April 2006

Issue #6

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April's Features:

From the President's Desk

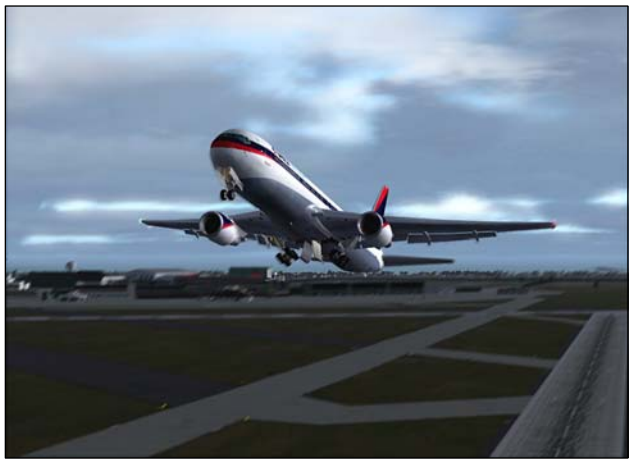
Terry Eshenour - President, Senior Captain 777

Delta Virtual Airlines is hard at work on making its sixth year a milestone. During March we celebrated our 5th anniversary and we became the world's largest virtual airline with 1,260 pilots. As April begins, the Flight Academy will go live offering a Private Pilot License course.

Our March 12, 2006 fly-in event resulted in a record day of the most flights flown in its history with 191 flight segments filed. Our pilots carried the DVA heritage to world destinations as well as to North America. I am grateful for all the pilots that dedicated their Sunday to flying multiple legs.

The finishing touches were made to the Flight Academy. It is now in beta testing with a projected April 1st start date. George Lewis, Director of Training has a separate letter detailing the Flight Academy and what to expect. With the increased work activity at the Flight Academy, its newsletter is being combined with Delta FLY!

The revised promotion policies that went into effect in January were readily adopted and integrated into our system making it simpler to understand and follow from both the pilot and administration viewpoints.



Gastòn Doval was appointed Chief Pilot MD-11 following Pablo Fraga's resignation in January because of school and a plan to study abroad. We thank Pablo for his years of leadership and wish him well as he pursues his education and eventually a career. Chris Williams was appointed Assistant Chief Pilot B767 filling Will Chambers position following Will's promotion to Chief Pilot.

Thank you for flying Delta Virtual Airlines,

Terry Eshenour
President, Senior Captain 777
DVA057

From Delta FLY!'s Editor

Matt Reamy - Editor In Chief, Sen. Cpt. 777

Welcome to the April 2006 edition of the Delta Virtual Airlines newsletter. The first thing up on the menu is to thank Matt Young for covering for me last month while I got some personal stuff worked out. I truly enjoyed the article Luke penned about the history of DVA. Thanks to Terry and George and the rest of the staff who were tossed the issue at the last minute.

We've got some big changes for you all this month. With the opening of the DVA Flight Academy imminent, George Lewis will be combining the Flight Academy newsletter with FLY. It's been great having George's contributions to FLY to date, and now we will be taking FLY to a whole new flight level, if you will. Also up, Larry Foltran will be doing the layout for FLY now, so we can all look forward to his touches. I've found, since starting FLY, that I'm not that great at layout design; so Larry's contribution is a most welcome and anticipated change.

We've got a great issue for you all. Our President, Terry Eshenour, briefly detailed some of the changes going on within DVA. These changes are not always visible to the pilot corps at large; and we should be grateful to Terry for keeping us all abreast of the changes, both in effect and anticipated, here at DVA. Chris Williams has penned an informative article concerning arrival procedures to Atlanta. Included are some useful tips on descents and predicting which runway will be in use at KATL when you get there. We've basically covered the basics of flight planning. When searching for a topic on which to write, I realized that radio communication on VATSIM can be quite intimidating. I've outlined the procedures you'll use on VATSIM and included a few examples of communication on a typical flight. Because it pertains to VATSIM operations, I've included the section from the Aeronautical Information Manual that outlines Hold Short Operations. Director of the Training Academy, George Lewis has written a couple of articles on flight planning and some tips on landing. Finally, but certainly not least important, from our Sister Airline AFV, Michael Carter has written a truly stimulating article on the Boeing 727's electrical systems.

As always, we welcome feedback from the pilots here at DVA. With all that's going on, both in our real world lives as well as our DVA-related activities, sometimes things slip through the cracks. If you'd like to see things included, feel free to drop me a line at editor@deltava.org.

See you in the skies!

Matt Reamy
DVA1267
Editor In Chief
Delta FLY

From the Flight Academy

George Lewis - V.P. & Director of Training

Greetings fellow DVA Pilots! You may have noticed that there was no March 2006 edition of the Flight Academy newsletter. I sincerely apologize for this, but Larry and I have been extremely busy lately. After much thought, I have decided to combine forces with the Delta Fly! newsletter and do away with the Flight Academy newsletter.

This month I have written an article on flight planning and an out and back example in the DVA Flight Academy EMB-120 aircraft. I have also included an excerpt from the Private Pilot Ground School Manual on landings. I hope you enjoy them.

Remember also that we have a Mentor Program in place. What is the Mentor Program? Well, if you need help with something, you simply send me an email to training@deltava.org and let me know what you need help in, and I'll get you setup with a mentor, who is someone experienced in the area you are seeking help in, that is willing to help others. It's also a great way to make some new friends!

The Flight Academy is finally open for business and we have had many people sign up for the Private Pilot course. I really appreciate your trust in us to help teach you some good aviation knowledge and flying skills!

Larry Foltran has real world commitments that will unfortunately keep him from being able to do DVA CFI work. We are in the process of announcing a replacement CFI shortly. Larry will still be available to answer questions related to the MD-88/90.

Flight Instruction will take place via fsnet/copilot and the software has a free trail period. Voice capability is highly encouraged, because without it, real time in the cockpit flight training is going to be very difficult, if not impossible, to accomplish.

Of course, if anyone has any questions, please don't hesitate to email me at training@deltava.org

Please keep in mind a couple of things when taking these courses.

