

# **DELTA FLY!**

MARCH 2009 EDITION

DELTA VIRTUAL AIRLINES MAGAZINE

## **8th Anniversary Edition**



***In This Issue:***  
***The DC-8***  
***LAX's LOOP4***  
***...and much more!***



# March 2009

## Issue #10

### Our Staff:

**George Lewis – Interim Editor In Chief**  
DVA Vice President, Director of Training  
Interim DC-8 Chief Pilot

**Larry Foltran – Layout**  
A320 Chief Pilot

Contact the Delta FLY! staff:  
[editor@deltava.org](mailto:editor@deltava.org)

On the Cover:



DC-8 cruises over the mountains – George Lewis

*If you want your photo to be considered for the cover of a future edition of Delta FLY!, send an email to the above email address with the subject Cover Photo. Please do not send the photo itself, but instead provide a link to the photo (i.e., from the Water Cooler). If you have to send the photo itself, send it to delta\_fly\_mag@hotmail.com. Photos must be your own work. Please do not recommend photos that are not yours. Photo copyrights belong to the original author and will not be used without permission. If you want a photo to be used as filler within Delta FLY!, the same rules apply.*

### This month's features:

- ▲ From the President ..... 3
- ▲ From the Editor ..... 5
- ▲ From the Flight Academy ..... 6
- ▲ Delta Virtual's Flight Academy ..... 7
- ▲ DC-8, A Piece of Delta History ..... 10
- ▲ LAX's Loop 4 Departure ..... 14

Delta Virtual Airlines (DVA) is in no way affiliated with Delta Air Lines or any of its subsidiaries. The information contained in this document is for flight simulation use only. This document is freeware only.

All Rights Reserved. This publication may not be reproduced, in part or its entirety, without the expressed permission of DVA and the Editor. Images used are copyrighted by their respective owners.

# From the President's Desk



Terry Eshenour - President, Senior Captain 777

Fellow Pilots,

The DC-8 is featured in our anniversary edition of Delta Fly! 50 years ago it started Delta Air Lines' jet age. The DC-“8” was selected to commemorate Delta Virtual Airlines' Eighth Anniversary of providing aviation virtual services to our pilots. While eight years in non-virtual time may not be considered long; in virtual airlines longevity terms, we are definitely mature.

Delta Virtual Airlines grew to more than 2,500 active pilots with a current 30-day waiting list. We have 40 dedicated volunteers on staff providing program services to our pilots. Our pilots are hard at work flying 312,000 flight legs and covering 261 million nautical miles since the inception of the airline.

Our age, continued development and growth are testimony to the airline's overall success. Our founders discovered a business plan that met and continues to meet the needs of our community. For me, it is a privilege to be a member and have the opportunity to serve on the management team.

Delta Virtual Airlines' operation and professionalism was publicized when Smithsonian Magazine – Air & Space featured the airline in its December 2008 issue. The recognition resulted in increased applicants. It also attracted the interest of the media. The ABC affiliate in Sacramento, California is planning a news item in the next couple of weeks.

At the start of year 8 we set goals for our organization.

- In year 8 we will continue to focus on serving with excellence.

- Hire additional staff to support in a timely manner our pilots.
- Revise exam questions and aircraft operating manuals to assure accuracy and eliminate vague questions.
- Revise Flight Academy curriculum.
- Introduce Dispatch feature for ACARS.
- Complete fleet upgrade to be FSX compatible.

In the twelve months that followed, staff has made considerable headway in achieving and in many cases surpassing the goals.

- Totally volunteer funded to cover operating expenses.
- Active membership capped at 2,500 to ensure our ability to deliver excellent service.
- USA terminal charts updated every 3 months.
- ACARS submitted flight reports for the 10 flight legs for promotion instituted for all programs except EMB-120.
- Live Dispatch using ACARS created with a staff dedicated to researching routes and providing live, on-request service.
- Exam questions review and revisions was completed. The exams are multiple choice, auto-graded with prompt results supplied to the pilot.
- AOM revisions are in progress. The B747-400, CRJ-200, and DC-6 AOM's were released.

- The Flight Academy, which was temporarily closed to permit curriculum revisions and relocation to Salt Lake City, was reopened. The revised curriculum will place a greater emphasis on preparing pilots for online flight.
- Fleet is FSX compatible.
- Northwest Airline Merger resulted in adding NWA flights to DVA schedule database and creating A320 and B747 programs.



Photo courtesy of Larry Foltran

There were staff changes in the past 12 months that are too involved and numerous to enumerate. All changes are posted on the website. Volunteers often experience real world demands that prevent them from carrying out their roles. Also, after serving in one position for extended periods of time there is often burnout when the role is no longer enjoyable. This is a management challenge to detect burnout in advance and find a different situation for the individual. We want our staff members to enjoy their roles just like we hope our pilots enjoy "working" for DVA.

