navigation Satellite System (GNSS), including GPS or WAAS, with enroute and terminal capability.
/R	- Required Navigational Performance. The aircraft meets the RNP type prescribed for the route segment(s), route(s) and/or area concerned.
/J /K /L /Q /W	**REDUCED VERTICAL SEPARATION MINIMUM (RVSM)** (Prior to conducting RVSM operations within the U.S., the operator must obtain authorization from the FAA or from the responsible authority, as appropriate.) - /E with RVSM - /F with RVSM - /G with RVSM - /R with RVSM - RVSM

"Aircraft": The aircraft code portion is a ICAO (International Civil Aviation Organization) code assigned to each specific type of aircraft. To find an ICAO code, use MTN's "Aircraft ICAO Code Search" link at: http://www.mountain-air.org/corp/links.php

"Airport": The airport code is an ICAO (International Civil Aviation Organization) code assigned to each airport. There are many places to find Airport ICAO Codes ranging from your flight simulator software, to many sites on the internet such as airnav.com and SkyVector.com .

"Route": This field can include VORs, NDBs, etc., but for now, enter "VFR DIRECT".

There are additional training materials for VFR flying with VATSIM at their website:

http://www.vatsim.net/prc/prc-vfrspec/

You are encouraged to review their VFR training material after you have had time to digest this Mountain Air VFR material, but for now, buckle your seat belt, have some fun, and fly the following short "Step-By-Step" online VFR flight!

Note: Before logging onto VATSIM, it is recommended you configure your flight simulator software to ignore crashes and damage. The reason is to avoid a "fatal" crash if you and another pilot log in and try to occupy the same gate or parking spot at the same time. In FSX, you do this by selecting Aircraft > Realism > Settings > Ignore crashes & damage.

A "Step-By-Step" Online VFR Flight With VATSIM

It is recommended for your first few online VFR flights, you do not fly near major airports with Class B airspace such as Salt Lake City, Utah. Try first flying a few "rural" flights involving smaller Class E airports such as KSZT (Sandpoint, ID) to KCOE (Coeur D' Alene, ID). With flights like this, you don't need to worry about complex airspace classification definitions and if the weather looks good, stay below 18,000 feet, and go for it VFR style!

This is a short daytime VFR flight in a Cessna C208 from Sandpoint, Idaho (KSZT) to Coeur D'Alene, Idaho (KCOE).

It is assumed you know how to use your flight simulator and either FSInn or Squawkbox software. If you need assistance, contact MTN's Training Manager at training@mountain-air.org .

1) Round up the appropriate charts to begin planning your flight. We used http://SkyVector.com to plan this flight. See Figs. 3,4, and 5. You can see from the Sectional, you will be flying in Class E and G airspace if the weather will permit a VFR flight. The "VFR Direct" route appears to be a heading of about 180° for 33 nautical miles (nm), at an altitude of 4,500 feet altitude (about half way, there is a small 4,558 ft. hill you will need to avoid). Figure out how much fuel you need based upon this 15 to 20 minute flight in a C208 (cruise speed = 160 knots).
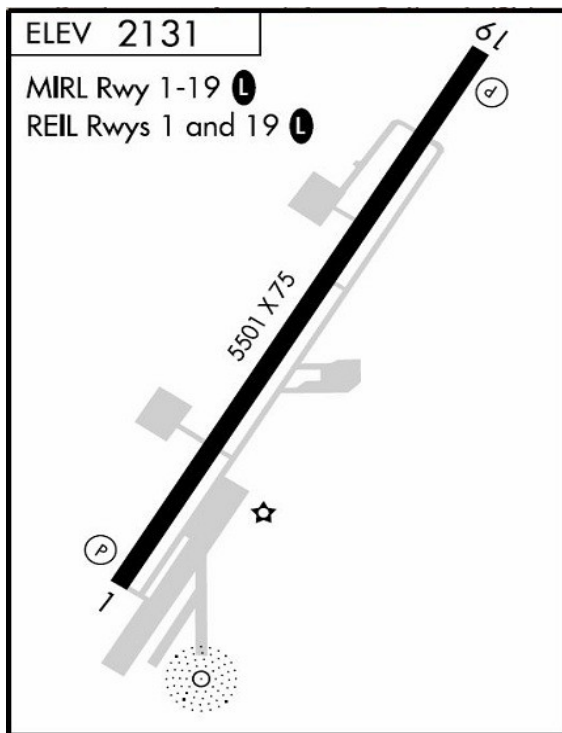

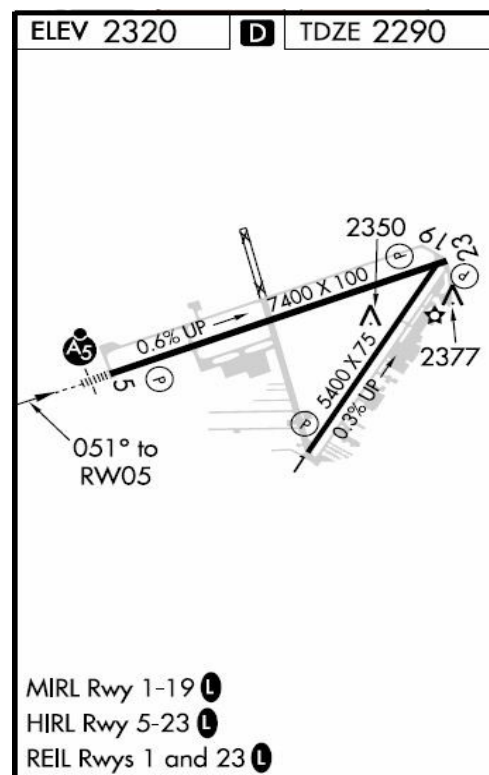
Fig. 3: Sandpoint, ID (KSZT).