1. This is not intended to be a replacement for real world flight training! This is intended to teach you how to better fly the flight simulator in a way that closely resembles real world flight training.
2. We understand (and you should to) that this is a voluntary thing – we all have real world lives that take priority. Please be patient but if we forget something, do let us know.
3. Flight instruction you may receive may not necessarily come from a real world pilot. If you are looking for real world flight instruction, go to your local FBO and sign up. This is flight simulation training.
4. The material has been written for DVA by DVA members. It is not intended to be a replacement for real world training manuals!

I look forward to the opportunity to help each and every one of you that seeks to increase their aviation knowledge and skill set. We'll see you soon at the DVA Flight Academy!

George Lewis
DVA 2253
Senior Captain, B722
DVA Vice President and Director of Training

The Boeing 727-200 Power Production

Michael Carter - AFVA President, CP 727

After much reading, researching, and general frustration at trying to understand the Boeing 727-200 electrical system, a manual I recently purchased made understanding this system a piece of cake. Even with my aerospace electrical/electronics background, the explanations, flow charts, and schematics remained a mystery until recently.

I hope you will enjoy this brief article and use this information during your pre-flight and en-route flying while in the ***BOEING*** 727-200.

The primary sources of electrical power for the aircraft are three 115-volt, 400 cycle, three phase AC engine driven generators.

Each generator is rated at 36KW. Another source of power is the APU generator which is identical to the others.

Electrical power is *not* connected automatically. All sources must be manually connected through movement of a switch. *The last source of power switched onto the system will take priority after automatically disconnecting the existing source.*

The engine driven generators are connected to their engines through a Constant Speed Drive (CSD) unit. This ensures that the frequency of 400 cycles is maintained throughout the operational envelope of the engine.

The generators are normally ***paralleled*** through a ***synchronizing buss*** to equalize the load between generators. In other words, all three generators are on the same electrical buss sharing the electrical load. If a generator drops off the line, the others can take up the slack, as *long as they are paralleled.* This is important because each generator can also be operated independently of the synch buss and each generator in that case will be powering the individual equipment items on their own buss. This is not normally used.

I won't detail this here, but as an example, Number One AC Buss may have the Captain's critical flight instruments, electric trim, and AC pack one on the circuit. AC Buss Two may have all electric boost pumps, hydraulic pumps, galley power, windshield heat, etc., and AC Buss Three may have the FO's critical flight instruments, exterior and interior lighting, AC pack two etc, on it's circuit. If these generators are all on their separate busses, loss of that generator will affect every system connected to that generator's buss. On the other hand, if the generators are paralleled, all of the generators are working together and the loss of one or even two does not mean all of the systems on any one buss will be lost.

It must be noted here however, that, as stated in the first paragraph, the maximum output of each generator is 36KW. The loss of two generators even on the synch buss would necessitate shutting down non-critical electrical loads to remain within the 36KW load limit. Items such as galley power, gasper fans, outflow cargo heat, are examples of non-critical systems which may be taken off the line under such circumstances.

When the APU is used to provide electrical power to the aircraft, it too is connected through the synch buss through number three synch buss control. That is just the way the system is wired. With Number Three synch buss switch CLOSED, the aircraft is provided power through all of its systems. Numbers One and Two synch buss switches do not have to be closed for the APU to provide full power to the aircraft. The source switch must be in the APU position.

The Generator Field Switch provides an on/off control for the generator magnetic field. When this switch is in the on position (Field CLOSED) the generator is producing voltage and frequency. Rotating the voltage and frequency monitoring selector switch will allow you to see what the generator is outputting. This same switch is also used to monitor the SYNCH BUSS, External Power, and the remaining two generators when they are operating individually or when they are paralleled.

The Generator Breaker Switch located above the field switch actually connects the individual generator to its load buss after its field is closed as described in the example above. Each generator uses this switch to connect it to its own load circuit before they are paralleled.

The BUS TIE breaker is used to introduce the generator to the synch buss. This is the top switch in the generator switch stack.

Before each individual generator is added to the SYNCH BUSS, they must all be producing the same voltage and frequency. This is know as being 'in phase' with one another. If a generator is introduced to the synch buss that is not in phase with the others, *all* of the buss tie breakers will open and each generator that *is* connected to the synch buss will revert to individual operation and only supply power for the equipment connected to the individual generator's AC buss.

Each generator is adjusted individually using the AC meters selector and the frequency adjustment knob before being switched to the synch buss. Each generator will still function individually if this is not performed, but the frequency and voltage will not be correct for the equipment being powered and must be adjusted. The tolerances are not great so accuracy is important even if operating individually. Exactness is a requirement for the generators to be placed on the synch buss.

Power from the generators, APU, or external power is routed through the E&E (Electronics & Equipment) bay to the circuit breaker panels found on the flight deck. The three main AC load busses are on the P-6 panel found to the right of the engineer's console on the aft right bulkhead. All heavy-load items are located on this panel. The P-18 panel located on the aft left cabin wall behind the jump seat consists of FLT/NAV, COMM, AP, and lighting circuit breakers.

Protective circuits prevent two unlike sources of power (APU, Aircraft, or external) from being connected at the same time. If a new source of power is introduced, the source already connected is tripped off before the new source is accepted.

DC power is also a requirement of many aircraft systems and this is provided by AC Buss One and Two. The AC power provided by generator's One and Two is routed to a Transformer Rectifier (T/R), T/R1 and T/R2. The voltage is 'rectified' or changed to DC and 'transformed' or stepped down to 28VDC for use by the NAV/COMM radios and other essential DC powered equipment after being routed through the appropriate breaker panels located on P-18.

The Essential AC Buss provides power to critical aircraft systems in case of an electrical problem or malfunction. The Essential AC buss is independent of the SYNCH buss and the main AC buss for each generator. Critical equipment to safely fly the aircraft is wired to this buss. Any of the generators (or APU, external power) may be switched to this buss without affecting the SYNCH buss using the Essential Power switch located on the Generator Power Panel on the engineer's console. During flight, any one of the three generators may be selected to provide this power if needed. Of course, if the problem

happens to occur with the generator selected, another generator will have to be chosen to provide the Essential Power Buss.