I am grateful for the multitude of contributions our staff, management and pilots contribute unselfishly for the betterment of DVA. This characteristic is common among aviators including virtual aviators. Lacking contributors, we would not be able to function at the level we are experiencing.

Should you have a specific question or a problem with flight reporting, check rides, fleet installer, signatures, create a Help Desk issue. This gives us the ability to assign the matter to the individual best equipped to resolve it. We can also track the progress of resolving the matter. Staff and administrative issues placed in the Water Cooler can get lost and they are public.

The publication of Delta Fly! is a time consuming and often times frustrating task for the writers, editors and publishers. Every effort is made to publish quarterly, but time constraints do not always permit. George Lewis, Charly Azcue and Larry Foltran are the energy behind its publication. We are deeply indebted to these gentlemen for their efforts. Their talented and energetic inputs produce a professional quality publication. We always have a need for content and assistance in publishing Delta Fly! Let George or myself know if you would like to take a role.

Your organization is busy, vibrant and maintains a high level of participation in the Cooler, events and instruction.

Wishing you all a safe end of winter/summer for our southern hemisphere pilots.

Thank you for flying Delta Virtual Airlines,

# From Delta FLY!'s Editor

George Lewis



Another year has passed by and we find ourselves in the year 2009. Fifty years have passed by since Delta introduced the widget logo, inspired by the Douglas DC-8 aircraft. Delta Virtual Airlines offers historical programs such as the Douglas DC-6 and Douglas DC-8, both of which were flying 50 years ago in 1959.

Many people enjoy reading the FLY! and we are often get asked, "why doesn't the FLY! come out more often?" The answer is not always an easy one to give – It takes a lot of time to put together the Delta FLY!

If you would like to contribute, send your ideas and/or submissions to [editor@deltava.org](mailto:editor@deltava.org) and hopefully we can use them.

If you have experience publishing newsletters and think you have what it takes to help put the FLY! together, create a helpdesk issue or send an email and we'll talk.

On the operations side of the house, DVA has introduced a new program – the Boeing 747, and will be introducing another one – the Airbus A320 program – very soon. There is a lot of behind the scenes work that goes into creating a new program.

First, there is the selection of the Chief Pilot and Assistant Chief Pilot. We were very fortunate to have Rob Morgan and Larry Foltran to represent these two new programs.

We have to create a fleet installer for both FS9 and FSX and test it. In the case of the B747, this involved some rather long flights between the USA and Europe.

The Aircraft Operations Manual (AOM) has to be created, and these must conform to our AOM standard, which we are converting all manuals to. The AOM must include, among other things, a cockpit checkout, fuel planning,

checklist, tutorial flight for the pilot who is flying this particular equipment type for the first time, and charts – including takeoff, landing and approach information, speed card templates, etc. The entire AOM is then reviewed by several people, including Scott Clarke, VP of Training, myself and Terry Eshenour, President. This is a very involved process because we have high standards and we want it to be right before it is published.

There are also exam questions to create, and some website work to make all this happen.

All of this must take place before we can activate the program.

In time, more and more of our fleet manuals will be revised to the AOM standard mentioned above. The EMB-120ER, CRJ-200, DC-6 and B747 AOMs are complete. The Airbus A320, Boeing 738 and Lockheed L-1011 AOMs are nearly complete.

We've also added some additional ratings – the Convair 340 and 440 – to the DC-6 ratings and we have also moved the DC-6 to Stage 3.

I hope you enjoy this issue and I look forward to hearing from those wanting to contribute to future issues of the FLY!

Regards  
George Lewis, VP Operations



Photo courtesy of Larry Foltran

# From the Flight Academy



**Scott Clarke – V.P., Training**

There are many new and exciting changes in the training program at Delta Virtual 2008-2009.

With the temporary closing of the Flight Academy in November 2007 and a complete remodel in 2008, the programs and courses are now open and working through the backlog.

We have new instructors and new course materials for the students. Jim Warner was appointed Director of the Flight Academy to handle the day-to-day programs and make sure that the Flight Academy keeps moving ahead. He will update you in his article located in the edition of "Delta Fly"

As soon as we can obtain more instructors, we will open up our new instrument course, which will expose the virtual pilot to the real world experience of "flying under the hood". You will be required to have completed the PPL and Commercial course before you can enroll in the new and exciting course.

We continue to work closely with the Operations Department to develop the Aircraft Operating Manuals (AOM) for each aircraft in the Delta VA fleet. In addition, we are working on new training programs with the chief pilots that will be specific to their aircraft.