Fig. 4: Coeur D'Alene, ID (KCOE).

Fig. 5: Seattle Sectional with flight plan route identified using www.SkyVector.com .

2) Start your flight simulator software and your multi-player client software (FSInn or Squawkbox) but do not immediately connect to VATSIM. Make sure your aircraft is positioned at a gate or in a parking area at KSZT airport BEFORE connecting to VATSIM. You do not want to start on an active runway – someone might be landing at the very moment you join VATSIM! Now that you are sure you are not parked on a runway or taxiway, connect to VATSIM.

3) Fill out your Flight Plan (see Fig. 2: "FSInn Flight Plan" as a guide) and submit it to VATSIM via FSInn (or Squawkbox).

4) It appears the FSX C208 model will burn about 8 gallons (approx. 54 lbs) for this flight. Adjust the fuel on board for a total fuel load of about 40 gallons (approx. 272 lbs.); 8 gallons for the 15 minute flight and 32 gallons for a 1 hour reserve. There are approximately 6.8 pounds per gallon of aviation fuel. Note: While it is not the best Flight Planner available, one way you can find the approximate burn rate and required fuel is by planning your flight in the FSX Flight Planner. It makes its' calculations based upon which aircraft and route you have selected for the flight.

5) Set your COM1 radio to UNICOM 122.80 (remember this is TEXT ONLY frequency). Since you are at an uncontrolled airport, and you are flying VFR, there is no need to contact ATC via voice or text message to obtain a clearance.

6) Set your Transponder to 1200 (this is the standard VFR Transponder code) but leave it in the "Standby" mode.

7) Set your altimeter.

8) Complete your aircraft pre-flight checks and prepare the aircraft for engine start and taxi.

9) Determine local wind speed and direction and select takeoff runway (take off into the wind as much as possible).

10) Check parking brake on, turn on Beacon and NAV lights; start engine, set flaps and elevator trim, and taxi to the "hold-short" line of the runway. Turn on your Transponder to "Mode C".

11) Send a text message on UNICOM to notify other area air traffic of your intentions. For example, if you are going to use runway 19, send this, "KSZT. Departing rwy 19 to the south."

12) Turn on Strobes and Landing Lights just before you enter the runway... When ready... Take off !!!

13) Once airborne, turn off the Landing Lights, climb to 4,500 feet, adjust engine and prop, trim the aircraft, and enjoy the sites!

14) Assuming the wind permits, plan on a straight in approach for landing at KCOE using runway 19.

15) About 10 nm from the airport, again announce your intentions on UNICOM with a text message. For example, "KCOE. 10 nm to the north. Inbound for full-stop landing rwy 19."

16) Prepare the aircraft for landing; landing lights, flaps, etc.

17) Land the aircraft and announce again on UNICOM when you are clear of the runway. For example, "KCOE. clr of rwy 19." Turn off your Strobes and Landing Lights when you leave the runway. Return your Transponder to "Standby" mode.

18) Taxi to parking/gate, shutdown your aircraft.

19) Disconnect from VATSIM in FSInn or Squawkbox.

20) Your flight is not over until the paperwork is filed. To log your flight at MTN, you have two different methods available; manually or using the FSAcars system. It is recommended you manually file your PIREPS while first learning. See MTN's "Pilot Manual" on how to file your PIREP (Pilot's Report). You have completed your online VFR flight with VATSIM!

While this manual does not intend to teach detailed flight navigation or IFR instrument landing procedures, you can also adjust your NAV1 radio to the COE VOR/DME at 108.80 before taking off from KSZT and fly to the COE VOR that is near the KCOE airport. If you want to try an IFR ILS landing under VFR conditions, set your NAV1 radio to 110.70 and try the ILS landing at KCOE using runway 5. Here is the ILS approach plate: http://skyvector.com/files/tpp/1211/pdf/00527ILD5.PDF .

"*If*" by some strange chance there is a controller at one or both of the Class E airspace towers (KSZT and/or KCOE), you will need to set your COM1 radio to the appropriate frequency before you leave KSZT and/or before you arrive at KCOE. Explain to them you are new to VATSIM. They should be happy to help you. Basically, you ask their permission for taxi, takeoff, and landing, at their respective airport, and always advise them of changes in your intentions as long as you are in their airspace (their respective air spaces are designated on the Sectional chart). Remember the airspace between the two airports' Class E air spaces is Class G uncontrolled airspace that has no regular VFR ATC.

Now, if you are ready to take the ATC involvement to the next level, plan a VFR flight from KCOE to KGEG (Spokane, WA) which is Class C airspace! Don't forget to contact available ATC *before* you enter the Class C airspace surrounding KGEG (check your Sectional chart and KGEG airport info on SpyVector). If VATSIM ATC is not online (Seattle Center and/or Spokane tower), announce your intentions on UNICOM just like you did flying into KCOE!

> *While flying VFR with VATSIM, you might be asked by ATC if you want "Flight Following", or you may hear other VFR pilots request it. This is a service ATC will provide when their workload permits. While receiving Flight Following, you will be in radio contact with ATC and first be instructed to set your Transponder to a new code. Under this service, ATC will provide you traffic information concerning other aircraft in your area and/or that will intersect your flight path and other hazardous ground obstructions. Once you are alerted to the location of other air traffic and hazards, you should be in a better position to take appropriate action if the need arises. You may also request radar vectors for navigational assistance, or for separation from other air traffic. It's important to note that you must request radar vectors; in most cases, controllers will not initiate vectoring for VFR aircraft. You can cancel Flight Following at any time.*