I'll touch a bit more on the CSDs for a moment. Some have questioned what those three red capped switches are for on the CSD panel and what do the meters monitor. As you may have figured out, the CSD units are rotating anytime the engines are turning. It doesn't necessarily mean the generators are producing voltage (see above), but it does mean they always turn. If a catastrophic failure should occur within a CSD, those capped switches allow a physical/mechanical disconnect from its respective engine. It will spin down (if it hasn't locked up) and stop. A re-connect can only be accomplished by ground servicing so make very sure that you have a serious problem before pulling the permanent plug on one of your generators.

The gauges monitor two temperatures. When the switch is placed to the IN position, the gauge is monitoring the oil temperature going Into the CSD. If the switch is placed to the RISE position, the gauge monitors the difference of the oil temperature coming into the CSD and that going out of the CSD. It is a measure of load on the CSD unit. RISE is measured on the outer scale and IN is measured on the inside scale.

There are several other power circuits aboard the Boeing 727 such as the Essential DC buss, battery buss, and hot battery buss. I will leave those for a future article. The above will get you started on understanding power production and distribution aboard the aircraft. I hope you found this article useful for further understanding of the complex systems aboard the Boeing 727. And see, you didn't even need an electrical engineering degree to get through that.

Michael E. Carter
Chief Pilot
Boeing 727-200 Program
Aviation Francais Virtuel

KATL Flight Arrival Planning

Chris Williams - 767 Assistant Chief Pilot

Last month, we looked at which departure procedures to use when flying out of Atlanta. This month, we'll finish up the series by looking at the arrival procedures into Atlanta.

I'm going to use the return flight from Boston as the example in this article. The flight plan is as follows:

KBOS GLYDE BAF J77 EMI J48 MOL.WOMAC2 KATL

Atlanta has four different Standard Terminal Arrival Route (STAR) procedures, one each for the Northeast, Northwest, Southeast, and Southwest. There are also the RNAV equivalents for each. Please refer to http://www.airnav.com/airport/KATL for a list of all the arrival charts.

The STARs (and RNAV equivalents) are:

MACEY TWO – Northeast arrivals; the RNAV equivalent is WOMAC TWO

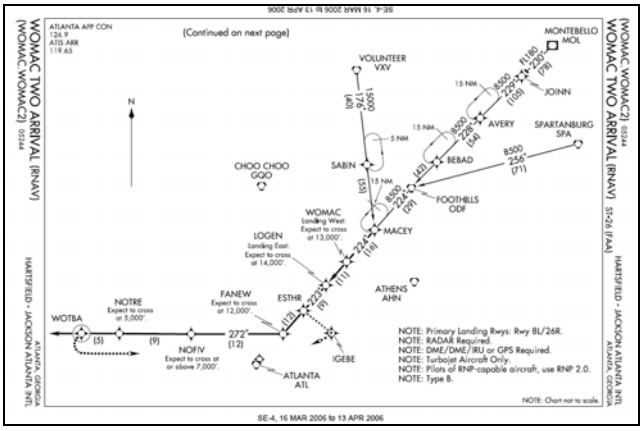
ROME TWO – Northwest arrivals; the RNAV equivalent is ERLIN TWO

LA GRANGE ONE – Southwest arrivals; the RNAV equivalent is HONIE TWO

SINCA THREE – Southeast arrivals; the RNAV equivalent is CANUK TWO

Please remember that RNAV procedures (both for departures and arrivals) can only be used by turbojets with GPS/FMC capabilities. Those aircrafts without a GPS/FMC or turboprops must use the non-RNAV procedures.

When looking at each STAR, you will notice crossing restrictions. Remember that STARs help reduce the workload on ATC and provide a standard arrival route for pilots; one way of achieving this is by publishing crossing restrictions depending on the active arrival runways in Atlanta.



Looking back at the above flight plan, I will be using the WOMAC2 RNAV MOL transition arrival procedure.

Looking at the above chart, I see my crossing restriction to be:

Landing West: Expect to cross WOMAC at 13,000'

Landing East: Expect to cross LOGEN at 14,000'

How do you know if Atlanta is in East or West Operations? Let's review the active arrival runways in Atlanta again.

When winds are at or below 4 knots (from any direction) or if winds are 180-360 and 5 knots or higher, KATL operates under West Operations. Active Arrival runways are 26R and 27L.

When winds are 5 knots and above from 001-179, KATL operates under East Operations. Active arrival runways are 8L and 9R.

Let's look at a METAR report to find the active arrival runways.

KATL 271252Z 06009KT 10SM FEW250 06/M03 A3035 RMK AO2 SLP283 T00561033

I see the winds are 060 at 9 knots. From looking at our guide above, I see Atlanta is under East Operations. That means the active arrival runways are 8L and 9R but which one will I get? Northern arrivals will get the 8L/26R runway and southern arrivals will get the

9R/27L runway. This could change due to traffic and other circumstances but you can count on this general rule for a majority of the time.

So I know that Atlanta is under East Operations and that I will be using runway 8L for my arrival runway. I also know I need to cross LOGEN at 14,000'. Now I need to plan my descent and select my final approach course for an ILS 8L approach.

I've covered descent planning before in the January issue of the Delta Flight Academy newsletter but here is a quick review:

The rule of thumb for planning your descent is:

1. Take your altitude and multiply it by three. This equals your distance in miles to begin your descent.

2. Take half of your ground speed and add a zero. This is your rate of descent in hundreds of feet.

Let's apply this rule to my flight. My flight plan calls for a cruise altitude of FL360. My ground speed is 450kts. Using the rule above, it would take me 66nm to reach LOGEN at 14,000'. Since my ground speed is 450kts, I take half of that, (225) and add 0 to it to give me a 2250fpm descent rate. So if I started my descent 66nm from LOGEN at a 2250fpm descent rate, I'll cross LOGEN at the published altitude of 14,000'.

You can read more on descent planning in the January edition of the Delta Flight Academy newsletter. I've also created a standalone descent planning windows application that will automatically calculate the distance and descent rate for you based on your altitude and ground speed. You can download the application at http://designmojo.com/site/applications.