With the new VATSIM pilot "training" program, Delta VA and your training program will be working with VATISM in the development of the program.

We thank you for your support and look forward to seeing in the virtual skies of Delta Virtual Airlines.

Scott Clarke  
DVA 2370  
Senior Captain, DC-8  
DVA Vice President -Training

**DELTA FLY!**





# **Delta Virtual's** **Flight Academy**

**Jim Warner**

---

## **Director of the Flight Academy**

Our Flight Academy has been in operation for over 3 years now and much has changed from the original concept. We remain dedicated to teaching students how to fly using Microsoft Flight Simulator.

I've always said that flying a plane is a lot like riding a bicycle in that once you learn how to ride a bike, you can ride just about any bicycle from a small wheeled dirt bike to a large wheeled beach cruiser. The only thing that changes is perhaps the size of the wheels and whether you have hand brakes or a coaster brake; or no gears to a 27 speed bike. The concepts are the same just the speeds change a little when turning and going in a straight line. Big wheels are faster in the straightaway but smaller wheels are faster in the turns. The same is true in airplanes. Once you learn how to fly, you can use these concepts in any plane you fly for Delta but the checklists may change, the V speeds may change, and you may have a fancy glass cockpit or steam gauges. The point is that flying is the same but the planes are a little different in their

handling. Everything you learn in the Flight Academy from flight planning, fuel planning, navigation, ATC communications, traffic patterns, VFR flying, IFR flying, weather, etc can be used in any of the Delta Virtual's airplanes.

We currently have 6 instructors in our Flight Academy and are trying to add more (perhaps a European instructor and another West Coast instructor). All of our instructors are real world pilots who have completed pilot training in the real world before becoming instructors for our Flight Academy. Our PPL (Private Pilot License) course is based on the FAA private pilot's course and includes a segment regarding Online flying with VATSIM or IVAO. Our Flight Academy is based in KSLC (Salt Lake City) where we have our own Flight Academy Hangar compliments of Gary Widup and his freeware KSLC scenery available at [www.avsim.com](http://www.avsim.com) as kslc9v2.zip. We train at Tooele (KTVY), Provo (KPVU), Ogden (KOGD), Logan (KLGU) and Pocatello (KPIH). There is lots of pretty scenery in that area of the mountains and we are usually flying VFR at 6,000 to 8,000 feet (about 2,000 to 4,000 feet AGL) so you get to see it all.

What makes us unique in the virtual training world is that we share a cockpit with our students so we can see what they see and also see what the student is doing in the cockpit while flying, although the student does most of the flying! We can look over the student pilot's shoulder and suggest corrections in flying or resume control of the plane to demonstrate a flight maneuver. This magic is brought to us by the people at <http://www.gates.to> using their product FSNet/CoPilot (not Abacus CoPilot) to join the cockpits of our Flight Academy EMB-120 planes for joint flying and instructing. Unfortunately, this only works with FS2004 and not FSX. We are looking into cockpit sharing with FSX but until that procedure is fully tested, we can only instruct using FS2004.



Screenshot courtesy of George Lewis

Here is the course outline so you can see the topics covered in the current PPL course:

**Task 1** - Configuration of Students  
Computer, download/install software and manuals

**Task 2** - Understanding of EMB-120ER, AOM, Airport environment, fly Basic Maneuvers, VFR Traffic Pattern

**Task 3** - Fly Basic Maneuvers, Fly VFR Traffic Pattern, Fly VFR Flight, has Basic ATC knowledge

**Task 4** - Performs Navigation & Instrument Procedures, has Chart Knowledge, Flight Planning skills

**Task 5** - Develops Flight Plans and Demonstrates ability to fly assigned Cross Country flights

**Task 6** - Develops IFR Flight Plans and demonstrates ability to fly VATSIM ATC Cross Country flights

**Task 7** - Course Review for Final Exam and Checkride review covering PPL TASK Objectives

#### Instructor Sign-off

Student has successfully completed all written and flying requirements of the PPL course and is recommended by instructor for the PPL checkride and course completion.

I'm sure that you will agree that this is a pretty comprehensive course that is designed to help our pilots fly wherever they wish to go on the Delta Routes and they will have the knowledge to fly offline or online with VATSIM or IVAO.

To date, we have had a number of students come through the course that were in the process of getting their real world pilot license and a number of people who were getting their BFR (bi-annual flight review – required for real world pilots). All of them said that completing the course had helped them with their real world flying and made flight lessons easier for them.

Now let me discuss the rules of the Flight Academy. There are only 3 of them.