Now that I have my descent planning complete, I can enter the waypoints for the final approach into 8L. Looking back at the WOMAC2 Chart, I see I need to cross FANEW at 12,000', NOFIV at or above 7,000', and NOTRE at 5,000'. At this point, you'll be given final approach vectors into KATL if ATC is online. If not, then please adhere by the crossing restrictions for FANEW, NOFIV, and NOTRE.

WOTBA is the last waypoint on the WOMAC2 STAR, so if ATC is not online, I program the FMC for the first waypoint on the ILS 8L approach plate which is BAHRR. I also program the FMC for a missed approach which would be:

Climb to 1500 then climbing left turn to 3500 via ATL R-360 to TROYS Int/ATL 15 DME and hold.

To recap, I am using the WOMAC2 RNAV arrival and by looking at the weather, I can see that I can expect runway 8L for arrival. Based on the fact that my cruise altitude is FL360 and my ground speed is 450kts, I also know that I'll need 66nm at a 2250fpm descent rate to cross LOGEN at 14,000'.

Once you get a few arrivals under your belt, planning your arrival into Atlanta will be a piece of cake.

Should you have any questions, please e-mail me at chris@designmojo.com.

How to Improve Your Landings

George Lewis - V.P. & Director of Training

Most people associate landing with the most dangerous part of the flight, but this isn't true. The *takeoff* is the most dangerous part of the flight, because if something goes wrong, we are in an awkward situation with low airspeed, low altitude, possibly exceeding maximum landing weight and we may not be able to make it back to the runway to land.

Landing is pretty safe – we are coming in with the runway right in front of us and we are prepared to put it on the ground. Weather can cause a problem but generally speaking, the landings are pretty safe – they may be considered difficult to master so we are going to cover them in detail here.

The *key* to landing is learning the basics – this is why at the DVA Flight Academy we teach a pilot how to fly straight and level using the trim. This is why we teach you how to climb and descend and maintain control at slow airspeeds. If you cannot fly the airplane in level flight at approach speeds at 3,000 feet AGL practicing slow flight, or make a controlled descent at 500 fpm at 110 knots, you are not going to be able to land the airplane very well.

Landings will be taught as part of the flight instruction by the DVA flight instructors (CFIs). If you learn the techniques they teach you – straight and level flight, climbs, descents, turns, slow flight, etc., when it comes time to do pattern work and landings, you will have very little problems with them, as the landings are really just a combination of all of these learned skills.

The landing is really set up in the approach. Let me paint a play by play scenario of a botched landing attempt:

- Not descending soon enough/entering the pattern at the wrong altitude makes you too high
- Coming in too high means you will overshoot the runway, so you push nose of the airplane down to make up for it.
- As a result of pushing the nose down, you increase your rate of descent past 500 fpm and are going too fast
- Because of the extra airspeed, you pull the throttle back.
- Now the airplane is sinking way too fast and you are coming in hot.
- Suddenly the PAPI lights go from all white to all red.
- Now you pull back on the stick and the airplane starts to climb
- Because you are climbing, the airspeed goes down
- You can't see in front of you because you are in a high pitch attitude
- Your airplane stalls and hits the ground, or you tailstrike, or you plop the ground so hard you are sure you left the landing gear on the runway, or you bounce, or you float, or you bounce more than once off the runway.

Has this ever happened to you? It has happened to probably all of us at one time or another. For some of us, it is a normal situation and we have reverted to **autoland**. This is not the purpose of autoland – the purpose of autoland is to ensure nobody dies during a zero visibility landing. Trust me; **you** can learn to land the airplane better than the robot!

Know your bird
The key to good landings is doing touch and goes over and over and over again in the airplane. Keep in mind that if you can do touch and goes well in the Cessna 172 you can do them well in a 727, but not right away. You have to take each airplane up and practice the characteristics of that particular aircraft. A Cessna 172 will fly an approach at 80 knots and you can land it that way with no flaps. A 727 is not going to stay airborne with no flaps at 80 knots. In fact, a 727 will fall out of the sky at that speed even if you have full flaps and the gear down. Nothing short of magic will keep you in the air at that speed in a 727. It is important to practice the recommended approach speeds of the aircraft you are piloting.

The basics of the landing are simply this:
You approach the touchdown point with your descent changing from 500 fpm to almost nothing – gradually and smoothly. While you are gradually adjusting your descent to near level flight, your speed will go from approach speed to touchdown speed, but not instantly. You hold the airplane just a few feet above the runway until the airplane slows down enough to quit flying.

In keeping the airplane a few feet off the ground, you will slow down and as a result of keeping it from sinking to the ground and bouncing (because it is not yet ready to quit flying at this point) you will need to apply smooth back pressure on the yoke. As you do this, the airplane will "flare" – meaning the nose will come up just a bit – not a lot – and as the airplane slows enough, it'll fall to the runway as it reaches a point where the wings will no longer support lift.

If your problems are maintaining proper airspeed and rate of descent during the approach, this will be corrected by the CFI during flight training when they teach you the proper use of pitch/trim and power.

Crosswinds
Crosswinds can be challenging but remember this – simply point the airplane into the wind with enough of an angle that the wind can't push it off the centerline. You may not be flying the runway heading at all – you may be heading 095 heading for a landing on runway 11, but if the wind is strong enough, it is pushing your airplane and you have to counteract this. This takes practice.

Pitch, Power and Trim
One thing that is key to understanding is that to have proper control of the airplane, you need to understand pitch, power and trim and how you use those to fly the airplane properly. If you learn these techniques, your approaches and landings will improve dramatically.

Pitch
Pitch maintains the indicated airspeed. Quite simply, you need to lower the nose to speed up and raise the nose to slow down. If you are supposed to fly the approach and 110 KIAS and you are at 100 KIAS, you need to lower the nose to get to 110 KIAS. If you are flying at 120 KIAS and you need to get to 110 KIAS, you need to raise the nose of the aircraft.

Power
Power maintains the climb/descent rate. If you are sinking too fast you need to increase power to stop the descent. If you are not sinking enough, reduce power to increase the descent rate.

Trim
Trim is your friend – use it to help you maintain pitch of the airplane. Also, there are times when you will need to use the full forward or backward motion of the yoke and it isn't enough. Keeping the trim properly set will give you more elevator control, making pitch settings easier.

Summary
Repeating our botched landing attempt, let's re-do it with these techniques in mind.

- We are too high in the pattern. (for example, we are at 1800 feet AGL instead of 1500 feet AGL)
- Because we are too high, we pull the throttle back, in effect, making the airplane sink.
- If we were too fast as well, we would hold the airplane level with reduced power until the airplane slowed down before descending. It is very difficult to slow down when descending. Remember that we'll lose more altitude at a slower ground speed than at a higher ground speed. Trim the airplane as needed to help with the pitch.
- Now we have a controlled descent, airspeed and rate of descent wise. We may even be descending at 1500 or 2000 fpm if necessary, but we are maintaining proper approach speed.
- As the PAPI lights go from all white to red and white together, we increase the throttle to slow the descent rate, and adjust the pitch (and use the trim as needed) of the airplane to maintain the proper airspeed and keep it at our approach speed.
- As a result of this, we approach the runway at the proper speed and descent rate, adjusting power, pitch and trim to maintain a good approach to the runway.
- The airplane comes over the runway and at about 10 feet high, we level out and reduce the power all the way back.
- As we hold the airplane level and it starts to slow down, we have a nice touchdown on the runway.

Again, see your local neighborhood friendly DVA flight instructor for a session in the airplane, where we will work on these basics.

**this article is an excerpt from the DVA Private Pilot Ground School Material

Radio Communications

Matt Reamy - Editor In Chief, Sen. Cpt. 777

Note: the frequencies used in this article are for example only and are not necessarily the actual frequencies you'll be using. Similar liberties were taken with procedures (SID/STARS).

Perhaps one of the most intimidating things about learning to fly online with VATSIM or IVAO is communication with the Air Traffic Controllers. As a virtual pilot new to online flying, you've probably got several questions about the whole process.

In the Document Library of your Pilot Center, you'll find the Online Flying Manual. That's a great place to start; it outlines the process of getting online at VATSIM.

Once you're connected and you're sitting there at the gate listening or reading (if it's text) to the veterans go about their business, you start to wonder if perhaps you've bitten off more than you can chew. How do these people know how to do all this stuff? They make it look easy.

You're in luck, because it is easy. It's just a matter of practice (This shouldn't surprise, you since everything else about flying takes practice).

You're perfectly free to sit there at the ramp and listen to or watch the text on the frequency until you think you've got it down. If you do this, pick a parking spot off the ramp so others can use that space. Courtesy is a major contributing factor to enjoying flights online.

Once connected, your first step should be to file your flight plan. You can start your preflight while it's being processed.

The flight plan is a straightforward process.

This is the flight plan form found in SquawkBox v3. The form is simple and intuitive. From the flight plan type to the comments, the flight plan shows the controllers what you're planning to do while in the air. Plan your flight and then fly your plan. If you're new, use the comments box to note that, if you want. Basically anything that pertains to your flight that you want the controllers to know can be added to this section.

The plan we're using is for Delta's flight 101, KATL to SAEZ with the following route: SOONE J89 HITTR J91 INPIN J85 DHP A509 URSUS UA301 MLY R640 ERIKO UW5 MAR UR640 MAN UA315 ATF UW28 CIA UB554 IGU UB668 MCS UW64 GUA PAGON PAGO5A.

You should be able to identify all the various parts of the flight plan if you've been following the articles in FLY about flight planning.

There's a hierarchy to Air Traffic Control. Normally, you will not encounter all of the various parts of ATC while flying online; however it's good to know which to contact and when. You have, in order of contact:

- Clearance Delivery
- Ground
- Tower
- Departure
- Center
- Approach
- Tower
- Ground

The titles are pretty self-explanatory. If a certain position isn't online, typically the next level up will, as time and controller workload permit, fulfill the duties of the positions

that are unmanned. In situations like this, realize that you're going to be waiting a little longer than usual.
Part of your preflight should include determining which ATC positions are filled and tuning your radios to the proper frequencies. This minimizes the amount of downtime while you're tuning your radios. It's nice to have an aircraft that has all four radios operating (Comms One and Two with standby frequencies). This isn't always possible with the aircraft available to us. It's just good practice to get into when the option is available to us. We're going to assume full staffing for this flight.

So you've got your flight plan filed, and your preflight is completed. You dial up the Clearance Delivery frequency.

- *Clearance delivery, Delta101 ready to copy IFR to Buenos Aires.*

Or

- *Clearance delivery, Delta101 request cleared as filed to Buenos Aires.*

When you tell the controller that you're ready to copy, you'd better be ready to copy because he will rattle off your clearance along with a squawk code and anything else you might need:

- *Delta101, you are cleared to Buenos Aires via the ATL5 departure, SOONE, then as filed. Climb and maintain 10000, expect FL320 within 10 minutes after departure, squawk 2317. Expect runway 27 right.*

Always read back the clearance:

- *Roger, Delivery, Delta101 is cleared to Buenos Aires via the ATL5 departure, SOONE then as filed. Climb and maintain 10000 and expect FL320 within 10. Squawk 2317. Two seven right.*

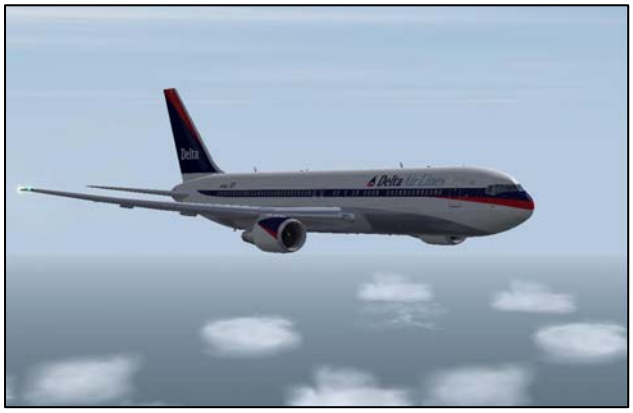
This allows you and the controller to verify that you've got your clearance correct.