1. What happens in the Flight Academy, stays in the Flight Academy! What we mean by this is that you will never see an instructor talk about a student's flying experiences in lessons out side of the Flight Academy. A student's flying will not be discussed in our Water Cooler, in emails or posts inside or outside of Delta Virtual Airlines. The Flight Academy is a safe place to come and make mistakes. You can then learn from your instructor how not to repeat them.

2. If a student can't make a lesson, we ask that they leave a comment in their PPL course record ASAP. This will notify their instructor and that instructor may be able to place another student in that time slot.

3. We are here to have fun! Our flight lessons are enjoyable and fun for all. If a student decides that this is no longer fun for them, then they can withdraw and go on to do something that they consider "fun".

We expect that the student should be able to complete this course within 6 weeks. That might mean that the student would have to complete 2 lessons per week for a while in order to complete the course in that timeframe. All our instructors work during the day and then volunteer to

instruct students at night or other times when they are free. You can see what our Flight Academy schedule looks like by viewing our Flight Academy Calendar at <http://www.deltava.org/academycalendar.doc>.

We are admitting students to the Flight Academy in the order that they enrolled. There are a number of students in the queue and only a few instructors so please have patience and we will get to all, in turn.

So, if you think the PPL course is for you, simply login to our website and go to the Pilot Center, Flight Academy and open the drop down box. Select Private Pilot and then press the button "Enroll in course" and we'll get to you as soon as we can.



## A Piece of Delta History

---

By George Lewis, VP Operations - DVA2253

---

The year 1959, 50 years ago, was historical in many ways. Alaska and Hawaii became the 49th and 50th states. Buddy Holly, Ritchie Valens and the Big Bopper died in an airplane accident that later was termed "The Day the Music Died", influencing the song "American Pie" by Don McClean. Lee Petty won the first ever Daytona 500. The Barbie doll debuted, Rod Sterling's *Twilight Zone* premiered on CBS and Delta took delivery of its first jet airliner, the Douglas DC-8 aircraft.

At the time the DC-8 entered the Delta fleet, the Convair CV-880 was still a year away and the world was raving about the Boeing 707, which began service for Pan Am in October 1958, nearly a full year earlier. Before the Douglas DC-8 entered service in September, the Delta fleet was all-propeller driven, consisting of the Convair 340, Convair 440, Curtiss C-46 (Cargo), Douglas DC-3, DC-4, DC-6, DC-7 and the Lockheed Constellation aircraft. Delta introduced the first trademark widget design, which resembled the swept wing of the Douglas DC-8. The Douglas DC-8 opened up the medium to long haul routes for both domestic and international travel and continued service with Delta for 32 years until 1991 when the Douglas DC-8-71 was retired and replaced by the Boeing 757-200. The Douglas DC-8 still flies today with over 100 of these aircraft in service. United Parcel Service (UPS) has over 40 of these aircraft still in service today.

Anyone who has flown on a commercial airliner has been through the passenger screening using metal detectors. This process began after a Delta DC-8 was hijacked from the US to Cuba in 1968.

Delta Virtual Airlines offers historical ratings for many historical aircraft, including the Boeing 727, Convair 340 and 440, Douglas DC-3, DC-6, DC-7, DC-8, DC-10, Lockheed L-1011 and McDonnell Douglas MD-11.

Various models of the Douglas DC-8 were produced and Delta used many of them, including the DC-8-11, -21, -33, -42, -51, -61, -62, -62F, -71 and -72.

The Series 30 used the JT4A engine series along with fuel capacity increases, strengthened fuselage and landing gear for intercontinental routes.

The Series 40 took the -30 series and introduced the Rolls Royce Conway turbofans, which transformed the DC-8-40 Series into the first turbofan powered airliner in the world. The -40 didn't sell well because the Rolls Royce engine was from a foreign company, and the Pratt and Whitney JT3D turbofan was coming out.

The Series 50 used the popular JT3D, which powered a majority of the Boeing 707s, the main competitor to the Douglas DC-8.



There were many DC-8 aircraft variations throughout its history, starting with the Series 10, originally called the DC-8A, and later renamed to the -10 series after the -30 series was introduced.

The Series 20, or DC-8B as it was originally named, featured higher powered Pratt and Whitney JT4A-3 turbojets.

The last variant produced by Douglas was the Super Sixties Series. The -61 was designed for medium range and high capacity and thus had a stretched fuselage. The -62 was designed for long range and wasn't nearly as stretched. The -63 entered service in 1968 and had a range of 4110 NM with full payload.



Mini-Panel mode – Douglas DC-8-72 in a standard descent – 280 KIAS at 2500 FPM

Freighter models of each were produced (-61F, -62F and -63F). The last of the 556 Douglas DC-8 aircraft produced was delivered on May 13, 1972.