- *Delta101, read back correct. You are cleared for pushback and engine start. Contact Ground on 117.9 when ready to taxi.*

Now you're cleared to push back from the gate and start your engines. Once this is done, you switch to the Ground Frequency:

- *Atlanta ground, Delta101 ready to taxi to runway 27 right for take off.*
- *Delta101, taxi to runway 27 right via M.*

Normally they will simply tell you to taxi to the runway. It's rare that they will actually give you a route, but you have to be prepared for that to happen.



When a controller gives you permission to taxi to the runway, you are not allowed to actually taxi *onto* the runway. There is a hold short line on the taxiway, and until you're given permission to taxi onto the runway, no part of your aircraft may cross a hold short line.

Sometimes you will have to actually cross runways to get to the runway from which you'll be departing. Unless specifically given permission to cross all runways, stop at each one and request permission to cross the runway. Once clear of that runway, let the controller know. Let's say you have to cross runway 27 right to get to 27 left:

- *Atlanta ground, Delta101 at 27 right, request permission to cross the active.*
- *Roger, Delta101, cross the active.*

Once clear:

- *Atlanta ground, Delta101 clear of the active runway.*
- *Roger, Delta101, thanks.*

It is required in the real world that you read back *all* hold short instructions. If given any in your clearance, you *must* read it back.

Now that you're holding short of the active runway, you once again contact the ground controller.

- *Atlanta ground, Delta101 holding short runway 27 right.*
- *Roger, Delta101, contact Tower on 119.85*

Because you're smart and you've got all of your frequencies ready to go, you simply flick a switch and contact tower:

- *Atlanta tower, Delta101 holding short runway 27 right.*
- *Delta101 winds calm, cleared for take off runway 27 right.*
- *Roger, cleared for take off 27 right.*

Sometimes you might get:

- *Delta101, taxi into position and hold.*

This means you are allowed to taxi onto the runway and line up, but you are not cleared to take off unless you hear the magic words: *cleared for take off.*

Now you're airborne and since you've got nothing to do at the moment, ATC decides to help with that boredom that sets in right after take off:

- *Delta101, contact departure on 121.25.*
- *One-two-one point two five for Delta101.*

Now you can start to see why it's a good idea to have all of your frequencies in place and ready to go. As you're just lifting off from the ground you've got to juggle the aircraft and the radio. On top of that, chances are you're going to have Departure come on the line and give you some vectors right away.

- *Departure, Delta101 with you through 2400 for 10000.*
- *Roger that Delta101, climb and maintain 10000, turn left heading 190.*

Now you have to remain in control of the aircraft as well as acknowledge the instruction. Real world crews have the luxury of one person doing the flying while the other monitors the radios, cleans up the aircraft, and a myriad of other duties. You're doing this all by yourself. It's acceptable to start the turn before acknowledging the instruction. The controller will see that you're complying. The moment you can spare a second, be sure to acknowledge the instruction:

- *Turn left 190 for Delta101.*

You won't be with Delivery for very long. They may give you a few more changes to your path before handing you off to Center. By this time, things may be easing up a little on your flight deck:

- *Delta101, contact Center on 137.8.*
- *Roger, 137.8 for Delta101.*

Tune to Center:

- *Atlanta Center, Delta101 with you through 9500 for 10000, 7nm inbound SOONE.*
- *Roger, Delta101, radar contact 5nm from SOONE intersection, climb and maintain FL320, resume own navigation.*

This is where you can relax, in regards to radio duties. Once you've acknowledged the instruction, your responsibilities on the radio will be fairly infrequent. They may contact you for traffic advisories or some other reason, but for now you are okay. Concentrate on your flight path. Eventually, you'll be handed off to another Center. This will continue as your flight progresses. The format will always be similar:

- *Delta101, you are leaving my airspace, contact Miami Center on 134.1.*
- *Roger, 134.1.*

Contacting the new facility:

- *Miami Center, Delta101 with you FL320 32nm from RANDM intersection.*
- *Roger, Delta101, radar contact 30nm from RANDM intersection.*

You are not required to acknowledge this transmission. He's simply telling you that you are under his control. You can probably go through entire areas of ATC supervision and never get a call after that initial acknowledgement until it's time to hand you off to the next sector.

Something to keep in mind: as you're handed from one sector to another, from one controller to another, it's always good form to thank the controller for his services. He doesn't have to be there providing you with ATC services.

As you near your destination, you'll be given instructions to descend. You can request a descent if you're not comfortable with the descent rate it looks like you'll have to maintain to meet any crossing restrictions.

A crossing restriction is a waypoint in your flight plan, usually on the SID or STAR, that you have to cross at a certain altitude and/or speed. These are also something that you should always read back if you are given them.

- *Delta101, descend and maintain FL050, cross ENO at FL070 and 240KIAS.*
- *FL050, cross ENO FL070 and 240KIAS.*

When you're around 50nm away from the airport or so, you'll be handed off to Approach. Approach has the responsibility to fit you into the traffic flow. You will be given a series of vectors to line you up with the approach coarse.

- *Approach, Delta101 with you through FL100 for FL050 crossing ENO at FL070 and 240.*

Once aligned with the runway, you'll be instructed to tune to the tower frequency. This hand off is also during one of the busiest phases of flight.

- *Delta101, maintain FL050 until established on the ILS, altimeter 1013*[29.92]*, winds 070 at 15, cleared to land runway 11.*

As with everything else:

- *Maintain Fl050 until established, copy winds, cleared to land runway 11.*

You'll come gracefully down the ILS to a perfect landing on runway 11 in Buenos Aires. This is still a busy time in the cockpit, but that doesn't

keep ATC from giving you some more instruction at this time:

- *Welcome to Buenos Aires, Delta101, exit the runway when able and contact ground on 129.55*

At your destination, Ground will give you taxi instructions. Remember to request permission to cross any runways unless you've been told initially to cross. When you've reached your gate, you radio ground:

- *Delta101 at the gate, ready to close this flight plan.*

- *Roger, Delta101, Flight plan closed at 1707Z.*

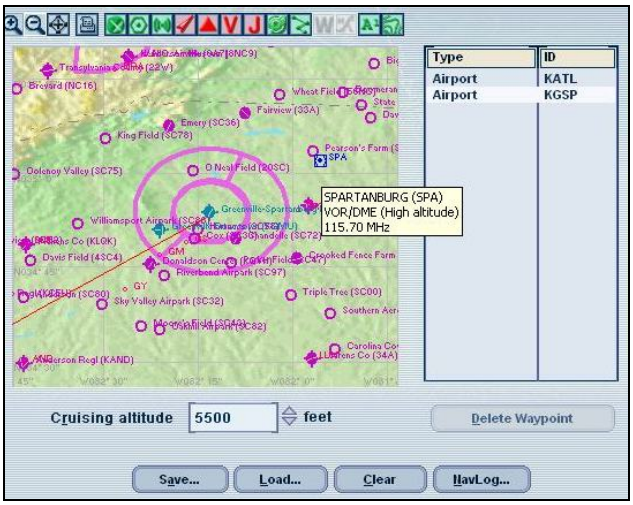
Your flight plan closed, you are now free to disconnect from VATSIM and file your PIREP.

Flight Planning ATL to GSP

George Lewis - V.P. & Director of Training

Today we're going to be flying the EMB-120 from KATL out to KGSP and back. The trip itself isn't too long, and we'll plan this flight both VFR and IFR. VFR flying is fairly simple and straightforward - no SID or STAR – we simply fly direct to the VOR and/or NDB and then find the airport and do a visual landing there.

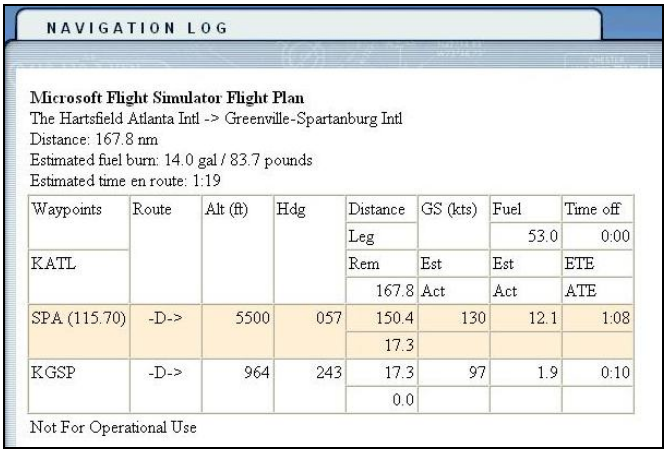
We'll start out by looking at the flight planner and seeing what the direct route to the nearest VOR by KGSP is.



We can see here that the SPA VOR is the nearest VOR to KGSP, slightly beyond the airport, and that it is a high altitude VOR, so we have a 194NM range to play with.

We also see that the altitude is 5500 feet, which means this is the safest minimum altitude to fly VFR on the flight. You can ignore this, because once we modify the straight line route, it is worthless. However you can figure out from this information that we need to fly an odd+500 feet altitude on the route.

We click on the route line and drag it to the SPA VOR, then click on the NAV Log.



NAVIGATION LOG

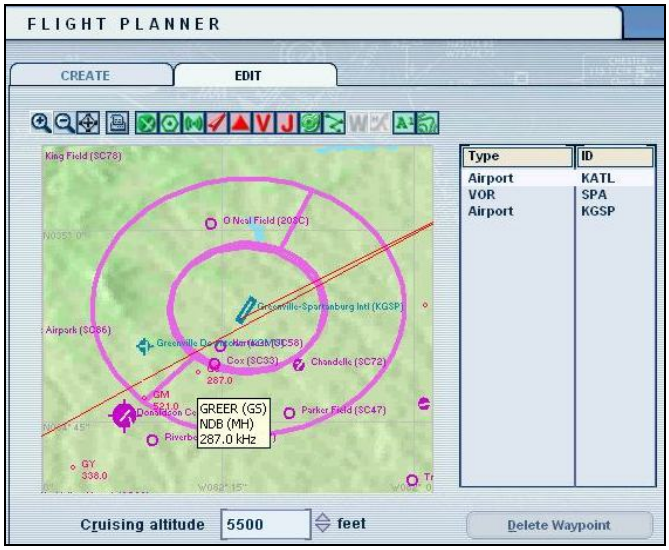
Microsoft Flight Simulator Flight Plan
The Hartsfield Atlanta Intl -> Greenville-Spartanburg Intl
Distance: 167.8 nm
Estimated fuel burn: 14.0 gal / 83.7 pounds
Estimated time en route: 1:19

Waypoints	Route	Alt (ft)	Hdg	Distance	GS (kts)	Fuel	Time off
				Leg		53.0	0:00
KATL				Rem	Est	Est	ETE
				167.8	Act	Act	ATE
SPA (115.70)	-D->	5500	057	150.4	130	12.1	1:08
				17.3			
KGSP	-D->	964	243	17.3	97	1.9	0:10
				0.0			

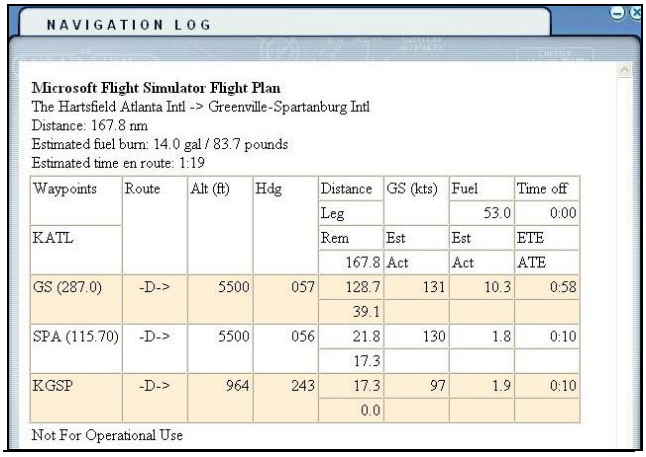
Not For Operational Use

Here we can see that we have 150.4 NM direct from KATL to the SPA VOR. This means we'll be able to use this single VOR the whole way into KGSP. Of course, the VOR is not on the field, and looking at

the local area, there are several airports that are nearby, meaning you could get confused and land at the wrong one.