In 1977, many retired Douglas executives formed Cammacorp. This company came up with a conversion project known as the Super 70 Conversion, using the GE/SNECMA CFM-56 engine. Many carriers, including Delta, converted their -60 series aircraft to the -70 series in the 1980s. There were 110 aircraft converted, including 53 of the 88 Douglas DC-8-61 produced.

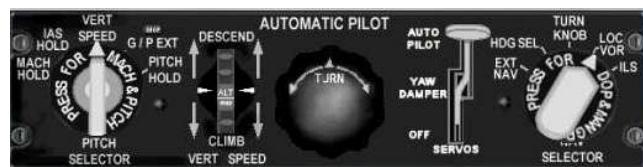
### Flying the Douglas DC-8

Many younger pilots have grown up with glass cockpits with FMCs and RNAV procedures. None of these technologies were available 50 years ago when the Douglas DC-8 was introduced. Pilots back then navigated the skies using radio navigation via AM radio stations and Ultra Short Wave (now known as VHF). VORs became widespread in the early 1960s. LORAN was introduced in the 1970s and GPS became available in the 1980s.

Douglas DC-8 pilots flew via airways using radio navigation, and this meant using Non-Directional Beacons (NDBs) and VHF Omni-directional Radio Range (VOR).

Flying using VORs is still in use today and will be for some considerable time into the future. Navigating via VORs is considered difficult by many simulator pilots who have no formal flight training, but those who have been trained find it to be a very easy, reliable system to use. Delta Virtual Airlines offers VOR navigation training in the Flight Academy. If you really wish to learn how to navigate with VORs, simply sign up for the course and go through the training.

Autopilot systems were rudimentary in the older systems. Pilots hand flew the airplane more often than in today's modern aircraft and auto land systems did not exist.



The Autopilot in the DC-8 Fleet installer

Those not familiar with "Steam gauges" may have a hard time understanding how this autopilot system works. There is no altitude hold, nor can you set the airspeed for auto throttle use, or feet per minute (FPM) climb/descent rates. You can, however, track a VOR or localizer, ILS approach, heading, or just turn the aircraft. You can hold the pitch based upon IAS, MACH, Pitch or vertical speed.

Even though the aircraft had rudimentary navigation systems by today's standards, they are fully functional and the aircraft, with a properly trained aircrew, can fly to any worldwide destination.



Hand-flying the Douglas DC-8-72 at FL340, tracking the J149 to the Fort Wayne (FWA) VOR

The Douglas DC-8, like the Boeing 727, is a pilot's airplane. If you have aviation skills, you can fly this airplane. If you don't, this bird will probably challenge you.

This airplane is flown at cruise by fuel burn level. In the above picture, we are flying at FL340 at 2000 PPH per engine. We've got quite a bit of a headwind, as our speed over the ground is only 427 knots, despite 465 Knots True Airspeed. We're covering 7.1 NM per minute over the ground and even without a sophisticated FMC I can tell you how much fuel I will have when I arrive

at my destination with only a few simple calculations that are covered in the Flight Encyclopedia, downloadable in the Document Library.

If you know how to hand fly an airplane, can plan your own flights and navigate them as well using VORs, then this airplane is one you will definitely want to get familiar with.



# HOW TO FLY...

# the LOOP 4 DEPARTURE

— By George Lewis, VP Operations - DVA2253 —

Many flight simulator pilots today rely on their aircraft systems to perform their navigation duties, such as flying complicated departures and arrivals, but what happens when this type of system is unavailable for use?

Just to be clear, Area Navigation (RNAV) departures are not intended to be flown using the older systems – VOR, DME, NDB and the compass. Those types of departures REQUIRE some sort of navigation system that contains a database of latitude and longitude waypoints that route through the air without the assistance of ground based navigation aids.

Normally, an airplane would navigate a course through the sky using a ground based radio signal from a VOR. They would follow a set course until they intersected the course of another VOR or were some distance in DME mileage from the VOR. Deviating from such a published departure or arrival would require radar vectors from ATC.

With RNAV, the aircraft has the capability to route through the sky without using the ground based navigation aids and does not require vectors from ATC. RNAV departures were designed not to help the pilot or the airline, but to take the workload off of ATC.

The RNAV departures are usually out of the way and require the airplane to be at a specific point in the sky at a specific altitude and airspeed and they are not usually efficient in regards to operating costs and time.

As a VATSIM controller, I have witnessed many occasions where pilots simply don't know how to properly fly the RNAV departures – they may laterally be where they are supposed to be, but the airspeed and altitude restrictions get ignored. During an event this can cause problems when some pilots improperly fly these departures and make it impossible for the controllers to create proper spacing between aircraft.

It is often desirable to take the normal (non-RNAV) SID and get on your way.

This article is intended to teach the flight simulator pilot how to fly a non-RNAV departure. This particular tutorial was flown using the Delta Virtual Airlines Fleet DC-8-72 aircraft in mini-panel mode to make the screenshots easier to display in this article. We will not discuss the use of the autopilot, as this flight was hand flown from takeoff to landing.

If you already completed Flight Academy training in the PPL or Commercial course, this article will probably not help you, as these techniques were demonstrated before being awarded your certification.



Screenshot courtesy of Larry Foltran

The first step in flying a departure is to download the actual departure and look it over. If you don't have that chart onboard, it is kind of difficult to fly it.

You can find all SIDs, STARs, Instrument Approaches and Airport diagrams for the United States right on the Delta Virtual Airlines website – they are located in the Pilot Center in the Flight Planning Resources section – the link is titled Approach Charts.

The LOOP4 departure is located by choosing Los Angeles CA (LAX) in the drop down box, or simply typing KLAX in the box to the right of this. To avoid a long list of choices, you should also check the "Standard Instrument Departure" check box in the Filter Options to just give you the SIDs.

Pulling up the LOOP4 Departure, take a look at the TAKE-OFF MINIMUMS listed:

#### TAKE-OFF MINIMUMS

Rwys 24L/R, 25L/R: Standard.

Rwys 6L/R, 7L/R: NA- Air Traffic.

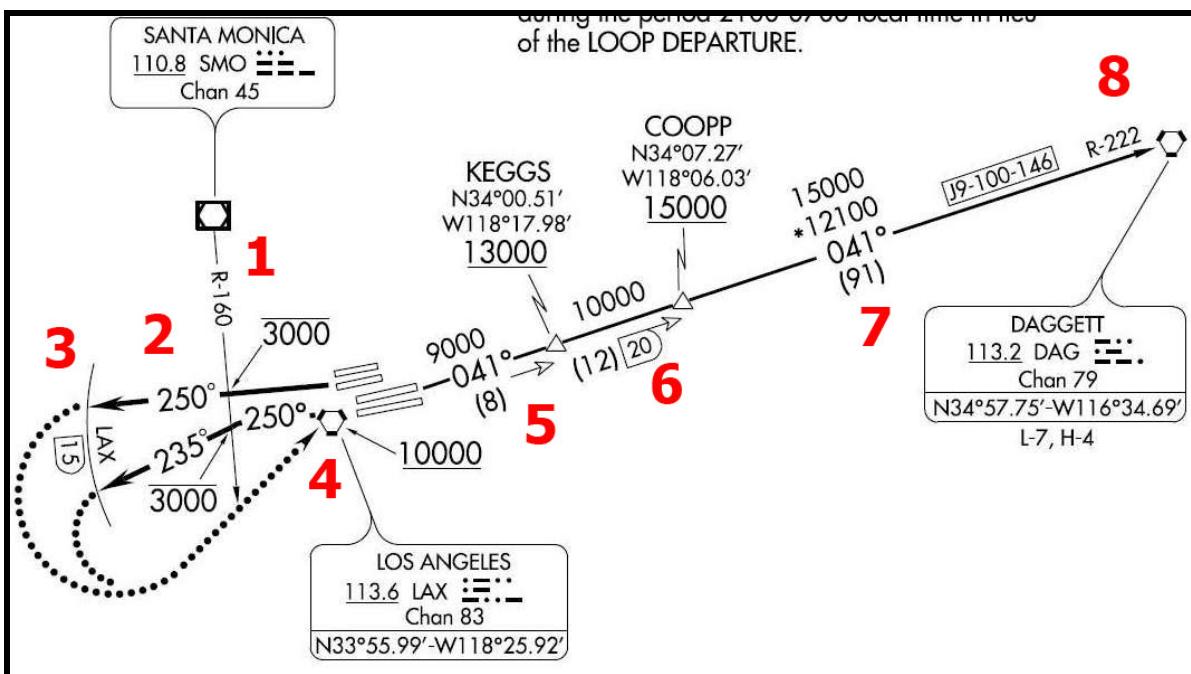
NOTE: RADAR and DME Required.

NOTE: ATC minimum climb of 500' per NM to 10,000 required. If unable, use LAXX DEPARTURE.

NOTE: Use LAXX DEPARTURE, DAGGETT TRANSITION, during the period 2100-0700 local time in lieu of the LOOP DEPARTURE.

Notice anything interesting? When KLAX is departing to the east, you can't use this departure, so this is a west operations only departure.