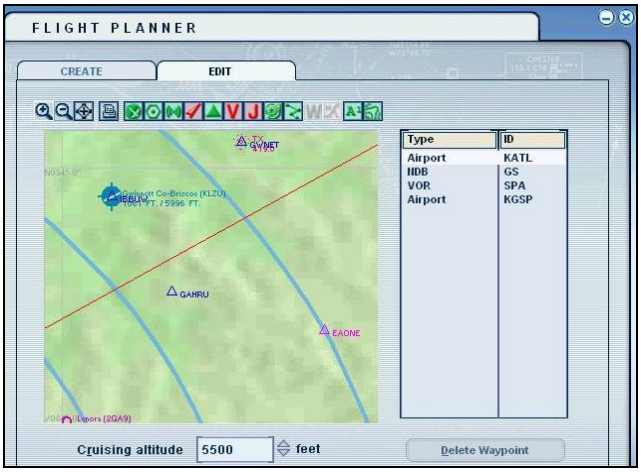
Here we can see those airports I mentioned. To make it easier, there are a couple of NDBs in the area. I have highlighted the GREER (GS) NDB, which is frequency 287.0 which we will tune into the NDB. We can simply fly direct to the SPA VOR and when the ADF picks up the NDB, we can turn and fly towards it, ensuring we find the right airport and if the winds are right, it should set us up for a direct straight in approach into the airport as well.



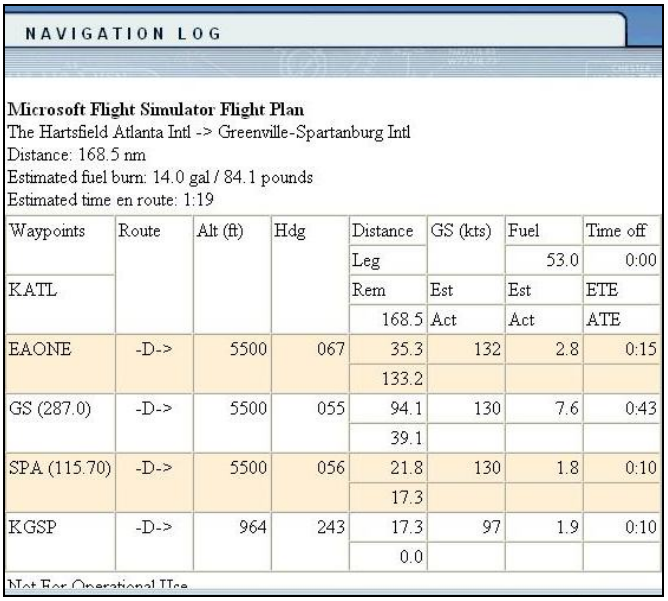
Waypoints	Route	Alt (ft)	Hdg	Distance	GS (kts)	Fuel	Time off
				Leg		53.0	0:00
KATL				Rem	Est	Est	ETE
				167.8	Act	Act	ATE
GS (287.0)	-D->	5500	057	128.7	131	10.3	0:58
				39.1			
SPA (115.70)	-D->	5500	056	21.8	130	1.8	0:10
				17.3			
KGSP	-D->	964	243	17.3	97	1.9	0:10
				0.0			

Now that we have added the NDB, we can see that the flight planner gives us a route to the NDB. This isn't really what we had in mind, but it does give us a general direction we will head. Looking at the first flight plan, the course is the same – 057. Since the VOR will come into range as soon as we climb somewhere above 3000 feet, we'll be fine by just flying direct to the VOR. As soon as the NDB comes in, we'll change course and head for it instead, and then track a visual straight in for KGSP.

Now, suppose we would like to change this to an IFR flight plan? The weather could be bad, or whatever. This is no problem. We know the departure is going to be either EAONE or EATWO, so simply go back to KATL in the flight planner and have a look around and see which of the departure transition points line up closest for us.



We can see here that EAONE is the closest intersection. So we'll simply look up the Atlanta 5 departure for the EAONE.ATL5 and we see that it is outbound course 065 off of the 116.9 VOR.



Waypoints	Route	Alt (ft)	Hdg	Distance	GS (kts)	Fuel	Time off
				Leg		53.0	0:00
KATL				Rem	Est	Est	ETE
				168.5	Act	Act	ATE
EAONE	-D->	5500	067	35.3	132	2.8	0:15
				133.2			
GS (287.0)	-D->	5500	055	94.1	130	7.6	0:43
				39.1			
SPA (115.70)	-D->	5500	056	21.8	130	1.8	0:10
				17.3			
KGSP	-D->	964	243	17.3	97	1.9	0:10
				0.0			

EAONE is shown here at 067 course, yet I said it was 065. What is going on here? Simple – the 065 is the outbound course radial from the ATL VOR. 067 is the heading from the KATL airport.

Look like it'll be one of those quick trips today. The Flight Planner is showing a distance of 168.5 NM. Ignore the enroute time and ground speed – this flight wasn't planned with the EMB-120. Instead, calculate the ground speed yourself. We'll go with 240 knots on the ground before factoring in any winds.

240 knots / 60 minutes is 4 nautical miles a minute, which means 168 divided by 4 is 42 minutes. Adding a few minutes for the taxi, takeoff, climb out, descent, approach and taxi to the gate should put this flight at somewhere just under an hour, depending on how far you have to taxi, and if you file IFR, how fast you can get your clearance.

The EMB-120 will probably burn around 720 pounds of fuel for the first hour of flight per engine, so we'll figure on that and another hour for alternate airport and the 45 minute fuel reserves. We factor 720 pph for the first hour and 600 pph after that for flights under FL180 (VFR cruising) as a rough estimate, so you can figure 720+600, or 1320 per engine. Doubling the amount for both engines, it comes to 2640 lbs of fuel needed for the trip.

The flight back is going to be similar, but easier. Since we know that the VOR was in range to KGSP, we know that the ATL VOR will be in range for the flight back. We simply fly direct on the way back to 116.9. If we decide to fly IFR, we would fly the ODF.MACEY2 STAR. You can see this on the STAR above. 8500 means the minimum altitude on that portion of the STAR.

Well, today we covered how to plan a quick out and back and we used a short range airport and utilized the NDB as well. Be sure and have instrument charts handy if you plan on any IFR flying. Don't forget the METAR/TAF before flying!