Next we'll look at the actual route. We'll break this departure down into 8 steps.



#### DEPARTURE ROUTE DESCRIPTION

TAKE-OFF RUNWAYS 24L/R: Climb via heading 250° to cross SMO R-160 at or below 3000, then via radar vectors to LAX VORTAC. Expect left turn direct LAX VORTAC. Thence....

TAKE-OFF RUNWAYS 25L/R: Climb via heading 250° to cross SMO R-160 at or below 3000, then turn left heading 235° for vector to LAX VORTAC. Expect left turn direct LAX VORTAC. Thence....

.... via (assigned transition) or (assigned route). All aircraft expect further clearance to filed flight level three minutes after departure.

1. We will intersect the Santa Monica VOR 160 Radial below 3,000' MSL on a heading of 250°, regardless of what runway we take off from.
2. Look at the graphic above, if you departed on runways 24L/R, you will remain on a heading of 250°, but if you departed on runways 25L/R, you would turn left heading 235°
3. The Departure Route Description says "then via radar vectors to LAX VORTAC. Expect left turn direct LAX VORTAC." – if you are flying on VATSIM with ATC, this will be the case, but if you are flying on VATSIM on Unicom, or flying without ATC, such as on a Check Ride, you will fly until you reach 15 NM on the DME and then make a left turn direct to the LAX VORTAC.
- A VORTAC is a VOR with TACAN capability, which is used by the military. There is no difference in how a VOR and a VORTAC operate in regards to VOR functionality – we'll simply refer to it as a VOR from here on out.
4. The route shows that you should cross over the LAX VOR above 10,000' MSL

5. After crossing the LAX VOR, you track outbound on the 041 radial off of the LAX VOR 113.6 at a minimum of 9,000' MSL for 8 NM, where you will hit the KEGGS intersection above 13,000' MSL. The Latitude and Longitude coordinates are supplied in case you want to plug them into your internal navigation system, such as the CIVA INS.
6. The next segment, after passing KEGGS, should be flown at a minimum of 10,000' MSL and it is 12 NM long. When you reach 20 NM on the DME of the LAX VOR, you will be at COOPP. You need to cross COOPP above 15,000' MSL.
7. This leg of the SID is 91 NM long and should be flown at a minimum of 15,000' MSL. 12,100' MSL is the minimum obstruction clearance altitude (MOCA). If you fly lower than this altitude you will hit something. Notice that this continues on the 041 Radial off of the LAX VOR.
8. If you wanted to track the DAGGETT VOR instead, you would fly the 222 RADIAL, and since this is inbound, we'd fly the reciprocal, which is the 042 course on the VOR/HSI. This is also the J9, J100 and J146 airways.

Once you arrive at the DAG VOR, you exit the SID and enter onto the airway and fly your flight, continuing until you exit the airway and enter your STAR at your arrival.

For example, KLAX to KSLC for this flight would be LOOP4.DAG J9 MLF.JAMMN4 – the LOOP4.DAG is your SID.Transition, then we navigate the J9 airway until we get to the MLF VOR. The MLF.JAMMN4 is your transition.STAR



MD-90 - Trevor Bair

Now that we briefly went over each step, let's go fly the departure



We've chosen to depart Runway 25R in order to include the 235° turn.

#### STEP 1



We are flying a heading of 250° and are climbing out. Note that the SMO R-160 is programmed into the HSI.



We cross SMO R-160 – note that the yellow line in the HSI is now in the center – we are at the point where we need to turn to a heading of 235°. We are also below 3,000' MSL.

## STEP 2



We have turned to a heading of  $235^{\circ}$  and are climbing out. Note that the DME is nearly 8 NM and that we are maintaining an indicated airspeed below 250 KIAS, since we are below 10,000' MSL.



We have now reached 15NM on the DME. We are at 9,700' MSL. I have tuned the HSI to a course of 041 for when we cross over the LAX VOR. Until then, we will not be using it. We will navigate DIRECT to the LAX VOR using the RMI, which is pointing down, directly to the VOR.

## STEP 3



We are above 10,000' MSL and in the left turn. Note that we have not accelerated yet. We prefer to have a lower airspeed during the turn. Speeding up will only widen the turn, which is not desirable.



We are still in the turn, but as you can see with the RMI, it is pointing to about  $035^{\circ}$  to where the LAX VOR is located. We will level the wings when the RMI for the LAX VOR is pointing straight up and accelerate at that point.

#### STEP 4

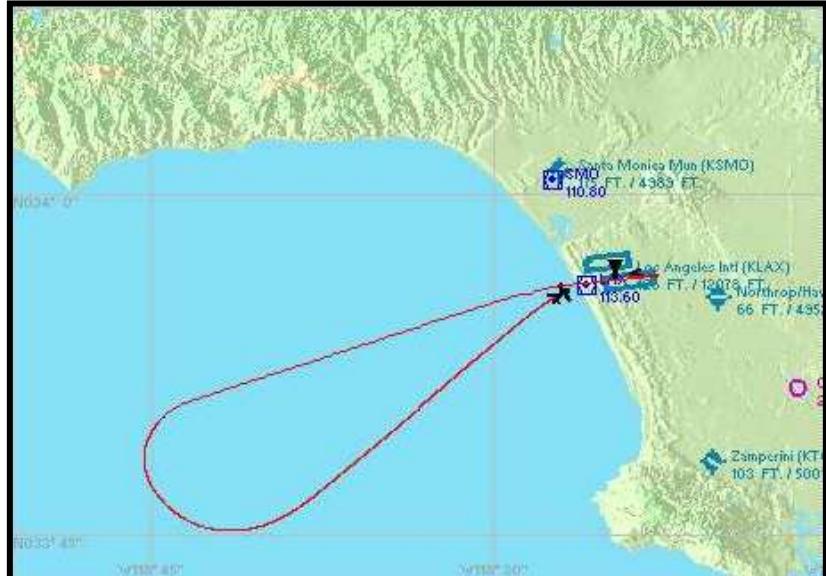


Here we see that the RMI is pointing straight ahead. We are now 13 NM from the VOR. Since we've completed the turn, we accelerate, and the DC-8 is very happy to comply. We simply fly this heading until the RMI needle turns around, indicating we are over the VOR.

#### Map of Route Flown

As you can see from the FS2004 map view, we took off, took a slight turn to the left, flew out to 15 on the DME, turned left and looped around and flew DIRECT to the LAX VOR.

You can compare this to the image on the SID.



#### STEP 5

**DELTA FLY!**



We are now over the LAX VOR – the RMI has swung to the side and is turning around. The HSI says we are “on course” but this is a lie – we are over top of the VOR and therefore the HSI cannot pick up the signal. The mileage to the DME says 3NM, but this is because we are 3 NM **ABOVE** the VOR in altitude. We will maintain a heading of 041° and when the signal picks up, we simply get on the radial and track outbound.

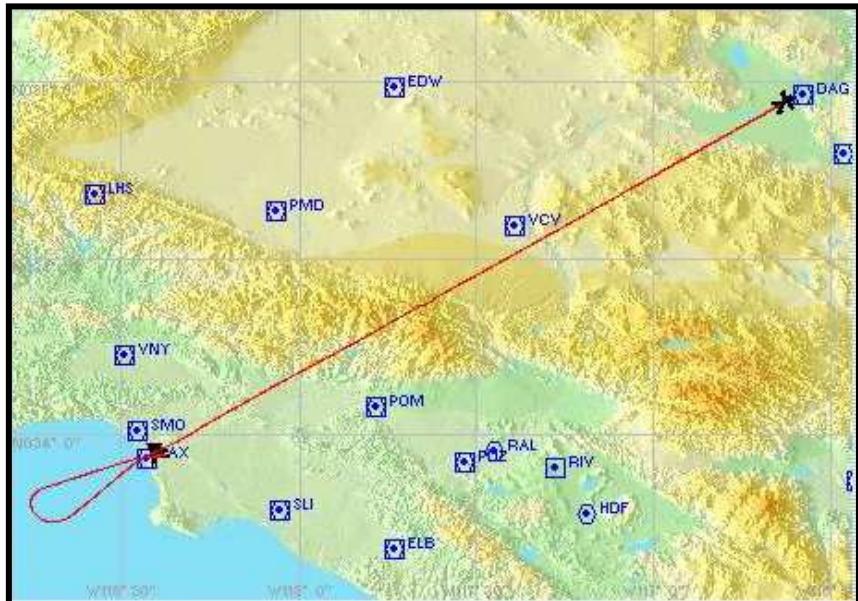


We have now reached 8NM, tacking the LAX R-041. We are 1 NM from KEGGS. We are nearly at FL200 and climbing, so we are above the requirement of above 13,000' as depicted on the SID.

## MAP OF ROUTE

The map view to the right shows the route that was flown, as is depicted on the SID.

After we flew direct to the LAX VOR, got on the LAX R-041 and simply kept tracking outbound until we picked up the DAG VOR and then flew to it.



Hopefully this article has helped you understand a little more about flying standard instrument departures. Why not give it a try? This can be flown in the EMB-120ER, the CRJ, B738, etc.

If you have any questions or need help, contact your Chief Pilot or a Flight Academy CFI via the helpdesk, and we'll get you on the right track.